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# PROJECT REPORT/ESTIMATE FOR PROVIDING WATER SUPPLY, SEWERAGE, STORM WATER DRAINAGE, ROADS, STREET LIGHTING AND HORTICULTURE IN RESPECT OF 6.29375 ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36 SOHNA

## REPORT

The Haryana Government has prepared a master plan for development of Residential/Industrial / Commercial urban estate SOHNA. M/S SIGNATURE GLOBAL HOMES PVT LTD has decided to develop a part of the area in this master plan and has named this part as 6.29375 Acres Residential plotted colony . This scheme is located in sector –36 of Haryana Urban Development Authority SOHNA. License has already been granted under by DGTCP read with license no 3632 to be road with license no 22 of 2018 dated 21.3.2018. The brief details of the colony are as under:-

### WATER SUPPLY

**1 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 ft strainers will be about 20,000 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 tubewells 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 to the Project by HARYANA URBAN DEVELOPMENT AUTHORITY, SOHNA .

**2 Design**

The scheme has been designed for approved population of 1512 persons. The rate of water supply per head per day has been taken as 172.5 litres (150 + 15 %) as per HUDA norms. In addition to above necessary provision of water for community area, shopping centres, parks etc. have been taken into account for calculating the maximum quantity of water requirement.



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**3 Pump chambers and Pumping Machinery**

It is proposed to equip each tubewell with an electrically driven set ejecto type or submersible pump capable of delivering of 20,000 litre per hour. It is also proposed to equip required Nos pumping sets with stand by diesel engins / gen set engines for operation during failure of electricity.

**4 Under Ground Storage**

Underground storage tank provision has been made for 175KL capacity.

(a) In two compartments, which caters for the domestic as well as for firefighting requirement. The water for domestic water compartment shall overflow the fire compartment so that the water in the fire compartment also remains fresh.

**5 Boosting Station**

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

**6 Distribution System**

The distribution system for this development has been designed to supply @ 172.5 litre per head her day @ 3 times the average rate of flow on Hazen William formula. Necessary provision for laying CI/DI pipes conforming to relevant 1S standards along with valves and specials has been made in the project. The minimum terminal head at any point will be more than 27.00 meters so that it can serve the stilt and four floors stories construction envisaged in the plan. Minimum pipe dia for distribution is kept as 100 mm dia. For drinking water supply and 80mm dia for flushing cum irrigation water supply.

**7 Rising mains**

Rising mains from HUDA water main or sector road to water works have also been proposed and provision has been made in this estimate.

**8 Sewerage**

The sewer lines have been designed for 3 times average DWF in relation to the water supply demand assuming that 75% of the domestic water supply shall find its way into the proposed sewer. SW/RCC pipe sewers have been proposed and designed to run half full. The sewers have been designed on 0.77 M per second minimum velocity i.e. self cleansing velocity. Necessary provision for laying s.w. /R.C.C. pipes manholes etc. has been made in this estimate.

## 9 Storm water Drainage

The storm water drainage is being designed to carry 6.25mm rainfall per hour. Also suitable provisions are contemplated in our scheme to ensure better recharging of underground water table in the area R.C.C. Hume pipes drain with minimum 400mm dia is proposed in this area.

## 10 Roads

The roads in the colony have been planned 9m wide. The following specifications have been adopted which are reproduced below.

(i) 300 mm GSB

(ii) 250 mm stone aggregate

(iii) 50 mm thick B.M

(iv) 20 mm MSS

The above construction shall be done on well compacted sub grade as per specifications. Complete work will be carried out as per MORTH specifications, IRC guide lines or HUDA specifications, which ever applicable.

## 11 Street lighting

The provision has been made on lump sum basis.

## 12 Horticulture

The usual provision of road side plantation of tree guards has been made for all roads. The parks shall be developed by providing lawns etc.

## 13 Specifications

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

## 14 Rates

Estimate for providing services in this pocket has been prepared on the recent market rates.

## 15 Cost

The total cost of development in this project including various P.H. and B & R services works out to Rs 597.70Lacs.

The cost per gross acre for the phase works out to be Rs 94.96 which covers the provision of services like water supply, sewerage, storm water drainage, roads, street lighting and plantation including maintenance thereof as well as escalation, administrative departmental and unforeseen charges.

# 6.29375 ACRES RESIDENTIAL PLOTTED COLONY
# SECTOR -36 SOHNA
# DESIGN CALCULATIONS

**Daily Requirement**

1. **Total No. of Plots** = 112

   Population per plot (@ 13.5) = 1512 persons

   Therefore population = 13.5 x 112

   Water requirement for plots @ 172.5 litres/head/day =260820.00litres
   1512 x 172.5 or
   260.82 KL

2. **Add Requirement for Institutions etc.**

a. No of commercials = 1 No

   Daily water requirement @ 32000 litre/Acre

   Area of commercial =0.176 Acre

   Therefore daily water requirement = 0.176 x 32000 = 5632.00 litres
   = 5.63 KL

b. Community place

   Area of community place = 0.630 acres

   Daily water requirement @25000litre/acre
   = 0.630X 25000 = 15750.00 litres
   = 15.75 KL

**Total = 21.38 KL**
**Say =25.00 KL**

3. **Area under Parks**
   Green Parks

   Therefore daily water requirement =0.494 Acre
   @ 25000 litre/Acre =12350.00 Litres
   = 0.494 x 25000 = 12.35 KL



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| | | | |
|---|---|---|---|
| 4. | **Area under roads** out of 6.29375 | | = 1.55 acres |
| | Therefore daily water requirement for sweeping of roads | = 1.55 x 5000 | = 7750.00 litres<br>= 7.75KL |
| | **Total daily requirement** | | |
| | a. For domestic use (1+2) | = 260.82+25.00 | = 285.82 KL |
| | b. Under parks & roads (3+4) | = 12.35+7.75 | = 20.10 KL |
| | Assuming requirement for flushing as 1/3 of total domestic demand and therefore daily requirement for flushing | | = 1/3 X 285.82<br>= 95.27 KL |
| | Daily requirement of potable drinking water supply<br>= 285.82 – 95.27 | | = 190.55 KL |

