

# EXTERNAL DEVELOPMENT WORKS DESIGN AND COST ESTIMATES

FOR

**PROPOSED GROUP HOUSING  
COLONY AT SECTOR 15 PART-II  
(POCKET-I), (ON 2.364063 ACRES) AT  
MANESAR URBAN COMPLEX TEHSIL  
& DISTRICT GURUGRAM (HR)**

*(Licence No. 13 of 2018 dt 9.2.2018)*



**DEVELOPED BY  
SH RAVIJEET SINGH & SH PAWAN KUMAR IN  
COLLABORTION WITH ALPHA CORP  
DEVELOPMENT PVT LTD.**

PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II , (POCKET-I) (ON 2.364063 ACRES) AT MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)

**REPORT**

ESTIMATE FOR PROVIDING WATER SUPPLY, SEWERAGE, STORM WATER DRAINAGE, ROADS, STREET LIGHTING AND HORTICULTURE IN RESPECT OF 2.364063 ACRES PROPOSED MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR) GROUP HOUSING COLONY IN SECTOR - 15 PART-II, (POCKET-I) (ON 2.364063 ACRES) AT

Gurgaon of Haryana State situated on National Highway-8 at a distance of 50 Kms from Delhi. Being the National Capital Region, the town has fast developing tendency and potential. Further, it has also started sharing the growing residential/ industrial load of Delhi. In order to relieve the growing pressure of population in National Capital of Delhi, it has been decided by the Haryana Govt. to establish various residential, industrial and other infrastructure sectors in Gurgaon. SH RAVIJEET SINGH & PAWAN KUMAR IN COLLABORATION WITH ALPHA CROP DEVELOPMENT PVT LTD has been developing Group Housing Colony at SECTOR - 15 PART-II (POCKET-I) (ON 2.364063 ACRES) AT GURUGRAM (HARYANA).

**WATER SUPPLY**

At present the source of water supply in this area is borewell. As the underground water is potable, provision for 1 number of tubewell has been made on temporary basis in this estimate. It has been proposed to construct the underground tanks of capacity as per attached details, and at location for domestic purpose and for fire protection. The underground tanks will be fed from the borewell and HUDA supply, which will feed overhead tanks on the roof of the buildings. The water supply system has been designed as per Hazen Williams formula.

**DESIGN**

The scheme has been designed for population of approx. 596 persons for Housing. The rate of water supply per head / day has been taken as 86.0 liters as per HUDA norms in addition to above necessary provision of water for club and parks etc. have been taken into account for calculating the maximum quantity of water requirement.

**PUMPING REQUIREMENTS**

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 electricity failure.

**PUMPING CHAMBER AND PUMPING EQUIPMENTS**

It has been proposed to equip each tubewell with an electrically driven set ejector type or submersible pump capable of driven 18000 liters per hour. The provision for standby generating set has also been provided in case of any electricity failure. Generator will be provided separately or added to the capacity of main generator.





### UNDERGROUND STORAGE TANK

Underground storage tank provision has been made in two compartments, which cater for the domestic as well as for fire fighting requirement. The water for fire water compartment shall overflow to the domestic compartment so that the water in the fire compartment also remain full & fresh and will not contaminate.

### BOOSTING STATION

The boosting station is being planned near underground storage tank catering to above requirement.

### DISTRIBUTION SYSTEM

The distribution system for this development has been designed to supply @ ~~86.6~~ <sup>172.50</sup> liter per head per day @ 3 times the average rate of flow on Hazen William formula. Necessary provision for laying CI/DI pipes conforming to relevant IS standard along with valves and special has been made in the project. The minimum terminal head at any point will be more than 130 Mtrs. so that it can be serve the G+26 floors construction envisaged in the plan. Minimum pipe dia. for distribution is

### RISING MAIN

Raising main from HUDA water main or sector road to water work have also been proposed as provision has been made in this estimate.

### SEWERAGE SCHEME

This scheme has been designed for sewer connecting to STP & over flow of STP connected to HUDA sewer main. 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 lines shall be laid to a gradient maintaining minimum 2.46 ft/sec self cleaning velocity. Necessary provision for laying S.W./R.C.C. pipe sewer line, construction of required number of manholes etc. has been made in the estimate.

Necessary design statement for entire sewerage system has been prepared and attached with estimate. Manning's formula has been used for the design of sewerage system.



### STORM WATER DRAINAGE

Since the Master Scheme has been proposed with pipe drain, we proposed to lay pipe drains with required number of catch basins for disposal of storm water. The intensity of rain fall has been taken as 40mm per hour. A minimum size of 400 mm dia NP3 pipe storm water pipe will be provided and designed as per Manning's formula.

### FIRE

As per N.B.C. (National Building Code), fire tanks & required capacity pumps have been provided the plan as shown on the plan. Similarly irrigation pumps of required capacity provided as shown on the plan.

### SPECIFICATIONS

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

### ROADS

The roads in the colony have been planned as minimum 6 M wide. The following specification have been adopted which are reproduced below:

The specification of 6M wide roads:

#### Tremix Driveway

Providing & Laying average 125mm, thick M-25 Grade (cement concrete) on the roads with Tremix finishing layer as specified below including all cost of placing, ramming & compacting with screed vibrator, putting dowels for adjoining panel.

1. P.C.C 200 mm GSB
2. W.B.M (Layer 1) 250 mm Stone aggregate  
50 mm B.M.  
25 mm thick B.C.

### STREETLIGHTING

Provision of lighting on surrounding area has been made.



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HORTICULTURE

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

RATES

The estimate has been prepared based on the present market rates.

COST

The total cost of the scheme, including cost of all services works out to Rs. ~~158.42~~ <sup>175.00</sup> ~~Lacs~~ <sup>294.64</sup> Including  
3% contingencies and 49% departmental charges, price escalation & other unforeseen charges.  
Cost per acres comes to Rs. ~~67.43~~ <sup>74.02</sup> lacs <sup>124.63</sup>

SH RAVIJEET SINGH & SH PAWAN KUMAR IN COLLABORTION WITH ALPHA CORP  
DEVELOPMENT PVT LTD.

(Authorized Signatory)





**PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II , (POCKET-I) (ON  
2.364063 ACRES) AT MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)  
TOTAL WATER REQUIREMENT**

**(I) DAILY WATER REQUIREMENT TOWER -I**

**A Residential blocks (G+26)**

a) Type 3 BHK	=	88 Units
@ 5Person / unit	=	440 Persons
b) Type 3 BHK + Servent	=	12 Units
@ 7Person / unit	=	84 Persons
c) Type EWS (G+4)	=	18 Units
@ 4Person / unit	=	72 Persons
		<b>90</b>
<b>Total population</b>	=	<b>614 - 596 Persons</b>
<b>@ 86.0 LPCD (1)</b>	=	<b>51256 Liters/ Day</b>
<b>Say 172.50</b>	=	<b>105915 - 52000 Liters/ Day</b>
		<b>105915</b>

**B Commercial**

a) Community Building (380 sqm @ 1.4 sqmt/ person @ 15 LPCD)	=	4065 Liters/day
b) Ground Floor Convent shopping (47.738 sqm @ 3 sqmt/ person)	=	16 Persons
i) Shop Keeper @ 10 Person	=	2 Persons
@ 45 LPCD	=	90 Liters/day
ii) Visitors	=	14 Persons
@ 15 LPCD	=	210 Liters/day
c) Maintenance Staff (Such as Gardener, ESS Staff, Security Guards etc.)	=	25 Persons
@ 45 LPCD	=	1125 Liters/day
d) Back Wash Filters - 10% AV/WD	=	10000 Liters/day
e) Floating Population 10% of Population	=	60 Persons
@ 15 LPCD	=	900 Liters/day
f) Swimming Pool	=	15000 Liters
<b>Total Commercial</b>	=	<b>31390 - 31480 Liters/day</b>
<b>Say</b>	=	<b>32000 Liters/day</b>

**C Horticulture & Road side plantation**

a) Area under Green area 1516.254 sqmt. @ 5 Liters / sqmt.	=	<b>6.17</b> <b>9355.28</b> <b>7581.00 Liters/day</b>
b) Area under road & paved area of 4702.294 @ 5 liters/ sqm (9567.008-(3348.46+1516.254) = 4702.294 Sq.m)	=	23511.00 Liters/day
<b>Total</b>	=	<b>32866.28</b> <b>31082.00 Liters/day</b>
<b>Or Say</b>	=	<b>32000.00 Liters/day</b>



The demand of Horticulture & Road work will met from recirculated water after treatment at S.T.P.

