



## Directorate of Town & Country Planning, Haryana

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Phone: 0172-2549349 e-mail:tcphry@gmail.com  
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To

Alton Buildtech Pvt. Ltd.,  
404, Jain Bhawan, 18/12,  
W.E.A, Karol Bagh,  
New Delhi-110005.

Memo No.LC-3106-JE(VA)-2016/

5144

Dated: 15/3/2016

**Subject: Approval of Service Plan/Estimates for AFFORDABLE GROUP HOUSING COLONY on the land measuring 5.5625 acres in the revenue estate of village Harsaru, Sector 88A & 89A, Distt. Gurgaon-(Licence No. 81 of 2014 dated 08.08.2014).**

Ref. With reference to Chief Administrator, HUDA memo no. 2459 dated 29.02.2016.

On the above cited subject, it is intimated that the service plans/ estimates of the above said Affordable Group Housing Colony have been got checked from the Chief Administrator, HUDA, Panchkula and as per estimated cost intimate them, you are required to furnish the bank guarantee of ₹ 185.04 Lacs on account of Internal Development Works against which you have already furnished the bank guarantee of ₹ 69.5313 Lacs against Internal Development Works. You are therefore requested to furnish the additional bank guarantee of ₹ 115.5087 Lacs on account of Internal Development Work and also submit the approved electrical service plan estimates from the concerned power utility in this office immediately so that the matter for approval of service plans/estimates could be considered.

(S.K. SEHRAWAT)

District Town Planner (HQ)

For Director General, Town & Country Planning  
Haryana Chandigarh



**SERVICE ESTIMATE, DESIGN REPORT AND CALCULATIONS OF  
EXTERNAL DEVELOPMENT WORKS**

**FOR**

**PROPOSED AFFORDABLE GROUP HOUSING SCHEME OF THE LAND  
MEASURING 5.5625 ( LICENSE NO.81 OF 2014 DATED 08/08/2014 IN  
SECTOR-88A&89A, AT GURGAON (HARYANA)**

**OWNER**

**M/S ALTON BUILDTECH INDIA PVT. LTD.**

  
*Vinish*  
Vinish Kr. Singh, Architect  
Council of Architecture  
Registration No. CA/2009/3000

  
*Pawan*

**SERVICE ESTIMATE, DESIGN REPORT AND CALCULATIONS OF  
EXTERNAL DEVELOPMENT WORKS FOR PROPOSED AFFORDABLE GROUP HOUSING OF  
THE LAND MEASURING 5.5625 ( LICENSE NO.81 OF 2014 DATED 08/08/2014 IN SECTOR-  
88A&89A, AT GURGAON (HARYANA)**

**REPORT**

The proposed project is for group housing at Gurgaon. Everyone knows the fact why Gurgaon is developing so fast, the main reason behind it is that the Gurgaon is hardly 25 to 30 KM away from Delhi. Being in the National Capital Region the Gurgaon town has fast developing tendency and potential, further Haryana Govt. has also started sharing the growing industrial/commercial load of Delhi and Faridabad. Keeping in view the above facts Haryana Govt, has decided to establish various sectors for Institutional, Group Housing, Mall Multiplex and Commercial Complex buildings in Gurgaon. The above-mentioned group housing building is being developed by M/s ALTON BUILDTECH INDIA PVT. LTD. Client is submitting the same for your reference and approval. This report and estimate is for area measuring approximately 5.5625 Acres.

**WATER SUPPLY**

The source of water supply shall be HUDA water supply connection. It has been proposed to construct centralized underground tanks of capacity as per attached details for domestic and other purpose. The under ground tank will be filled from the HUDA riser and then pumped to the overhead water tanks of each tower. The water supply system has been designed as per Hazen Williams formula.

**DESIGN**

The scheme has been designed for the population as given in attached sheets.

**PUMPING EQUIPMENTS**

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.

**SEWERAGE SCHEME**

This scheme is designed for sewer connecting the centralized sewage treatment plant to treat the sewage and to use for horticulture and flushing purpose and excess sewage line will be connected to the proposed HUDA sewer, passing along the road. The sewerage system has been marked on the 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 90 % 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/RCC pipe sewer line, construction of required number of manholes etc., have been made in the estimate.

Necessary design statement for entire sewerage system has been prepared and attached with estimate.

### **STORM WATER DRAINAGE**

We propose to construct under ground pipe drain, which will be connecting rain water harvesting system for recharge the aquifer and surplus storm water will be allowed to flow to the HUDA drain along the road. Minimum size of 400 mm pipe storm water line will be provided and designed as per Manning's formula.

### **FIRE**

As per N.B.C fire tanks and require capacity pumps have been provide 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.E as laid down by the Haryana Govt. /HUDA.

### **Roads**

Cost of road has been taken in the estimate.

### **Street Lighting**

Provision for lighting on surrounding area has been made.

### **Horticulture**

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

### **Rates**

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 be Rs ~~657.93~~ <sup>988.36</sup> Lacs (~~Rupees Six Crore Fifty Seven Laes & Ninety three Thousand only~~) including 3% contingencies & 49% departmental charges. Price escalation, unforeseen Admin charges.

**M/S ALTON BUILDTECH INDIA PVT. LTD.**



**Authorized Signatory**



1 DETAILS FOR DAILY WATER CONSUMPTION (PART-A)					
I Total Water Demand					
S No.	TOWER	TOTAL UNIT	PERSON/UNIT	POPULATION <i>Persons</i>	Water Requirement @ 172.5 LPCD
a.	Tower-A1(S+12)	120	5	600	103500
b.	Tower-A2(S+12)	120	5	600	103500
c.	Tower-A3(S+12)	120	5	600	103500
d.	Tower-A4(S+12)	120	5	600	103500
e.	Community hall(45 lpcd)	200 sqmt	1Per/1.5sqmt	134	6030
f.	Anganwadi Cum Creche	200 sqmt	1Per/1.5sqmt	134	6030
g.	Floating Population	<i>@ 15 LPA</i>		267	4005
h.	Staff			47	2115
					<i>432180 Ltrs.</i>
<b>Grand Total</b>					<b>432172</b>
<b>Total Domestic &amp; flushing Water per day demand</b>					<b>432.10 KL</b>
Say					<b>432 KL</b>
<b>Domestic Consumption @ (65% of residential &amp; 35% of other amenity)</b>					281 KL
<b>Flushing Consumption @ (35% of residential &amp; 65% of other amenity)</b>					151 KL
<b>STP CAPACITY @ ( 90% Of Total Water Demand )</b>					389 KLD
Say					<b>390 KLD</b>
II. Horticultural water requirement (Organized Green)					
1982 mtr @ 2.5 ltr/sqmt /Per Day(Horticulture) <i>0.97 acre @ 25KL /ACRE</i>					4.95 KL <i>24.25 KL</i>
III. Fire demand					
					250 KL
					<i>456.25</i>
<b>Total water demand (except fire)</b>					<b>456.9 KL</b>
2. Type of water & Type of Source					
I Domestic water demand/ day (From Bore well/HUDA)					281 KL
II Flushing water demand /day (From STP)					151 KL
III Horticulture (From STP)					4.95 KL <i>24.25</i>

*met from treated effluent*



<b>3.</b>	<b>HUDA Main water Supply Calculation</b>		
<b>a</b>	Required Fresh Water per Day	281	KL
<b>b</b>	Supply Duration	10:49 <del>20</del>	Hrs
<b>c</b>	Line Flow Rate	<del>0.447</del> <sup>0.169</sup> <sub>2.34</sub>	(Cum/ Min)
<b>d</b>	Proposed line dia.	80	mm
<b>e</b>	Flow Velocity.	1.48	(m/sec)
<b>f</b>	Friction Head Loss /1000m	55.25	Mtr
<b>g</b>	Length of line	40	Mtr
<b>h</b>	Total Head Loss	2.21	Mtr
<b>4.</b>	<b>TOTAL U.G. TANK</b>		
<b>i</b>	<b>TOTAL U.G. STORAGE DOMESTIC &amp; RAW TANK</b>	<b>400</b>	<b>KL</b>
<b>ii</b>	<b>FIRE WATER TANK</b>	<b>250</b>	<b>KL</b>
<b>iii</b>	<b>TOTAL U.G. STORAGE FLUSHING (Flushing &amp; horticulture) (IN STP)</b>	<b>240</b>	<b>KL</b>
	Therefore it is proposed to construct under ground tank of		
	<b>FIRE TANK – 250 KL = 125 KL X 2 nos</b>		
	<b>RAW WATER TANK- 200 KL = 100 KL X 2 nos</b>		
	<b>DOMESTIC WATER TANK – 200 KL = 100 KL X 2 nos</b>		
	<b>FLUSHING WATER TANK – 240 KL = 120 KL X 2 nos</b>		
	<b>Fire , Raw, Domestic water tanks are at One location</b>		
	<b>Flushing water tank located in STP</b>		
<b>5</b>	<b>PUMPS FOR DOMESTIC WATER SUPPLY FOR (Tower A1+A2+A3+A4+Community hall +Anganwadi+ floating +staff ) = (0.65) X (432.17kl+) = 281 KL</b>		
<b>i</b>	Potable Water Requirement Per Day for (all Towers )	281	KL
<b>ii</b>	Pumping duration per day	8	Hrs
<b>iii</b>	Suction lift	0	Mtr
<b>iv</b>	Clear Head Required	45	Mtr
<b>v</b>	Residual Head	10	Mtr
<b>vi</b>	Friction Head Loss	12	Mtr
<b>vii</b>	Total head required	67	Mtr
<b>viii</b>	Discharge of Pump = $281/8 = 35.1 \text{ cu.m/hr} = 585.4 \text{ lpm}$	<del>585.4</del> <sup>Say 70 m</sup> <sub>Say 590 lpm</sub>	
<b>ix</b>	Power Required (Lpm*head (m))/(4500*.65(effi))	<del>13.4</del>	HP
	<del>Say</del> $\frac{590 \times 70}{4500 \times 0.65}$	<del>14.12</del> <sup>Say 15 BHP</sup>	HP



6.	PUMPS FOR FLUSHING WATER SUPPLY FOR (Tower A1+A2+A3+A4+Community hall +Anganwadi+ floating +staff) = (0.35) X (432.17kl+) = 151 KL		
i	Flushing Water Requirement Per Day	151	175.25 KL
ii	Pumping duration per day	8	Hrs
iii	Suction lift	0	Mtr
iv	Clear Head Required	45	Mtr
v	Residual Head	10	Mtr
vi	Friction Head Loss	18	Mtr
vii	Total head required	73	73 Mtr
viii	Discharge of Pump = $151/8 = 18.9$ cu.m/hr = 315 lpm		Say 365 lpm
ix	Power Required (Lpm*head (m)/4500*.65(effi))	7.86	HP
	say	8	HP

$$\frac{365 \times 75}{4500 \times 0.65} = 9.35 \text{ HP}$$

Say 10 HP

### 7. Irrigation pump

- Proposed Pump discharges
- Proposed pumping for irrigation (1 working + 1 stand)
- Max Clear Head required
- HP of each pump required

$$\text{Pump - HP} = \frac{60 \times 40}{60 \times 75 \times 0.65}$$

$$\frac{60 \text{ lpm}}{40 \text{ Mtrs.}} = 1 \text{ hp}$$

Say 1 HP Each

8.	PUMPS FOR FIRE PROTECTION					
i	PUMPS DESCRIPTION	LOCATION	NOS	DISCHARGE (LPM)	HEAD IN Mtr	HP
ii	DIESEL PUMP	PUMP ROOM	1	2280	90	
iii	FIRE PUMP	PUMP ROOM	1	2280	90	70 (Dead Load)
iv	JOCKEY .PUMP	PUMP ROOM	1	180	90	6

### 9. Tube well.

Approx. discharge of tube well = 15 KL/hour and working for 16 hours /day

- Total domestic Water demand = 281KL/day
  - Number of tube wells  $281 / 15 \times 16 = 1.17$
- Add 10% as standby = 0.117



~~Total~~

~~= 1.287~~

SAY

= 1 Nos

Proposed Tube well shall be ~~7~~ Nos (~~1W~~ + 1 Standby)

Entire water to the proposed development is to be supplied by HUDA and therefore, it is proposed to install tube wells as standby.