## 6.29375 ACRES RESIDENTIAL PLOTTED COLONY
## SECTOR -36 SOHNA

**TUBEWELL**

| | |
|---|---|
| Assuming working hours of tube well | = 16 |
| Assuming discharge/hour of each tube well | = 20000 lit/hour |
| Total domestic demand (DRINKING) | = 296.52 KL |
| No. of tubewells required for drinking water supply | = 285.82 / 20 X16 = 0.89 |
| No. of tube wells Required for Total demand | = (285.82+20.10) / 20 x 16 = 0.95 |
| Add 10% stand by | = 0.10 |
| Total no of tubewells required = 0.95 + 0.10 | =1.05 nos. |
| SAY | = 1 No |

So it is proposed to provide 1 Nos of tube wells at present.The provision of Installation of 1 No tube well has been made in this estimate More tube wells will be installed when required. Moreover the requirement of flushing water supply is to met from treated water from S.T.P. and ultimately water is to be supplied by HUDA

**Pumping machinery for tube wells**

| | |
|---|---|
| Gross working load | = 45.00 m |
| Average fall in is S.L. | = 3.00 m |
| Depression head | = 9.00 m |
| Friction Loss | = 3.00m |
| Total | = 60.00 m |

B.H.P. = 20000 x 60 / 60x60x75x0.6 With 60% efficiency = 7.40 B.H.P.

Say = 8.5 B.H.P

**Boosting Machinery (Drinking water)**

| | | |
|---|---|---|
| Daily requirement for domestic use (Drinking) | | = 190.55 KLD |
| Assuming 8 hours running 1 pump (with one stand by) discharge/hour. | = 190.55 / 8 | = 23.81 KL/HR<br>=396.83 ltr/m |
| say | | = 400.00 ltr/m |

Head of Pump

| | | |
|---|---|---|
| i) | Suction Lift | 4m |
| ii) | Friction Loss in main & specials | 4m |
| iii) | Clear Head | 27m |
| | | 35m |
| say | | 40m |

| | | |
|---|---|---|
| B.H.P. of Motor | 400 x 40 / 60x75x0.6 | = 5.92 |
| | Say | 6.50 H.P. |

**Underground Storage Tank (Drinking water supply)**

| | | |
|---|---|---|
| Daily requirement for domestic use including institutional demand | | = 190.55 KL |
| Capacity of under ground tank taking storage (25 + 33 = 58%) say 60% of daily demand | = 190.55 x 0.6 | = 114.33 KL |
| | Say | = 125.00 KL |



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Demand of Fire fighting $= 100\sqrt{1.51}$ = 123.00 KL
$100\sqrt{P}$

113 demand =113x123.00
=41.00 KL
=50.00 KL

Hence it is proposed to provide underground tank of capacity 175 KL which also includes 50KL capacity for firefighting as well.

This tank will have two compartments, one for fire and the other for domestic use. The water first enters the fire compartment then over flows to the domestic use compartment so that the water in the fire compartment shall remain fresh.

**BOOSTING MACHINERY(Flushing water supply)**

| | | |
|---|---|---|
| Daily requirement for domestic use (flushing) | | = 95.27 KL |
| Add for horticulture and roads | | = 20.10 KL |
| **TOTAL** | | = 125.37 KL |
| Assuming 8 hours running 1 pumps (with one stand by) | | |
| Discharge/hour | $= \frac{125.37}{8}$ | = 15.67 KL |
| Discharge/minute | | = 261.18 liter/m |
| | say | = 275.00 liter/m |

**HEAD OF PUMP**

| | | |
|---|---|---|
| **i)** | Suction lift | = 4 M |
| **ii)** | Friction Loss in main & specials | = 4 M |
| **iii)** | Clear head | = 27 M |
| **TOTAL** | | = 35 M |
| SAY | | = 40 M |
| B.H.P. of Motor | $= \frac{275 \times 40.00}{60X75X0.6}$ | = 4.07 |
| | say | **= 4.50** |

**UNDERGROUND STORAGE TANK(Flushing water supply)**

| | |
|---|---|
| Daily requirement for flushing including horticulture | = 125.37 KL |
| Capacity of underground tank taking 8 hours storage<br>= (25 + 33=58 %) Say = 60%<br>= 125.37 x 0.6 | = 75.22 KL |
| | = 75.22 KL |
| SAY | = 75.00 KL |

**DIESEL GENERATING SET**

| | |
|---|---|
| Pumping sets 1 Nos. 6.50B. H.P. each | = 6.50 B.H.P. |
| Pumping sets 1 Nos. 4.50B. H.P. each | = 4.50 B.H.P. |
| Lightening etc | = 1.50 B.H.P. |
| | = 12.50 H.P. |
| Capacity of diesel gen set | |
| Or 20 x 0.746 x 1.50 | = 14.17KVA |
| Add 10 % extra | = 1.41 |
| | = 15.58 |
| SAY | = 17.50 KVA |
| Capacity of genset for tubewell | = 10.46 KVA |
| = 8.5 x 0.746 x 1.5 x 1.10 | |
| SAY | = 12.00 KVA |

**OVER HEAD SERVICE RESERVIOR**

There is no necessity of O.H.S.R. as the capacity of U.G.S.T. has been increased from 33 % to 60% which includes 25 % capacity of O.H.S.R. of daily requirement

