EXTERNAL DEVELOPMENT WORKS
DESIGN
& COST ESTIMATES

FOR

PROPOSED GROUP HOUSING SITE MEASURING 9.53 ACRES IN RESIDENTIAL PLOTTED COLONY MEASURING 177.86 ACRES (LICENSE NO. 10 OF 2009 DATED DT.21.05.2009, LICENSE NO. 113 OF 2011 DATED 22.12.2011 & LICENSE NO. 117 OF 2022 DATED 23.08.2022) IN SECTOR 65 & 62, GURUGRAM BEING DEVELOPED BY ACTIVE PROMOTERS AND OTHERS IN COLLABORATION WITH EMAAR INDIA LTD (FORMERLY KNOWN AS EMAAR MGF LAND LTD)

IN

SECTOR – 62,
AT GURUGRAM, HARYANA

DEVLOPED BY

EMAAR INDIA

REPORT

1. Water Supply Source

The source of water supply shall be HUDA water supply connection. It has been proposed to construct underground tank will be filled up from the riser and then pumped to the overhead water tank of each tower.

2. Pumping Equipment

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

3. Sewerage

The scheme is designed for sewer connection to the proposed sewerage treatment. The sewerage system has been marked on the respected plans.
The sewer line has been designed for 3 times average DWR in relation to the water supply demand assuming that 80% for the domestic water supply shall finds its way into the proposed sewer SW pipe sewer have been proposed to run half full. The sewer has been designed on 2.5 ft per second velocity i.e. self-cleaning velocity.
Necessary design statement for entire sewerage system has been prepared and attached with estimate.

4. Storm water Drainage

The storm water drain is being designed to carry 6.35 mm rainfall per hour. Also suitable provisions are contemplated in our scheme to ensure better recharging of underground water table in area RCC NP3 pipe drain with minimum 400 mm dia is proposed in this area.

5. Roads

Cost of road has been taken in the estimate.

6. Street lighting

Provisions of street lighting on surrounding area has been made.

7. Horticulture

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

8. Specification

The work will be carried out in accordance with the standard specifications of PH is laid down by the HUDA/ Haryana government

9. Rates

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

10. Cost

The total cost of development in this revised project including various PH & B & R services work to Rs. 1570.00 Lacs which include 3% contingencies and PE charges and 49% department charge also.

(Authorized Signatory)

9.53 ACRE RESIDENTIAL GROUP HOUSING
SEC-62, GURUGRAM

DESIGN CALCULATION

1. Daily requirement

i) .Nos of Dweling units (main) = 424 Nos
Population per plot @5 = 424 X 5 Nos
Total population = 2120 Nos

Water requirement for plots @ 172.5 litres/head/day = 365700 Litres…… (i)

a). **Club Building** **= 1 No**

i). Daily water requirement (L.S) = 5.0 KL……..(ii)

b). **Commercial Building** **= 1 No**
i). Daily water requirement (L.S) = 7.0 KL…….**(iii)**

c) EWS Building
Daily requirement
.Nos of Dweling units (main) = 94 Nos

Population per plot @2 = 94 X 2 Nos
Total population = 188 Nos

Water requirement for plots @ 172.5 litres/head/day = 32430 Litres …… (iv)

d) Servants Quarter
Daily requirement
.Nos of servant quarters (main) = 50 Nos

Population per servant quarter @2 = 50 X 2 Nos
Total population = 100 Nos

Water requirement for plots @ 172.5 litres/head/day = 17250 Litres …… (v)

Total water demand = (i) + (ii) +(iii) + (iv) + (v)

For domestic use 366 KL+5 KL + 7 KL + 33 KL + 17 KL = 428 KL

2. Area under parks/green space = 9745.00 sqm
= 2.41 Acres
Therefore, daily water @ 25000 litre/Acre = 2.41x 25000 Litre
Requirement =60250 = **61 KL**

3. **Area under roads** = 3.47 Acres
Therefore, daily water
Requirement for sweeping of roads 3.47 x 5000 = 17350 Litre
= 17.0 KL

Total daily requirement

a). For domestic use (i + ii +iii + iv + v) =366 KL+5 KL + 7 KL + 33 KL + 17 KL= 428 KL

b). Under parks & roads =61KL+17KL= 78 KL

c). Assuming requirement for flushing as 40% of total domestic requirement, then daily water requirement for = 171.0 KL

flushing

d). Total requirement of portable water = 428-171 = 257.0 KL

Tube well Details

Assuming working hours of tube well = 16
Assuming discharge/hour of each tube well = 25000 lit/hour
Total domestic demand = 428 KL

No. of tube wells Required for total demand = 428/(16x25) = 1.07 No.