**Pumping machinery for tube well**

Gross working head	= 80.0 m
Average fall in S.L.	= 5.0 m
Depression head	= 5.0 m
Friction loss in main	= 10.0 m
	-----
	= 100.00 m

HP = 250 (Lpm) x 100(head)/(4500x0.65) = 8.55 SAY = 10 H.P.

10.	Equipment Description	No's		Each power cons (HP)	Total Power (HP)	
i.)	DOMESTIC WATER SUPPLY	(1W+1S)		<del>14</del> 15	<del>14</del> 15	
ii.)	FLUSHING WATER SUPPLY	(1W+1S)		<del>8</del> 10	<del>8</del> 10	
<del>iii.)</del>	<del>IRRIGATION PUMP</del>	<del>(1W+1S)</del>		<del>1</del>	<del>1</del>	
iv)	JOCKEY PUMP			<del>6</del> 7.50	<del>6</del> 7.50	
v.)	TUBE WELL			10	10	
				SAY	<del>39</del> 42.50	HP
					<del>29</del>	KW
					42.50 x 0.746 x 1.50	
					<del>45.31</del> 47.55	KVA
				SAY	<del>45</del>	KVA
11.	Equipment Description	No's		Each power cons (HP)	Total Power (HP)	
					<del>89</del> 50 KVA	

Requirement of ~~45~~<sup>50</sup> KVA capacity will be added in to the main D.G. set to provide stand by supply.





1 DETAILS FOR DAILY WATER CONSUMPTION (PART-B)					
I Total Water Demand					
S No.	TOWER	TOTAL UNIT	PERSON/UNIT	POPULATION	Water Requirement @ 172.5 LPCD
a.	Tower-B1(S+14)	179	5	895	154388
b.	Tower-B2(S+14)	179	5	895	154388
c.	Floating Population <i>for commercial</i>			179 <i>e 15ltr</i>	2685
h.	Staff <i>for commercial</i>			28 <i>e 25ltr</i>	1286
	<b>Grand Total</b>				<b>312731</b>
	<b>Total Domestic &amp; flushing Water per day demand</b>				312.7 KL
				<b>Say</b>	<b>313 KL</b>
	<b>Domestic Consumption @ (65% of residential &amp; 35% of other amenity)</b>				203 KL
	<b>Flushing Consumption @ (35% of residential &amp; 65% of other amenity)</b>				109.6 KL
	<b>STP CAPACITY @ ( 90% Of Total Water Demand )</b>				281.3 KLD
				<b>Say</b>	<b>281 KLD</b>
II.	<b>Horticultural water requirement (Organized Green)</b>				
	1317.75 mtr @ 2.5 ltr /sqmt /Per Day(Horticulture)				5.27 KL
III.	<b>Fire demand</b>				<b>250 KL</b>
	<b>Total water demand (except fire)</b>				<b>317.8 KL</b>
2.	<b>Type of water &amp; Type of Source</b>				
I	Domestic water demand/ day (From Bore well/HUDA)				203 KL
II	Flushing water demand /day (From STP)				109.6KL
III	Horticulture (From STP)				5.27 KL



<b>3.</b>	<b>HUDA Main water Supply Calculation</b>		
a	Required Fresh Water per Day	203	KL
b	Supply Duration	<del>7.58</del> 20	Hrs
c	Line Flow Rate	<del>0.446</del> 0.169	(Cum/Min)
d	Proposed line dia.	80	mm
e	Flow Velocity.	1.48	(m/sec)
f	Friction Head Loss /1000m	55.82	Mtr
g	Length of line	50	Mtr
h	Total Head Loss	2.79	Mtr
<b>4.</b>	<b>TOTAL U.G. TANK</b>		
i	TOTAL U.G. STORAGE DOMESTIC & RAW TANK	400	KL
ii	FIRE WATER TANK	250	KL
iii	TOTAL U.G. STORAGE FLUSHING (Flushing & horticulture) (IN STP)	240	KL
	Therefore it is proposed to construct under ground tank of		
	FIRE TANK - 250 KL = 125 KL X 2 nos =	250 KL	
	RAW WATER TANK- 200 KL = 100 KL X 2 nos =	200 KL	
	DOMESTIC WATER TANK - 200 KL = 100 KL X 2 nos =	200 KL	
	FLUSHING WATER TANK - 180 KL = 90 KL X 2 nos =	180 KL	
	Fire , Raw, Domestic water tanks are at One location		
	Flushing water tank located in STP		
<b>5</b>	<b>PUMPS FOR DOMESTIC WATER SUPPLY FOR (Tower B1+B2+ floating +staff) = (0.65) X (313kl+) = 203 KL</b>		
i	Potable Water Requirement Per Day for (all Towers )	203	KL
ii	Pumping duration per day	8	Hrs
iii	Suction lift	0	Mtr
iv	Clear Head Required	50	Mtr
v	Residual Head	10	Mtr
vi	Friction Head Loss	10	Mtr
vii	Total head required	70	Mtr
viii	Discharge of Pump = $203/8 = 25.3 \text{ cu.m/hr} = 423 \text{ lpm}$	Say 425 lpm	
ix	Power Required (Lpm*head (m))/(4500*.65(effi))	10.17	HP
	Say	10.00	HP
	$425 \times 70$		
	$4500 \times 0.65$		



6.	PUMPS FOR FLUSHING WATER SUPPLY FOR (Tower B1+B2+ floating +staff) = (0.35) X (313kl+) = 109.6 KL		
i	Flushing Water Requirement Per Day	109.6 + 5.27 = 114.87	KL
ii	Pumping duration per day	8	Hrs
iii	Suction lift	0	Mtr
iv	Clear Head Required	50	Mtr
v	Residual Head	10	Mtr
vi	Friction Head Loss	10.6	Mtr
vii	Total head required	115 + 14.375 + 239.56 = 368.935	Mtr
viii	Discharge of Pump = 109.6/8 = 13.6 cu.m/hr = 227 lpm	Say = 250 lpm	
ix	Power Required (Lpm*head (m)/4500*.65(effi)	5.4	HP
	say	5.5	HP

$$\frac{250 \times 70}{4500 \times 0.65} = 7.50$$

### 7. Irrigation pump

- a. Proposed Pump discharges
- b. Proposed pumping for irrigation (1 working + 1 stand) = 50 lpm
- c. Max Clear Head required = 40 Mtrs.
- d. HP of each pump required

$$\text{Pump - HP} = \frac{50 \times 40}{60 \times 75 \times 0.65} = 1 \text{ hp}$$

Say 1 HP Each

8.	PUMPS FOR FIRE PROTECTION					
i	PUMPS DESCRIPTION	LOCATION	NOS	DISCHARGE (LPM)	HEAD IN Mtr	HP
ii	DIESEL PUMP	PUMP ROOM	1	2280	90	
iii	FIRE PUMP	PUMP ROOM	1	2280	90	70 (Dead Load)
iv	JOCKEY .PUMP	PUMP ROOM	1	180	90	6

### 9. Tube well.

Approx. discharge of tube well = 15 KL/hour and working for 16 hours /day

- a) Total domestic Water demand = 203KL/day
- b) Number of tube wells 203 /15x16 = 0.84
- ~~Add 10% as standby = 0.08~~



Total

= 0.924

SAY

= 1 No

Proposed Tube well shall be 2 Nos (1 W + 1 Standby)

Entire water to the proposed development is to be supplied by HUDA and therefore, it is proposed to install tube wells as standby.

**Pumping machinery for tube well**

Gross working head = 80.0 m  
 Average fall in S.L. = 5.0 m  
 Depression head = 5.0 m  
 Friction loss in main = 10.0 m  
 -----  
 = 100.00 m

HP = 250 (Lpm) x 100(head)/(4500x0.65) = 9.25  
 = 8.55 SAY = 10 H.P.

10.	Equipment Description	No's		Each power cons (HP)	Total Power (HP)	
i.)	DOMESTIC WATER SUPPLY	(1W+1S)		10	10	
ii.)	FLUSHING WATER SUPPLY	(1W+1S)		7.5	7.5	
<del>iii.)</del>	<del>IRRIGATION PUMP</del>	<del>(1W+1S)</del>		<del>1</del>	<del>1</del>	
iv)	JOCKEY PUMP			6 7.50	6 7.50	
v.)	TUBE WELL			10	10	
				SAY	22.9 - 35	HP
					17	KW
					26.56 39.16	KVA
				SAY	27 - 46	KVA
11.	Equipment Description	No's		Each power cons (HP)	Total Power (HP)	

Requirement of 40 KVA capacity will be added in to the main D.G. set to provide stand

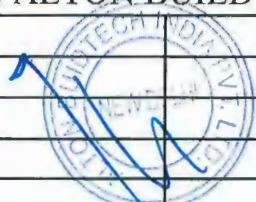


**HOUSING OF THE LAND MEASURING 5.5625 ( LICENSE NO.81 OF 2014 DATED 08/08/2014 IN SECTOR-88A&89A, AT GURGAON (HARYANA)**

**FINAL ABSTRACT OF COST**

		Amount in Rs. Lacs
SUB WORK NO. I	WATER SUPPLY SCHEME	<del>280.51</del> 269.11 287.12
SUB WORK NO. II	SEWERAGE SCHEME	<del>144.76</del> 149.67 182.73
SUB WORK NO. III	STORM WATER DRAINAGE	<del>54.60</del> 58.35 70.10
SUB WORK NO. IV	ROADS & FOOT PATHS	75.53 175.13
SUB WORK NO. V	STREET LIGHTING	9.79 21.35
SUB WORK NO. VI	PLANTATION & ROAD SIDE TREES	8.47 3.73
SUB WORK NO. VII	MAINTENANCE CHARGES & SURFACING OF ROAD	92.02 248.20
	<b>TOTAL</b>	<del>680.41</del> <b>988.36</b> 657.93

FOR :M/S ALTON BUILDTECH INDIA PVT. LTD



$$\frac{988.36 \text{ Lacs}}{5.5625 \text{ Acre}} = \text{Rs. } 177.68 \text{ per Acre}$$

$$\frac{680.41 \text{ Lacs}}{5.5625 \text{ Acre}} = \text{Rs. } 122.4 \text{ per Acre}$$

**AUTHORISED SIGNATORY**

Checked subject to comments in forwarding letter No. 24/1/19 Dt. 29/1/16 and notes attached with the estimate

**Superintending Engineer**  
**HUDA Circle No. 1,**  
**Gurgaon**

**Executive Engineer**  
**HUDA, Division No. II**  
**Gurgaon**

**Executive Engineer**  
**for Chief Engineer**  
**HUDA Panchkula**

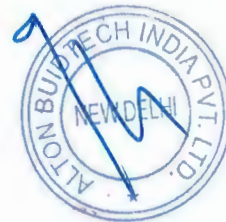
**Vinish Kr. Singh, Architect**  
**Council of Architecture**  
**Registration No. CA/2005/364**



**SERVICE ESTIMATE, DESIGN REPORT AND CALCULATIONS OF  
EXTERNAL DEVELOPMENT WORKS FOR PROPOSED AFFORDABLE GROUP  
HOUSING OF THE LAND MEASURING 5.5625 ( LICENSE NO.81 OF 2014 DATED  
08/08/2014 IN SECTOR-88A&89A, AT GURGAON (HARYANA)**

SUB WORK No. 1		Water Supply & Fire Fighting
1	Sub Head No. 01 Water Supply distribution <i>inc. Fire fighting</i> <i>Head Works (DWT + Flushing)</i>	<del>11,449,275.00</del> <i>126.47 Lacs</i>
2	Sub Head No. 02 Pumping Machinery	<del>4,845,000.00</del> <i>53.20 Lacs</i>
3	Sub Head No. 03 Water Supply Rising Main from HUDA	<del>543,000.00</del> <i>6.47 Lacs</i>
4	Sub Head No. 05 Water supply Irrigation	<del>698,000.00</del> <i>0.95 Lacs</i>
	<b>TOTAL</b>	<del>17,535,275.00</del> <i>182.78</i>
	Add 3% contingencies & PE Charges	<del>526,058.25</del> <i>5.48</i>
	<b>TOTAL</b>	<del>18,061,333.25</del> <i>188.26</i>
	Add 49% Departmental charges, price escalation, unforeseen, Admin.	<del>8,850,053.29</del> <i>92.25</i>
	<b>TOTAL</b>	<del>26,911,386.54</del> <i>280.51</i>
	<b>SAY IN LAKHS</b>	<del>269.11</del> <i>280.51</i>