**Capacity of S.T.P.**

Capacity of S.T.P. = 0.75 X 285.82 = 214.36 KLD

SAY = 225.KLD or 0.225 MLD

## 6.29375 ACRES RESIDENTIAL PLOTTED COLONY
## SECTOR -36 SOHNA

### FINAL ABSTRACT OF COST

| | | Amount (Rs. In Lacs) |
|---|---|---|
| Sub Work No. I | Water Supply | Rs. 117.30 |
| Sub Work No. II | Sewerage | Rs. 68.70 |
| Sub Work No. III | Storm Water Drainage | Rs. 52.90 |
| Sub Work No. IV | Road and Footpath | Rs. 145.40 |
| Sub Work No. V | Street Lighting | Rs. 24.10 |
| Sub Work No. VI | Horticulture Work | Rs. 4.00 |
| Sub Work No. VII | Maintenance Charges for 10 years i/c resurfacing of roads after 1st 5 years and 2nd 5 years | Rs. 185.30 |
| | Total | Rs. 597.70 |

Executive Engineer
HSVP Division No. VI
Gurugram

Superintending Engineer
HSVP, Circle-II, Gurugram

Addl. Chief Engineer
HSVP, Gurugram

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## FINAL ABSTRACT OF COST (WATER SUPPLY)

| | Amount (Rs in Lacs) |
|---|---|
| Sub Head No. 1 Head Works | 47.10 |
| Sub Head No. 2 Pumping Machinery | 34.50 |
| Sub Head No. 3 Distribution System (Drinking) | 23.00 |
| Sub Head No. 4 Distribution System Flushing come Irrigation | 12.70 |
| **Total** | **117.30** |

**Sub Work-I**

**Sub Head No. 1** **Water Supply**

**Head Works Rs (Lacs.)**

1. Boring and installing 200 i/d tubewells with reserve/ direct rotary rig complete with pipe strainer to a depth of about 150m complete.

   1 Nos. @ 7.00 Lacs each — 7.00

2. Constructing pump chambers as per standar design of PWD PH/HUDA of size 1.25m x 1.25m x 1.25m

   1 Nos. @ 1.00 Lacs each — 1.00

3. Construction of boundary wall around the Tubewell site

   Water Works 1 No. @ Rs 1.00 lac — 1.00

   Tube wells 1 Nos. @ Rs 1.20 — 1.00

4. Provision of footpath hedges and lawns at tubewell 1 Nos.

   (L.S.) — 1.00

5. Construction of boosting chambers of suitable size along with under ground tank of capacity 250 KL pumping machinery and generating set etc. complete in all respects.

   Details of boosting station

   i) Construction of boosting chamber — 3.00

   ii) U.G. tank 250 KL capacity incl 50 KL For fire fighting in two compartments And 75 KL for flushing @ RS 250/KL = 4000x250 — 10.00

| | | | | |
|---|---|---|---|---|
| 6. | Provision for staff quarters for Maintenance / storage | | | |
| | i) | 1 No 350 sft @ Rs 6.00 Lac | 6.00 lac | 6.00 |
| 7. | Prov. for carriage of material (L.S.) | | 1.00 lac | 1.00 |
| | P.E. & contingency charges @ 3% | | | 31.00<br>0.93 |
| | | | | 31.93 |
| | Department escalation unforeseen and administrator charges @ 49% | | | 15.65 |
| | | | **Total** | **47.08** |
| | | | **Say** | **47.10** |

C.O to final abstract of cost

| Sub Work I | Water Supply |
|---|---|
| Sub Head No. 2 | Pumping Machinery |
| | Amount (Rs.) |
| | (in Lacs) |
| 1. Providing and installing electricity driven electro or submersible pumping sets capable of delivering about 20.00KL water per hour against a total head of 60 M complete with motor and other accessories (8 .5B.H.P.) | |
| 1 Nos. @ Rs 2.00 lac each | 2.00 |
| 2. Provision for diesel engine genset stand by arrangement for tubewells (12KVA) (L.S.) | 2.00 |
| 3. Provision for cheap pressure type chlorination plant complete | |
| 1 Nos. @ Rs 1,00,000/- | 1.00 |
| 4. Provision for making foundations and erection of pumping machinery (L.S.) | 2.00 |
| 5. Provision for pipes, valves, and specials inside the pump chamber | 2.00 |
| 6. Provision for electric services connection including electric transformer and fittings for tubewells chambers complete including transformers L.S. | 2.50 |
| 7. Providing and installing centrifugal boosting pumping sets, capable of delivering water at 40 M head complete in all respects (2X6.5+2X4.5=22H.P.) domestic & flushing | |
| 4 Sets @ Rs 1.50 lac each | 6.00 |

| | | |
|---|---|---|
| 8. | Providing Gen set 17.50 KVA for Boosting machinery | 4.00 |
| 9. | Provision for carriage for materials and other unforeseen items L.S. | 1.00 |
| | Total | 22.50 |
| | P.E. & contingency charges @ 3% | 0.67 |
| | | 23.17 |
| | Department escalation unforeseen and administrator charges @ 49% | 11.35 |
| | Total | 34.52 |
| | **say** | **34.50** |

