Directorate of Town & Country Planning, Haryana
SCO-71-75, 2nd Floor, Sector-17-C, Chandigarh, Phone: 0172-2549349
Web site tcpharyana.gov.in - e-mail: tcpharyana5@gmail.com

Regd.

To

Brock Developers Pvt. Ltd.,
C/o Vatika Ltd.
7th Floor, Vatika Triangle,
Block-A, Sushant Lok-1, Gurugram.

Memo. No. LC-2802/PA(SN)-2017/ 19552 Dated: 9-8-17

Subject: **Approval of Service Plan/Estimates in respect of Residential Group Housing colony on the land measuring 14.025 acres under Licence No. 46 of 2013 dated 08.06.2013 in Sector 88A, District Gurugram.**

Kindly refer your application on the subject noted above.

The Service Plans/Estimates in respect of Licence No. 46 of 2013 dated 08.06.2013 granted for setting up Residential Group Housing colony over an area measuring 14.025 acres in Sector 88A, District Gurugram have been checked and corrected wherever necessary by the Chief Administrator, HUDA & are hereby approved subject to the following terms and conditions:-

1. That you will have to pay External Development Charges as a full and no deduction on account of any services proposed from other Department/from own sources by the colonizer for the time being, as EDC works for a town as a whole will have to be got executed in view of overall planning, proposed area also covered/to be covered in EDC, Gurgaon Town, which is under finalization.

2. The category wise area shown on the plans and proposed density of population thereof has been treated to be correct for the purpose of services only.

3. That you are liable to maintain the licensed area for ten years or as per HUDA norms till such time, the colony is taken over by the local authority/State Govt.

4. The wiring system of street lighting will be under ground and the specifications of the street lighting fixture etc. will be as per relevant standard of HVPNL. LED lamps shall be provided to met the requirement of HVPNL and as well environment.

5. It is made clear that appropriate provision for fire-fighting arrangement as required in the NBC/ISI should also be provided by you and fire safety certificate should also be obtained from the competent authority before undertaking any construction. You shall be sole responsible for fire safety arrangement.

6. All technical notes and comments incorporated in the estimates in two sheets will also apply. A copy of these is also appended as Annexure-A.

7. The correctness of the levels of the colony will be sole responsibility of the owner for integrating the internal sewer/ storm water drainage of the colony by gravity with the master services.

8. That level/extent of external services to be provided by HUDA will be in accordance with EDC deposited. The colonizer will be fully responsible to meet the demand, to dispose of effluent and rain water till these services are provided by HUDA.

9. You shall be sole responsible for disposal of sewage of your colony as per requirement of HSPCB/Environment Deptt. till such time the external services are made available as per the proposal of the town. All the link connections with the

external services shall be made by you at your own cost after seeking approval from competent authority. There should be no pollution due to disposal of sewerage of the colony. The disposal of the effluent should be accordance to the standard norms fixed by Haryana State Pollution Board/Environment Department.

10. The estimate does not include the provision of electrification of the colony. However, it is clear that the supervision charges and O&M charges shall be paid by you directly to the HVPNL.

11. That you shall be solely responsible to lay the services upto the external services laid/to be laid by HUDA or any developing agency on Sector dividing road at respective locations/points

12. You have proposed to utilize recycled water for flushing purposes and provision of separate flashing line, storage tank, metering system, pumping system and plumbing has been made. Therefore, it is clarified that no tap or outlet of any kind will be provided from the flushing lines/plumbing lines for recycled water except for connection to the cistern of flushing tanks and any scouring arrangement. Even ablution taps should be avoided.

(i) Two separate distribution systems, independent to each other, will be adopted, one for potable water supply and second for recycled water. Every Home/Office/business establishment will have access to two water pipe lines.

(ii) Potable water and recycled water supply lines will be laid on opposite berms of road. Recycled water lines will be above sewer lines. Wherever unavoidable and if all pipes are required to be laid on same side of road, these will be located from the ground surface in order of descending quality. Potable water shall be above recycled water which should be above sewer. Minimum clear vertical separation between a potable water line and a recycled water line shall be one ft, if it not possible then readily identifiable sleeve should be used.

To avoid any accidental use of recycled water for potable purposes all:-

(a) Recycle water pipes, fitting, appurtenances, valves, taps, meters, hydrants will be of Red Colour or painted red.

(b) Sign and symbols signifying and clearly indicating "Recycle Water" "Not fit for Drinking" must invariably be stamped/fixed on outlets, Hydrants Valves both surface and subsurface, Covers and at all conspicuous places of recycle distribution system.

(c) Detectable marker tapes of red colour bearing words "Recycle Water" should be fixed at suitable interval on pipes.

(d) Octagonal covers, red in colour or painted red and words "Recycle Water-Not fit for Drinking" embossed on them should be used for recycled water.

13. That it shall be mandatory to provide dual/two button or lever flushing system in toilets.

14. You shall be sole responsible for the construction of various structures such as RCC underground tank etc. according to the standard specification good quality and its workmanship. The structural stability responsibility will entirely rest upon you.

15. In case some additional structures are required to be constructed and decided by HUDA/development agency at a later stage, the same will be binding upon you.

Flow of control valves will be installed preferably of automatic type on water supply connection with main water supply line, laid by developing agency or HUDA.

16. The formation level of internal road should match with sector roads. Similar other services like water supply, sewerage and SWD level etc. should be fixed in integration of levels of EDC services of water supply, sewerage and SWD etc, which shall be ensured by you.

17. In case it is decided by Govt. that HUDA/Govt. will construct 24 m wide road and will extend master services on 24 m wide internal circulation road, then additional amounts at rates as decided by the authority/Govt. will be recoverable over and above EDC.