C.O. to final abstract of cost



*Vinish*  
Vinish Kr. Singh, Architect  
Council of Architecture  
Registration No. CA/2005/364



		Head works			
Sub -Work No. 1		Water Supply & Fire Fighting			
Sub -Head No. 01		Water Supply distribution			
		(Dom. + Flushing)			
SL.NO	Description	Unit	Qty	Rate	Amount
1	Boring and installing 510 mm i/d tube wells with reverse rotary rig complete with pipe and strainer to depth of about 120 m. Complete with cost of pumping set <b>Part (A+B+C)</b>				<b>300000/-</b>
		Each	<b>35</b>	1000000.00	3,500,000.00
2	Provision for rising mains, connection borewells with water main and Bye-pass arrangements.				
a.	<b>100</b> mm dia	M	<b>232</b>	<b>1250/-</b>	<b>2.90 las</b>
			<del>364</del>	<del>4400.00</del>	<del>400,400.00</del>
3	Provision for water supply risers from pump room <del>risers</del> <b>line</b> (DOMESTIC WATER SUPPLY)				
a.	<del>32</del> mm dia	M	<del>52</del>	<del>450.00</del>	<del>23,400.00</del>
b.	<del>65</del> mm dia	M	<del>369</del>	<del>950.00</del>	<del>341,050.00</del>
c.	<del>80</del> mm dia	M	<del>214</del>	<del>1000.00</del>	<del>214,000.00</del>
d.	100 mm dia	M	<b>820</b>	<b>120.00</b>	<b>10.25 las</b>
e.	150 mm dia	M	<b>85</b>	<b>1575/-</b>	<b>1.34 las</b>
4	Provision for water supply risers from pump room (FLUSHING WATER SUPPLY)				
a.	25 mm dia	M	29	475.00	13,775.00
b.	50 mm dia	M	545	550.00	299,750.00
c.	65 mm dia	M	61	950.00	57,950.00
d.	80 mm dia	M	102	1000.00	102,000.00
5	Provision & Fixing valve. <b>incl. cost of brick masonry chamber complete in all 20 specs</b>				
a.	20 mm dia	Each	2	650.00	1,300.00
b.	32 mm dia	Each	1	950.00	950.00
c.	40 mm dia	Each	6	1500.00	9,000.00
d.	50 mm dia	Each	6	2500.00	15,000.00
e.	65 mm dia	Each	4	4000.00	16,000.00
f.	100 mm dia	Each	<b>10 + 10 = 20</b>	<b>18000.00</b>	<b>2.40 las</b>
g.	150 mm dia	Each	<b>2</b>	<b>18000.00</b>	<b>0.30 las</b>
6	Provision for carriage of materials	LS			100,000.00
7	Construction of U.G Tanks <b>55+450+450 = 950 KL 3500/- Per KL</b> 1000 KL @ Rs.3000 /KL <b>incl. 550 KL Fire Fighting, 420 KL for Flushing</b> <b>near STP 1375m at three locations</b>	KL	1890	3000.00	<b>48.13 las</b>
					<b>665000/-</b>
8	Provision for construction of Tubewell chambers of Size 1.5x1.5x1.5 m for Housing tubewell	Each	<b>3</b>	100000.00	<b>300000/-</b>
					<b>500,000.00</b>
					<b>99,94,275/-</b>
	<b>TOTAL</b>				<b>11,449,275.00</b>
	(C/O To Abstract of cost for subwork No.1) SAY				<b>114.49 Lakhs</b>

9. Prov. for fire fighting arrangement with m.s. Pipe lines for rising main inc. cost of fighting valves etc.

150m. dia = 895 mtr @ Rs 1875/- Per mtr

80m. dia = 125 mtr @ Rs 1000/- Per mtr

10. Prov. for fire hydrants

25 no @ Rs 10,000/- each

11. Prov. for slide valve 150m. dia = 3 no @ Rs: 10,000/-

Rs:- 11540400/-

126.47 las



Material statement For tube well					
SL. NO	NAME OF PIPE LINE	DIA (MM)	LENGTH		
1	<del>TUBE WELL UGT</del>	<del>80</del>	<del>364</del>		
Material statement of domestic & flushing Rising Main (See Enclosed Sheet Annexure-IA & IB)					
Sub -Work No. 1			Water Supply & Fire Fighting		
Sub -Head No. 02			Pumping Machinery		
SL. NO	Description	Unit	Qty	Rate	Amount
1	Providing and installing electricity driven/pumping set for domestic and flushing supply complete with motor and other accessories				
	Domestic Pump for ALL TOWER (1W+1S) <del>590</del> LPM at 70 M Head @ <del>15</del> HP FOR PART-A	Each	(1+1) 2 No.	2.00 lacs <del>187500.00</del>	₹ 4.00 lacs <del>375,000.00</del>
	Domestic Pump for all ALL TOWER (1W+1S) 423 LPM at 70 M Head @ 10HP FOR PART-B	Each	(1+1) 2 No.	175000.00	350,000.00
	Flushing Pump for All towers (1W+1S) <del>365</del> LPM at 75 M Head @ <del>10</del> HP for part A	Each	(1+1) 2 No.	125000.00	250,000.00
	Flushing Pump for All towers (1W+1S) <del>280</del> LPM at 70 M Head @ <del>5.5</del> HP for part -B	Each	(1+1) 2 No.	100000.00	200,000.00
	Irrigation Pump for 50 LPM at 40 M Head @ 1 HP for part A	Each	<del>2</del> No.	10000.00	20,000.00
	Irrigation Pump for 40 LPM at 40 M Head @ 1 HP for part-B	Each	<del>2</del>	10000.00	<del>20,000.00</del>

2) Providing and installing electrically driven electro or submersible sets with service cable delivering about 15 KL per hrs. against a total head of 120 m complete with motor and other accessories  
3 Nos @ ₹s. 2.00 Lacs each

₹s 6.00 lacs





3	Providing and installing pumping set of following capacities for Fire protection.					
	180 lpm at 90M head (15 HP)			2.00		
	Each	2	120,000.00		4.00	240,000.00
	2280 lpm at 90 M head (70HP)					
	Each	2	400000.00			800,000.00
	2280 lpm at 90 M head DG pump					
	Each	2	500000.00			1,000,000.00
4	Provision for chlorination plant complete					2,00,000.00
	Each	2	100000.00			100,000.00
5	Provision for making foundations and erection of Pumping Machinery.					
	LS					200000.00
6	Provision for carriage of material and other unforeseen Items etc.					
	LS					100,000.00
7	Provision for pipes, valves and specially inside the pump chamber and boosting chamber					
	LS					100,000.00
8	Provision for electric service connection including electrical fitting for bore well and boosting chamber					
	LS			3.00	3.00	3,00,000.00
	9 Transformer (3 Locations)					100,000.00
9	Provision for Gen. set of 45KVA capacity for part A					
	50 LS			(1.5)	3.00	550,000.00
10	Provision for Gen. set of 27KVA capacity for part b					
	40 LS			(6.5)	2.00	400,000.00
	<b>Total cost of Abstract of cost for Subwork No.1</b>				50.45	4,845,000.00
	<b>SAY</b>					48.45 Lakhs

53.20 Lacs 50.45 Lacs



SL.NO	Description	Unit	Qty	Rate	Amount
Sub -Work No. 1		Water Supply & Fire Fighting			
Sub -Head No. 03		Water Supply Rising Main from HUDA			
1	Providing , laying, jointing and testing pipe lines including Cost of excavation etc. complete in all respects .				
	100 mm dia.	Each	275	1000.00	275,000.00
	100 mm dia.	Each	30	1200.00	36,000.00
2	Providing and fixing sluice valve including cost of surface box and masonry chamber etc. completed in all respects.				
	100 mm i/d	Each	2	9000.00	18,000.00
3	Providing and fixing indicating plates for sluice valve and air Valves .				
		Each	2	1000.00	2,000.00
4	Providing and fixing scour valve. .				
		Each	2	7500.00	15,000.00
5	Provision for carriage for materials and other unforeseen items .				
		LS			50,000.00
6	Provision for cutting of roads and making good to its original condition				
		LS			50,000.00
7	Making water supply connection with HUDA Master W/S Line on 60 mt <sup>2</sup> Road				
		Each			1,00,000.00
Total cost of Abstract of cost for Subwork No.1					543,000.00
SAY					5.43 Lakhs
Material statement of HUDA Rising Main					
Line Name	Dia in MM	Length			6.47 Lacs
CITY LINE	100	35			
CITY LINE TO PARTA,PARTB	100	275			
		305 m			



Sub -Work No. 1				Water supply & Fire fighting	
Sub -Head No. 04				Water supply Irrigation	
SL . NO	Description	Unit	Qty	Rate	Amount
1	Providing , Laying, Jointing and testing pipe line including cost of excavation etc. complete in all respect.				
	<del>25/20 mm Garden Hydrant line</del>				0.50 Lacs
a	<del>50 mm dia connect to Plumbing line</del>	M	890	<del>550</del>	<del>489,500.00</del>
2	Providing and fixing 20 mm dia irrigation hydrant Valve complete in all respect.				0.35 Lacs
		Each	10	3500	408,500.00
3	Provision for carriage of Material and other as foreseen Items.				0.10 Lacs
					50,000.00
4	<del>Provision for cutting of roads and making good to its original condition</del>				
		LS			50,000.00
<b>Total cost of Abstract of cost for Subwork No.1</b>					<b>698,000.00</b>
<b>SAY</b>					<b>0.95 Lacs</b>
					<b>6.98 Lakhs</b>
Material statement of irrigaton line (See Enclosed Sheet Annexure-II)					



Sub -Work No. II				Sewerages Scheme	
SL. NO	Description	Unit	Qty	Rate	Amount
1	Providing, jointing, cutting and testing .S W pipe class "A" and lowering into trenches including cost of Excavation, bed concrete, cost of manholes etc.				
a	250 mm dia	M	22	1800 /- <i>Rs</i>	39,600.00
b	300 mm dia	M	664	2000 /- <i>Rs</i>	1,328,000.00
2	Provision for CI pipe From STP <i>to</i> outfall by pumping.				
a	C.I. pipe 150 mm	M	323	4500 /- <i>1575/-</i>	1,455,000.00 <i>Rs 1.89 lacs</i>
3	Provision for lighting and watching, <i>timbering strings etc</i>				0.50 lacs
		LS			100,000.00
4	Provision for vent pipe as per P.E requirement				
		LS			100,000.00
5	Provision for cartage of material an other unforeseen items. <i>Cutting of roads as making good do its in original condition</i>				
		LS			100,000.00
6	Provision for making HUDA connection. <i>with HUDA line on master road upto plant for STP.</i>				1,00,000.00 <i>1.00 lacs</i>
7	Provision for STP 0.678 MLD <i>upto tertiary level treatment (65)</i>				7,500,000.00 <i>7500000/- 100-00 lacs</i>
TOTAL				<i>9432100/-</i>	9,752,100.00 <i>119.07 lacs</i>
Add 3% contingencies & PE charges				<i>2829631/-</i>	292,563.00
TOTAL				<i>47150631/-</i>	10,044,663.00 <i>3.57 lacs</i>
Add 49% Departmental charges, price escalation Unforeseen, Admin.				<i>4760381/-</i>	4,921,884.87 <i>122.64 lacs</i>
TOTAL				<i>144754447/-</i>	14,966,547.87 <i>60.09 lacs</i>
SAY					149.67 Lakhs <i>182.73 lacs</i>
Material statement of sewer line (See Enclosed Sheet Annexure-III)				<i>Rs-144.76 lacs</i>	

Length of S.W. pipe

250 mm  $\phi$  = 22 m for Block (Sec-88A)

300 mm  $\phi$  = 441 m + 223 m = 664 m (For Block A & B)

Sec-89A



Sub -Work No. III			Storm Water Scheme		
SL.NO	Description	Unit	Qty	Rate	Amount
1	1. Providing and laying R.C.C. pipe drain class NP-3 with cement joint, manholes excavation etc complete in all respect including refilling earth.				
a	400 mm dia.	M	<del>997</del> 1027	<del>1750</del>	1,744,750.00
<del>B</del>	<del>500 mm dia.</del>	<del>M</del>	<del>17</del>	<del>2200</del>	<del>37,400.00</del>
2	Provision for road gullies with pipe connection 300mm d	LS			500,000.00
3	Provision for roof top rain harvesting arrangement - Recharge pit (for 6 Pit with twin bore )	Each	6	<del>20000</del> 25000	<del>120,000.00</del> 150,000.00
4	Provision for carriage of material and unforeseen items				50,000.00
5	Provision for timbering & shoring	LS			<del>100,000.00</del> 0.50 Lacs
6	Provision for making connection to MAIN line . on master head	LS			100,000.00
7	Provision for Lighting ,watching arragment	LS			50,000.00
8	Provision for cutting of roads and making good to its	LS			<del>100,000.00</del> 0.50
<del>9</del>	<del>Provision for temporary disposal arrangement</del>	LS			<del>4,000,000.00</del> 300,000.00
TOTAL				<del>3882150</del>	3,802,150.00
Add 3% for contingencies and PE charges.				<del>116465</del>	114,064.50
TOTAL				<del>3998615</del>	3,916,214.50
Add 49% Departmental charges, price escalation,				<del>1459371</del>	1,918,945.11
TOTAL SAY				<del>5457986</del>	5,835,159.61
					58.35 Lakhs
Material statement of strom line (See Enclosed Sheet Annexure-IV)					Rs. = 54.60 Lacs.