**Total Water demand (A + B)**

Total Water demand (KLD)  $105915 + 31390 = 137305$

Or Say

$140 \text{ KL}$   
~~84000~~ Liters/day  
~~84.00~~ KLD  
~~85.00~~ KLD  $140 \text{ KL}$

Domestic water demand 65% of AV/WD of (A) +35% of [B (a+b+c+e) + 100% of B (d+f)]

Domestic water demand (KLD)

Or Say

$96081$   
~~61250.00~~ Liters/day  
 $96.08$   
~~61.25~~ KLD  
~~62.00~~ KLD  
 $96.08$

Flushing water demand 35% of AV/WD of (A) +65% of [B(a+b+c)]

Flushing water demand (KLD)

Or Say

$41224$   
~~22750.00~~ Liters/day  
~~22.75~~ KLD  $41.22$   
~~23.00~~ KLD  
 $41.08$

**Sewage Treatment Plant Capacity**

Average Sewerage Contribution Considering 80% of AV domestic water demand & 90% of AV/Flushing demand

Sewage Treatment Plant Capacity (KLD)

Or Say

$114000$   
~~70300~~ Liter / Day  
 $114.0$   
~~70.30~~ KLD  
~~70.00~~ KLD  
 $115.0$

**Sewage scheme**

Peak discharge @3 times of sewage discharge plus sub soil infiltration @ 10% of total water demand

$218500$  Liters  
 $48556$  GPD  
 $0.09$  Cusces

Hence 250 mm dia pipe having design capacity 0.659 cusces is sufficient to carry the above discharge



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(HR)

(I) BOREWELLS

Approx. discharge of borewells @ 18 KL/hour and working 18 hours/day

(a) Total water demand = KLD	= 62.00
(b) Number of borewells $62/(18 \times 18)$	= 0.22
Add 10% extra	= 0.02
Total	= 0.24
Say	= <u>1 No</u>

So, it is proposed to provide 1 No. of tube well . Moreover, the water demand for horticulture purposes is to met from recirculated water after treatment at STP and ultimate water supply is to provided by HUDA.





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- (II) **Pumping Machinery for Borewell**
- |                                       |   |                    |
|---------------------------------------|---|--------------------|
| Gross working Head                    | = | 50.0 Meters        |
| Average Fall in S.L.                  | = | 5.0 Meters         |
| Depression Head                       | = | 5.0 Meters         |
| Friction loss in main + Positive head | = | 10.0 Meters        |
| Total                                 | = | 70.0 Meters        |
| Or Say                                | = | <u>70.0 Meters</u> |
- 
- Pump HP =  $\frac{18000 \times 70 \times 100}{60 \times 60 \times 75 \times 70}$  = 6.67 H.P.
- Or Say 7.50 H.P.
- 
- (III) **Under Ground Water Tanks**
- |                                |   |                                  |
|--------------------------------|---|----------------------------------|
| a) Total Domestic Water Demand | = | 96.0 <del>61250</del> Liters/day |
| Storage (One day)              | = | 96.0 <del>61.25</del> KLD        |
| Or Say                         | = | 100.00 KLD                       |
- 
- Fire Tank provided as per N.B.C. norms = 300.00 KLD
- Hence it is proposed to construct an underground tank of 400 KLD having 50 KLD for treated water, 50 KLD as raw water, and 300 KLD for fire fighting purpose as per location shown on plan i.e. Total 400 K.L.D.
- 
- (IV) **Boosting Machinery (Domestic water supply)**
- |                               |   |                           |
|-------------------------------|---|---------------------------|
| a) For Under Ground Tank      |   |                           |
| Total water demand (Domestic) | = | 96.0 <del>62.00</del> KLD |
| Pumping 4 hour pumping        | = | 400 <del>268.33</del> LPM |
| Or Say                        | = | <u>400.00 LPM</u>         |
- 
- |  |   |                      |
|--|---|----------------------|
| Gross Working Head                                   |   |                      |
| - Suction lift                                       | = | 3.00 Meters          |
| - Delivery head                                      | = | 5.00 Meters          |
| - Frictional loss in Mains & Specials+ Positive head | = | 7.00 Meters          |
| - Clear head required (S+26) = 10+26x4               | = | 114.00 Meters        |
| Total  | = | 129.00 Meters        |
| Or Say   | = | <u>130.00 Meters</u> |
- 
- Pump HP =  $\frac{400 \times 130 \times 100}{60 \times 75 \times 80}$  = 19.25
- Or Say 20.0 H.P.

It is proposed to provide 2 nos. of motors of 20.0 HP sets of 260 LPM discharge at 130 M head (One pump working and one as standby for domestic supply & generator set of same capacity in case of electric failure) for domestic purpose.



PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II , (POCKET-I) (ON 2.364063 ACRES) AT MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)

- Boasting machines for flushing water.*
- b) Flushing water supply requirement = 140.0 KL
- (i) AV water demand = 84000 liters/day
- (ii) Flushing water supply demand @35% of (A) + 65% of [B(a+b+c+e)] = 22750 liters/day
- Flushing water demand (KLD) = 41.0 + 32 KL for 1100
- Or Say = 22.75 KLD
- = 23.00 KLD
- = 41.0
- Pumping per hour @ 4 hour pumping (L.P.M)  $41 + 32 = 73 \text{ KL/h}$   $73 \times 83 = 304.16$
- LPM = 95.83 LPM
- Say  $41/4 = 10.25 \text{ KL/h}$  = 100.00 LPM
- Pump HP =  $\frac{305}{60 \times 75 \times 60} \times 130 \times 100$  = 14.68 HP
- Or Say = 15.0 H.P.

It is proposed to provide 2 nos. of motors 15.0 HP sets of 300 LPM discharge at 130 m head (One pump working & one pump stand by & generator set of same capacity in case of electric failure.)

(V) Irrigation Pumping

- a) Plot Area = 2.364063 Acres
- = 9567.36 Sqmt
- Water Demand of Horticulture + Road Area Plantiion = 32000.00 LPD
- 4 Hours Pumping = 133.33 LPM
- Say = 135 LPM
- Head = 35 Mtr.
- Pump HP =  $\frac{135 \times 35 \times 100}{60 \times 75 \times 70}$  = 1.50 H.P.
- Or Say = 2.00 H.P.

It is proposed to provide 2 nos. of motors of 2.0 HP sets of 135 LPM discharge at 35 M head (One pump are working and one as standby & generator set of same capacity in case of electric failure.)