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## 6.29375 ACRES RESIDENTIAL PLOTTED COLONY
## SECTOR -36 SOHNA

**SUB WORK NO. I** — **WATER SUPPLY**

**SUB HEAD NO. 3** — **DISTRIBUTION SYSTEM/RISING MAIN**

| | | Amount (Rs in lacs) |
|---|---|---|
| 1. | Providing, laying, jointing and testing C.I/D.I. K7 Pipes including cost of excavation complete as per specifications. | |
| | 100 mm dia i/d 410mtrs @ Rs. 1250/- mtr | 5.12 |
| | 150 mm dia i/d 230mtrs @ Rs. 1575/- mtr | 3.62 |
| 2. | Providing and fixing sluice valve including cost brick masonry chambers complete in all respect. | |
| | 100 mm dia i/d 2Nos. @ Rs. 12000/- each | 0.24 |
| | 150 mm dia i/d 3 Nos. @ Rs. 15000/- each | 0.45 |
| 3. | Providing and fixing air valves and scour valves or scour taps including cost of brick masonry chamber | |
| | 4 Nos. @ Rs. 10,000/- each | 0.40 |
| 4. | Providing and fixing fire hydrants complete with masonry chambers | |
| | 3 Nos. @ Rs. 10,000/- each | 0.30 |
| 5. | Providing and fixing indicator plates for sluice valve, air valve etc. | |
| | 12 Nos. @ Rs. 1000/- each | 0.12 |
| 6. | Provision for rising main D.N. 110mm from main HUDA water line to U.G.S.T. 280mtrs @ Rs. 1250/- mtr | 3.50 |
| 7. | Provision for D.N. 110mm D.I. rising main from tube well to U.G.S.T. 20 mtrs @ Rs. 1250/- mtr | 0.25 |

| | | |
|---|---|---|
| 8. | Providing for carriage of material L.S. | 1.00 |
| | | **15.00** |
| | Add P.E. & Contingency charges @ 3% | 0.45 |
| | | 15.45 |
| | Department escalation unforeseen and administrator charges @ 49% | 7.57 |
| | Total | 23.02 |
| | Say: | 23.00 |



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**Sub Work No. I**

**Sub Head No. 4**

**Water Supply**
**Flushing and Irrigation**

| | | **Amount (Rs. in Lacs)** |
|---|---|---|
| 1 | Providing, laying, jointing and testing DI pipe K-9 pipes including cost of excavation etc. complete in all respect. | |
| | a) 80mm dia C.I./D.I. 600m @ Rs. 1000/- M | 6.00 |
| | b) 100mm dia C.I./D.I. 10m @ Rs. 1250/- M | 0.12 |
| | c) | |
| 2 | Providing and fixing sluice valves including cost of brick masonry chambers complete in all respect. | |
| | a) 100mm dia 2nos. @ Rs. 12000/- each | 0.24 |
| | b) 80mm dia 2nos. @ Rs. 10000/- each | 0.24 |
| 3. | Providing and fixing air valves and scour Valves or scour taps including cost of brick masonry chambers 6 nos. @ Rs. 10000/- each | 0.60 |
| 4. | Providing and fixing indicating plates for sluice Valves, air valves etc. 10nos. @ Rs. 1000/- each | 0.10 |
| 5 | Provision for carriage of material and other unforeseen items. | 1.00 |
| | **Total** | **8.30** |
| | Add 3% contingencies & P.E. charges | 0.25 |
| | | **8.55** |

| | |
|---|---|
| Add 49% departmental, escalation, adm. and unforeseen charges. | 4.19 |
| **Total** | **12.74** |
| **say** | **12.70** |

## 6.29375 ACRES RESIDENTIAL PLOTTED COLONY

## SECTOR -36 SOHNA

**SUB WORK II** **SEWERAGE SCHEME**

**Amount (Rs. in Lacs)**

| | | |
|---|---|---|
| 1. | Providing, lowering, cutting, salt glazed stoneware pipes and specials into trenches including cost of excavation, bed concrete, cost of manholes complete in all respect. | |
| | i) 200 mm i/d | |
| | Av. Depth upto 2 M – 620M @ Rs. 1250- per M | 7.75 |
| 2. | Provision for providing oblique junctions (L.S.) | 2.00 |
| 3. | Provision for providing and fixing vent shafts at suitable places as per PH requirement ( L.S.) | 2.00 |
| 4. | Provision of temporary disposal arrangement till HUDA sewer laid (including cost of STP capacity 0.225MLD) and over flow pipe upto main HUDA sewer | 30.00 |
| 5. | Provision of temporary timbering etc. | 1.00 |
| 6. | Provision for cutting of roads and carriage of materials etc. and other unforeseen charges (L.S.) | 1.00 |
| 7. | Provision for connection with HUDA main (L.S.) | 1.00 |
| | Total | 44.75 |
| | P.E. & Contingency charges @ 3% | 1.34 |
| | | 46.09 |
| | Department escalation unforeseen and administrator charges @ 49% | 20.58 |
| | Total | 68.67 |
| | **Say:** | **68.70** |

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## 6.29375 ACRES RESIDENTIAL PLOTTED COLONY
## SECTOR -36 SOHNA

**SUB WORK – III** **STORM WATER DRAINAGE**

| | | Amount (Rs. in Lacs) |
|---|---|---|
| 1. | Providing, laying RCC pipes drain class NP – 3 with cement joint, manholes, excavation etc. complete in all respect<br>400 mm i/d<br>Av. Depth upto 2.0 m – 600 M @ Rs. 2500/- per M | 15.00 |
| 2. | Provision for road gullies with 300 mm dia pipe connection L.S. | 2.00 |
| 3. | Provision for lighting, watching and temporary diversion of traffic | 1.00 |
| 4. | Provision for cutting of roads and carriage of materials etc. and other unforeseen items L.S. | 1.00 |
| 5. | Provision for recharge pit at selected place. | 6.00 |
| 6. | Provision for connection with HUDA on master line | 1.00 |
| 7. | Provision for timbering and shoring | 0.50 |
| 8. | Providing for temporary disposal arrangement Till HUDA services are provided ( LS) | 8.00 |
| | Total | 34.50 |

| | |
|---|---|
| P.E. & contingency charges @ 3% | 1.03 |
| Total | 35.53 |
| Department escalation unforeseen and administrator charges @ 49% | 17.41 |
| Total | 52.94 |
| say | 52.90 |