Add 10% stand by 1.07+ 0.107= 1.177 No.
Say = 2 No.

So it is proposed to provide 1No of tube wells at present because the water demand for horticulture and flushing purposes is to be met from re-circulated water after treatment at S.T.P and ultimately water Supply is to be provided by HUDA.

Pumping machinery for tube wellS

Gross working head = 60.00 mts.

Average fall in S. L = 3.00 mts.

Depression Head = 9.00 mts.

Friction loss in main = 3.00 mts.

Total = 75.00 mts.

HP = 25000 X 75 = 11.57
SAY = 12 B.H. P

Underground Storage Tank (Drinking water)

Daily requirement for domestic use including Institutional demand = 257 KL

Capacity of underground tank = 0.5x257 = 128.5 KL
SAY = 130 KL

Firefighting demand = 200 KL
Proposed = 675 KL

Hence it is proposed to provide underground tank of Capacity976 KL which also includes 675 KL for firefighting as well.
This tank will have two compartments for raw water tank, two compartments for domestic water tank and three compartments for fire water tank. The water first enters the fire compartment then over flows to the domestic use compartment so that the water in fire compartment shall remain fresh.

Domestic tank = 65 KL

Raw water =65 KL

Flushing water =171 KL

Fire water =675 KL

Total = 976.0 KL

Boosting machinery (Drinking water)

Daily requirement for domestic use		=257 KL
Assuming 8 hours running 2 pumps (2 Working + 1 stand By)		= 257/2x8=16.06 KL/HR = 267.66 LPM = 268 LPM Each
Head of pump		
i)	Suction Lift	= 9.0 M
ii)	Friction loss in main and special	= 15.0 M
iii)	Clear Head	= 120.0 M
		= 144.0 M Say 145.0 M
BHP of Morter		= 268x145/ 60x76x0.60 = 14.20 HP Say 15.0 HP for Each Pump

It is proposed to provide 3 nos of pumping set of 268 liters pe minutes at a total load of 145.0 M (2working + 1 standby)

Underground storage tank (Flushing water)

Daily requirement for flushing at STP		= 171.0 KL
Add for cleanings of road and irrigation		= 23.0 KL
		= 194 KL
Half day capacity		194/2
		= 97 KL
Boosting machinery for flushing water supply		
Assuming 8 hours running 2 pumps (2 Working + 1 stand By)		= 194/2x8=12.13 KL/HR
		= 202.17 LPM
	SAY	= 210.0 LPM
BHP of the pumps		= 210x145/ 60x76x0.60
		= 11.13 HP
	Say	= 12.5 HP for Each Pump
Capacity of the STP		= 0.80x428
		= 342.4 KL
Add 20%		= 68.5 KL
Total		= 411.0 KL
		Say = 415.0 KL

However, for similarity with drinking water boosting pump. It is proposed to provide 2 nos pumping set of 210 LPM discharge with a total head of 145 M (2working + 1 standby).

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S.NO	Parameters	Location	Pumps set		
			Main	Diesel	Jockey
1	Discharge in LPM	Pump Room	2850 LPM	2850 LPM	180 LPM
2	Head in Meters	Pump Room	180-140-100	180-140-100	180-140-100
3	HP	Pump Room			
4	Quantity in Nos	Pump Room	2	2	2
5	Water curtain pump	Pump Room	4500 LPM	4500 LPM	
6	Water curtain pump head	Pump room	50 M	50 M	

Rating of generator set	= 75.0 HP
Pumps 2 Nos + 2 nos (20 HP + 17.50 HP = 6.0 HP	
Lighting etc.	
T.W.	10
	91

Capacity of generator set	= 101.82 KVA
=0.746x91x1.50	= 10.18 KVA
Add 10 % extra	= 112.01 KVA
Say	= 115 KVA