18. Since, the construction of master plan is yet to take place, you will get the road level/formation level of your service fixed from the concerned Superintending Engineer, before execution.

19. This estimate does not include the common services like water supply, storage tank on the top of the building block, the plumbing works etc. will part of the building works.

20. You will have to ensure that the sewer/storm water drainage to be laid by you will be connected with the proposed existing master services by gravity. If it is not possible to connect the services by gravity, it will be your sole responsibility to make the pumping arrangement and maintenance thereof for all the time to come.

21. That you shall not make any connection with the master services i.e. water supply, sewerage, storm water drainage, without prior approval of the competent authority in writing.

22. That the detailed technical proposal/scheme shall be got approved from this office before execution of work at site.

23. The firm will provide solar water heating system as per the guidelines issued by Haryana Govt./Ministry of Environment/Govt. of India.

24. It is made clear that roof top rain harvesting system shall be provided by you as per Central Ground Water Authority norms/Haryana Govt. Notification and the same shall be kept operational/maintained all the time. The arrangement for segregation of first rain water not to be entered into the system shall also be made by you.

25. That you shall transfer the land under master plan road as well as service road to Govt./HUDA for construction of road/service road free of cost and proportionate cost for construction of service road shall also be paid by you.

NOTE(1):-

In order to implement the directions given by National Green Tribunal dated 26.11.2014, 04.12.2014 and 19.01.2015 in original Application No. 21 of 2014 in the matter of Vardhman Kaushik V/s Union of India and Ors, the following instruction issued vide letter No. 2613 dated 5.3.2015 be incorporated for implementation at site as under:-

i) It shall be ensured that there should be no hot mixing on the road side. During construction and maintenance of road, it shall be also ensure that coal tar, bitumen and asphalt is brought in molten condition and same is neither burnt nor fire is put to melt these substances on open roads.

ii) The demolition material and construction material is transported with proper coverage and precautions, in order not to be cause serious air pollution.

iii) No Govt. authority, contractor, builders would be permitted to store and dump construction material or debris on the metalled road.

iv) Such storage does not cause any obstruction to the free flow of traffic and/ or inconvenience to the pedestrians. Every builder, contractor or person shall ensure that the construction material is completely covered by tarpaulin. To ensure that no dust particles are permitted to pollute the air quality as a result of such storage.

v) The builder/contractor will be responsible and ensure that their activity does not cause any air pollution during the course of the construction and/or storage of material or construction activity. Defaulter shall be liable to be prosecuted under the law in force.

vi) All trucks or vehicles of any kind which are used for construction purposes and/or are carrying construction materials like cement send and other allied material shall be fully covered dust free and/or other precautions would be taken to ensure that enroute their destination, the dust, send or other particles are not permitted to be released in the air and/or contaminate air. Any truck which is not complying with these directions would not be permitted to enter in the NCR region.

NOTE(2):-

Implementation of instruction used by Hon'ble NGT during hearing held on 28.4.2015 in OA No. 21 of 2014 and OA No. 95 of 2014 in the matter of Vardhman Kaushik V/s Union of India and Ors, the following instruction issued vide letter No. CEIEE-W/CHD(G)/4971-89 dated 30.4.2015 shall be complied with in the construction work as under:-

a. All the direction contained in our order dated 4th December, 2014 shall continue to be in force and the Authorities concerned would carry out the said directions in their true spirit and substance.

b. There shall be complete prohibition of burning of any kind of garbage leave, waste plastic, rubber, self-moulding compound and such other materials in the open. Any person affected or concerned would have a right to make a complaint in writing.

c. NGT further directed that all the Corporations of concerned states falling in NCR would notify on their websites, address and Mobile Number to which such complaint can be made/sent.

d. Immediately upon receipt of such complaint, the concerned Authority and for Authorities the designed Officers would proceed to take action in accordance with law.

e. For every incident of burning of any such above stated material, the person who is found actually burning such and/ or responsible for or abating such burning would be liable to pay compensation in terms of the Section 15 of the Nation Green Tribunal Act, 2010 for polluting the environment and would be liable to pay a sum Rs. 5000/- (to be paid instantaneously).

f. In the event such offender refuses to comply with the directions of the Authorized Officers, the Authorized Officers would be at liberty to serve a notice upon him for appearing before the Tribunal and to show cause why the person burning, abating or responsible for such burning materials afore indicated, be not directed to pay compensation as may be determined by the Tribunal in accordance with law.

g. The orders of the NGT are to be complied with as a decree / order of the Civil Court. All these Authorities and the Police are duty bound to carry out the directions/orders of the Tribunal in accordance with law. The money so collected, shall be maintained by the Corporation and / or any Authority as a separate fund to

be utilized for improvement, restoration and restitution of the environmental degradation resulting from such activity or otherwise.

h. The payment of such compensation shall not absolve the offender of other liabilities that such person may incur under different laws in force including other provisions of the National Green Tribunal Act, 2010.

i. NGT has directed that there is no burning of leaves or horticulture residue, all the Corporations, Authorities and the State Governments to ensure that there is proper composting pits area-wise prescribed within one week from today (28.04.2015). The composting will be only at those sites and all the Corporations, Authorities and the State Governments shall be responsible to provide due space for collection and deposit of horticulture waste including leaves for composting purposes at these sites.

j. Each officer under whose jurisdictions the area would fall, would be personally responsible for imposition of compensation and costs.

k. The composition sites should be provided nearer to the places where there is large numbers of trees, gardens and compost bits which also convert into self-manure should be used for horticulture purposes to ensure that the burden on the site does not increase beyond its capacity.

l. Decision in regard the land fill sites should be taken expeditiously as possible. Such adequate number of sites if not earmarked, should be identified by the respective corporations and authorities if not done so far.

m. No one would permit the building of plastic and allied products in NCR area. if authorities notice any burning of such materials they would not only ensure that such activity does not persist, but even would be entitled to seize the entire material which is illegally and unauthorized stored/held by a person who does not possess of a license or authorization for dealing with such products in accordance with the plastic waste Management and Handling Rules, 2011. Upon seizure of such material, the authorities would take a direction from Hon'ble NGT and dispose of the same by giving it to the authorized dealer in accordance with the directions issued.