## 6.29375 ACRES RESIDENTIAL PLOTTED COLONY
## SECTOR -36 SOHNA

**Sub Work No. IV** **Road Work**

| Item No. | Description of Item | Unit | Qty. | Rate (Rs) | Amount (Rs in lacs ) |
|---|---|---|---|---|---|
| **1** | **Site Clearance** | | | | |
| 1.1 | Clearing and grubbing road land including uprooting rank, vegetation, grass, bushes, shrubs, saplings and trees girth upto 300 mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable materials to be used or auctioned, upto a lead of 1000mm including removal and disposal of top soil not exceeding 150 mm thickness by manual means in areas of light jungle as per drawings and Clause 201 of Morth Specifications. | Hectare | 0.92 | 50000 | 0.46 |
| **2** | **Earth Works** | | | | |
| 2.1 | Provision for leveling + earth filling as per site condition approximate | Acre | 6.29375 | 1,50,000 | 9.44 |
| **3** | **Provision for** | | | | |
| i. | 300mm GSB | | | | |
| ii. | 250mm thick stone aggregate | | | | |
| iii. | 50mm thick B.M. | | | | |
| iv. | 20mm thick MSS | | | | |
| | Total | Sqm | 5450 | 1200 | 65.40 |
| **4** | **Miscellaneous Items** | | | | |
| 4.1 | Construction of cement concrete Kerb and Channels as per specifications | Meter | 1660 | 600 | 9.96 |
| 4.2 | Construction of footpaths as per specification on 24 m wide road 2x1.50x300 =900 | Sqm | 300 | 600 | 1.80 |
| 4.3 | Providing and fixing guide maps at selected locations (L.S.) | | | | 0.50 |

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| | | | | | |
|---|---|---|---|---|---|
| 4.4 | Provision for plot indicators (L.S.) | | | | 1.00 |
| 4.5 | Provision for demarcating burgies (L.S.) | | | | 1.00 |
| 4.6 | Provision for traffic arrangement | | | | 2.00 |
| 4.7 | Provision for carriage of material (L.S.) | | | | 1.00 |
| 4.8 | Construction of pavement in shopping area 712x1/2=356 SQM | sqm | 360 | 600 | 2.16 |
| | | | | | 94.72 |
| | Add 3% contingency & P.E. charges | | | | 2.84 |
| | Total | | | | 97.56 |
| | Department escalation unforeseen and administrator charges @ 49% | | | | 47.80 |
| | Total | | | | 145.36 |
| | Say | | | | 145.40 |

**SUB WORK – V**

## 6.29375 ACRES RESIDENTIAL PLOTTED COLONY SECTOR -36 SOHNA

**Street Lighting**

| | | Amount (Rs. in lacs) |
|---|---|---|
| Providing street lighting on internal Roads as per standard specification in 10.84 acre area @ Rs. 2,50,000/- per acre | | = 15.73 |
| 6.29375 x 2,50,000/- | | = 0.47 |
| Add 3% contingencies & P.E. charges | | = 16.20 |
| Add Department escalation unforeseen and administrator charges @ 49% | | = 7.94 |
| | Total | = 24.14 |
| | Say | = 24.10 |

C/O to final abstract of cost

## 6.29375 ACRES RESIDENTIAL PLOTTED COLONY

## SECTOR -36 SOHNA

**SUB WORK – VI**

**COST ESTIMATE**

**HORTICULTURE**

| | | AMOUNT (RS. IN LACS) |
|---|---|---|
| 1 | **Development of Lawn area** | |
| | a) Trenching the ordinary soil up to depth of 60 cm. Including removal and packing of serviceable material and disposing at a lead of 50 m/ and making up the trenched area to proper level by filling with earth mixed with manure including cost of imported earth and manure. | |
| | b) Rough dressing of trenched area. | |
| | c) Grassing with "doob grass" including watering and maintenance of lawns free from weeds and fit for moving rows 7.50 cm in either direction including for hedges and grill and barbed wire fencing around park and green belts (as per HUDA Norms) Area 0.494 Acres @ Rs. 1,50,000/- per acre | 0.74 |
| 2 | **Planting of trees with tree guards on Roads at 40' intervals** | |
| | Total length of roads =830.00 mtr | |
| | No. of trees @ 12 m c/c = 830x 2 / 12 = 138.33Nos. | |
| | Say = 140 Nos . | |
| | **Cost of the tree** | |
| | Excavation Rs. 60/- | |
| | Manure Rs. 90/- | |
| | Tree plants Rs. 150/- | |
| | Tree guards Rs. 1000/- | |
| | Total = 1300x 140 | 1.82 |
| | **TOTAL** | 2.56 |
| | Add 3 % contingencies and P.E charges | 0.08 |
| | | **2.64** |

[Pick the date]



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| | |
|---|---|
| Add 49% departmental charges, price escalation , unforeseen and Adm charges | 1.29 |
| **TOTAL** | **3.93** |
| **SAY** | **4.00** |

## SUB – WORK NO VII

## MAINTENANCE CHARGES AND RESRURFACING OF ROADS

Amount (Rs. in lacs)

**2nd phase after 5 yrs of 1st phase**

1. Provision for maintenance charges for water supply, sewerage, storm water drainage, roads, streetlights, horticulture etc. complete including operation and establishment charges as per HUDA norma after completion and resurfacing of roads after 10 years.