### 400 mm $\phi$ RCC NP. 3 Pipe line

Part - A = 526 mh

Part - B = 379 mh

Part - C = 122 mh

1027 mh

Qty as given  
on attached plan



Sub -Work No.IV				Roads and Footpaths	
SL .NO	Description	Unit	Qty	Rate	Amount
1	Provision for leveling and earth filling as Per site condition 5.1015 acres	Acre	<del>5.1015</del> 5.5625	<del>150000</del> 8.34 Lacs	637,687.50
2 (i)	Construction of roads by providing granular sub base 300 mm as per MORT & H specification conforming to clause 401 grading B 400.1				
(ii)	Providing ,laying,spreading & compacting hand broken/ crushed stone aggregate to wet mix macadam conforming to physical requirement laid in 400 of 300 mm GSB 250 mm stone aggregate MORT &H specification in two layers (compacted to 250 mm (125+125) by taking material 1.32 times of the (thickness of the layer) including per mixing of material with water in mechanical mixer .				
(iii)	50 mm thick BM				
(iv)	20 mm thick mix seal surfacing (BC)	sqmt.	<del>3894.54</del> 9920	<del>850</del> 1000/-	<del>3,310,359.00</del> 99.20 Lacs
3	Provision for kerb and channels of CC M35	M	<del>1047.5</del> 780	<del>550</del> 600/-	<del>576,125.00</del> 4.68 Lacs
	Provision of Paved Path CC in M30	sqmt.	<del>4190</del>	<del>250</del>	<del>1,047,500.00</del>
4	Provision for making approach to each block and I. Pavement				0.50 Lacs 100,000.00
5	Provision for guide map and other unforeseen items and Indicating board etc.				0.50 Lacs 40,000.00
6	Provision for parking arrangement	LS			50,000.00
7	Provision for carriage of material and other unforeseen items.	LS			40,000.00
			TOTAL		<del>5,801,671.50</del>
	Add 3% contingencies & PE Charges				114.12 474,050.15 3.42 Lacs
			TOTAL		5,975,721.65
	Add 49% Departmental charges, price escalation, unforeseen, Admin.				117.54 2,928,103.61 57.59 Lacs
			TOTAL		8,903,825.25
			SAY		175.13 Lacs 89.04 Lakhs
Material statement of road (See Enclosed Sheet Annexure-V)					



Sub -Work No.V			Street Lighting		
SL.NO	Description	Unit	Qty	Rate	Amount
1	Providing Street lighting on roads as l. per standard specification of HVPN				
		Acre	5.1015	2.50 lac/Acre <del>125000</del>	13.91 lac <del>637,687.50</del>
			<b>TOTAL</b>		<b>13.91</b> <del>637,687.50</del>
	Add 3% contingencies & PE Charges				19,130.63
			<b>TOTAL</b>		<b>0.42</b>
	Add 49% Departmental charges, price escalation, unforeseen, Admin.				321,840.88
			<b>TOTAL</b>		<b>14.33</b> <del>656,818.13</del>
			<b>SAY</b>		<b>7.02</b>
					<b>21.35</b> <del>978,659.01</del>
					<b>9.79 Lakhs</b>

C.G. to final abstract of work



Sub -Work No.VI			Plantation and road side trees		
SL.NO	Description	Unit	Qty	Rate	Amount
1	Development of lawn area 0.75 Acres <i>3927.63 Sqm</i>	Acre	0.9705	150000	145,575.00
a	Trenching the ordinary soil up to dept of 60cm including removal and stacking serviceable material and disposing of by spreading and leveling within a lead of 50m and making up the trenches area to proper leads 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 turfed area				
c	Grassing with "Doob Grass" including watering and IV. Maintenance of lawns for 30 days till the grass forms a thick lawn, free from weeds and fit for moving in rows 7.5 m Apart in either direction 1.76 Acres @ 100000 per acre				
2	Providing 1 trees, guards and planting trees along road at 6 m interval Total road length = <i>780/12 = 638</i> No of Tress = 106.33 say = <i>107</i> <i>130</i> <i>(@ 12 m for both side)</i>				
<b>Cost Analysis of Planting Trees</b>					
	Excavation = 30 each				
	Manure = <i>60</i> each				
	Tree plants = <i>80</i> each				
	Tree guards = 600 each = Rs.750 per tree				
	<i>750/</i>	Each	<i>130</i> <i>107</i>	750/-	<i>0.98 Lacs</i> 80,250.00
			<b>TOTAL</b>		<i>2.44 Lacs</i> <b>225,825.00</b>
		Add 3% contingencies & PE Charges			<i>0.07 Lacs</i> 6,774.75
			<b>TOTAL</b>		<b>232,599.75</b>
		Add 49% Departmental charges, price escalation, unforeseen, Admin.			<i>2.51 Lacs</i> <i>1.22 Lacs</i> 113,979.88
			<b>TOTAL</b>		<b>346,573.63</b>
			<b>SAY</b>		<i>3.73 Lacs</i> <b>3.47 Lakhs</b>





SL.NO	Description	Amount
1	Provision for maintenance charges for water supply, sewerage, storm water drainage, roads, street light, horticulture etc. complete including operation and establishment charges as per HUDA norms after completion.	
	<i>5.5625</i>	<i>27.81 lacs</i>
	Acre <del>6.1015</del> 500000	<del>2,550,750.00</del>
2	Provision for resurfacing of roads after 1st 5 years of maintenance i.e by providing 50mm thick B.M. with 20 mm thick Premix Carpet.	
	<i>9920</i>	<i>59.52 lacs</i>
	<del>3894.54</del> 600	<del>2,336,724.00</del>
3	Provision for resurfacing of roads after 10 years of maintenance i.e by providing 20 mm thick Premix Carpet.	
	<i>9920</i>	<i>74.40 lacs</i>
	<del>3895</del> <i>750</i> / <del>300</del>	<del>1,168,362.00</del>
	TOTAL	<i>161.73</i> 6,055,836.00
	Add 3% contingencies & PE Charges	<i>4.85 lacs</i> 181,675.08
	TOTAL	<i>166.58 lacs</i> 6,237,511.08
	Add 49% Departmental charges, price escalation, unforeseen, Admin.	<i>81.62 lacs</i> 3,056,380.43
	TOTAL	<i>248.20 lacs</i> 9,293,891.51
	SAY	92.94 Lakhs

*c.o. to final aspect of cost*



SEWER DESIGN FOR PART-A																									
SI	LINE			TOTAL POPULATION @ 5 per /unit	Total Water Requirement t. @ 172.5 lpcd	TYPE OF BUILDING	Total Daily Water Requirement in Litre	Self	Peak Load @ 3X Av. Load	Subsoil Infiltration @25% of Av Load	Self Discharge	Branch Discharge	Total Discharge	Total Discharge	Length of line	Dia of Pipe	Slope 1 IN	Fall in Line	Velocity In	Capacity of Pipe	CHECK FOR CARRYING CAPACITY	STARTING (G.L)	STARTING (I.L)	END(G.L)	END(I.L)
NO.	FROM	TO	NO OF main UNIT																						
1.0	A1	A2	15	75	12937.5	TOWER-A4	12938	10350	31050	2587.5	33638	0	33638	0.39	11	300	250	0.04	0.75	26.51	OK	0.00	-900	0.00	-944
2.0	A2	A4	15	75	12937.5	TOWER-A4	12938	10350	31050	2587.5	33638	33638	67275	0.78	21	300	250	0.08	0.75	26.51	OK	0.00	-944	0.00	-1028
3.0	A3	A4	15	75	12937.5	TOWER-A4	12938	10350	31050	2587.5	33638	0	33638	0.39	12	300	250	0.05	0.75	26.51	OK	0.00	-1028	0.00	-1076
4.0	A4	A6	15	75	12937.5	TOWER-A4	12938	10350	31050	2587.5	33638	100913	134550	1.56	9	300	250	0.04	0.75	26.51	OK	0.00	-900	0.00	-936
5.0	A5	A6	15	75	12937.5	TOWER-A3	12938	10350	31050	2587.5	33638	0	33638	0.39	12	300	250	0.05	0.75	26.51	OK	0.00	-936	0.00	-984
6.0	A6	A8	15	75	12937.5	TOWER-A3	12938	10350	31050	2587.5	33638	168188	201825	2.34	22	300	250	0.09	0.75	26.51	OK	0.00	-1076	0.00	-1164
7.0	A7	A8	15	75	12937.5	TOWER-A3	12938	10350	31050	2587.5	33638	0	33638	0.39	13	300	250	0.05	0.75	26.51	OK	0.00	-1164	0.00	-1216
8.0	A8	A10	15	75	12937.5	TOWER-A3	12938	10350	31050	2587.5	33638	235463	269100	3.11	8	300	250	0.03	0.75	26.51	OK	0.00	-900	0.00	-932
9.0	A9	A10	15	75	12937.5	TOWER-A2	12938	10350	31050	2587.5	33638	0	33638	0.39	14	300	250	0.06	0.75	26.51	OK	0.00	-932	0.00	-988
10.0	A10	A12	15	75	12937.5	TOWER-A2	12938	10350	31050	2587.5	33638	302738	336375	3.89	22	300	250	0.09	0.75	26.51	OK	0.00	-988	0.00	-1076
11.0	A11	A12	15	75	18967.5	TOWER-A2+anganwa	18968	15174	45522	3793.5	49316	0	49316	0.57	14	300	250	0.06	0.75	26.51	OK	0.00	-1076	0.00	-1132
12.0	A12	A14	15	75	12937.5	TOWER-A2	12938	10350	31050	2587.5	33638	385691	419328	4.85	8	300	250	0.03	0.75	26.51	OK	0.00	-900	0.00	-932
13.0	A13	A14	15	75	18967.5	TOWER-A1+community	18968	15174	45522	3793.5	49316	0	49316	0.57	14	300	250	0.06	0.75	26.51	OK	0.00	-1132	0.00	-1188
14.0	A14	A15	15	75	12937.5	TOWER-A1	12938	10350	31050	2587.5	33638	468644	502281	5.81	20	300	250	0.08	0.75	26.51	OK	0.00	-1216	0.00	-1296
15.0	A15	A16	15	75	12937.5	TOWER-A1	12938	10350	31050	2587.5	33638	502281	535919	6.20	9	300	250	0.04	0.75	26.51	OK	0.00	-900	0.00	-936