A copy of the approved service plan/estimates is enclosed herewith. You are requested to supply three additional copies of the approved service plan/estimates to the Chief Administrator, HUDA, Panchkula under intimation to this office.
DA/As above

(Sanjay Kumar)
District Town Planner (HQ)
For Director, Town & Country Planning
Haryana, Chandigarh

Endst. No LC-2802-PA(SN)-2017/ Dated :

A copy is forwarded to the Chief Administrator, HUDA, Panchkula with reference to his memo No. CE-1/EE(W)/CHD(G)/2015/15770 dated 15.07.2015 for information and necessary action please.

(Sanjay Kumar)
District Town Planner (HQ)
For Director, Town & Country Planning
Haryana, Chandigarh

SERVICE COST ESTIMATE FOR EXTERNAL DEVELOPMENT WORKS, DESIGN AND COST ESTIMATES

FOR

PROPOSED GROUP HOUSING SCHEME MEASURING 14.025 ACRES (LICENCE NO. 46 OF 2013 DATED 08-06-2013) IN SECTOR - 88A, GURGAON MANESAR - URBAN COMPLEX BEING DEVELOPED BY GABINO DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

DEVELOPED BY:

M/S GABINO DEVELOPERS (P) LTD. & OTHERS IN COLLABORATION WITH VATIKA LTD.

Vatika Limited

VISHAL MITTAL CA/98/23185 ARCHITECT

V. S. Kukreja and Associates (P) Ltd. New Delhi

PROPOSED GROUP HOUSING SCHEME MEASURING 14.025 ACRES (LICENCE NO. 46 OF 2013 DATED 08-06-2013) IN SECTOR - 88A, GURGAON MANESAR - URBAN COMPLEX BEING DEVELOPED BY GABINO DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

REPORT

Estimate for providing water supply sewerage, storm water drainage, road, street lighting and horticulture in respect of 14.025 acres Group Housing Scheme in sector - 88A, Gurgaon Manesar - Urban Complex Distt.- Gurgaon (Haryana)

Project site is located in Sector 88 A, Village Hardaru, Gurgaon of Gurgaon Patoudi Road and 10.5 km. in North East direction of f Indira Gandhi International Airport 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 Manesar, Gurgaon by M/S GABINO DEVELOPERS (P) LTD. & OTHERS IN COLLABORATION WITH VATIKA LTD. This report and estimate is for M/S GABINO DEVELOPERS (P) LTD. & Others measuring plot area 14.025 Acres.

WATER SUPPLY

At present the source of water supply in this area is bore well. As the underground water is potable, provision for **Two** number of tube well has been made in this estimate. It has been proposed to construct the under ground 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 bore well 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 as given in the design calculation enclosed herewith.

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.

SEWERAGE SCHEME

This scheme has been designed for sewer connecting to STP & over flow of STP connected to Municipal 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 drain pipe drains with required number of catch basins for disposal of storm water. The intensity of rain fall has been taken as ¼" per hour. A 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 required 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.W.H. as laid down by the Haryana Government / HUDA.

VISHAL MITTAL CA/ 93/23185 ARCHITECT

V.S. Kukreja and Associates (P) Ltd. New Delhi

ROADS

Roads have been provided to above zones and estimate is prepared as per revised specifications by HUDA.

STREETLIGHTING

Provision of lighting on surrounding area has been made.

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. 895.86 Lac Including 3% contingencies and 49% departmental charges. Price escalation & other unforeseen charges and cost per acre comes out to be Rs. 63.88 Lacs.

for M/S GABINO DEVELOPERS (P) LTD. & OTHERS
C/o M/s Vatika Ltd.

(Authorized Signatory)

Vatika Limited

V. S. Kukreja and Associates (P) Ltd. New Delhi

VISHAL MITTAL CA/93/23165 ARCHITECT

PROPOSED GROUP HOUSING SCHEME MEASURING 14.025 ACRES (LICENCE NO. 46 OF 2013 DATED 08-06-2013) IN SECTOR - 88A, GURGAON MANESAR - URBAN COMPLEX BEING DEVELOPED BY GABINO DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

Total Water Requirement

(I) DAILY WATER REQUIREMENT

A. Residential		
(i) Tower - 1	=	48 Units
(ii) Tower - 2	=	96 Units
(iii) Tower - 3	=	97 Units
(iv) Tower - 4	=	97 Units
(v) Tower - 5	=	96 Units
(vi) Tower - 6	=	104 Units
(vii) Tower - 7	=	104 Units
(viii) Tower - 8	=	99 Units
(ix) Type V01	=	12 Units
Total	=	753 Units
@ 4.50 persons / Unit	=	3389 Persons
B. EWS		134 Units
@ 2 persons / Unit	=	268 Persons
Total Population (A+B)		**3657 Persons**
@ 135 Lpcd		493695 Liters/day
C. Community Shopping		283.168 Sqmt.
@ 3 Sqmt / Persons	=	94 Persons
@ 45 Lpcd		4230 Liters/day
D. Club + community Center		2980 Sqmt.
@ 1.5 Sqmt / Persons	=	1987 Persons
@ 15 Lpcd		29805 Liters/day
E. Staff (such ESS, Gardeners, Security etc.)		45 Persons
@ 45 Lpcd		2025 Liters/day
F. School		1600 Sqmt.
@ 3 Sqmt / Student		533 Students
@ 45 Lpcd		23985 Liters/day
G. Swimming Pool (L.S.)		15000 Liters
H. Back Wash Filter		10000 Liters
Total Water demand (A To H)	=	576715 **Liters / Day**
Domestic water demand 65% of AV/WD of (A+B) + 35% of (C+D+E+F) + 100% OF G & H)	=	366918 Liters / Day
		366.918 KLD
Or Say	=	**380 KLD**
Flushing water demand (35%)	=	211823 Liters / Day
		211.823 KLD
Or Say	=	**220 KLD**