   6.29375 acres@ Rs. 7.50 lacs per acre = 47.20

2. Provision for resurfacing of roads after 1st 5 years of maintenance i.e. 100mm thick B.M. and 25mm premix carpet with mechanical paver

   5450sqm @ Rs 600/- Per Sqm = 32.70

3. Resurfacing of road after 10 years of maintenance by providing 25 mm thick premix carpet with seal coat with mechanical paver

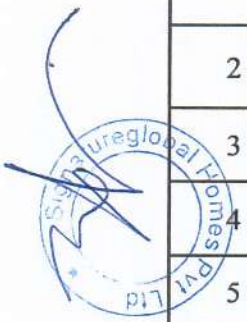
   5450 sqm @ Rs 750/- Per Sqm = 40.87

| | |
|---|---|
| TOTAL | = 120.77 |
| Add 3% PE and contingency charges | = 3.62 |
| | = 124.39 |
| Add 49% Departmental charges, price escalation unforeseen and administrator charges. | = 60.95 |
| Total | = 185.34 |
| **Say** | **= 185.30** |

# HYDRAULIC DESIGN STATEMENT OF WATER SUPPLY

**Providing Water Supply Scheme 6.29375 ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA**

| Sr. No. | Name of Pipe Line | Residential plots | | Population @13.5 or 9 persons per plot | Water requirement @ 155 l/head /day in KLD | Water requirement for non residential plots | | | | Gross requirement in KLPD | Gross water requirement in gallons per day (Total) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | As per plan | Total | | | Plots area in acres | Type of building | Basis of water requirement | Total water requirement | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | RA | - | - | - | - | - | - | - | - | - | - |
| 2 | AA1 | 10 | - | 135.0 | 15.52 | 0.176 | Commercial | 32KL/ Acre | 5.63 | 21.15 | 4650 |
| 3 | AB | 2 | - | 27.0 | 3.10 | - | vegetable /Milk Booth | - | 3.62 | 6.72 | 1480 |
| 4 | BC | 19 | - | 256.5 | 29.50 | - | - | - | - | 29.50 | 6490 |
| 5 | CC1 | 4 | - | 54.0 | 6.20 | - | - | - | - | 6.20 | 1360 |
| 6 | CD | 7 | - | 94.5 | 10.86 | - | - | - | - | 10.86 | 2390 |
| 7 | DD1 | 20 | - | 270.0 | 31.05 | - | - | - | - | 31.05 | 6830 |
| 8 | DE | 5 | - | 67.5 | 7.76 | - | - | - | - | 7.76 | 1710 |
| 9 | EE1 | 13 | - | 175.5 | 20.18 | - | - | - | - | 20.18 | 4440 |
| 10 | EE2 | 12 | - | 162.0 | 18.63 | 0.63 | Commercial | 25KL/ Acre | 15.75 | 34.38 | 7560 |



# SCHEDULE OF QUANTITIES

## Providing Water Supply Scheme 6.29375 ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

| Sr. No. | Name of Pipe Line | Pipe (length in M size in mm) | | | | | S.V. Qty. in Nos. Size in mm | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 100 | 150 | 200 | 250 | 300 | 100 | 150 | 200 | 250 | 300 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | RA | - | 20.00 | | | | | 1 | | | |
| 2 | AA1 | 55.00 | - | | | | 1 | | | | |
| 3 | AB | - | 35.00 | | | | | 1 | | | |
| 4 | BC | - | 70.00 | | | | | | | | |
| 5 | CC1 | 20.00 | - | | | | | | | | |
| 6 | CD | - | 50.00 | | | | | 1 | | | |
| 7 | DD1 | 65.00 | - | | | | | | | | |
| 8 | DE | - | 45.00 | | | | 1 | | | | |
| 9 | EE1 | 65.00 | - | | | | | | | | |
| 10 | EE2 | 60.00 | - | | | | | | | | |

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# SCHEDULE OF QUANTITIES

## Providing Water Supply Scheme 6.29375 ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

| Sr. No. | Name of Pipe Line | Pipe (length in M size in mm) | | | | | S.V. Qty. in Nos. Size in mm | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 100 | 150 | 200 | 250 | 300 | 100 | 150 | 200 | 250 | 300 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 11 | EF | 65.00 | - | | | | 1 | | | | |
| 12 | FF1 | 65.00 | - | | | | | | | | |
| | TOTAL | 395.00 | 220.00 | | | | 2 | 3 | | | |
| | SAY | 410.00 | 230.00 | | | | 2 | 3 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

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# FLUSHING WATER SUPPLY

**PROVIDING FLUSHING WATER SUPPLY SCHEME6.29375 ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA**

| S. No. | Name of Line | 100 mm | 80 mm |
|---|---|---|---|
| 1 | R'A' | 10.00 | |
| 2 | A'A1' | | 60.00 |
| 3 | A'B' | | 15.00 |
| 4 | B'C' | | 70.00 |
| 5 | C'C1' | | 15.00 |
| 6 | C'D' | | 50.00 |
| 7 | D'D1' | | 70.00 |
| 8 | D'E' | | 50.00 |
| 9 | E'E1' | | 70.00 |
| 10 | E'E2' | | 50.00 |
| 11 | E'F1' | | 70.00 |
| 12 | F'F1' | | 70.00 |
| | **TOTAL** | **10.00** | **590.00** |
| | **SAY** | **10.00** | **600.00** |