SI NO.	LINE		NO OF main UNIT	TOTAL POPULATION @ 5 per /unit	Total Water Requirement t. @ 172.5 lpcd	TYPE OF BUILDING	Total Daily Water Requirement in Litre	Self	Peak Load @ 3X Av. Load	Subsoil Infiltration @25% of Av Load	Self Discharge	Branch Discharge	Total Discharge	Total Discharge	Length of line	Dia of Pipe	Slope 1 IN	Fall in Line	Velocity in	Capacity of Pipe	CHECK FOR CARRYING CAPACITY	STARTING	STARTING	END(G.	END(I.L)										
	FROM	TO																				(G.L)	(I.L)	(L)	(I.L)										
																					LPD	LPD	LPD	LPD	LPD	LPS	Mtr	MM	Mtr	m/sec	lps				
16.0	A16	A32	15	75	12937.5	TOWER-A1	12938	10350	31050	2587.5	33638	535919	569556	6.59	13	300	250	0.05	0.75	26.51	OK	0.00	-936	0.00	-988										
17.0	A17	A18	15	75	12937.5	TOWER-A4	12938	10350	31050	2587.5	33638	0	33638	0.39	12	300	250	0.05	0.75	26.51	OK	0.00	-988	0.00	-1036										
18.0	A18	A20	15	75	12937.5	TOWER-A4	12938	10350	31050	2587.5	33638	33638	67275	0.78	21	300	250	0.08	0.75	26.51	OK	0.00	-1296	0.00	-1380										
19.0	A19	A20	15	75	12937.5	TOWER-A4	12938	10350	31050	2587.5	33638	0	33638	0.39	11	300	250	0.04	0.75	26.51	OK	0.00	-1330	0.00	-1374										
20.0	A20	A22	15	75	12937.5	TOWER-A4	12938	10350	31050	2587.5	33638	100913	134550	1.56	9	300	250	0.04	0.75	26.51	OK	0.00	-900	0.00	-936										
21.0	A21	A22	15	75	12937.5	TOWER-A3	12938	10350	31050	2587.5	33638	0	33638	0.39	11	300	250	0.04	0.75	26.51	OK	0.00	-936	0.00	-980										
22.0	A22	A24	15	75	12937.5	TOWER-A3	12938	10350	31050	2587.5	33638	168188	201825	2.34	22	300	250	0.09	0.75	26.51	OK	0.00	-900	0.00	-988										
23.0	A23	A24	15	75	12937.5	TOWER-A3	12938	10350	31050	2587.5	33638	0	33638	0.39	12	300	250	0.05	0.75	26.51	OK	0.00	-1374	0.00	-1422										
24.0	A24	A26	15	75	12937.5	TOWER-A3	12938	10350	31050	2587.5	33638	235463	269100	3.11	8	300	250	0.03	0.75	26.5	OK	0.00	-1374	0.00	-1406										
25.0	A25	A26	15	75	12937.5	TOWER-A2	12938	10350	31050	2587.5	33638	0	33638	0.39	18	300	250	0.07	0.75	26.51	OK	0.00	-900	0.00	-972										
26.0	A26	A28	15	75	12937.5	TOWER-A2	12938	10350	31050	2587.5	33638	302738	336375	3.89	22	300	250	0.09	0.75	26.51	OK	0.00	-972	0.00	-1060										
27.0	A27	A28	15	75	12937.5	TOWER-A2	12938	10350	31050	2587.5	33638	0	33638	0.39	10	300	250	0.04	0.75	26.51	OK	0.00	-1060	0.00	-1100										
28.0	A28	A30	15	75	12937.5	TOWER-A2	12938	10350	31050	2587.5	33638	370013	403650	4.67	8	300	250	0.03	0.75	26.51	OK	0.00	-1100	0.00	-1132										
29.0	A29	A30	15	75	12937.5	TOWER-A1	12938	10350	31050	2587.5	33638	0	33638	0.39	10	300	250	0.04	0.75	26.51	OK	0.00	-1132	0.00	-1172										
30.0	A30	A31	15	75	12937.5	TOWER-A1	12938	10350	31050	2587.5	33638	437288	470925	5.45	20	300	250	0.08	0.75	26.5	OK	0.00	-1422	0.00	-1502										
29.0	A31	A32	15	75	12937.5	TOWER-A1	12938	10350	31050	2587.5	33638	470925	504563	5.84	15	300	250	0.06	0.75	26.51	OK	0.00	-1502	0.00	-1562										
30.0	A32	STP	15	75	12937.5	TOWER-A1	12938	10350	31050	2587.5	33638	1074119	1107756	12.82	10	300	250	0.04	0.75	26.5	OK	0.00	-972	0.00	-1012										

31. STP To STP of Part B ——— 150 M. dia ———



**SEWER DESIGN FOR PART-B**

SI NO.	LINE			TOTAL POPULATION @ 5 per/unit	Total Water Requirement @ 172.5 lpcd	TYPE OF BUILDING	Total Daily Water Requirement in Litre		Peak Load @ 3X Av. Load LPD	Subsoil Infiltration @25% of Av Load LPD	Self Discharge LPD	Branch Discharge LPD	Total Discharge LPD	Total Discharge LPS	Length of line Mtr	Dia of Pipe MM	Slope 1 IN	Fall in Line Mtr	Velocity In m/sec	Capacity of Pipe Ips	CHECK FOR CARRYING CAPACITY	STARTING (G.L)	STARTING (I.L)	END(G. L)	END(I.L)
	FROM	TO	NO OF main UNIT				Self LPD	Total LPD																	
1.0	A1	A2	17	85	14662.5	TOWER-B2	14663	11730	35190	2932.5	38123	0	38123	0.44	8	300	250	0.03	0.75	26.51	OK	0.00	-900	0.00	-932
2.0	A2	A3	17	85	14662.5	TOWER-B2	14663	11730	35190	2932.5	38123	38123	76245	0.88	8	300	250	0.03	0.75	26.51	OK	0.00	-932	0.00	-964
3.0	A3	A4	17	85	14662.5	TOWER-B2	14663	11730	35190	2932.5	38123	76245	114368	1.32	13	300	250	0.05	0.75	26.51	OK	0.00	-964	0.00	-1016
4.0	A4	A5	17	85	14662.5	TOWER-B2	14663	11730	35190	2932.5	38123	114368	152490	1.76	12	300	250	0.05	0.75	26.51	OK	0.00	-1016	0.00	-1064
5.0	A5	A6	17	85	14662.5	TOWER-B2	14663	11730	35190	2932.5	38123	152490	190613	2.21	7	300	250	0.03	0.75	26.51	OK	0.00	-1064	0.00	-1092
6.0	A6	A7	17	85	14662.5	TOWER-B2	14663	11730	35190	2932.5	38123	190613	228735	2.65	8	300	250	0.03	0.75	26.51	OK	0.00	-1092	0.00	-1124
7.0	A7	A8	17	85	14662.5	TOWER-B2	14663	11730	35190	2932.5	38123	228735	266858	3.09	15	300	250	0.06	0.75	26.51	OK	0.00	-1124	0.00	-1184
8.0	A8	A9	17	85	14662.5	TOWER-B1	14663	11730	35190	2932.5	38123	266858	304980	3.53	9	300	250	0.04	0.75	26.51	OK	0.00	-1184	0.00	-1220
9.0	A9	A10	17	85	14662.5	TOWER-B1	14663	11730	35190	2932.5	38123	304980	343103	3.97	12	300	250	0.05	0.75	26.51	OK	0.00	-1220	0.00	-1268
10.0	A10	A11	17	85	14662.5	TOWER-B1	14663	11730	35190	2932.5	38123	343103	381225	4.41	13	300	250	0.05	0.75	26.51	OK	0.00	-1268	0.00	-1320
11.0	A11	A12	17	85	20692.5	TOWER-B1	20693	16554	49662	4138.5	53801	381225	435026	5.04	11	300	250	0.04	0.75	26.51	OK	0.00	-1320	0.00	-1364
12.0	A12	A21	17	85	14662.5	TOWER-B1	14663	11730	35190	2932.5	38123	435026	473148	5.48	21	300	250	0.08	0.75	26.51	OK	0.00	-1364	0.00	-1448
13.0	A13	A14	17	85	20692.5	TOWER-B1	20693	16554	49662	4138.5	53801	0	53801	0.62	9	300	250	0.04	0.75	26.51	OK	0.00	-900	0.00	-936
14.0	A14	A15	17	85	14662.5	TOWER-B1	14663	11730	35190	2932.5	38123	53801	91923	1.06	10	300	250	0.04	0.75	26.51	OK	0.00	-936	0.00	-976
15.0	A15	A16	17	85	14662.5	TOWER-B1	14663	11730	35190	2932.5	38123	91923	130046	1.51	8	300	250	0.03	0.75	26.51	OK	0.00	-976	0.00	-1008
16.0	A16	A17	17	85	14662.5	TOWER-B1	14663	11730	35190	2932.5	38123	130046	168168	1.95	8	300	250	0.03	0.75	26.51	OK	0.00	-1008	0.00	-1040
17.0	A17	A18	17	85	14662.5	TOWER-B1	14663	11730	35190	2932.5	38123	168168	206291	2.39	8	300	250	0.03	0.75	26.51	OK	0.00	-1040	0.00	-1072
18.0	A18	A19	17	85	14662.5	TOWER-B1	14663	11730	35190	2932.5	38123	206291	244413	2.83	9	300	250	0.04	0.75	26.51	OK	0.00	-1072	0.00	-1108
19.0	A19	A20	17	85	14662.5	TOWER-B1	14663	11730	35190	2932.5	38123	244413	282536	3.27	10	300	250	0.04	0.75	26.51	OK	0.00	-1108	0.00	-1148
20.0	A20	A21	17	85	14662.5	TOWER-B1	14663	11730	35190	2932.5	38123	282536	320658	3.71	13	300	250	0.05	0.75	26.51	OK	0.00	-1148	0.00	-1200
21.0	A21	STP	17	85	14662.5	TOWER-B1	14663	11730	35190	2932.5	38123	793806	831929	9.63	11	300	250	0.04	0.75	26.51	OK	0.00	-1448	0.00	-1492

22. STP B to HVDA line 150mm dia



SEWER DESIGN FOR PART-COMMERCIAL BLOCK

SI NO.	LINE		NO OF main UNIT	TOTAL POPULATION	Total Water Requirement @45 lpcd	TYPE OF BUILDING	Total Daily Water Requirement in Litre	Self	Peak Load @ 3X Av. Load	Subsoil Infiltration @25% of Av Load	Self Discharge	Branch Discharge	Total Discharge	Total Discharge	Length of line	Dia of Pipe	Slope 1 IN	Fall in Line	Velocity In	Capacity of Pipe	CHECK FOR CARRYING CAPACITY	STARTING (G.L)	STARTING (I.L)	END(G.L)	END(I.L)
	FROM	TO																							
1.0	A1	A2	0	137	6165	COMMERCIAL BLOCK	6165	4932	14796	1233	16029	0	16029	0.19	5	250	170	0.03	0.81	19.77	OK	0.00	-900	0.00	-929
2.0	A2	A3	0	0	0	COMMERCIAL BLOCK	0	0	0	0	0	16029	16029	0.19	7	250	170	0.04	0.81	19.77	OK	0.00	-929	0.00	-971
3.0	A3	S.T.P	0	0	0	COMMERCIAL BLOCK	0	0	0	0	0	16029	16029	0.19	10	250	170	0.06	0.81	19.77	OK	0.00	-971	0.00	-1029
4.0																									
5.0																									
6.0																									
7.0																									

TOTAL LENGTH  
 250 MM DIA= 22  
 300 MM DIA= 664

*STP To MVDA line = 150 dia*

*Total length of 150m-dia for STP (Part-A) To STP (Part-B) and STP (Part-B) to MVDA line of STP (Part-C) To MVDA line*