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(VI) PUMPS FOR FIRE PROTECTION

S. No.	Parameters	Location	Pump sets		
			Jockey	Main	Diesel
1	Discharge in lpm	Pump Room	180 lpm	2850 lpm	2850 lpm
2	Head in metre		130	130	130
3	HP		16	120	120
4	Quantity in nos.		2	2	1

(VII) GENERATING SETS

S. No	Equipment	QTY	HP	Total HP	
1	Borewell	1	7.50	7.5	
2	Fire Jockey pumps	1	16.00	16.0	
3	Booster Pump (for domestic) + Flushing+ irrigation pump	1+1+1	12.5+5.0+2.0	19.5	
	Total			45	42.0
				33.53	31.33 KW
	Disversity 0.8 & Power factor 0.8		33.53 X 1.50	48.96	50.35 KVA
	Or Say			50.00	50.00 KVA

It is proposed to add 50 KVA capacity for above said machinery to the main DG set.





PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II, (POCKET-II) (ON 2.364063 ACRES) AT  
MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)

FINAL ABSTRACT OF COST

Sub Work	Description	Amount (Rs.) in Lacs
I	Water Supply Scheme	106.19 <del>61.79</del> <del>59.35</del>
II	Sewerage Scheme	29.23 <del>15.50</del> <del>42.83</del>
III	Storm Water Drainage	27.62 <del>19.10</del> <del>16.38</del>
IV	Road	50.39 <del>41.82</del> <del>37.81</del>
V	Street Lighting	9.05 <del>3.62</del> <del>2.18</del>
VI	Horticulture	1.44 <del>0.98</del> <del>0.88</del>
VII	Maintenance Charges for 10 Years including Resurfacing of Roads after 1st 5 year & 11nd 5 years of mtc	70.72 <del>32.19</del> <del>38.38</del>
Total (in Lacs)		294.64 <del>145.92</del> <del>175.00</del>
Cost per acres (2.364063) =		124.63 <del>57.43</del> <del>74.02</del>

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(Authorized Signatory)

Addl. Chief Engineer  
HSVP, Gurugram

Superintending Engineer  
HSVP, Circle-II, Gurugram

Executive Engineer  
HSVP Division No.1,  
Gurugram

Checked subject to comments  
in forwarding letter No. 245360  
Dt. 12/11/10..... and notes  
attached with the estimate



Superintending Engineer (HQ)  
for Chief Engineer 1 HSVP  
Panchkula

PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II, (POCKET-I) (ON 2.364/63 ACRES) AT  
MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)

Sub Work No.1		Water Supply	
Sub Head	Description		Amount (Rs.). In lacs
1	Head Works	Rs. 42.97	-21.38
2	Pumping Machinery	Rs. 47.57	23.71
3	Rising Main	Rs. 3.65	<del>3.80</del> -0.21
4	Distribution System <i>Dom. &amp; flushing</i>	Rs. 6.09	<del>4.55</del> +1.54
5	Fire Fighting	Rs. 4.22	<del>3.48</del> +0.74
6	Irrigation	Rs. 1.69	<del>4.92</del> -3.23
Say (In Lacs)		<u>106.19 lacs</u>	<u><del>50.30</del> -61.79</u>

C. o. to final abstract of cost



PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II, (POCKET-I) (ON 2.364063 ACRES) AT  
MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)

Sub Work No-1					Water Supply	
Sub Work No-01					Head Works	
Sl No	DESCRIPTION	Qty		Rate		AMOUNT (In Lacs.)
1	Boring and installing 200 mm i/d tubewell with reverse rotary rig complete with pipe and strainer to depth of about 80 m in all respect 1 Nos. @ Rs. 300000/- each	1	x	300000	Rs.	3.00
2	Provision for Rising Main connecting Bore well with water main and by-pass arrangement					
2.1	80 mm dia G.I. Pipe <i>combined Pump</i>	25	x	800	Rs.	0.20
3	Providing Boosting arrangement by pumps (7.5 HP) (capacity 400 lpm at 30 M head, 2-no. @ Rs. 30,000/- each (for Tube Well) <i>Dom. Water Pump</i>	2	x	30000	Rs.	0.60
4	Providing Boosting arrangement by pumps (2.5 HP, capacity 200 LPM at 130 M head, 2 nos. each & @ Rs. 50,000/- each (For UGT) complete with panel, foundation etc. <i>Flushing Water Pump</i>	2	x	50000	Rs.	1.00
5	Provision for carriage of materials and other unforeseen items	1	x	30000	Rs.	0.30
6	Construction of U.G. tanks of total cap. 400 KL @ Rs. 2200 per KL <i>incl. 300 KL for fire and 100 KL for flushing need 450 KL</i>	400	x	2200	Rs.	8.80
7	Provision for borewell chamber of size 1.5 x 1.5 x 1.5 m For housing borewell 2 Nos. @ Rs. 30,000/- each <i>combined boosting chamber of suitable capacity as per P.H. req.</i>	2	x	30000	Rs.	0.60
TOTAL					Rs.	13.90
Add 3% contingencies <i>as per P.E. charges</i>					Rs.	0.42
TOTAL					Rs.	14.32
Add 49% Department charges, Price Escalation & other unforeseen Charges.					Rs.	7.02
TOTAL COST					Rs.	21.33

42.97 lacs

**Material statement of Borewell Rising Mains**

S. No.	Name of line	Length of 80 mm dia. pipe	Length of 100 mm dia pipe
1	Borewell no. 1 to UGT	25	-
	Total	25	-





**PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II, (POCKET-II) (ON 2.354063 ACRES) AT  
MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)**

Sub Work No-1					Water Supply	
Sub Work No-02					Pumping Machinery	
Sl No	DESCRIPTION	Qty		Rate		AMOUNT (In Lacs.)
1	Providing and installing electricity driven Submersible pumping set capable of delivery about 18 KL / Hr. of water against a total Head of 70 M complete with motor and other accessories, 1 No @ 35,000/-	1	x	35000 <i>2.00</i>	Rs.	0.35
2	Provision for diesel engine genset each for standby arrangements for T. W. , booster pumps complete with gear head arrangement. 1 No. 50 KVA	1	x	250000 <i>(6.5)</i>	Rs.	2.50 <i>5.00</i>
3	Providing and installing pumping set of following capacities for Fire protections :-					
(i)	180 lpm at 130 M head 2 Nos. Jockey Pump @ Rs. 65,000/-	2	x	65000 <i>(4.8)</i>	Rs.	1.30 <i>2.00</i>
(ii)	2850 lpm at 130 M head 2 No. Main Fire Pump @ Rs. 3,00,000/- <i>(120 HP)</i>	2	x	300000	Rs.	6.00 <i>7.50</i>
(iii)	2850 lpm at 130 M head 1 No. Diesel Pump @ Rs. 3,50,000/- <i>(120 HP)</i>	1	x	350000	Rs.	3.50 <i>10.00</i>
4	Providing for chlorination plant complete. 1 set @ 30,000/-	1	x	30000 <i>(6.5)</i>	Rs.	0.30 <i>1.00</i>
5	Provision for making foundations and erection of Pumping machinery @ Rs. 30,000/-	1	x	30000	Rs.	0.30 <i>1.00</i>
6	Provision for pipes, valves and specials inside boosting chamber - 1 Set (L.S.) Rs.30000/- for each	1	x	30000	Rs.	0.30 <i>1.50</i>
7	Provision for electric services connection including electric fitting for tube wells & boosting chamber & cost of transformer etc. Rs. 60000/-	1	x	60000	Rs.	0.60 <i>2.50</i>
8	Provision for carriage of material and unforeseen item. L.S. Rs. 50000/-	1	x	50000	Rs.	0.50 <i>0.50</i>
TOTAL					Rs.	15.45 <i>31.00</i>
Add 3% contingencies					Rs.	0.46 <i>0.93</i>
TOTAL					Rs.	15.91 <i>31.93</i>
Add 48% Department charges, Price Escalation & other unforeseen Charges.					Rs.	7.80 <i>15.64</i>
TOTAL COST					Rs.	23.71 <i>47.57</i>

47.57 lacs



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MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)