VISHAL MITTAL CA/ 93/23185 ARCHITECT

V. Sri Khurana and Associates Pvt. Ltd. New Delhi

PROPOSED GROUP HOUSING SCHEME MEASURING 14.025 ACRES (LICENCE NO. 46 OF 2013 DATED 08-06-2013) IN SECTOR - 88A, GURGAON MANESAR - URBAN COMPLEX BEING DEVELOPED BY GABINO DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

Total Water Requirement

Sewage Treatment Plant Capacity

Calculations are based on Manning Formula V = (1.486/n) x m2/3 x s1/2 in F.P.S System

Quantity of Water Available after Sewage Treatment:

Waste water available @ 80% of domestic and 90% of flushing water requirement + Sub Soil Water @ 10% AV/WD	=	496884 LPD
Add Sub Soil Water @ 10% AV/WD	=	57672 LPD
Sewerage Treament Plant Capacity	=	554556 LPD
		554.56 KLD
Capacity of STP		**570.00 KLD**

Sewerage Scheme

Calculations are based on Manning Formula V = (1.486/n) x m2/3 x s1/2 in F.P.S System

Quantity of Water Available after Sewage Treatment:

1 Average Sewerage Contribution Considering 80% of domestic + 90% of flushing	=	496884 LPD
2 Sub soil infiltration 10% of average water demand	=	57672 LPD
3 Peak discharge 3 times of AV sewerage Contribution + 10 % sub soil infiltration	=	1548324 LPD
	=	344072 GPD
	=	0.637 Cuses/ Day

Hence 300 dia. pipe having design capacity 0.945 cuses/day is sufficient to carry the above discharge.

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V. S. Kukreja and Associates P. Ltd. New Delhi

Vatika Limited

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(I) BOREWELLS

Approx. discharge of borewells @ 15 KL/hour and working 16 hours/day

(a)	Total domestic water demand = KLD	=	380.00
(b)	Number of borewells 90/(15 x 16)	=	1.583
	Add 10% as Extra	=	0.158
	Total	=	1.742
	Say	=	2 Nos.
	Total		2 Nos.

So, it is proposed to provide 2 Nos. of tube wells. 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.

(II) Pumping Machinery for Borewell

Gross working Head (G+25) (10+25x4)	=	110.0 Meters
Average Fall in S.L.	=	5.0 Meters
Depression Head	=	5.0 Meters
Friction loss in main + Postive head	=	10.0 Meters
Total	=	**130.0 Meters**
Or Say	=	**130.0 Meters**

0

Pump HP = $\frac{15000 \times 130 \times 100}{60 \times 60 \times 75 \times 70}$ = 10.32 Say = 10.00 H.P.

(III) Under Ground Water Tanks

Total Domestic Water Demand	=	366.92 KLD
Or Say	=	**380.00** KLD

Therefore, it is proposed to construct an underground tank of 580 KLD having 190 KLD for domestic use, 190 KLD as raw water, and 200 KLD for fire fighting purpose as per location shown on plan i.e & over head tank capacity will be 50% of UGT capacity.

(IV) Boosting Machinery

a) For Under Ground Tank

Total Water Demand (Domestic)	=	380 KLD
Pumping 8 hour pumping	=	791.67 LPM
Or Say	=	**800.00 LPM**

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	=	110.0 Meters
Total	=	125.0 Meters
Or Say	=	125.0 Meters

$\frac{800 \times 125 \times 100}{60 \times 75 \times 75}$ = 29.63 = 30.00 H.P.

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It is proposed to provide 3 nos. of motors of 15 HP sets of 800 LPM discharge at 125 Mtr. head (Two pump are working and one as standby for domestic supply in each Block & generator set of same capacity in case of electric failure)

b) Flushing water supply requirement

Flushing water supply demand	=	211823 liters/day
Pumping per hour @ 8 hour pumping	=	441.30 LPM
Say	=	450.00 LPM
Pump HP = $\frac{4400 \times 125 \times 100}{60 \times 75 \times 70}$	=	17.86 H.P.
Say	=	20.00 HP

It is proposed to provide 3 nos. of motors 10.0 HP sets of 440 LPM discharge at 125 M head (Two pumps are working & other as stand by flushing water supply & generator set of same capacity in case of electric failure

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V.S. Kukreja and Associates (P) Ltd. New Delhi

PROPOSED GROUP HOUSING SCHEME MEASURING 14.025 ACRES (LICENCE NO. 46 OF 2013 DATED 08-06-2013) IN SECTOR - 88A, GURGAON MANESAR - URBAN COMPLEX BEING DEVELOPED BY GABINO DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

Pumps For Fire Protection

S.No	Parameters	Location	Pump sets Building A		
			Jockey	Main	Diesel
1	Discharge in lpm	Pump Room	280 lpm	2850 lpm	2850 lpm
2	Head in metre		125	125	125
3	HP		12.5	120	120
4	Quantity in nos.		2	2 + 2	1

Generating Sets

S. No	Equipment	QTY	HP	Total HP
1	Borewells	2	10.0	20
2	Fire Jockey pumps	1	12.5	12.5
3	Booster Pump (for domestic +flushing)	2 + 2	2 x 15 + 2 x 10	50.0
	Total			**82.5**
	Total KW			**61.55**
	Total KVA			**96.16**
	Total			**96.00**
	Say			**100.00**

It is proposed to add 100 KVA capacity for above said machinery to the main DG set.

