# PROJECT ESTIMATE
# FOR
# PROVIDING INTERNAL SERVICES (WATER SUPPLY, SEWERAGE, DRAINAGE, INTERNAL ROADS ETC) IN GROUP HOUSING COLONY MEASURING 9.6 ACRES IN SECTOR –10 A, BAWAL, DISTT. REWARI.

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**PROJECT REPORT AND ESTIMATE FOR PROVIDING SERVICES IN GROUP HOUSING COLONY IN AN AREA OF 9.60 ACRES STYLED AS PRATHAM APARTMENTS AT SEC 10 A, BAWAL, DISTT.- REWARI, HARYANA BEING DEVELOPED BY M/C CHOICE REAL ESTATE DEVELOPERS PVT. LTD.**

## INTRODUCTION

Gurgaon town of Haryana state situated on Delhi Jaipur highway No.8 at a distance of 80 Kms from delhi. It is now proposed to develop a residential colony in an area of 9.60 acres styled as RATHAM APARTMENTS at Sector 10A, Bawal Distt. Rewari. The plan for complete colony are approved by DTCP Haryana vide memo no. ZP-504/SD (BS)/2014/10153 dated 16/5/14.

## WATER SUPPLY

- **Source**

The source of water supply in this area is through Tube well and HUDA water supply. As the underground water is potable, provision for required number of Tube wells has been made in this estimate. It has been proposed to construct the common underground tanks and overhead tanks in each block for storage purpose. The underground tank will be filled up through the proposed Tube wells/HUDA line. The overhead tank will be filled up by lifting pump and distributed to each dwelling unit by gravity flow.

- **Design**

The scheme has been designed for population of 1832 persons considering 5 person for DUs and EWS units and 2 person per unit for service personal. Water requirement for community centre, shops, swimming pool and future blocks etc has been considered in the scheme. The rate of water supply per head per day has been taken as 172.5 lpcd. For water supply distribution dual plumbing system has been proposed. Treated water from STP shall be used for toilet flushing and irrigation of green area.

- **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 on any electricity failure.

| | | | |
|---|---|---|---|
| **GROUP HOUSING COLONY AT SECTOR 10A, BAWAL, DISTT. REWARI** | | | |
| | | | |
| **1. Design Calculation** | | | |
| | | | |
| **A Domestic Water Requirement** | | | |
| **1)** Nos. of D.U. - | 253 | | |
| Population Per D.U.- | 5 | | |
| TOTAL POPULATION - | 1265 | | |
| Water Requirement Per Person Per Day- | 172.5 | | |
| **WATER REQUIREMENT FOR D.U.** | **218.21 KL** | | |
| **2)** Nos. of D.U. for Service personal - | 26 | | |
| Population Per D.U.- | 2 | | |
| Total Population - | 52 | | |
| Water Requirement Per Person Per Day- | 172.5 | | |
| **WATER REQUIREMENT FOR D.U. Ser Personal-** | **8.97 KL** | | |
| **3)** Nos. EWS Units | 103 | | |
| Population per EWS unit - | 5 | | |
| Total Population - | 515 | | |
| Water Requirement Per Person Per Day- | 172.5 | | |
| **WATER REQUIREMENT FOR EWS** | **88.88 KL** | | |
| **4)** Shopping area + Nur. School | **10.00 KL** | | |
| **5)** **Community centre** | **18.00 KL** | | |
| | | | |
| **Total Domestic requirement** | | | **344.06 KL** |
| | | **SAY** | **345.00 KL** |
| **B) SWIMMING POOL** | | | **10.00 KL** |
| | | | |
| **C Irrigation** | | | |
| **Area Under Park 1.44 Acre @ 25 Kl/ acre** | | | **36.00 KL** |
| | | | |
| **TOTAL WATER REQUIREMENT** | | | **391.00 KL** |
| **REUSE OF TREATED EFFLUENT** | | | |
| **For Flushing** | | | |
| Total population 1832 @ 57.5 lpcp | | | 105.00 KL |
| In Community centre & shopping 33 % of total req. | | | 9.00 KL |
| For irrigation | | | 36.00 KL |
| **Total** | | | **150.00 KL** |
| | | | |
| | | | |
| **FRESH WATER REQUIREMENT (391 - 150)** | | | **241.00 KL** |

**2. Tube wells**

| | |
|---|---|
| (Approx. yield of Tube well =10 KL/hr and Working 10 hrs/day | 100 KL/day |
| Total Fresh Water Demand | 241 KL/day |
| No. of Tube wells = | 2.41 say 3 |
| **Total nos. of tube wells required** | **03 Nos.** |

It is proposed to provide 3 nos. tube well for the colony.