Sub Work No-1					Water Supply	
Sub Work No-03					Rising Main from HUDA	
Sl No	DESCRIPTION	Qty		Rate		AMOUNT (In Lacs)
1	Providing, laying, jointing & testing 80 mm dia. G.I. pipe lines including cost of excavation complete in all respects.	60	@	<del>800</del> 1250/-	Rs.	0.75   0.48
2	Providing and fixing 80 mm dia. sluice valves including cost of surface boxes and masonry chambers etc., complete in all respects.	1	@	<del>4000</del> 12000/-	Rs.	0.40 0.12
3	Providing and fixing indicating plates for sluice valves, air valves and fire hydrants.	1	@	<del>1000</del> 1000/-	Rs.	0.10 0.01
4	Provision for carriage of material & other foreseen items etc., L.S.	1		30000 (6.3)	Rs.	0.30
5	Provision for making connection with HUDA main (L.S.) 1 job complete in all respect	1		60000 (6.3)	Rs.	1.00   0.60
6	Provision for cutting road and making good the same (L.S.) 1 job	1		60000 (6.3)	Rs.	0.50   0.60
TOTAL					Rs.	2.48   2.09
Add 3% contingencies <i>see PE. Charges</i>					Rs.	0.07   0.06
TOTAL					Rs.	2.55   2.15
Add 48% Department charges, Price Escalation & other unforeseen Charges.					Rs.	1.25   1.05
TOTAL COST					Rs.	3.80   3.21

*3.65 lacs*

**Material Statement and design statement of HUDA Rising Mains**

S. No.	Name of line			Dia. in mm	Length in m from municipal to U.G.T.
1	Municipal Main To UGT			100	60



**PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II, (POCKET-I) (ON 2.364063 ACRES) AT  
MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)**

Sub Work No-1					Water Supply	
Sub Head No-04					Distribution system	
Sl No	DESCRIPTION	Qty	Rate		AMOUNT (In Lacs)	
1	Providing, laying, jointing & testing D.I. pipes including cost of excavation complete as per ISI marked. <i>(Dom. &amp; Flushing)</i>	170	@ 1250/-		Rs.	2.125
	100 mm I/D					1.36
2	Providing, laying, jointing & testing G.I. pipes including cost of excavation complete as per ISI marked.	20	@ 850/-		Rs.	0.07
	50 mm I/D					
	65 mm I/D	20	@ 500/-		Rs.	0.10
3	Providing and Fixing sluice valves including cost of complete in all respect.					
	100 mm I/D	35	@ 10000/-		Rs.	0.60
	65 mm I/D	1	@ 2000/-		Rs.	0.02
	50 mm I/D	1	@ 1600/-		Rs.	0.02
3	Providing and Fixing air valves and scour valves including cost of brick masonry chamber complete.	1	@ 2000/-		Rs.	0.20
						0.10
4	Providing and Fixing indicating plates for sluice valves	5	@ 4000/-		Rs.	0.20
						0.05
5	Provision for carriage of material & other foreseen items etc., (L.S). 1 Job including cutting of road and making the same.	1	@ 1000/-		Rs.	0.70
						0.60
	TOTAL				Rs.	2.97
	Add 3% contingencies <i>see PE charges</i>				Rs.	0.08
	TOTAL				Rs.	3.05
	Add 49% Department charges, Price Escalation & other unforeseen Charges.				Rs.	1.49
	TOTAL COST				Rs.	4.55

*Dom. & Flushing*

*3.97*

*0.12*

*4.09 lacs*

*2.01 lacs*

*6.09 lacs*





PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II, (POCKET-II) (ON 2.364063 ACRES) AT  
MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)


S. No.	Description	200 mm	150 mm	100 mm	80 mm	65 mm	50 mm
(A)	Domestic						
	Ring Main						
1	UGT- W1	-	-	20	-	-	-
2	W1-W2	-	-	30	-	-	-
3	W2-W3	-	-	30	-	-	-
4	W3-W4	-	-	25	-	-	-
5	W4 - TOWER-I	-	-	5	-	-	-
6	To fill O.H.T. riser to building shafts					(1 No. x 20 Mtr.) = 20	
	TOTAL	0	0	110	0	20	0
(A)	Flushing						
1	STP- FWS1	-	-	15	-	-	-
2	STP- FWS2	-	-	10	-	-	-
3	FWS2-FWS3	-	-	15	-	-	-
4	FWS3-FWS4 (EWS Shaft)	-	-	20	-	-	-
5	EWS (AV) & fill O.H.T.s	-	-	-	-	-	(1 No. x 20 Mtr.) = 20
6	Risers to building shafts EWS Building						
	TOTAL	0	0	60	0	0	20
	GRAND TOTAL	0	0	170	0	20	20



**PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART II, (POCKET-I) (ON 2.364053 ACRES) AT MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)**

**DOMESTIC WATER SUPPLY (HYDRAULIC CHART)**

S. No	Ref of line	Length in mts	Self			Additional	AWWD		Domestic Water demand @ 65% of AWWD Acts +35% commercial	Peak Demand @ 3 time of AWWD	Dia of Pipe	Velocity	Loss of Head in 1000 M (m/s)	Loss of Head in the line (m/s)	Level in start			Remarks
			3 BHK @ 5 persons @ Nos. 30HK + Servants @ 7 persons @ 4 Person / Unit @ 173.8 LPCD	Population @ 15% of Population @ 15 LPCD	Community Center+ Backwash+ Staff+ Shops & Swimming Pool (LPCD)		MLD	SLD							ML	SL	TL	
1	AL UGT	-	-	-	-	Tower 1 = 3 BHK + 80 unit, 3 BHK + Servant 12 unit & EWS 18 unit Persons = 595 +102810 Ltrs	60 Persons = 900 Ltrs	Community Center+ Backwash+ Staff+ Shop+ Swimming Pool = 4065+10000+1125+30 +15000 =30490	94.4	134.20	-	-	-	-	343.00	277.00	126.00	Ground level = 271.00 M UGT Bed level = 214.00 M
2	UGT-W1	20	-	-	-	Tower 1 = 3 BHK + 80 unit, 3 BHK + Servant 12 unit & EWS 18 unit Persons = 595 +102810 Ltrs	60 Persons = 900 Ltrs	Community Center+ Backwash+ Staff+ Shop+ Swimming Pool = 4065+10000+1125+30 +15000 =30490	94.4	134.20	100	0.75	3.30	0.08	342.64	277.00	126.00	Add Building delay (1+25) = 10+250 = 1+250 Add suction head = 2 m/s Add delivery head = 3m Add pressure head = 3 m/s Add friction head = 4 m/s Head level = 343.00 m/s
3	W1-W2	30	-	-	-	Tower 1 = 3 BHK + 80 unit, 3 BHK + Servant 12 unit & EWS 18 unit Persons = 595 +102810 Ltrs	60 Persons = 900 Ltrs	Community Center+ Backwash+ Staff+ Shop+ Swimming Pool = 4065+10000+1125+30 +15000 =30490	94.4	134.20	100	0.75	3.30	0.1	342.84	277.00	126.00	
4	W2-W3	30	EWB 18 unit 23 person = 13400 Ltr	7 Persons = 405 Ltrs	-	Tower 1 = 3 BHK + 80 unit, 3 BHK + Servant 12 unit & EWS 18 unit Persons = 595 +102810 Ltrs	60 Persons = 900 Ltrs	Community Center+ Backwash+ Staff+ Shop+ Swimming Pool = 4065+10000+1125+30 +15000 =30490	94.4	134.20	100	0.75	3.30	0.1	342.74	277.00	126.00	
5	W3-W4	20	-	-	-	Tower 1 = 3 BHK + 80 unit, 3 BHK + Servant 12 unit & EWS 18 unit Persons = 595 +102810 Ltrs	60 Persons = 900 Ltrs	Community Center+ Backwash+ Staff+ Shop+ Swimming Pool = 4065+10000+1125+30 +15000 =30490	94.4	134.20	100	0.75	3.30	0.08	342.66	277.00	126.00	
6	W4-Tower 1 Staff	5	Tower 1 = 3 BHK + 80 unit, 3 BHK + Servant 12 unit & EWS 18 unit Persons = 595 +102810 Ltrs	60 Persons = 900 Ltrs	Community Center+ Backwash+ Staff+ Shop+ Swimming Pool = 4065+10000+1125+30 +15000 =30490	Tower 1 = 3 BHK + 80 unit, 3 BHK + Servant 12 unit & EWS 18 unit Persons = 595 +102810 Ltrs	60 Persons = 900 Ltrs	Community Center+ Backwash+ Staff+ Shop+ Swimming Pool = 4065+10000+1125+30 +15000 =30490	94.4	134.20	100	0.75	3.30	0.08	342.64	277.00	126.00	





Note: 1. Civil water supply line will be laid as per HUDA / NBC norms.  
2. Head Level has been calculated with reference to Road Level 247.06.

PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II, (POCKET-I) (ON 2.384063 ACRES) AT MANESAR URBAN COMPLEX TEHSIL & DISTT, GURUGRAM (HR)

FLUSHING WATER CAPACITY (HYDRAULIC CHART)

Sl. No.	Ref. of line	Length in mts	Self			Additional		AVMG	Domestic Water demand @ 15% of AVMG + 85% of commercial	Peak Demand @ 3 time of AVMG	Use of Pipe	Loss of Head in 1000 M (m/s)	Level in pipe			Remarks
			3 BHK 80 unit @ 5 persons /12 Nos. 3BHK + 7 Servants @ 7 persons/unit + EWS 18 unit @ 4 Person / Unit @ 172.5 LPCD	Floating @ 10% of Population @ 18 LPCD	Community center+ Backwash, Staff, Shops & Swimming Pool (LPCD)	3 BHK 80 unit @ 5 persons /12 Nos. 3BHK + 7 Servants @ 7 persons/unit + EWS 18 unit @ 4 Person / Unit @ 172.5 LPCD	Floating @ 10% of Population @ 18 LPCD						HL	CL	TL	
1	At STP	-	-	-	-	Tower 1 = 3 BHK + 60 unit, 3 BHK + Servant 12 unit + EWS 18 unit = 1080 Persons = 1080 LPCD	Population = 80 Persons = 80 LPCD	134.20	36.8	119.4	-	-	343.00	217.00	170.00	Ground level = 217.00 m STP Bed level = 210.00 m Add building head 5.00 = 10.00 m Add suction head = 3.00 m Add delivery head = 7.00 m Add post head = 2.00 m Add friction loss = 4.00 m Head level = 243.00 m
2	STP- FMS1	15	Tower 1 = 3 BHK + 60 unit, 3 BHK + Servant 12 unit + EWS 18 unit = 1080 Persons = 1080 LPCD	52 Persons = 760 Ltr	-	-	-	81.15	32.14	96.42	100	0.75	342.98	217.00	125.99	
3	STP- FMS2	10	-	-	Community Center+ Backwash +staff + Shop+ Swimming Pool = 4071+10000+1125+304+12000 = 33500	EWS 18 unit 72 Person = 12420 Ltr	7 Person = 105 Ltr	63.00	16.06	45.27	100	0.75	342.96	217.00	125.99	
4	FMS-2 FMS-3	15	-	-	Community Center+ Backwash +staff + Shop+ Swimming Pool = 4071+10000+1125+304+12000 = 33500	EWS 180 unit 36 Person = 4210 Ltr	7 Person = 105 Ltr	45.00	15.20	45.27	100	0.75	342.98	217.00	125.99	
5	FMS-3 FMS-4	20	EWS 18 unit 72 Person = 12420 Ltr	7 Person = 105 Ltr	-	-	-	12.52	4.42	15.26	100	0.75	342.66	217.00	125.99	

Note: 1. Flushing Water supply line will be laid as per HUDA / NBC Norms.  
2. Head Level has been calculated with reference to Road Level 217.00.





**PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II , (POCKET-I) (ON 2.354063 ACRES)  
AT MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)**

Sub Work No-1					Water Supply	
Sub Work No-05					Fire fighting	
SI No	DESCRIPTION	Qty		Rate		AMOUNT (In Lacs.)
1	Providing, laying jointing & testing M.S. pipe lines for rising main including cost of fitting, valves, connection etc., complete in all respects.					
	150 mm I/D for Fire Brigade and 2 way draw off connection	30	@	3000 1200.00 1500.00	Rs.	0.47 0.30
	100 mm I/D for Tanker Inlet	15	@	1000.00	Rs.	0.18
	80 mm I/D for Yard hydrant fire Brigade connection	30	@	800.00 1000	Rs.	0.24 0.30
2	Providing & fixing valve including cost of surface boxes and masonry chambers etc. complete in all respects					
	- 150 mm dia.	2	@	12000.00		0.24
	- 100 mm dia.	1	@	12000.00		0.02
	- 80 mm dia.	5	@	5000.00		0.08
3	Providing and fixing fire Hydrant with accessories	5	@	10,000 7000.00	Rs.	0.50 0.35
4	Providing for carriage of material (L.S.) 1 jobs	1	@	(L.S.) 30000.00	Rs.	0.30
5	Providing and fixing Indicating plate	8	@	1050.00	Rs.	0.08
TOTAL					Rs.	2.75 2.03
Add 3% contingencies <i>see PG charges</i>					Rs.	0.08 0.06
TOTAL					Rs.	2.83 2.09
Add 49% Department charges, Price Escalation & other unforeseen Charges.					Rs.	1.39 1.02
TOTAL COST					Rs.	4.22 3.11

**Material Statement of Fire ring – MS – 150mm dia**

S. No.	Location	200 mm dia pipe	150 mm dia pipe	100 mm dia pipe	80 mm dia pipe	Fire Hydrant
1	Tanker inlet connection	-	-	15	-	-
2	Fire Brigade 4 way	-	15	-	-	-
3	Two way Draw off connection	-	15	-	-	-
4	Yard Hydrants = 5 Nos. x 6 Meters	-	-	-	30	5
	Total	0	30	15	30	5

**Fire Hydrant System**

- 2 Valves 150mm dia
- 3 Valves 100mm dia
- 4 Valves 80mm dia
- 5 Fire Hydrants
- 6 Fire Brigade Connections

- 2 Nos.
- 1 No.
- 1 Nos.
- 5 Nos.
- 1 No.



**PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II, (POCKET-I) (ON 2.364063 ACRES)  
AT MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)**

Sub Work No-1					Water Supply	
Sub Work No-06					Irrigation	
Sl No	DESCRIPTION	Qty		Rate		AMOUNT (In Lacs)
1	Providing, laying, jointing and testing uPVC pipe line conforming to I.S 4985 including cost of excavation etc., complete in all respects.					
25	20 mm O/D for Garden Pipe (L.S.)	15	@	200		0.50
	75-mm O/D for Ring Main	470	@	170	Rs.	0.08
	110 mm O/D from STP to Ring Main	20	@	350	Rs.	1.65
	connected to flushing line		@	500	Rs.	0.10
2	Providing and fixing Irrigation hydrant valve complete in all respect.	10	@	800	Rs.	0.08
3	Provision for carriage of material & other foreseen items etc., (L.S.) 1 jobs			3500	Rs.	0.35
4	Providing & fixing ball valve 20-mm	10	@	250	Rs.	0.03
5	Providing & fixing sluice valve complete with chamber.					
	- 65 mm dia.	1	@	3000	Rs.	0.03
	- 100 mm dia.	1	@	4000	Rs.	0.04
6	Providing and fixing Irrigation pump 2 HP / 135 LPM @ 35 Mtr. Head complete with foundation & control panel etc.	2	@	50,000	Rs.	1.00
				20000		0.40
	<b>TOTAL</b>				Rs.	3.212.60
	<b>Add 3% contingencies</b>				Rs.	0.0963
	<b>TOTAL</b>				Rs.	3.302.67
	<b>Add 49% Department charges, Price Escalation &amp; other unforeseen Charges.</b>				Rs.	1.621.34
	<b>TOTAL COST</b>				Rs.	4.923.98

**Material statement of Irrigation System**

S. No.	Line Name	110 mm OD	75 mm OD	20 mm OD	Irrigation Hydrants
1	Pump Room to ring main.	20	-		
2	Garden hydrant ring main around the building	-	470	-	-
6	Garden hydrant 10 x 1.5 mts (AV)	-	-	15	-
7	Garden hydrant	-	-	-	10
	<b>Total</b>	20	470	15	10





**PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II, (POCKET-I) (ON 2.364063 ACRES)  
AT MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)**

Sub Work No-II					Sewerage Scheme	
Sl No	DESCRIPTION	Qty		Rate		AMOUNT (In Lacs)
1	Providing, jointing, cutting and testing S.W pipe class 'A' S.W /RCC and lowering into trenches including cost of excavation, bed concrete, cost of manhole etc., complete in all respects. 250 mm I/D Avg. depth upto 0 - 4.00 M (S.W. Pipe) 20 Pipe) 150mm Ø DI PIPE 25m @ ₹ 1575/- m	65	@	2000 -1200.00	Rs.	1.10 -0.86 0.24
2	Provision for lighting and watching L.S.	1	@	30000.00	Rs.	0.30
3	Provision for timbering and shuttering L.S.	1	@	30000.00	Rs.	0.30
4	Provision of connection with HUDA on master plan	1	@	60000.00	Rs.	1.00 0.60
5	Providing boosting arrangement by 2 nos. pump for flushing water supply 5.0 HP capacity 100 L.P.M., 130 Meter Head	2	@	50000.00	Rs.	1.00 0.60
6	Provision for making STP (KLD) 115 KLD upto existing level	70	@	7000.00	Rs.	4.90
7	Provision for carriage of material (L.S.)	1	@	30000.00	Rs.	0.30
8	Provision of cutting road & making it good as same in original condition - 1 job	1	@	70000.00	Rs.	1.00 0.70
<b>TOTAL</b>					Rs.	8.36
Add 3% contingencies & P.E. charges					Rs.	0.25
<b>TOTAL</b>					Rs.	8.61
Add 49% Department charges, price escalation, other for unforeseen charges.					Rs.	4.22
<b>TOTAL COST</b>					Rs.	12.83

**Material statement of Sewerage System – As per drawing sheet**

S. No.	Name of Pipe Line	Length of Pipe in M		
		300 mm	250 mm	200 mm
1	S1-S2 150 mm Ø DI PIPE along ceiling basement	-	15	DI PIPE along ceiling basement SW PIPE
2	S2-S3	-	20	
3	S3-S4	-	15	
4	S4-STP	-	5	
<b>Total</b>		<b>0</b>	<b>55</b>	<b>0</b>

DI = 35 m  
SW = 20 m.





**PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II , (POCKET-I) (ON  
2.364063 ACRES) AT MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)  
TOTAL WATER REQUIREMENT**

**(I) DAILY WATER REQUIREMENT TOWER -I**

**A Residential blocks (G+26)**

a) Type 3 BHK	=	88 Units
@ 5Person / unit	=	440 Persons
b) Type 3 BHK + Servent	=	12 Units
@ 7Person / unit	=	84 Persons
c) Type EWS (G+4)	=	18 Units
@ 4Person / unit	=	72 Persons
<b>Total population</b>	=	<b>596 Persons</b>
<b>@86.0 LPCD (1)</b>	=	<b>51256 Liters/ Day</b>
<b>Say</b>	=	<b>62000 Liters/ Day</b>

**B Commercial**

a) Community Building (380 sqm @ 1.4 sqmt/ person @ 15 LPCD)	=	4065 Liters/day
b) Ground Floor Convent shopping (47.738 sqm @ 3 sqmt/ person)	=	16 Persons
i) Shop Keeper @ 10 Person @ 45 LPCD	=	2 Persons 90 Liters/day
ii) Visitors @ 15 LPCD	=	14 Persons 210 Liters/day
c) Maintenance Staff (Such as Gardener, ESS Staff, Security Guards etc.) @45 LPCD	=	25 Persons 1125 Liters/day
d) Back Wash Filters - 10% AV/WD	=	10000 Liters/day
e) Floating Population 10% of Population @ 15 LPCD	=	60 Persons 900 Liters/day
f) Swimming Pool	=	15000 Liters
<b>Total Commercial</b>	=	<b>31390 31480 Liters/day</b>
<b>Say</b>	=	<b>32000 Liters/day</b>

**C Horticulture & Road side plantation**

a) Area under Green area 1516.254 sqmt. @ 5 Liters / sqmt.	=	7581.00 Liters/day
b) Area under road & paved area of 4702.294 @ 5 liters/ sqm (9567.008-(3348.46+1516.254) = 4702.294 Sq.m)	=	23511.00 Liters/day
<b>Total</b>	=	<b>31092.00 Liters/day</b>
<b>Or Say</b>	=	<b>32000.00 Liters/day</b>



The demand of Horticulture & Road work will met from recirculated water after treatment at S.T.P.

<b>Total Water demand (A + B)</b>		<b>84000 Liters/day</b>
Total Water demand (KLD)	$105915 + 31380 = 137295 \text{ ltr}$ or $137.30 \text{ KL}$	84.00 KLD
Or Say		85.00 KLD $140 \text{ KL}$
Domestic water demand 85% of AV/WD of (A) +35% of [B (a+b+c+e) + 100% of B (d+f)]		$96081$ 61250.00 Liters/day
Domestic water demand (KLD)		$96.0$ 61.25 KLD
Or Say		$96.0$ 62.00 KLD
Flushing water demand 35% of AV/WD of (A) +65% of [B(a+b+c)]		$41224$ 22750.00 Liters/day
Flushing water demand (KLD)		$41.0$ 22.75 KLD $41.22$
Or Say		$41.0$ 23.00 KLD
<b>Sewage Treatment Plant Capacity</b>		$11400$
Average Sewerage Contribution Considering 80% of AV domestic water demand & 90% of AV/Flushing demand		70300 Liter / Day
Sewage Treatment Plant Capacity (KLD)		$114.0$ <del>70.30</del> KLD
Or Say		$115$ 70.00 KLD
<b>Sewage scheme</b>		
Peak discharge @3 times of sewage discharge plus sub soil infiltration @ 10% of total water demand		218500 Liters
		48556 GPD
		0.09 Cusces

Hence 250 mm dia pipe having design capacity 0.659 cuses is sufficient to carry the above discharge.







PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II, (POCKET-I) (ON 2.364063 ACRES) AT MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)

Sub Work No-III

Storm water drain

S. No.	DESCRIPTION	Qty		Rate		AMOUNT (In Lacs)
1	Providing, lowering, laying and jointing R.C.C NP-3 pipes and specials into trenches including manholes, chambers etc., excavation, back filling and disposal of surplus earth complete in all respects.					9.75 5.85
1.1	400 mm I/D Avg. depth upto 2.0 M.	390	@	2500 4250	Rs.	4.88
2	Provision for Road Gullies L.S. <i>with 300 mm d pipe</i>	1	@	100000 60000	Rs.	0.60 1.00
3	Provision for lighting and watching	1	@	50000	Rs.	0.30 0.50
4	Provision for timbering and shoring L.S.	1	@	50000	Rs.	0.25 0.30 0.50
5	Provision for carriage of material & other foreseen items etc., L.S.	1	@	60000 (L.S.)	Rs.	0.60
6	Provision for Rain water harvesting arrangements for 2 Nos. Rain Water Harvesting	2.000	@	180000	Rs.	3.40
7	Provision for connection with HUDA <i>on master lead</i>	1	(L.S.)	60000	Rs.	0.80
	<b>TOTAL</b>				Rs.	10.68 12.45
	<b>Add 3% contingencies <i>on PO charges</i></b>				Rs.	0.32 0.37
	<b>TOTAL</b>				Rs.	11.00 12.82
	<b>Add 49% Department charges, price escalation, other for unforeseen</b>				Rs.	5.39 6.2
	<b>TOTAL</b>				Rs.	16.38 19.1

27.62

*c.o. to final abstract of cost*



**PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II, (POCKET-I) (ON 2.364063 ACRES) AT MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)**

**STORM WATER DRAIN**

S. No	Name of Drain	400mm dia RCC pipe
<b>Rain Water Harvesting - 1</b>		
1	D1-D2	38 ✓
2	D2-D3	82 ✓
3	D3-D4	70 ✓
4	D4-D5	44 ✓
5	D5-D7	5 ✓
6	D6-D7	47 ✓
7	D7-RWH-1	4 ✓
8	RWH-1 - City Drain / Open space	20 ✓
	<b>Total</b>	<b>310 ✓</b>
<b>Rain Water Harvesting - 2</b>		
9	D8-D9	60 ✓
10	D9-D10	10 ✓
11	D10-RWH-2	5 ✓
12	Over flow Pipe	5 ✓
	<b>Total</b>	<b>80 ✓</b>
	<b>Grand Total</b>	<b>390 ✓</b>



**PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II, (POCKET-I) (ON 2.364063 ACRES) AT MANESAR URBAN COMPLEX TEHSIL & DISTT.**

**GURUGRAM (HR)**  
**Hydraulic Design Chart**

**Storm Water Drain**

Calculations are based on Manning Formula  $V = (1.486/n) \times m^{2/3} \times S^{1/2}$  in F.P.S System

Sl. No.	Name of Line	Length in Meter	Catchment Area in sqmt		Total Area (Sqmt)	Discharge in Cuasec (1 Acre = 1 Cuasec)	Proposed dia of pipe (mm)	Velocity (m/sec)	Design Capacity of Pipe (Cuasec)	Gradient	Drop (Mtr.)	Level at Start			Level at End		
			Self	Additional								G.L. (Mtr.)	I.L. (Mtr.)	Depth (Mtr.)	G.L. (Mtr.)	I.L. (Mtr.)	Depth (Mtr.)
Rain Water Harvesting - 1																	
1	D1-D2	38	38 x 15 = 570	-	570	0.141	400	0.75	3.30	1:500	0.08	217.00	216.10	0.90	217.00	215.02	0.98
2	D2-D3	82	82 x 42 = 3280	Line D1-D2 = 570	3850	0.951	400	0.75	3.30	1:500	0.16	217.00	216.02	0.98	217.00	215.85	1.14
3	D3-D4	70	70 x 15 = 1350	Line D2-D3 = 385	5200	1.285	400	0.75	3.30	1:500	0.14	217.00	215.88	1.14	217.00	215.72	1.20
4	D4-D5	44	44 x 40 = 1760	Line D3-D4 = 5200	6960	1.720	400	0.75	3.30	1:500	0.09	217.00	215.72	1.28	217.00	215.63	1.37
5	D5-D7	5	-	Line D4-D5 = 6960	6960	1.720	400	0.75	3.30	1:500	0.01	217.00	215.63	1.37	217.00	215.62	1.36
6	D6-D7	47	47 x 40 = 1680	-	1680	0.415	400	0.75	3.30	1:500	0.09	217.00	216.10	0.90	217.00	216.01	0.99
7	D7-RWH-1	5	-	Line D5-D7=6960 + Line D6-D7 = 1680 = 8640	8640	2.135	400	0.75	3.30	1:500	0.01	217.00	215.62	1.38	217.00	215.61	1.39
Rain Water Harvesting - 2																	
8	D8-D9	60	85 X 10 = 850	-	850	0.210	400	0.75	3.30	1:500	0.12	217.00	216.10	0.90	217.00	215.98	1.02
9	D9-D10 RWH-2	15	15 X 5 = 75	Line D8-D9 = 850	925	0.229	400	0.75	3.30	1:500	0.03	217.00	215.90	1.02	217.00	215.95	1.05





PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II, (POCKET-I) (ON 2.364063 ACRES) AT MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)

SUB WORK NO. - IV					Road Work	
Sl No	DESCRIPTION	Qty		Rate		AMOUNT (In Lacs)
1	Provision for leveling - earth filling / cutting as per site conditions. (In Acres)			150000		2.36
	Area = 2.364063 Acre	2.364063	@	60000	Rs.	1.42
2	Tremix Driveway	2310	Sq.m			3.54
3	Providing & Laying average 125mm, thick M-25 Grade (cement concrete) on the roads with Tremix finishing layer as specified below including all cost of placing, ramming & compacting with screed vibrator, putting dowels for adjoining panel.	200mm CSB 250 mm stone aggregate 50 mm Ben 25 mm thick BC 288.75	Cum	6500	Rs.	18.77
3.1	P.C.C.	231	Cum	12000	Rs.	2.77
3.2	W.B.M (Layer 1)	231	Cum			
4	Provision of Paved path of C.C. 1:2:4	330	@	220	Rs.	0.73
5	Provision for Kerbs & channels of CC 1:2:4	380	@	600	Rs.	0.88
6	Provision for making approach to each block for C.C. pavements L.S.	1	@	10000	Rs.	1.00
7	Provision of guide maps at selected place (L.S.)	1	@	50000	Rs.	0.50
8	Provision for Demarcating Durgies - L.S.	1	@	50000	Rs.	0.50
9	Provision for Plot Indicator - L.S.	1	@	50000	Rs.	0.50
10	Provision for Parking Arrangement, L.S.	1	@	50000	Rs.	0.50
11	Provision of carriage of material and unforeseen items - L.S.	1	@	50000	Rs.	0.50
	TOTAL			100000	Rs.	24.50
	Add 3% contingencies & P.C. charges			32.88	Rs.	0.74
	TOTAL			0.96	Rs.	25.24
	Add 49% Department charges, price escalation, other for unforeseen charges.				Rs.	12.37
	TOTAL			33.82	Rs.	37.61

C.O. to final abstract of cost



PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II, (POCKET-I) (ON 2.364063 ACRES) AT MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)

Road Work

ROAD AREA CHART - POCKET-1						
ITEM	NO.	FORMULA	LENGTH (Metres)	BREATH (m) (Metres)	HEIGHT (m)	AREA ( SQ. M.)
1	1	1	1.300	8.000		7.800
2	1	0.5	1.571	10.947		8.509
3	1	0.5	10.247	11.871	8.132	60.060
4	1	0.5	8.132	5.980	1.147	8.935
5	1	1	3.543	12.990		45.939
6	1	1	41.846	17.527		735.527
7	1	0.5	1.157	51.349		29.705
8	1	BY PLINE				46.057
9	1	1	6.000	30.038		180.228
10	1	1	14.853	18.000		267.354
11	1	1	4.302	13.124		56.459
12	1	1	9.000	11.242		101.178
13	1	0.5	9.000	5.574		25.083
14	1	BY PLINE				62.766
15	1	0.5	3.000	11.003		16.505
16	1	1	26.215	3.000		78.645
17	1	0.5	3.000	9.665		14.498
18	1	BY PLINE				32.220
19	1	0.5	3.000	3.515		5.273
20	1	1	3.000	11.875		35.628
21	1	1	21.537	18.5		398.4345
22	1	BY PLINE				7.895
				TOTAL (X) =		2222.487
DEDUCTIONS(D)						
A	2	BY PLINE			11.082	22.164
B	1	1	20.304	5.312		107.855
				TOTAL DEDUCTION (D)=		130.019
TOTAL ROAD AREA = X - D = - (2222.487-130.019)						2092.468
Total				2092.468		
Add 10% for curves				209.2468		
Total Length				2301.7148 2092.468		
Say				2310.90 2100 Sqr m		
Total Length of road				149.099		
Add 10% curves				14.9099		
Total Length				164 150		
Say				165	Mtrs.	

