EXTERNAL DEVELOPMENT WORKS
DESIGN
& COST ESTIMATES

FOR

PROPOSED
PROJECT: Approval for Phasing Plan of Group Housing Colony measuring 14.025 Acres (Licence No.265, of 2007 dated 02-12-2007) in sector 62, Gurgaon Manesar Urban Complex, being developed by Juhi Promoters Pvt Ltd & others in collaboration with 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/DWC 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. 1185+617 = 1802 Lacs which include 3% contingencies and PE charges and 49% department charge also.

M/S Logical Developer Pvt. Ltd. And other
Collaboration with Approval for Phasing Plan of Group Housing Colony measuring 14.025 Acres (Licence No.265, of 2007 dated 02-12-2007) in sector 62, Gurgaon Manesar Urban Complex, being developed by Juhi Promoters Pvt Ltd & others in collaboration with Emaar MGF Land. Ltd.

(Authorized Signatory)

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DESIGN CALCULATION

1. Daily requirement

i)	Nos of Dwelling units (main) for phase-2	= 522 Nos.
	Population per plot @5	= 2610 Persons.
(ii)	Service Personal for phase-2	= 29 Nos.
	Population per plot @2	= 58 Persons.
(iii)	EWS for phase-2	= 22 Nos.
	Population per plot @2	= 44 Persons.
(iv)	Nos of Dwelling units (main) for phase-1	= 369 Nos.
	Population per plot @5	= 1845 Persons.
(v)	Service Personal for phase-1	= 61 Nos.
	Population per plot @2	= 122 Persons.
(vi)	EWS for phase-1	= 135 Nos.
	Population per plot @5	= 675 Persons.
	Total population = 2610+58+44+1845+122+675	= 5354 Persons.
	Water requirement for plots @ 172.5 liters/head/day	= 923565 Liters.
	5354x172.5	= 923.565 KL
	SAY	= 924 KL ……. (i).
a).	**Community Building for phase-1**	= 1 No.
	Daily water requirement (L.S)	= 10 KL
b).	No. of Commercials = 1 No. (L.S)	= 5 KL
c).	Nursery School = 1 No. (L.S)	= 10 KL
	Club Building for phase-2	**= 1 No.**
	Daily water requirement (L.S)	= 10 KL
	Total = 10+5+10+10	= 35 KL …….(ii).
	Total water demand	= (i) + (ii)
	For domestic use	= 924 KL+35 KL
		= 959 KL

2. Area under parks/green space

For phase-2 = 8178.72 sqm

For phase-1 = 8747.253 sqm

Total area = 8178.72 +8747.253	= 16925.98 sqm
	= 4.182 Acres
Therefore, daily water @ 25000 liter/Acre	= 104550 Liter
Requirement	= 4.182x 25000 = **105 KL**

3. **Area under roads**

For- phase-2 = 2.624 Acres

For- phase-1 = 1.2 Acres
Total area = 2.624 + 1.2 = 3.824 Acres

Therefore, daily water
Requirement for sweeping of roads 3.824 x 5000 = 19120 Liter
= 19KL

Total daily requirement

a). For domestic use (i + ii) = 924KL+35KL = 959 KL
b). Under parks & roads =105KL+19KL = 124 KL

c). Assuming requirement for flushing as 40% of total domestic requirement, then daily water requirement for flushing = 383.6 KL

d). Total requirement of portable water = 959-383.6 = 575.4 KL

Already constructed in phase -1 = 420 KL

Propose for Phase-2 = 575.4 - 420 = 155.4 KL

Say = 200 KL

Tube well Details

Assuming working hours of tube well = 16
Assuming discharge/hour of each tube well = 25000 lit/hour
Total domestic demand = 959 KL

No. of tube wells Required for total demand = 959/(16x25) = 2.398No.

Add 10% stand by 2.398+ 0.2398 = 2.64 No.
Say **= 3 No.**

So, it is proposed to provide 1No of tube wells for each phase 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 for phase-2

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.

$HP = \frac{25000 \times 75}{60 \times 60 \times 75 \times 0.6} = 11.57$

SAY = 12 B.H. P

Pumping machinery for tube wells for phase-1

Gross working head = 45.00 mts.