**Pumping Machinery for Tube wells**

| | | |
|---|---|---|
| Gross Working Head | | 45.00 mtrs |
| Average fall in S.L. | : | 3.00 mtrs. |
| Depression Head | : | 6.00 mtrs. |
| Friction Loss in Main | : | 6.00 mtrs. |
| **Total** | **:** | **60.00 mtrs.** |

$$HP = \frac{12000 \times 60 \times 1}{60 \times 60 \times 75 \times 0.6} = 4.44 \text{ HP}$$ SAY -7.5 HP

**Water Storage Reservoirs**

Underground water tanks

| | |
|---|---|
| Water demand for domestic use excluding Flushing park and irrigation | 241 KLD |
| Raw Water Tank | 110 KL |
| Domestic Water Tank | 110 KL |
| Fire Fighting | 180 KL |
| Flushing/ Irrigation ( Near STP **)** | 75 KL |

Over Head Water tanks
( On Terrace)

| Sr.No. | Tower | Domestic water | Flushing Water | Fire |
|---|---|---|---|---|
| 1 | Tower 2 | 16000 Ltrs. | 8000 Ltrs. | 10000 Ltrs |
| 2 | Tower 1.3 & 4 | 20000 Ltrs. | 10000 Ltrs. | 10000 Ltrs |

## BOOSTING MACHINERY

Domestic Water Requirement : 241.00 KL
Daily Demand
Pumping per hour @ 8 hrs pumping / day : 30.13 KL/Hr or 8.37 lps

HP of pumps with 68m head & 60% efficiency 12.64 HP x 1 nos.

It is proposed to install the 2 Nos. ( 1 Working + 1 Standby) of 15.0 HP Pump For lifting of water from UGSR to terrace tanks.

**For flushing water**

Daily requirement : 114 KL

Pumping per hour @ 6 hrs pumping / day : 19 KL/Hr or 5.28 lps

HP of pumps with 70 m head & 60% efficiency : 8.20 HP

Nos. of Pumps (Working + Standby) : 1 No + 1 No.

It is proposed to install the 2nos. (1Working + 1 Standby) of 10.0 HP Pump

For lifting of water from UGSR to Terrace tanks.

**RISING MAIN FROM HUDA**

| Sr. No. | Node | Water demand in KLD | 1.5 times demand considering 16 Hrs.supply | Length | Dia | Velocity m/sec | Friction loss/1000 M in Ft. | Friction loss as per length in Ft. |
|---|---|---|---|---|---|---|---|---|
| 1 | HUDA line to UGT | 241 | 362 | 100 | 100 | 0.75 | 5.88 | 0.59 |

## SEWERAGE SCHEME

The sewerage system has been marked on respective plans. The sewer lines have been designed for three times average D.W.F. in relation to water supply demand. It has been assumed that about 80% of the domestic water supply shall find its way into the proposed sewer. Sewer line shall be laid to a gradient maintaining minimum 0.75m/sec self cleaning velocity. Sewer line up to 400 mm dia has been designed to run half full and above 400 mm dia has been designed to run three fourth full at peak flow. Necessary provision for laying SW/RCC pipe sewer line construction of required number of manholes etc. has been made in the estimate. The internal sewerage system of the colony has been proposed to be connected with the S.T.P to be constructed in the green belt within the colony. The treated waste water shall be utilized for Flushing in toilets, irrigation of landscape area within the colony.