No. of Car Parking (open surface) =

Say

Area = 0X0X0 =

150 0 Nos.

0 Nos.

0 Sqmts.

Pave Path on both side of Road = 165 x 2 =

330 Sqmts.



PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II , (POCKET-I) (ON 2.364063 ACRES) AT MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)

Sub Work No-V					Street Lighting	
Sl No	DESCRIPTION	Qty		Rate		AMOUNT (In Lacs)
1	Providing street lighting on roads as per standard specifications on HVPNL					
	Area = 2.364063 Acre	2.364063	@	60000	Rs.	1.42
	TOTAL			2.50 lacs	Rs.	1.42
	Add 3% contingencies <i>GL PE Charges</i>			Acn	Rs.	0.04
	TOTAL				Rs.	1.46
	Add 49% Department charges, price escalation, other for unforeseen charges.				Rs.	0.72
	TOTAL				Rs.	2.18

C.O. to final abstract of cost





**PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II, (POCKET-I) (ON 2.364063 ACRES) AT MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)**

Sub Work No-VI					Plantation & Road side trees	
SI No	DESCRIPTION	Qty		Rate	AMOUNT (In Lacs)	
1	Development of Lawn Area :- a) Trenching the ordinary soil upto 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 before and after flooding trench with water 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 in rows 7.50 cm. in either direction including for hedges and grill and barred wire fencing around park and green belts (As per HUDA norms) Area 1516.254 sqmt = 0.375	0.375	@	160000 20000	Rs.	0.37 0.26 0.56
2	Providing & Planting of trees with tree guards on roads at 12 m intervals Total Road Length (M.) Trees @ 12 M. c/c Say (2 x 14) = 28 Or Say	165 14 30				
	Cost of One Tree :- Excavation (Rs.) 50/- Manure (Rs.) 50/- Tree Plants (Rs.) 50/- Tree Guards (Rs.) 450/- Total Cost (each) Cost of Total trees	60.00 90.00 150.00 1000.00 1300.00		1300.00 600	Rs.	0.39 0.18 0.57
	<b>TOTAL</b>			9000	Rs.	0.44
	Add 3% contingencies				Rs.	0.01
	<b>TOTAL</b>				Rs.	0.45
	Add 49% Department charges, price escalation, other for unforeseen charges.				Rs.	0.22
	<b>TOTAL</b>				Rs.	0.68





हरियाणा शहरी विकास प्राधिकरण

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Panchkula

C.E.I-No. 245360

Dated: 17/12/12

Annexure-A

**SUB:- Approval of service plan/ estimate for Group Housing Colony measuring 2.364063 acre area in Sec-15, Part-II(Pocket-I) Gurugram Manesar Urban Complex being developed by Ravijeet Singh and others in collaboration with Alpha Corp. Development Pvt. Ltd.**

**Technical note and comments:-**

1. All detailed working drawings would have to be prepared by the colonizer for Integrating the internal services proposals with the master proposals of town.
2. The correctness of the levels will be the sole, responsibility of the colonizer for the integration of internal proposals, with the master proposals, of town and will be got confirmed before execution.
3. The material to be used shall the same specifications as are being adopted by HSVP and further shall also confirm to such directions, as issued by Chief Engineer, HSVP from time to time.
4. The work shall be carried out according to Haryana PWD specification or such specifications as are being followed by HSVP. Further it shall also confirm to such other directions, as are issued by Chief Engineer, HSVP from time to time.
5. The colonizer will be fully responsible to meet the demand of water supply and allied services till such time these are made available by State Government/ HSVP. All link connections with the State Government/ HSVP system and services will be done by the colonizer. If necessary extra tube-wells shall also be installed to meet extra demand of water beyond the provision according to EDC deposited.
6. Structural design & drawings of all the structures, such as pump chamber, boosting chamber, RCC OHSR underground tanks quarters, manholes chamber, sections of RCC pipes sewer and SW pipes, sewer, ventilating shafts for sewerage and Masonry Ventilation Chamber for Chamber for storm water drainage, temporary disposal/ arrangement etc. will be as per relevant I.S codes and PWD specifications; colonizer himself will be responsible for structural stability of all structures.

56-2  
L  
S. K. Singh  
13/12/12




हरियाणा शहरी विकास प्राधिकरण  
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Address: C-3, HSVP, HQ Sector-6  
Panchkula

C.E. No:

Dated:

7. Potability of water will be checked and confirmed and the tube-wells will be put into operation after getting chemical analysis of water tested.
8. Only C.I/D.I pipes will be used in water supply and flushing system, UPVC/HDPE pipe for irrigation purposes.
9. A minimum 100 i/d C.I/D.I, 200mm i/d SW and 400mm id RCC NP-3 pipes will be used for water supply, sewerage and storm water drainage respectively.
10. Standard X-section for S.W. pipes sewer, RCC pipes sewer etc. will be followed as are being adopted in Haryana Public Health Engineering Deptt. or HSVP.
11. The X-section, width of roads, will be followed as approved by the Chief Town Planner, Haryana, Chandigarh. The kerbs and channels will also be provided as per approved X-section and specifications.
12. The specifications for various roads will be followed as per IRC/MORTH specifications.
13. The wiring system of street lighting and specifications of street lighting fixture will be as per relevant standards.
14. This shall confirm to such other conditions as are incorporated in the approved estimate and the letter of approval.

For   
Superintending Engineer (HQ),  
Chief Engineer-I, HSVP,  
Panchkula.

13/12/12



PROPOSED GROUP HOUSING COLONY AT SECTOR 15 PART -II , (POCKET-I) (ON 2.364063 ACRES) AT MANESAR URBAN COMPLEX TEHSIL & DISTT. GURUGRAM (HR)

SUB WORK NO. VII:				MTC. CHARGES AND RESURFACING OF ROADS.	
Sl No	DESCRIPTION	Qty		Rate	AMOUNT (In Lacs)
1	Provision for maintenance charges for water supply, sewerage, storm water, drainage, roads, street light, Hort., etc. complete including operation & establishment charges as per HUDA norms after completion.				
	Area = 2.364063 Acre	2.364063	@	350,000/-	8.27
2	Provision for resurfacing of roads after first five years of maintenance i.e. 100mm thick B.M. with 25mm thick premix carpet with seal coat with mechanical paver. (Sqm)	2100 2310 Sqm	@	7.50 lacs	17.73 lacs
3	Provision for resurfacing of roads after 10 years of Mtc. i.e. 25mm thick premix carpet with seal coat with mechanical paver. (Sqm)	2100 2310 Sqm	@	600/-	12.60 lacs
				250/-	15.75 lacs
	TOTAL				Rs. 49.88
	Add 3% contingencies				Rs. 1.50
	TOTAL				Rs. 51.38
	Add 49% Department charges, price escalation, other for unforeseen charges.				Rs. 25.25
	TOTAL				Rs. 76.63