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PROPOSED GROUP HOUSING SCHEME MEASURING 14.025 ACRES (LICENCE NO. 46 OF 2013 DATED 08-06-2013) IN SECTOR - 88A, GURGAON MANESAR - URBAN COMPLEX BEING DEVELOPED BY GABINO DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

FINAL ABSTRACT OF COST

Sl No		DESCRIPTION		AMOUNT (In Lacs.)
1	Sub Work No.I	Water Supply Scheme	Rs.	243.81
2	Sub Work No.II	Sewerage Scheme	Rs.	127.03
3	Sub Work No.III	Storm Water Drainage.	Rs.	78.43
4	Sub Work No.IV	Road	Rs.	176.76
5	Sub Work No.V	Street Lighting.	Rs.	21.52
6	Sub Work No.VI	Horticulture.	Rs.	7.61
7	Sub Work No.VII	Maintenance Charges for 10 Years including Resurfacing of Roads after Ist 5 year & IInd 5 years of mtc	Rs.	240.68
		TOTAL COST	**Rs.**	895.86
		COST PER ACRE	**Rs.**	63.88

Vatika Limited

VISHAL MITTAL CA/ 93/23185 ARCHITECT

V. S. Kukreja and Associates Pvt. Ltd. New Delhi

PROPOSED GROUP HOUSING SCHEME MEASURING 14.025 ACRES (LICENCE NO. 46 OF 2013 DATED 08-06-2013) IN SECTOR - 88A, GURGAON MANESAR - URBAN COMPLEX BEING DEVELOPED BY GABINO DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

Sub Work No.I		WATER SUPPLY ABSTRACT OF COST		
Sl No		DESCRIPTION		AMOUNT (In Lacs.)
1	Sub Head No. I	Head Works	Rs.	34.61
2	Sub Head No. II	Pumping Machinery	Rs.	43.55
3	Sub Head No. III	Rising Mains	Rs.	5.00
4	Sub Head No. IV	Distribution System	Rs.	37.49
5	Sub Head No. V	Fire Fighting	Rs.	29.53
6	Sub Head No. VI	Irrigation	Rs.	8.69
		TOTAL	**Rs.**	**158.87**
		Add 3% contingencies	**Rs.**	**4.77**
		TOTAL	**Rs.**	**163.63**
		Add 49% Department charges, Price Esclation & other priforsear charges	**Rs.**	**80.18**
		TOTAL COST	**Rs.**	**243.81**

Vatika Limited

VISHAL MITTAL CA/93/23185 ARCHITECT

V. S. Kukreja and Associates (P) Ltd. New Delhi

PROPOSED GROUP HOUSING SCHEME MEASURING 14.025 ACRES (LICENCE NO. 46 OF 2013 DATED 08-06-2013) IN SECTOR - 88A, GURGAON MANESAR - URBAN COMPLEX BEING DEVELOPED BY GABINO DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

Sub Work No.I		Water Supply				
Sub Head No. I		Head Works				
Sl No	DESCRIPTION	Qty		Rate	-	AMOUNT (In Lacs.)
1	Boring and installing 510 mm i/d tubewell with reverse rotary rig complete with pipe and strainer to depth of about 120 m in all respect 2 Nos. @ Rs. 4,50,000/- each	2		450000	Rs.	9.00
2	Provision for Rising Main connecting Bore well with water main and by-pass arrangement					
2.1	80 mm dia. G.I. Pipe	150		1000	Rs.	1.50
2.2	100 mm dia. G.I. Pipe	5		1250	Rs.	0.063
3	Providing Boosting arrangement by pumps (10 HP) (capacity 380 lpm at 130 M head, 3 nos. @ Rs. 100000/- each (for Tube Well)				Rs.	3.00
4	Providing Boosting arrangement by pumps 15 HP, capacity 800 LPM at 125 M head, 3 nos. each & @ Rs. 1,50,000/- each (For UGT)				Rs.	4.50
5	Provision for carriage of materials and other unforseen items				Rs.	1.00
6	Construction of U.G. tanks of total cap. 380 KL @ Rs. 3500 KL				Rs.	13.30
7	Provision for borewell chamber of size 1.5 x 1.5 x 1.5 m For Housing borewell 3 Nos. @ Rs.75000/- each				Rs.	2.25
	TOTAL				Rs.	34.61
						Lacs.

Material Statement of Bore well Rising Main

S. No.	Name of Line	Length of 80 mm dia. pipe	Length of 80 mm dia. pipe
1	Borewell No. 1 to Borewell No. 2	75	-
2	Borewell No. 2 to A	75	-
3	A Point to U.G.T.	-	5
	Total	150	5