Average fall in S. L = 3.00 mts.

Depression Head = 9.00 mts.

Friction loss in main = 3.00 mts.

Total = 60.00 mts.

HP = $\frac{25000 \text{ X } 60}{60\text{X}60\text{X}75\text{X}0.6}$ = 9.25

SAY = 10 B.H. P

Underground Storage Tank (Drinking water)

Daily requirement for domestic use including Institutional demand = 575.4 KL

Capacity of underground tank = 0.5x575.4 = 287.7 KL

SAY = 300 KL

Firefighting demand = 200 + 200 = 400 KL

Already constructed in phase -1 = 600 KL

Propose for Phase-2 = 850 KL

Hence it is proposed to provide for phase-2 underground tank of Capacity 1190 KL which also includes 850KL for firefighting as well.

Domestic tank = 100KL +100KL = 200 KL

Total Flushing water 383.4 KL – 245 KL= 138.4 KL

SAY = 140KL

Fire water = 850 KL

Total = 1190 KL

Note- Total flushing water requirements are 383.4 KL but 245 KL tank already constructed in Phase-01. So, we Proposed in Phase-02 only 140 KL for flushing water tank.

Boosting machinery for phase-2(Drinking water)

Daily requirement for domestic use		= 287 KL
Assuming 8 hours running 2 pumps (with one stand by)		= 287/2x8=17.9 KL/HR = 298.33 LPM = 300 LPM
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		= 300x145/ 60x76x0.60 = 16.33 HP
	Say	= 20.0 HP

It is proposed to provide 3 nos. of pumping set of 300 liters pe minutes at a total load of 145.0 m (2working + 1 standby)

Boosting machinery for phase-1(Drinking water)

Daily requirement for domestic use		= 288.5 KL
Assuming 8 hours running 2 pumps (with one stand by)		= 288.5/2x8=18.03 KL/HR = 300.52 LPM = 300 LPM
Head of pump		
i) Suction Lift		= 4.0 M
ii) Friction loss in main and special		= 4.0 M
iii) Clear Head		= 155.0 M
		= 163.0 M
	Say	= 165.0 M
BHP of Morter		= 300x165/ 60x76x0.60 = 18.33 HP
	Say	= 20.0 HP

It is proposed to provide 3 nos. of pumping set of 300 liters pe minutes at a total load of 165.0 m (2working + 1 standby)

Underground storage tank (Flushing water)

Daily requirement for flushing at STP = 383.6 KL

Add for cleanings of road and irrigation = 105 + 19.0 = 124 KL
= 507.6 KL

= 507.6/2

Half day capacity = 253.8 KL

Boosting machinery for flushing water supply (for phase-2)

Assuming 8 hours running 2 pumps (with one stand by) = 253.8 /2x8= 15.86 KL/HR
= 264.3 LPM
Say = 265 LPM

BHP of the pumps = 265x145/ 60x76x0.60
= 14.04HP
Say = 15 HP

Capacity of the STP (Combine STP for Phae-1 & 2) = 0.80x951
= 760.8 KL
Say = 761 KL

It is proposed to provide 3 nos. of pumping set of 265 liters per minutes at a total load of 145.0 m (2working + 1 standby)

Boosting machinery for flushing water supply (for phase-1)

Assuming 8 hours running 2 pumps (with one stand by) = 252.4 /2x8= 15.77 KL/HR
= 262.92 LPM
Say = 270 LPM

BHP of the pumps = 270x165/ 60x76x0.60
= 16.5 HP
Say = 17.5 HP

It is proposed to provide 3 nos. of pumping set of 270 liters pe minutes at a total load of 165.0 m (2working + 1 standby)

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PUMPS FOR FIRE PROTECTION

For Phase-2

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	185-145-100	185-145-100	185-145-100
3	HP	Pump Room			
4	Quantity in Nos	Pump Room	2	2	2
5	Water curtain pump	Pump Room	6820 LPM	6820 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

For Phase-1

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	180	180
3	HP	Pump Room	190	190	12.5
4	Quantity in Nos	Pump Room	2	2	2
5	Water curtain pump	Pump Room	2850 LPM	2850 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