**DESIGN CHART FOR WATER SUPPLY SYSTEM (Domestic) FOR PART-A**

SL NO	LINE NO	No of Main Unit for TOWER	TOTAL POPULATION@ 5 per /unit	TOTAL WATER REQ@172.5 LPD	DOMESTIC@6 5% OF TOTAL WATER	TOTAL DOMESTICWATER REQ.PER DAY(SELF)	PROGRESSIVE WATER REQ. IN LPD	TOTAL DOMESTICWATER REQ.PER DAY	PUMP WORKING 8 HOURS	SELF WATER REQ IN LPM	LENGTH OF PIPE	HEAD LOSS MTR/ MTR	TOTAL HEAD LOSS IN MTRS	VELOCITY IN M/SEC	SIZE OF RISER PIPE IN MM Dia
1	PUMP ROOM- D11		0	0	0	0	269100	269100	33638	561	4	0.003	0.01	0.440	150
2	D11-D10		0	0	0	0	269100	269100	33638	561	6	0.003	0.02	0.440	150
3	D10-D9		0	0	0	0	269100	269100	33638	561	37	0.003	0.10	0.440	150
4	D9-D8		0	0	0	0	269100	269100	33638	561	34	0.003	0.09	0.440	150
5	D8-D7		0	0	0	0	67275	67275	8409	140	26	0.012	0.32	0.586	65
6	D7-TOWERA1		0	0	0	0	67275	67275	8409	140	10	0.012	0.12	0.586	65
7	TowerA1- OHT	120	600	103500	67275	67275	0	67275	8409	140	45	0.012	0.55	0.586	65
8	D8-D6		0	0	0	0	201825	201825	25228	420	31	0.011	0.35	0.743	100
9	D6-D5		0	0	0	0	67275	67275	8409	140	26	0.012	0.32	0.586	65
10	D5-TOWERA2		0	0	0	0	67275	67275	8409	140	9	0.012	0.11	0.586	65
11	TOWERA2-OHT	120	600	103500	67275	67275	0	67275	8409	140	45	0.012	0.55	0.586	65
12	D6-D4		0	0	0	0	134550	134550	16819	280	30	0.016	0.48	0.774	80
13	D4-D3		0	0	0	0	67275	67275	8409	140	26	0.012	0.32	0.586	65
14	D3-TOWER-A3		0	0	0	0	67275	67275	8409	140	8	0.012	0.10	0.586	65
15	TOWE-A3- OHT	120	600	103500	67275	67275	0	67275	8409	140	45	0.012	0.55	0.586	65
16	D3-D2		0	0	0	0	67275	67275	8409	140	36	0.012	0.44	0.586	65
17	D2-D1		0	0	0	0	67275	67275	8409	140	24	0.012	0.29	0.586	65
18	D1- TOWER-A4		0	0	0	0	67275	67275	8409	140	14	0.012	0.17	0.586	65
19	TOWER-A4- OHT	120	600	103500	67275	67275	0	67275	8409	140	45	0.012	0.55	0.586	65

**DESIGN CHART FOR WATER SUPPLY SYSTEM (Domestic) FOR PART-B**

SL NO	LINE NO	No of Main Unit for TOWER	TOTAL POPULATION@ 5 per /unit	TOTAL WATER REQ@172.5 LPD	DOMESTIC@6 5% OF TOTAL WATER	TOTAL DOMESTICWATER REQ.PER DAY(SELF)	PROGRESSIVE WATER REQ. IN LPD	TOTAL DOMESTICWATER REQ.PER DAY	PUMP WORKING 8 HOURS	SELF WATER REQ IN LPM	LENGTH OF PIPE	HEAD LOSS MTR/ MTR	TOTAL HEAD LOSS IN MTRS	VELOCITY IN M/SEC	SIZE OF RISER PIPE IN MM Dia
1	PUMP ROOM- D4		0	0	0	0	200704	200704	25088	418	4	0.011	0.05	0.739	100
2	D4-D3		0	0	0	0	206057	206057	25757	429	6	0.012	0.07	0.759	100
3	D3-TOWER-B2		0	0	0	0	100353	100353	12544	209	37	0.009	0.34	0.577	80
4	TOWER-B2- OHT	179	895	154387.5	100352	100352	0	100352	12544	209	34	0.009	0.32	0.577	80
5	D3-D2		0	0	0	0	100352	100352	12544	209	26	0.009	0.24	0.577	80
6	D2-D1		0	0	0	0	100352	100352	12544	209	10	0.009	0.09	0.577	80
7	D1-TOWER-B1		0	0	0	0	100352	100352	12544	209	45	0.009	0.42	0.577	80
8	TOWER-B1- OHT	179	895	154387.5	100352	100352	0	100352	12544	209	31	0.009	0.29	0.577	80
9															



**DESIGN CHART FOR WATER SUPPLY SYSTEM (Domestic) FOR COMMERCIAL BLOCK**

SL NO	LINE NO	No of Main Unit for TOWER	TOTAL POPULATION	TOTAL WATER REQ@45 LPD	DOMESTIC@6 5% OF TOTAL WATER	TOTAL DOMESTIC WATER REQ.PER DAY(SELF)	PROGRESSIVE WATER REQ. IN LPD	TOTAL DOMESTIC WATER REQ.PER DAY	PUMP WORKING 4 HOURS	SELF WATER REQ IN LPM	LENGTH OF PIPE	HEAD LOSS MTR/ MTR	TOTAL HEAD LOSS IN MTRS	VELOCITY IN M/SEC	SIZE OF RISER PIPE IN MM Dia
1	PUMP ROOM- D3		0	0	0	0	5353	5353	1338	22	4	0.013	0.05	0.385	32
2	D3-D2		0	0	0	0	5353	5353	1338	22	30	0.013	0.38	0.385	32
3	D2-D1		0	0	0	0	5353	5353	1338	22	8	0.013	0.10	0.385	32
4	D1-OHT	0	183	8235	5353	5353	0	5353	1338	22	10	0.013	0.13	0.385	32
									TOTAL PIPES	32 MM=	52				
										65MM=	359				
										80 MM=	213				
										100 MM=	41				
										150 MM=	81				



**DESIGN CHART FOR WATER SUPPLY SYSTEM (FLUSHING) FOR PART-A**

SL NO	LINE NO	No of Main Unit	TOTAL POPULATION@ 5 per /unit	TOTAL WATER REQ@172.5 LPD	FLUSHING@ 35% OF TOTAL WATER	TOTAL WATER REQ.PER DAY(SELF)	PROGRESSIVE WATER REQ. IN LPD	TOTAL FLUSHINNNNG WATER REQ.PER DAY	PUMP WORKING 8 HOURS	SELF WATER REQ IN LPM	LENGTH OF PIPE	HEAD LOSS MTR/ MTR	TOTAL HEAD LOSS IN MTRS	VELOCIT Y IN M/SEC	SIZE OF RISER PIPE IN MM Dia
1	S.T.P- F9		0	0	0	0	144900	144900	18113	301.9	21	0.018	0.39	0.834	80
2	F9-F8		0	0	0	0	144900	144900	18113	301.9	26	0.018	0.48	0.834	80
3	F8-F7		0	0	0	0	36225	36225	4528	75.5	26	0.014	0.36	0.534	50
4	F7-TOWERA1		0	0	0	0	36225	36225	4528	75.5	10	0.014	0.14	0.534	50
5	TOWERA1-OHT	120	600	103500	36225	36225	0	36225	4528	75.5	50	0.014	0.69	0.534	50
6	F8-F6		0	0	0	0	108675	108675	13584	226.4	31	0.030	0.92	0.947	65
7	F6-F5		0	0	0	0	36225	36225	4528	75.5	24	0.014	0.33	0.534	50
8	F5-TOWER-A2		0	0	0	0	36225	36225	4528	75.5	9	0.014	0.13	0.534	50
	TOWER-A2-OHT	120	600	103500	36225	36225	0	36225	4528	75.5	20	0.014	0.28	0.534	50
10	F6-F4		0	0	0	0	72450	72450	9056	150.9	30	0.014	0.42	0.631	65
11	F4-F3		0	0	0	0	36225	36225	4528	75.5	26	0.014	0.36	0.534	50
12	F3-TOWERA3		0	0	0	0	36225	36225	4528	75.5	8	0.014	0.11	0.534	50
13	TOWER-A3-OHT	120	600	103500	36225	36225	0	36225	4528	75.5	50	0.014	0.69	0.534	50
14	F4-F2		0	0	0	0	36225	36225	4528	75.5	36	0.014	0.50	0.534	50
15	F2-F1		0	0	0	0	36225	36225	4528	75.5	24	0.014	0.33	0.534	50
16	F1-TOWER-A4		0	0	0	0	36225	36225	4528	75.5	14	0.014	0.19	0.534	50
17	TOWEA4- OHT	120	600	103500	36225	36225	0	36225	4528	75.5	50	0.014	0.69	0.534	50
18															
19															
25															





**DESIGN CHART FOR WATER SUPPLY SYSTEM (FLUSHING) FOR PART-B**

SL NO	LINE NO	No of Main Unit	TOTAL POPULATION@ 5 per /unit	TOTAL WATER REQ@172.5 LPD	FLUSHING@ 35% OF TOTAL WATER	TOTAL WATER REQ.PER DAY(SELF)	PROGRESSIVE WATER REQ. IN LPD	TOTAL FLUSHINNNNG WATER REQ.PER DAY	PUMP WORKING 8 HOURS	SELF WATER REQ IN LPM	LENGTH OF PIPE	HEAD LOSS MTR/ MTR	TOTAL HEAD LOSS IN MTRS	VELOCIT Y IN M/SEC	SIZE OF RISER PIPE IN MM Dia
1	S.T.P- F5		0	0	0	0	108071	108071	13509	225.1	28	0.011	0.30	0.622	80
2	F5-F4		0	0	0	0	108071	108071	13509	225.1	27	0.011	0.29	0.622	80
3	F4-F3		0	0	0	0	54036	54036	6755	112.6	8	0.029	0.23	0.796	50
4	F3-TOWER-B1		0	0	0	0	54036	54036	6755	112.6	5	0.029	0.15	0.796	50
5	TOWERB1- OHT	179	895	154387.5	54036	54036	0	54036	6754	112.6	50	0.029	1.46	0.796	50
6	F4-F2		0	0	0	0	54036	54036	6755	112.6	38	0.029	1.11	0.796	50
7	F2-F1		0	0	0	0	54036	54036	6755	112.6	39	0.029	1.14	0.796	50
8	F1-TOWER-B2		0	0	0	0	54036	54036	6755	112.6	8	0.029	0.23	0.796	50
	TOWER-B2- OHT	179	895	154387.5	54036	54036	0	54036	6754	112.6	50	0.029	1.46	0.796	50
10															

**DESIGN CHART FOR WATER SUPPLY SYSTEM (FLUSHING) FOR COMMERCIALBLOCK**

SL NO	LINE NO	No of Main Unit	TOTAL POPULATION	TOTAL WATER REQ@45	FLUSHING@ 35% OF TOTAL WATER	TOTAL WATER REQ.PER DAY(SELF)	PROGRESSIVE WATER REQ. IN LPD	TOTAL FLUSHINNNNG WATER REQ.PER DAY	PUMP WORKING 4 HOURS	SELF WATER REQ IN LPM	LENGTH OF PIPE	HEAD LOSS MTR/ MTR	TOTAL HEAD LOSS IN MTRS	VELOCIT Y IN M/SEC	SIZE OF RISER PIPE IN MM Dia
1	S.T.P- F2		0	0	0	0	5353	5353	1338	22.3	11	0.043	0.47	0.631	25
2	F2-F1		0	0	0	0	5353	5353	1338	22.3	8	0.043	0.34	0.631	25
3	F1-OHT		183	8235	0	5353	0	5353	1338	22.3	10	0.043	0.43	0.631	25
4															
5															
6								TOTAL PIPES	25MM=	29					
7									50MM=	545					
									65MM=	61					
									80MM=	102					