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Sub Work No. I		**Water Supply**	
Sub Head No. II		**Pumping Machinery**	
Sl No	**DESCRIPTION**		**AMOUNT (In Lacs.)**
1	Providing and installing electricity driven Submersible pumping set capable of delivery about 15 KL / Hr. of water against a total Head of 130 M complete with motor and other accessories, 2 Nos. @ 75,000/-	Rs.	2.25
2	Provision for diesel engine genset each for standby arrangements for T.W. of booster pump complete with gear head arrangement. - 1 No. 100 KVA	Rs.	7.50
3	Providing and installing pumping set of following capacities for Fire protections :-		
(i)	280 lpm at 125 M head 2 Nos. Jockey Pump @ Rs. 2,00,000/-	Rs.	4.00
(ii)	2850 lpm at 125 M head 2 No. Main Fire Pump @ Rs.7,50,000/-	Rs.	15.00
(iii)	2850 lpm at 125 M head 1 Nos. Diesel Pump @ Rs. 10,00,000/-	Rs.	10.00
4	Providing for chlorination plant complete. 1 set @ 80,000/-	Rs.	0.80
5	Provision for making foundations and erection of Pumping machinery.	Rs.	1.00
6	Provision for pipes, valves and specials inside boosting chamber - 1 Set (L.S.)	Rs.	1.00
7	Provision for electric services connection including electric fitting for tube wells & boosting chamber etc. 1 set (L.S.)	Rs.	1.00
8	Provision for carriage of material and unforeseen item. L.S.	Rs.	1.00
	TOTAL	**Rs.**	**43.55**
			Lacs.

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Sub Work No. I					**Water Supply**	
Sub Head No. III					**Rising Mains**	
Sl No	**DESCRIPTION**	**Qty**		**Rate**		**AMOUNT (In Thousand.)**
1	Providing, laying, jointing & testing 50 mm dia. G.I. pipe lines including cost of excavation complete in all respects.	100	@	850	Rs.	85000.00
2	Providing and fixing 50 mm dia. sluice valves including cost of surface boxes and masonary chambers etc., complete in all respects.	2	@	2500	Rs.	5000.00
3	Providing and Fixing indicating plates for sluice valves, air valves and fire hydrants.	2	@	5000	Rs.	10000.00
4	Provision for carriage of material & other foreseen items etc., L.S. (For Two Builings)				Rs.	50000.00
5	Provision for making connection with HUDA main (L.S.) 2 jobs complete in all respect				Rs.	200000.00
6	Provision for cutting road and making good the same (L.S.) 2 jobs				Rs.	150000.00
	TOTAL				**Rs.**	**500000.00**
	SAY				Rs.	**5.00**
						Lacs.

Material Statement and design statement of HUDA Rising Main

S. No.	Name of line	Dia in mm	Length in m from municipal to U.G.T.
1	Municiple to Building A to UGT	50	100
	Total		100

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Sub Work No. I						**Water Supply Dom.+Flushing**	
Sub Head No. IV						**Distribution system Domestic + Flushing**	
Sl No	**DESCRIPTION**		**Qty**		**Rate**		**AMOUNT (In Thousand.)**
1	Providing, laying, jointing & testing D.I. pipes including cost of excavation complete as per ISI marked.						
	80 mm I/D		1375	@	1050	Rs.	1443750.00
	100 mm I/D		1375	@	1200	Rs.	1650000.00
	150 mm I/D		10	@	1450	Rs.	14500.00
	200 mm I/D		10	@	1700	Rs.	17000.00
2	Providing, laying, jointing & testing G.I. pipes including cost of excavation complete as per ISI marked.						
	50 mm I/D		220	@	450	Rs.	99000.00
	65 mm I/D		220	@	700	Rs.	154000.00
3	Providing and Fixing sluice valves including cost of brick masonry chamber complete in all respect.						
	80 mm I/D		7	@	6000	Rs.	42000.00
	100 mm I/D		8	@	8000	Rs.	64000.00
	150 mm I/D		1	@	10000	Rs.	10000.00
	200 mm I/D		1	@	15000	Rs.	15000.00
	65 mm I/D		11	@	4500	Rs.	49500.00
	50 mm I/D		11	@	4000	Rs.	44000.00
3	Providing and Fixing air valves and scour valves including cost of brick masonry chamber complete.		1	@	7500	Rs.	7500.00
4	Providing and Fixing indicating plates for sluice valves		39	@	1000	Rs.	39000.00
5	Provision for carriage of material & other foreseen items etc., (L.S) - 1 Job					Rs.	100000.00
	TOTAL					**Rs.**	**3749250.00**
	SAY					**Rs.**	**37.49**
							Lacs.

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Material Statement

S. No.	Description	200 mm	150 mm	100 mm	80 mm	65 mm	50 mm
(A)	**Domestic**						
1	U.G.T. – W1	10	-	-	-	-	-
2	W1 - W2	-	-	160	-	-	-
3	W2 - W4	-	-	530	-	-	-
4	W1 - W3	-	-	360	-	-	-
5	W3 - W4	-	-	325	-	-	-
6	Riser shafts (11 Nos. x 20 Mt. AV)	-	-	-	-	220	-
	TOTAL	**10**	**0**	**1375**	**0**	**220**	**0**
(B)	**Flushing**						
1	STP – FWS1	-	10	-	-	-	-
2	FWS1 -FWS2	-	-	-	425	-	-
3	FWS2 - FWS3	-	-	-	95	-	-
4	FWS3 - FWS4	-	-	-	325	-	-
5	FWS2 - FWS4	-	-	-	530	-	-
6	Riser shafts (11 Nos. x 20 Mt. AV)	-	-	-	-	-	220
	TOTAL	0	10	0	1375	0	220
	GRAND TOTAL	10	10	1375	1375	220	220

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VISHAL MITTAL CA/ 98/23185 ARCHITECT

V. S. Kukreja and Associates New Delhi

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Hydraulic Chart Water Supply Scheme (Domestic)