**Sewage treatment plant**

Sewage Treatment plant of 260 KLD shall be construct for total residential colony. Treatment plant is based on FAB technology. The bases of design are as under

| | |
|---|---|
| Nature of wastewater: | Domestic wastewater (comprising of Soil and Waste-water from toilet/ Bath rooms) |
| Total Domestic water requirement: | 345 m3/day |
| Waste water generation (75% of total water requirement) | 259 m3/day |
| Designed capacity: | 260 m3/day |

Inlet/outlet characteristics of STP:

| S.No. | Parameters | Before treatment (Combined waste water) | After treatment |
|---|---|---|---|
| 1. | pH | 6.0-8.0 | 6.5-8.5 |
| 2. | COD, mg/l | 500-600 | 60-70 |
| 3. | BOD, 5 days @ 20 deg.C, mg/l | Up to 300 | Less than 30 |
| 4. | Suspended solids, mg/l | Up to 250 | Less than 10 |
| | Oil & grease, mg/l | 30- 50 | Less than 5 |

Mode of disposal of treated water-Treated effluent will be recycled in Flushing, Horticulture/irrigation

## SCHEME OF UNDER GROUND SEWERAGE TREATMENT PLANT

1. Sewage Collection/ Bar Screen
↓
2. Equalization Tank for Equalizing the domestic sewer
↓
3. Grease oil chamber ( 3 Compartments)
↓
4. Biological Oxidation unit
↓
5. Settler → Sludge Pump
↓ ↓
Filter Press
. 6 Chlorine Contact Tank ↓
↓ Manure store
7. NaOCL Tank
↓
8. Tertiery Treatment
↓
9. Underground Storage Tank
↓
10. Used for Toilet Flushing & horticulture irrigation

## STORM WATER DRAINAGE

Since the Master Scheme of colony is proposed with under ground pipe drains, we proposed to lay underground RCC pipe drains with required number of catch basins for collection and disposal of storm water. The intensity of rain fall has been taken as 35 mm per hour and the runoff taken as 0.4. A minimum size of 400 mm RCC pipe line will be provided to connect manhole to manhole and designed as per manning formula. All lines are proposed to be laid at flatter gradients by maintaining minimum self cleaning velocity. The rain water will harvesting by providing harvesting chamber with filtering media and drilling bore up to sub soil water table. complete rain water shall be harvested in rain water harvesting chambers as shown in drainage plan.

## FIRE FIGHTING SYSTEM

It is proposed to lay 150 mm dia fire ring main all along the proposed complex and ring main shall be connected to 150mm dia fire hydrant riser of each block as per NBC-2005

**Fire pumps**

According to NBC Table no. 23.residential building height-Below 45 meters

Head of fire pumps

| | |
|---|---|
| Pump below ground | 4.00 meters |
| Max. Height of blocks | 35.85 meters |
| Residual head | 35.00 meters |
| Friction loss (approx) | 10.00 meters |
| Total head | 84.85 meters Say **90 meters** |

**Pumps proposed**

| | |
|---|---|
| Electrical main pump (Hydrant) | 1x 2,280 lpm 90 M Head |
| Electrical main pump (Sprinkler) | 1x 2,280 lpm 90 M Head |
| Jockey electrical pump | 1x 180 lpm 90 M Head |
| Diesel Engine operated main | 1x 2,280 lpm 90 M Head |

**Fire water Storage ( Based on recommendation above)**

**Under ground Static fire Tanks**

. It is proposed to provide a static water storage of capacity of 180 cum as per code & norms.

**Overhead secondary fire storage tanks**

An overhead tank of 10cum capacity proposed on the terrace of the building as secondary source to meet the regulations. The tank will be connected to the mains to supply water in case of failure of pumps.

## ROADS

It has been proposed to construct 6m wide wide internal sectoral roads as per the plan approved by the D.T.C.C. The internal lanes of the colony shall be of 6 m wide. The roads shall be constructed as per the M.O.R.T.&H specifications for roads.

## STREET LIGHTING

The scheme of street light for the colony shall be as per HVPN norms. For street light 9 meter long pole with under ground cabling and sodium vapour lamps / MH/CFL lights shall be provided for street light.

## HORTICULTRE

The usual provision of road side plantation of trees with tree guards has been made for all roads. The parks shall also be developed by providing lawns etc. as per HUDA norms.

## SPECIFICATIONS

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

## RATE

The estimate has been based on the present market rates.

## COST

The total cost of the scheme including cost of all services works out to Rs.594.37 Lacs including 3% contingencies and 49% departmental charges, price, escalation, unforeseen and administration charges.