**DESIGN STATEMENT - STORM WATER DRAINAGE. FOR PART-A**

S.No.	DRAINAGE LINE		AREA SERVED			RUNOFF ASSUMING	DIA OF	GRADIENT	VELOCITY	DESIGN	CHECK FOR CARRYING CAPACITY	LENGTH (M)	FALL IN	starting	starting		
	MARKED AS		self(sq.m)	BRANCH(sq.m)	TOTAL(Sqm)	RF @ 1" (25MM)	PIPE	1/	m/sec	DISCHARGE.		OF LINE	METER	GL)	(IL)	End(GL)	End(IL)
	STARTING NODE	ENDING NODE				IN LPS.	IN MM			IN LPS				IN mm	IN mm	IN mm	IN mm
1	B1	B2	382	0	382	1.59	400	370	0.75	84.48	OK	13.0	0.04	100.00	99.10	100.00	99.06
2	B2	B3	382	382	764	3.18	400	370	0.75	84.48	OK	20.0	0.05	100.00	99.06	100.00	99.01
3	B3	B5	382	764	1146	4.78	400	370	0.75	84.48	OK	16.0	0.04	100.00	99.01	100.00	98.97
4	B4	B5	382	0	382	1.59	400	370	0.75	84.48	OK	21.0	0.06	100.00	99.10	100.00	99.04
5	B5	B6	382	1528	1910	7.96	400	370	0.75	84.48	OK	15.0	0.04	100.00	98.97	100.00	98.93
6	B6	B8	382	1910	2292	9.55	400	370	0.75	84.48	OK	15.0	0.04	100.00	98.93	100.00	98.89
7	B7	B8	382	0	382	1.59	400	370	0.75	84.48	OK	21.0	0.06	100.00	99.10	100.00	99.04
8	B8	B9	382	2674	3056	12.73	400	370	0.75	84.48	OK	15.0	0.04	100.00	98.89	100.00	98.85
9	B9	B11	382	3056	3438	14.33	400	370	0.75	84.48	OK	15.0	0.04	100.00	98.85	100.00	98.81
10	B10	B11	382	0	382	1.59	400	370	0.75	84.48	OK	21.0	0.06	100.00	99.10	100.00	99.04
11	B11	B12	382	3820	4202	17.51	400	370	0.75	84.48	OK	21.0	0.06	100.00	98.81	100.00	98.75
12	B12	RWHP-2	382	4202	4584	19.10	400	370	0.75	84.48	OK	8.0	0.02	100.00	98.75	100.00	98.73
13	RWHP-2	B13	0	4584	4584	19.10	400	370	0.75	84.48	OK	5.0	0.01	100.00	99.10	100.00	99.09
14	B13	B14	382	4584	4966	20.69	400	370	0.75	84.48	OK	34.0	0.09	100.00	99.09	100.00	98.99
15	B14	B15	382	4966	5348	22.28	400	370	0.75	84.48	OK	15.0	0.04	100.00	98.99	100.00	98.95
16	B15	RW3	382	5348	5730	23.88	400	370	0.75	84.48	OK	6.0	0.02	100.00	98.95	100.00	98.94
17	B16	B17	382	0	382	1.59	400	370	0.75	84.48	OK	17.0	0.05	100.00	99.10	100.00	99.05



**DESIGN STATEMENT - STORM WATER DRAINAGE. FOR PART-A**

S.No.	DRAINAGE LINE		AREA SERVED			RUNOFF ASSUMING	DIA OF	GRADIANT	VELOCITY	DESIGN	CHECK FOR CARRYING CAPACITY	LENGTH (M)	FALL IN	starting(	starting	End(GL)	End(IL)		
	MARKED AS		self(sqm)	BRANCH(sqm)	TOTAL(Sqm)	RF @ 1" (25MM)	PIPE	I/	m/sec	DISCHARGE.		OF LINE	METER	GL)	(IL)	IN mm	IN mm	IN mm	IN mm
	STARTING NODE	ENDING NODE				IN LPS.	IN MM			IN LPS					IN mm	IN mm	IN mm	IN mm	
18	B17	B18	382	382	764	3.18	400	370	0.75	84.48	OK	20.0	0.05	100.00	99.05	100.00	99.00		
19	B18	B20	382	764	1146	4.78	400	370	0.75	84.48	OK	16.0	0.04	100.00	99.00	100.00	98.96		
20	B19	B20	382	0	382	1.59	400	370	0.75	84.48	OK	17.0	0.05	100.00	99.10	100.00	99.05		
21	B20	B21	382	1528	1910	7.96	400	370	0.75	84.48	OK	15.0	0.04	100.00	98.96	100.00	98.92		
22	B21	B23	382	1910	2292	9.55	400	370	0.75	84.48	OK	15.0	0.04	100.00	98.92	100.00	98.88		
23	B22	B23	382	0	382	1.59	400	370	0.75	84.48	OK	15.0	0.04	100.00	99.10	100.00	99.06		
24	B23	B24	382	2674	3056	12.73	400	370	0.75	84.48	OK	15.0	0.04	100.00	98.88	100.00	98.84		
25	B24	B26	382	3056	3438	14.33	400	370	0.75	84.48	OK	15.0	0.04	100.00	98.84	100.00	98.79		
26	B25	B26	382	0	382	1.59	400	370	0.75	84.48	OK	15.0	0.04	100.00	99.10	100.00	99.06		
27	B26	B27	382	3820	4202	17.51	400	370	0.75	84.48	OK	15.0	0.04	100.00	98.79	100.00	98.75		
28	B27	B28	382	4202	4584	19.10	400	370	0.75	84.48	OK	9.0	0.02	100.00	98.75	100.00	98.73		
29	B28	RWHP-1	382	4584	4966	20.69	400	370	0.75	84.48	OK	7.0	0.02	100.00	98.73	100.00	98.71		
30	RWHP-1	B29	0	4966	4966	20.69	400	370	0.75	84.48	OK	4.0	0.01	100.00	99.10	100.00	99.09		
31	B29	B30	382	4966	5348	22.28	400	370	0.75	84.48	OK	14.0	0.04	100.00	99.09	100.00	99.05		
32	B30	RWHP-3	382	5348	5730	23.88	400	370	0.75	84.48	OK	4.0	0.01	100.00	99.05	100.00	99.04		
33	RWHP-3	B31	0	11460	11460	47.75	400	370	0.75	84.48	OK	52.0	0.14	100.00	99.04	100.00	98.90		



**DESIGN STATEMENT - STORM WATER DRAINAGE, FOR PART-B**

S.No.	DRAINAGE LINE		AREA SERVED			RUNOFF ASSUMING	DIA OF	GRADIENT,	VELOCITY	DESIGN	CHECK FOR CARRYING CAPACITY	LENGTH (M)	FALL IN	starting( GL)	starting (IL)	End(GL)	End(IL)
	MARKED AS		self(sqm)	BRANCH(sqm)	TOTAL(Sqm)	RF @ 1" (25MM)	PIPE	I/	m/sec	DISCHARGE.		OF LINE	METER				
	STARTING NODE	ENDING NODE				IN LPS.	IN MM			IN LPS							
1	B31	B32	382	11460	11842	49.34	400	370	0.75	84.48	OK	18.0	0.05	100.00	98.90	100.00	98.85
2	B32	B33	382	11460	11842	49.34	400	370	0.75	84.48	OK	18.0	0.05	100.00	98.85	100.00	98.80
3	B33	B34	382	11842	12224	50.93	400	370	0.75	84.48	OK	30.0	0.08	100.00	98.80	100.00	98.72
4	B34	B35	382	12224	12606	52.53	400	370	0.75	84.48	OK	29.0	0.08	100.00	98.72	100.00	98.64
5	B35	B36	382	12606	12988	54.12	400	370	0.75	84.48	OK	23.0	0.06	100.00	98.64	100.00	98.58
6	B36	B37	382	12988	13370	55.71	400	370	0.75	84.48	OK	16.0	0.04	100.00	98.58	100.00	98.54
7	B37	RWHP-4	382	13370	13752	57.30	400	370	0.75	84.48	OK	6.0	0.02	100.00	98.54	100.00	98.52
8	RWHP-4	B38	0	13752	13752	57.30	400	370	0.75	84.48	OK	3.0	0.01	100.00	98.52	100.00	98.51
9	B38	B39	382	13752	14134	58.89	400	370	0.75	84.48	OK	3.0	0.01	100.00	98.51	100.00	98.51
10	B39	B47	382	13752	14134	58.89	400	370	0.75	84.48	OK	29.0	0.08	100.00	98.51	100.00	98.43
11	B40	B41	382	14134	14516	60.48	400	370	0.75	84.48	OK	27.0	0.07	100.00	99.10	100.00	99.03
12	B41	B42	382	14516	14898	62.08	400	370	0.75	84.48	OK	33.0	0.09	100.00	99.03	100.00	98.94
13	B42	B45	382	14898	15280	63.67	400	370	0.75	84.48	OK	29.0	0.08	100.00	98.94	100.00	98.86
14	B43	B45	382	15280	15662	65.26	400	370	0.75	84.48	OK	25.0	0.07	100.00	99.10	100.00	99.03
15	B44	B45	382	15662	16044	66.85	400	370	0.75	84.48	OK	24.0	0.06	100.00	99.10	100.00	99.04
16	B45	B46	382	16044	16426	68.44	400	370	0.75	84.48	OK	18.0	0.05	100.00	99.03	100.00	98.98
17	B46	B47	382	16426	16808	70.03	400	370	0.75	84.48	OK	18.0	0.05	100.00	98.98	100.00	98.94
18	B47	RWHP-5	382	30942	31324	130.52	500	450	0.79	138.89	OK	7.0	0.02	100.00	98.94	100.00	98.92
19	RWHP-5	OUTFALL	0	31324	31324	130.52	500	450	0.79	138.89	OK	10.0	0.02	100.00	99.10	100.00	99.08
20																	



DESIGN STATEMENT - STORM WATER DRAINAGE. FOR COMMERCIAL

S.No.	DRAINAGE LINE		AREA SERVED			RUNOFF ASSUMING	DIA OF	GRADIENT	VELOCITY	DESIGN	CHECK FOR CARRYING	LENGTH (M)	FALL IN	starting	starting	End(GL) IN mm	End(IL) IN mm
	MARKED AS		self(sqm)	BRANCH(sqm)	TOTAL(Sqm)	RF @ 1" (25MM)	PIPE	1/	m/sec	DISCHARGE.		OF LINE	METER	GL)	(IL)		
	STARTING NODE	ENDING NODE				IN LPS.	IN MM			IN LPS				IN mm	IN mm		
1	B1	B2	382	0	382	1.6	400	370	0.75	84.48	OK	20.0	0.05	100.00	99.10	100.00	99.05
2	B2	B3	382	382	764	3	400	370	0.75	84.48	OK	12.0	0.03	100.00	99.05	100.00	99.01
3	B3	B4	382	764	1146	5	400	370	0.75	84.48	OK	24.0	0.06	100.00	99.01	100.00	98.95
4	B4	B7	382	1146	1528	6	400	370	0.75	84.48	OK	12.0	0.03	100.00	98.95	100.00	98.92
5	B5	B6	382	1528	1910	8	400	370	0.75	84.48	OK	26.0	0.07	100.00	98.92	100.00	98.85
6	B6	B7	382	1910	2292	10	400	370	0.75	84.48	OK	20.0	0.05	100.00	98.85	100.00	98.79
7	B7	RW1	382	2292	2674	11	400	370	0.75	84.48	OK	5.0	0.01	100.00	98.79	100.00	98.78
8	RW1	OUTFALL	0	2674	2674	11	400	370	0.75	84.48	OK	3.0	0.01	100.00	99.10	100.00	99.09
					<b>Total</b>												
					400 MM DIA							997					
					500 MM DIA							17					



**MATERIAL STATEMENT FOR TUBE WELL WORKS FOR PART-A**

S.NO.	LINE NO		PIPE DIA	LENGTH	PIPE IN 80MM Dia
	FROM	TO			
1	TUBE WELL-1	T3	100	134	134 ✓
<del>2</del>	<del>TUBE WELL-2</del>	<del>T3</del>	<del>80</del>	<del>3</del>	<del>3</del>
3	T3	UGT	100	10	10

144

**MATERIAL STATEMENT FOR TUBE WELL WORKS FOR PART-B**

1	<del>TUBE WELL-1</del>	<del>T2</del>	<del>80</del>	<del>80</del>	<del>80</del>
2	<del>T2</del>	<del>T4</del>	<del>80</del>	<del>45</del>	<del>45</del>
<del>3</del>	TUBE WELL-2	T2	100	20	20
<del>4</del>	<del>T3</del>	<del>T4</del>	<del>80</del>	<del>22</del>	<del>22</del>
5	T4	UGT	100	20	20

**MATERIAL STATEMENT FOR TUBE WELL WORKS FOR PART-COMMERCIAL BLOCK**

1	TUBE WELL-1	T1	100	2	2
2	T1	T2	100	30	30
3	T2	T3	100	12	12
4	T3	UGT	100	4	4
					48m

TOTAL  
80-MM 364

100mm  $\phi$  = 144 + 40 + 48 m = 232 m



**MATERIAL STATEMENT FOR EXTERNAL FIRE HYDRANT WORKS FOR PART-A**

S.NO.	LINE NO		PIPE DIA	LENGTH	PIPE IN 150 MM Dia
	FROM	TO			
1	FIRE PUMP	EFH0	150	8	8
2	EFH0	EFH1	150	10	10
3	EFH-1	EFH-2	150	45	45
4	EFH-2	EFH-3	150	45	45
5	EFH-3	EFH-4	150	45	45
6	EFH-4	EFH-5	150	45	45
8	EFH-5	EFH-6	150	45	45
9	EFH-6	EFH-7	150	45	45
10	EFH-7	EFH-8	150	45	45
11	EFH-8	EFH-9	150	45	45