S. No.	Ref of line	Length in mts	Self				Additional				AVWD	Domestic Water demand @ 65% of AVWD of Appts + 35% of Commercial	Peak Demand @ 2.5 time of AVWD	Dia of Pipe	Velocity	Lose of Head in 1000 M (mts)	Loss of head in the line (mts)	Level in start			Remarks
			Appts @ 4.5 person / D.U. @ 135 LPCD	EWS @ 2 Persons / D.U. @ 135 LPCD	School +Shopping + Community Center + Staff	Swimming Pool + Back wash filter	Appts @ 4.5 person / D.U. @ 135 LPCD	EWS @ 2 Persons / D.U. @ 135 LPCD	School +Shopping + Community Center + Staff	Swimming Pool + Back wash filter	KLD							HL	GL	TH	
1	At UGT	-	-	-	-	-	753 D.U.	134 D.U.	23985 + 4230 + 29820 + 2025 = 60060	10000 + 15000 = 25000	578.76	366.92	1100.76	-	0.75	-	-	337.50	215.50	122.00	Ground level = 215.50 UGT Bed level=125.00 Add Building head G+25 = 10+25x4= 110 mts Add suction head = 3 mtrs Add Delivery head= 5mtr Add positive head = 3 mtrs Add friction loses = 4 mtr Head level = 337.50 mtr
2	U.G.T. – W1	10	-	-	-	-	753 D.U.	134 D.U.	23985 + 4230 + 29820 + 2025 = 60060	10000 + 15000 = 25000	578.76	366.92	1100.76	200	0.75	0.98	0.01	337.49	215.50	121.99	
3	W1 - W2-W4	690	376 D.U.	67 D.U.	-	25000 Liter	-	-	-	-	271.51	185.23	555.69	100	0.75	5.80	4	333.49	215.50	117.99	
4	W1 - W3	360	199 D.U.	67 D.U.	23985 (School)	-	169 D.U.	-	4230 + 29820 + 2025 = 36075	-	283.21	173.27	519.61	100	0.75	5.40	1.94	335.55	215.50	120.05	
5	W3 - W4	325	199 D.U.	-	36060	-	-	-	-	-	159.69	87.26	261.78	100	0.75	1.60	0.59	334.96	215.50	119.46	

Note: 1. Water supply should be laid as per NBC / HUDA Norms
2. Ground Level has been taken as per GTS Level = 215.50

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VISHAL MITTAL CA/ 93/23185 ARCHITECT

V. S. Khurana and Associates Pvt. Ltd. New Delhi

PROPOSED GROUP HOUSING SCHEME MEASURING 14.025 ACRES (LICENCE NO. 46 OF 2013 DATED 08-06-2013) IN SECTOR - 88A, GURGAON MANESAR - URBAN COMPLEX BEING DEVELOPED BY GABINO DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

Hydraulic Chart Water Supply Scheme (Flushing)

S. No	Ref of line	Length in mts	Self				Additional				AVWD	Domestic Water demand @ 65% of AVWD of Appts + 35% of Commercial	Peak Demand @ 2.5 time of AVWD	Dia of Pipe	Velocity	Lose of Head in 1000 M (mts)	Loss of head in the line (mts)	Level in start			Remarks
			Dwelling units 6 person/DU @ 135 Lpcd	Commercial etc. @ 15 Lpcd	Restaurants & Food Court @ 70 LPCD/ seat + Auditorium @ 15 ltr. / seat + staff + Hall	Service Floor (Kitchen, and Back wash filter)	Dwelling units 6 person/DU @ 135 Lpcd	Commercial etc. @ 15 Lpcd	Restaurants & Food Court @ 70 LPCD/ seat + Auditorium @ 15 ltr. / seat + staff + Hall	Service Floor (Kitchen, and Back wash filter)	KLD							HL	GL	TH	
1	At STP	-	-	-	-	-	753 D.U.	134 D.U.	23965 + 4230 + 29820 + 2025 = 60060	10000 + 15000 = 25000	578.76	211.83	635.49	-	0.75	-	-	337.50	215.50	122.00	Ground level = 215.50 UGT Bed level=208.50 Add Building head G+25 = 10+25x4= 110 mts Add suction head = 3 mtrs Add Delivery head= 5mtr Add positive head = 3 mtrs Add friction loses = 4 mtr Head level = 337.50 mtr
2	STP – FWS1	10	-	-	-	-	753 D.U.	134 D.U.	23965 + 4230 + 29820 + 2025 = 60060	10000 + 15000 = 25000	578.76	211.83	635.49	150	0.75	1.40	0.14	337.36	215.50	121.86	
3	FWS1 -FWS2	425	250 D.U.	67 D.U.	-	25000 Liter	-	-	-	-	313.59	108.50	325.50	80	0.75	6.80	2.89	334.47	215.50	118.97	
4	FWS2 - FWS4	530	125 D.U.	67 D.U.	23985 (School)	-	189 D.U.	-	4230 + 29820 + 2025 = 36075	-	1149.09	48.53	145.59	80	0.75	1.40	0.74	333.73	215.50	118.23	
5	FWS1 - FWS3 - FWS4	845	377 D.U.	-	36060	-	-	-	-	-	265.10	103.61	310.83	80	0.75	6.60	4.32	333.04	215.50	117.54	

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VISHAL MITTAL CA/ 98/23185 ARCHITECT