## STATEMENT FOR CALCULATION OF SEWAGE LOAD

### PROVIDING SEWERAGE SCHEME 6.29375 ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

| S.No. | Name of Line | Water Requirement of plots | | | Demand of non residential areas | | | Total requirement in KLPD | Quantity of Sewage @ 75% of water requirement in cusecs. |
|---|---|---|---|---|---|---|---|---|---|
| | | No. of Plots | Population @13.5 or 9 persons /plot | Water requirement @155 LPCD in KLPD | Nature of bdg | Basis of water requirement | Gross requirement in KLPD | | |
| 1 | AB | 4 | 54 | 9.31 | Community 6.29375 | 25KL/Acre | **15.75** | 25.06 | 0.008 |
| 2 | BC | 16 | 216 | 37.26 | - | - | - | 37.26 | 0.011 |
| 3 | C1C | 12 | 162 | 27.94 | - | - | - | 27.94 | 0.008 |
| 4 | C2C | 13 | 175.5 | 30.27 | - | - | - | 30.47 | 0.009 |
| 5 | CD | 7 | 94.5 | 16.3 | - | - | - | 16.3 | 0.005 |
| 6 | D1D | 20 | 270 | 46.57 | - | - | - | 47.57 | 0.014 |
| 7 | DE | 7 | 94.5 | 16.3 | - | - | - | 16.3 | 0.005 |
| 8 | E1E | 2 | 27 | 4.66 | - | - | - | 4.66 | 0.001 |
| 9 | EF | 20 | 270 | 46.57 | Vegetable +Milk Booth | - | 3.62 | 50.19 | 0.015 |
| 10 | F1F | 11 | 148.5 | 25.62 | Commercial 0.176 | 32KL/ Acre | 5.63 | 31.25 | 0.01 |

# DESIGN STATEMENT

## PROVIDING SEWERAGE SCHEME6.29375 ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

| S. No. | Name of Line | Sewage Load in cusecs | | | 3 times sewage load in cusecs | Designed discharge in cusecs | Size in mm | Length in m | Slope 1 in | Velocity in m/sec | Fall in m | Formation level in m | | Invert level in m | | Depth in m | | Avg depth in m |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Self | Branch | Total | | | | | | | | U/E | L/E | U/E | L/E | U/E | L/E | |
| 1 | AB | 0.008 | - | 0.008 | 0.024 | 0.43 | 200 | 70.00 | 220 | 0.75 | 0.32 | 210.90 | 210.87 | 209.90 | 209.58 | 1.00 | 1.29 | 1.15 |
| 2 | BC | 0.011 | 0.008 | 0.019 | 0.057 | 0.43 | 200 | 70.00 | 220 | 0.75 | 0.32 | 210.87 | 210.90 | 209.58 | 209.26 | 1.29 | 1.64 | 1.47 |
| 3 | C1C | 0.008 | - | 0.008 | 0.024 | 0.43 | 200 | 50.00 | 220 | 0.75 | 0.23 | 210.94 | 210.90 | 209.94 | 209.71 | 1.00 | 1.29 | 1.15 |
| 4 | C2C | 0.009 | - | 0.009 | 0.027 | 0.43 | 200 | 70.00 | 220 | 0.75 | 0.32 | 210.94 | 210.90 | 209.94 | 209.62 | 1.00 | 1.28 | 1.14 |
| 5 | CD | 0.005 | 0.036 | 0.041 | 0.123 | 0.43 | 200 | 50.00 | 220 | 0.75 | 0.23 | 210.90 | 210.91 | 209.26 | 209.03 | 1.64 | 1.88 | 1.76 |
| 6 | D1D | 0.014 | - | 0.014 | 0.042 | 0.43 | 200 | 70.00 | 220 | 0.75 | 0.32 | 210.94 | 210.91 | 209.94 | 209.62 | 1.00 | 1.29 | 1.15 |
| 7 | DE | 0.005 | 0.055 | 0.060 | 0.18 | 0.43 | 200 | 50.00 | 220 | 0.75 | 0.23 | 210.91 | 210.92 | 209.03 | 208.80 | 1.88 | 2.12 | 2.00 |
| 8 | E1E | 0.001 | - | 0.001 | 0.003 | 0.43 | 200 | 15.00 | 220 | 0.75 | 0.07 | 210.92 | 210.92 | 209.92 | 209.85 | 1.00 | 1.07 | 1.04 |
| 9 | EF | 0.015 | 0.061 | 0.076 | 0.228 | 0.43 | 200 | 85.00 | 220 | 0.75 | 0.39 | 210.92 | 210.93 | 208.80 | 208.41 | 2.12 | 2.52 | 2.32 |
| 10 | F1F | 0.1 | 0.076 | 0.086 | 0.258 | 0.43 | 200 | 55.00 | 220 | 0.75 | 0.25 | 210.94 | 210.93 | 209.94 | 209.69 | 1.00 | 1.24 | 1.12 |
| 11 | F-STP | - | 0.086 | 0.086 | 0.258 | 0.43 | 200 | 15.00 | 220 | 0.75 | 0.07 | 210.93 | 210.93 | 208.41 | 208.34 | 2.52 | 2.59 | 2.56 |

# Schedule of Quantities of S.W. Pipes

**PROVIDING SEWERAGE SCHEME 6.29375 ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA**

| S.No. | Name of Line | Dia of pipe in mm and Length in meters | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 200mm | 250mm | 300mm | 350mm | 400mm | 450mm | 500mm |
| 1 | AB | 70.00 | | | | | | |
| 2 | BC | 70.00 | | | | | | |
| 3 | C1C | 50.00 | | | | | | |
| 4 | C2C | 70.00 | | | | | | |
| 5 | CD | 50.00 | | | | | | |
| 6 | D1D | 70.00 | | | | | | |
| 7 | DE | 50.00 | | | | | | |
| 8 | E1E | 15.00 | | | | | | |
| 9 | EF | 85.00 | | | | | | |
| 10 | F1F | 55.00 | | | | | | |
| 11 | F-STP | 15.00 | | | | | | |
| | **TOTAL** | 600.00 | | | | | | |
| | **SAY** | 620.00 | | | | | | |