**MATERIAL STATEMENT FOR EXTERNAL FIRE HYDRANT WORKS FOR PART-B**

1	FIRE PUMP	EFH0	150	10	10
2	EFH0	EFH1	150	12	12
3	EFH-1	EFH-2	150	45	45
4	EFH-2	EFH-3	150	45	45
5	EFH-3	EFH-4	150	45	45
6	EFH-4	EFH-5	150	45	45
7	EFH-5	EFH-6	150	45	45
8	EFH-6	EFH-7	150	45	45
9	EFH-7	EFH-8	150	45	45

**MATERIAL STATEMENT FOR EXTERNAL FIRE HYDRANT WORKS FOR COMMERCIAL BLOCK**

1	FIRE PUMP	EFH0	150	10	10
2	EFH0	EFH1	150	12	35
3	EFH-1	EFH-2	150	45	45
4	EFH-2	EFH-3	150	45	45
5	EFH-3	EFH-4	150	45	45
				<b>TOTAL</b>	<b>675-895mh</b>



**MATERIAL STATEMENT FOR GARDEN HYDRANT WORKS FOR PART-A**

S.NO.	LINE NO		PIPE DIA	LENGTH	PIPE IN 40 MM Dia	PIPE IN 50 MM Dia
	FROM	TO				
1	STP	GH1	50	60	0	60
2	GH1	GH2	50	60	0	60
3	GH2	GH3	50	60	0	60
4	GH3	GH4	50	60	0	60
5	GH4	GH5	50	60	0	60
6	GH5	GH6	50	60	0	60
7	GH6	GH7	50	60	0	60

**MATERIAL STATEMENT FOR GARDEN HYDRANT WORKS FOR PART-B**

S.NO.	LINE NO		PIPE DIA	LENGTH	PIPE IN 40 MM Dia	PIPE IN 50 MM Dia
	FROM	TO				
1	STP	GH1	50	25	0	25
2	GH1	GH2	50	60	0	60
3	GH2	GH3	50	60	0	60
4	GH3	GH4	50	60	0	60
5	GH4	GH5	50	60	0	60
6	GH5	GH6	50	60	0	60

**MATERIAL STATEMENT FOR GARDEN HYDRANT WORKS FOR COMMERCIAL BLOCK**

S.NO.	LINE NO		PIPE DIA	LENGTH	PIPE IN 40 MM Dia	PIPE IN 50 MM Dia
	FROM	TO				
1	STP	GH1	50	25	0	25
2	GH1	GH2	50	60	0	60
3	GH2	GH3	50	60	0	60

**TOTAL                      890****ANNEXTURE II**



**MATERIAL STATEMENT**

Pipe Diameter (in mm)	LENGTH (in meter) of RESPECTIVE DIAMETER PIPE USED										
	25	32	50	65	80	100	150	250	300	400	500
Garden Hydrant			890								
External Fire Hydrant							675				
Tube Well Work					364						
Water Supply Domestic		52		359	213	41	81				
Water Supply Flushing	29		545	61	102						
Storm Water Drainage										997	17
Sewer Discharge								22	664		
<b>Total Length</b>	<b>29</b>	<b>52</b>	<b>1435</b>	<b>420</b>	<b>679</b>	<b>41</b>	<b>756</b>	<b>22</b>	<b>664</b>	<b>997</b>	<b>17</b>



**FORM LC -V**  
(See Rule 12)  
**HARYANA GOVERNMENT**  
**TOWN AND COUNTRY PLANNING DEPARTMENT**

License No. 37 of 2014

This License has been granted under the Haryana Development and Regulation of Urban Areas Act, 1975 & the Rules 1976, made thereunder to Alton Buildtech India Pvt. Ltd., 404, Jain Bhawan, 18/12, W.E.A, Karol Bagh, New Delhi-110005 for setting up of AFFORDABLE GROUP HOUSING COLONY on the land measuring 5.5625 acres out of which land measuring 10K-2M or 1.2525 acres falling in alignment of 60 mtr wide sector road alongwith 12 mtr wide service road has been transferred to HUDA free of cost in compliance of condition no. 10 of the LOI dated 25.07.2014 (schedule of land enclosed) in the revenue estate of village Harsaru, Sector 88A & 89A, Gurgaon.

1. The License is granted subject to the following conditions:
  - a) That Affordable Group Housing Colony will be laid out in accordance with the approved building plans and development works are executed according to the designs and specifications shown in the approved plans.
  - b) That conditions of the agreements already executed are duly fulfilled and the provisions of Haryana Development and Regulation of Urban Areas Act, 1975 and the Rules 1976 made thereunder are duly complied with
  - c) That you shall submit the additional bank guarantee, if any required at the time of approval of Service Plans/Estimates. With an increase in the cost of construction and increase in the number of facilities in building Plan, you would be required to furnish an additional bank guarantee within 30 days on demand. It is made clear that bank guarantee of Internal Development Works/EDC has been worked out on the interim rates.
  - d) That you have understood that the development/construction cost of 24 m wide major internal roads is not included in the EDC rates and you shall pay the proportionate cost for acquisition of land if any, alongwith the construction cost of 24 m wide major internal roads as and when finalized and demanded by the Department.
  - e) That you shall arrange electric connection from HVPN/DHBVNL for electrification of your colony from HVPN and shall install the electricity distribution infrastructure as per the peak load requirement of the colony for which you shall get the electrical (distribution) service plan / estimates approved from the agency responsible for installation of external electric services i.e. HVPN/DHBVNL Haryana and complete the same before obtaining completion certificate for the colony.
  - f) That you shall make arrangements for water supply, sewerage, drainage etc. to the satisfaction of DGTCP till these services are made available from External Infrastructure to be laid by HUDA or any other Govt. Agency.
  - g) That you shall submit no objection certificate/approval, as required under notification dated 14.09.2006 issued by Ministry of Environment and Forest, Govt. of India before executing development works at site, in this office.

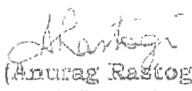
*[Signature]*

- h) That you shall obtain clearance from Competent Authority, if required under PLPA, 1900 and any other clearance required under any other law.
- i) That you shall maintain and upkeep all roads, open spaces, public parks and public health services for a period of five years from the date of issue of the completion certificate unless earlier relieved of this responsibility and thereupon to transfer all such roads, open spaces, public parks and public health services free of cost to the Govt. or the local authority, as the case may be in accordance with the provisions of Section 3.3),a(iii) of the Haryana Development and Regulation of Urban Areas Rules, 1976.
- jj) That you shall construct at his own cost, or get constructed by any other institution or individual at its cost, schools, hospitals, community centers and other community buildings on the lands set apart for this purpose, in a period as may be specified, and failing which action as per the Act / Rules shall be initiated. the land shall vest with the Government after such specified period, free of cost, in which case the Government shall be at liberty to transfer such-land to any person or institution including a local authority, for the said purposes, on such terms and conditions, as it may deem fit.
- k) That you shall deposit thirty per centum of the amount realised, from time to time, by you, from the plot holders within a period of ten days of its realisation in a separate account to be maintained in a scheduled bank. This amount shall only be utilised by you towards meeting the cost of internal development works in the colony.
- l) That you shall pay the labour cess charges as per policy dated 04.05.2010.
- m) That you shall provide the rain water harvesting system as per Central Ground Water Authority Norms/Haryana Govt. notification as applicable.
- n) That you shall make the provision of solar water heating system as per HAREDA guidelines and shall be made operational where applicable before applying for an Occupation Certificate.
- o) That you shall use only CFL fittings for internal as well as for campus lighting.
- p) That you shall submit compliance of Rule 24, 26, 27 & 28 of Rules 1976 & Section 5 of Haryana Development and Regulation of Urban Areas Act, 1975, and shall inform account number and full particulars of the scheduled Bank wherein you have to deposit thirty per centum of the amount from the Flat/shop buyers for meeting the cost of Internal Development Works in the colony.
- q) That you shall keep pace of the construction, at least in accordance with sale agreement executed with the buyers of the flats as and when scheme is launched, after approval of building plans.
- r) That you shall not create Third Party Right/ pre launch against the licensed land, before approval of building plans.
- s) That you shall submit the building plans within three months from the issuance of this license.
- t) That you have understood that provision of External Development facilities may take long time by HUDA, the licensor shall not claim any damages against the Department for loss occurred, if any.
- u) That you shall specify the detail of calculations per Sqm/per sq ft. which is being demanded from the owners on account of EDC, if being charged separately as per rates fixed by Govt.

- v) That you shall not use the ground water for the purpose of construction of building. The building plans shall be approved only after the source of water for construction purposal is explained to the satisfaction of HUDA in terms of orders of the Hon'ble High Court dated 16.07.2012 in CW's no. 20032 of 2008, 13594 of 2009 and 807 of 2012.
- w) That you shall permit the Director or any other officer authorized by him to inspect the execution of the layout and the development works in the colony and to carry out all directions issued by him for ensuring due compliance of the execution of the layout and development works in accordance with the license granted.
- x) That you shall obey all the directions/restrictions imposed by the Department from time to time in public interest.
- y) That you shall abide by the terms & conditions of the Affordable Housing Policy 2013, as notified on 19.08.2013.

3 The license is valid up to 7/8/2019.


Dated: The 8/8/2014  
Chandigarh

  
(Anurag Rastogi)  
Director General, Town & Country Planning  
Haryana, Chandigarh  
Email: tcphrv@gmail.com

Endst. No. LC-3106-JE/NA-2014/17792. Dated: 8/8/14.

A copy along with a copy of schedule of land is forwarded to the following for information and necessary action:-


1. Allen Buildtech India Pvt. Ltd., 404, Jain Bhawan, 18/12 W.E.S., Karol Bagh, New Delhi-110005 alongwith a copy of agreement, LC-fv 3 & Bilateral Agreement and Zoning Plan.
2. Chairman, Pollution Control Board, Haryana, Sector-6, Panchkula.
3. Chief Administrator, HUDA, Panchkula.
4. Chief Administrator, Housing Board, Panchkula alongwith copy of agreement.
5. Managing Director, HVPN, Planning Directorate, Shakti Bhawan, Sector-6, Panchkula.
6. Joint Director, Environment Haryana - Cum-Secretary, SEAC, Paryavaran Bhawan, Sector -2, Panchkula.
7. Addl. Director Urban Estates, Haryana, Panchkula.
8. Administrator, HUDA, Gurgaon.
9. Chief Engineer, HUDA, Gurgaon.
10. Superintending Engineer, HUDA, Gurgaon along with a copy of agreement.
11. Land Acquisition Officer, Gurgaon.
12. Senior Town Planner, Gurgaon alongwith a copy of Zoning Plan.
13. Senior Town Planner (Enforcement), Haryana, Chandigarh.
14. District Town Planner, Gurgaon along with a copy of agreement & Zoning Plan.
15. Chief Accounts Officer (Monitoring) O/o DGTCP, Haryana.
16. Accounts Officer, O/o Director General, Town & Country Planning, Haryana, Chandigarh along with a copy of agreement.

  
(KARANVEER SINGH)  
District Town Planner (HQ)  
For Director General, Town & Country Planning  
Haryana Chandigarh

1. Detail of land owned by Alton Buildtech India Pvt. Ltd., District Gurgaon.

<u>Village</u>	<u>Rect. No.</u>	<u>Killa No.</u>	<u>Area</u> <u>K.M</u>	
Harsaru	74	22	8-0	
		23	8-0	
		24/1	1-12	
	73	19	8-0	
		20/2	2-13	
		20/1	5-7	
	74	16	8-0	
		25/2/1	2-18	
	Total			44-10 or 5.5625 Acres

Out of 5.5625 acres land measuring 10K-2M or 1.2625 acres in Khasra No. 73//19 min 4K-16M, 20/2 min 1K-11M, 20/1 min 3K-15M falling alignment of sector road has been transferred free of cost to HUDA vide Gift Deed no. 10663 dated 01.08.2014 in compliance of condition no. 10 of LOI dated 25.07.2014.

  
Director General  
Town and Country Planning,  
Haryana, Chandigarh  
CH/10/1