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# DESIGN STATEMENT

## PROVIDING STORM WATER DRAINAGE SCHEME 6.29375 ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

| S. No. | Name of Line | Area in Acres | | | Discharge in cusecs@¼' ' rainfall intensity | Designed discharge in cusecs | Size in mm | Length in mtr | Slope 1 in | Velocity in m/sec | Fall in mtr | Formation Levels in mtr | | Invert level in mtr | | Depth in mtr | | Avg depth in mtr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Self | Branch | Total | | | | | | | | U/E | L/E | U/E | L/E | U/E | L/E | |
| 1 | AB | 0.1 | - | 0.1 | 0.03 | 4.17 | 400 | 40.00 | 400 | 0.91 | 0.1 | 210.94 | 210.94 | 209.74 | 209.64 | 1.20 | 1.30 | 1.15 |
| 2 | BC | 0.66 | 0.1 | 0.76 | 0.19 | 4.17 | 400 | 55.00 | 400 | 0.91 | 0.14 | 210.94 | 210.93 | 209.64 | 209.50 | 1.30 | 1.43 | 1.37 |
| 3 | CD | 0.78 | 0.76 | 1.54 | 0.38 | 4.17 | 400 | 70.00 | 400 | 0.91 | 0.18 | 210.93 | 210.92 | 209.50 | 209.32 | 1.43 | 1.60 | 1.52 |
| 4 | D1D | 0.06 | - | 0.06 | 0.01 | 4.17 | 400 | 15.00 | 400 | 0.91 | 0.04 | 210.92 | 210.92 | 209.72 | 209.68 | 1.20 | 1.24 | 1.22 |
| 5 | DE | 0.27 | 1.6 | 1.87 | 0.47 | 4.17 | 400 | 50.00 | 400 | 0.91 | 0.13 | 210.92 | 210.91 | 209.32 | 209.19 | 1.6 | 1.72 | 1.66 |
| 6 | E1E | 0.75 | - | 0.75 | 0.19 | 4.17 | 400 | 65.00 | 400 | 0.91 | 0.16 | 210.94 | 210.91 | 209.74 | 209.58 | 1.20 | 1.33 | 1.27 |
| 7 | EF | 0.32 | 2.62 | 2.94 | 0.74 | 4.17 | 400 | 50.00 | 400 | 0.91 | 0.13 | 210.91 | 210.90 | 209.19 | 209.06 | 1.72 | 1.84 | 1.78 |
| 8 | F1F | 1.05 | - | 1.05 | 0.26 | 4.17 | 400 | 50.00 | 400 | 0.91 | 0.13 | 210.94 | 210.90 | 209.74 | 209.61 | 1.20 | 1.29 | 1.25 |
| 9 | F2F | 1.05 | - | 1.05 | 0.26 | 4.17 | 400 | 65.00 | 400 | 0.91 | 0.16 | 210.94 | 210.90 | 209.74 | 209.58 | 1.20 | 1.32 | 1.26 |
| 10 | F-HUDA STORM | 0.95 | 5.04 | 5.99 | 1.05 | 4.17 | 400 | 85.00 | 400 | 0.91 | 0.21 | 210.90 | 210.87 | 209.06 | 208.85 | 1.84 | 2.05 | 1.95 |
| 11 | G-HUDA STORM | 0.12 | - | 0.12 | 0.03 | 4.17 | 400 | 45.00 | 400 | 0.91 | 0.11 | 210.95 | 210.87 | 209.75 | 209.64 | 1.2 | 1.23 | 1.22 |

## Schedule of Quantities of R.C.C. Pipes

## PROVIDING STORM WATER DRAINAGE SCHEME 6.29375 ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

| S.No. | Name of Line | Dia of pipe in mm and Length in meters | | | | | |
|---|---|---|---|---|---|---|---|
| | | 400mm | 500mm | 550mm | 600mm | 800mm | 900mm |
| | | | | | | | |
| 1 | AB | 40.00 | | | | | |
| 2 | BC | 55.00 | | | | | |
| 3 | CD | 70.00 | | | | | |
| 4 | D1D | 15.00 | | | | | |
| 5 | DE | 50.00 | | | | | |
| 6 | E1E | 65.00 | | | | | |
| 7 | EF | 50.00 | | | | | |
| 8 | F1F | 50.00 | | | | | |
| 9 | F2F | 65.00 | | | | | |
| 10 | F-HUDA STORM | 85.00 | | | | | |

## Schedule of Quantities of R.C.C. Pipes

## PROVIDING STORM WATER DRAINAGE SCHEME 6.29375 ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

| S.No. | Name of Line | Dia of pipe in mm and Length in meters | | | | | |
|---|---|---|---|---|---|---|---|
| | | 400mm | 500mm | 550mm | 600mm | 800mm | 900mm |
| | | | | | | | |
| 11 | G-HUDA STORM | 45.00 | | | | | |
| | TOTAL | 590.00 | | | | | |
| | SAY | 600.00 | | | | | |
| | | | | | | | |

# DESIGN DATA OF ROADS

## 6.29375 ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

## 9.0 M WIDE ROAD

| S.NO | Name of Road | Length in M |
|---|---|---|
| 1 | R1 | 28.00 |
| 2 | R2 | 70.00 |
| 3 | R3 | 70.00 |
| 4 | R4 | 70.00 |
| 5 | R5 | 47.00 |
| 6 | R6 | 50.00 |
| 7 | R7 | 174.00 |
| 8 | R8 | 52.00 |
| 9 | R9 | 100.00 |
| | | **661.00** |

**Total length of 9.0 M wide roads**

| | |
|---|---|
| **Add 10 % at curves** | **66.00** |
| **TOTAL** | **727.00** |
| **SAY** | **730.00** |

## 24 M WIDE ROAD

| S.NO | Name of Road | Length in M |
|---|---|---|
| 1 | R24 | 90.00 |
| | **Add 10 % at curves** | **9.00** |
| | **TOTAL** | **99.00** |
| | **SAY** | **100.00** |

**Metalled Area of Roads =730M X5.5 M 100X14** **5415.00 SQM**

**SAY** 5450.00 SQM

**Total length of Roads = 730.00+ 100** **830.00 M**

**Length of kerbs = 830.00 X 2.00** **1660.00 M**

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