Mukerja and Associates Pvt. Ltd. New Delhi

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Sub Work No. I						**Water Supply**
Sub Head No. V						**Water Supply Fire Fighting**
Sl No	**DESCRIPTION**	**Qty**		**Rate**	-	**AMOUNT (In Thousand.)**
1	Providing, laying jointing & testing M.S. pipe lines for rising main including cost of fitting, valves, connection etc., complete in all respects.					
	200 mm I/D for UGT- Ring Main	10	@	1800	Rs.	18000.00
	150 mm I/D for Ring Main	1375	@	1500	Rs.	2062500.00
	150 mm I/D for Tanker Inlet	20	@	1400	Rs.	28000.00
	80 mm I/D for Yard hydrant fire Brigade connection	156	@	1200	Rs.	187200.00
2	Providing & fixing valve including cost of surface boxes and masonry chambers etc. complete in all respects					
	- 200 mm dia Nos. @ 20000/- each	1		20000		20000.00
	- 150 mm dia Nos. @ 14000/- each	8		14000		112000.00
	- 80 mm dia Nos. @ 5000/- each	26		5000		130000.00
3	Providing and fixing fire Hydrant with accessories @ Rs. 10000/-	26	@	10000	Rs.	260000.00
4	Providing for carriage of material (L.S.) 1 jobs				Rs.	100000.00
5	Providing and fixing Indicating plate @ Rs. 600/- each	35	@	1000	Rs.	35000.00
	TOTAL				**Rs.**	**2952700.00**
	SAY				**Rs.**	**29.53**
						Lacs.

Material Statement of Fire ring -- MS -- 150mm dia

S. No.	Location	200 mm dia pipe	150 mm dia pipe	80 mm dia pipe	Fire Hydrant
	Domestic				
1	Pump room to F1	10	-	-	-
2	Ring alround the building	-	1375	-	-
3	Tanker inlet Connection	-	20	-	-
4	Yard Hydrant (66 No. x 6 Mtr.)	-	-	156	26
	Total	10	1395	156	26

Fire Hydrant System

1	Valves 200mm dia	1 No.
2	Valves 150mm dia	8 Nos.
3	Valves 80mm dia	26 Nos.
4	Fire Hydrants	26 Nos.
5	Fire Brigade Connections	2 Nos.

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VISHAL MITTAL CA/98/23165 ARCHITECT

V. S. Mukreja and Associates (P) Ltd. New Delhi

PROPOSED GROUP HOUSING SCHEME MEASURING 14.025 ACRES (LICENCE NO. 46 OF 2013 DATED 08-06-2013) IN SECTOR - 88A, GURGAON MANESAR - URBAN COMPLEX BEING DEVELOPED BY GABINO DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

Sub Work No. I						**Water Supply**
Sub Head No. VI						**Water Supply Irrigation**
Sl No	**DESCRIPTION**	**Qty**		**Rate**		**AMOUNT (In Thousand.)**
1	Providing, laying, jointing and testing uPVC pipe line confirming to I.S 4985 including cost of excavation etc., complete in all respects					
	20 mm O/D for Garden Hydrants	88	@	200	Rs.	17600.00
	75 mm O/D for Ring Main	1375	@	500	Rs.	687500.00
	110 mm O/D from STP to Ring Main	10	@	650	Rs.	6500.00
2	Providing and fixing Irrigation hydrant valve - 14 mm	44	@	2000	Rs.	88000.00
3	Providing and fixing sluice valve complete with chamber.					
(i)	65 mm dia	5	@	3000		15000.00
(ii)	100 mm dia	1	@	4000		4000.00
4	Provision for carriage of material & other foreseen items etc., (L.S.) 1 jobs				Rs.	50000.00
	TOTAL				**Rs.**	**868600.00**
	SAY				**Rs.**	**8.69**
						Lacs.

	Material statement of Irrigation System				
S. No.	**Line Name**	**Length of pipe in m 110 mm OD**	**Length of pipe in m 75 mm OD**	**Length of pipe in m 20 mm OD**	**Irrigation Hydrants**
1	Pump Room to ring main.	10	-		
2	Garden hydrant ring main around the building	-	1375	-	-
3	Garden hydrant 44 x 2 mts (AV)	-	-	88	-
4	Garden hydrant	-	-	-	44
	Total	**10**	**1375**	**88**	**44**

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Sewerage Scheme (Hydraulic Design Chart)

Calculations are based on Manning Formula V = (1.486/n) x m2/3 x s1/2 in F.P.S System

(I) DAILY WATER REQUIREMENT

A. Residential		
(i) Tower - 1	=	48 Units
(ii) Tower - 2	=	96 Units
(iii) Tower - 3	=	97 Units
(iv) Tower - 4	=	97 Units
(v) Tower - 5	=	96 Units
(vi) Tower - 6	=	104 Units
(vii) Tower - 7	=	104 Units
(viii) Tower - 8	=	99 Units
(ix) Type V01	=	12 Units
Total	=	753 Units
@ 4.50 persons / Unit	=	3389 Persons
B. EWS		134 Units
@ 2 persons / Unit	=	268 Persons
Total Population (A+B)		**3657 Persons**
@ 135 Lpcd		493695 Liters/day
C. Community Shopping		283.168 Sqmt.
@ 3 Sqmt / Persons	=	94 Persons
@ 45 Lpcd		4230 Liters/day
D. Club + community Center		2980 Sqmt.
@ 1.5 Sqmt / Persons	=	1987 Persons
@ 15 Lpcd		29805 Liters/day
E. Staff (such ESS, Gardeners, Security etc.)		45 Persons
@ 45 Lpcd		2025 Liters/day
F. School		1600 Sqmt.
@ 3 Sqmt / Student		533 Students
@ 45 Lpcd		23985 Liters/day
G. Swimming Pool (L.S.)		15000 Liters
H. Back Wash Filter		10000 Liters
Total Water demand (A To H)	=	576715 Liters / Day

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Domestic water demand 65% of AV/WD of (A+B) + 35% of (C+D+E+F) + 100% OF G & H)	=	366918 Liters / Day
		366.918 KLD
Or Say	=	**380 KLD**
Flushing water demand (35%)	=	211823 Liters / Day
		211.823 KLD
Or Say	=	**220 KLD**

Sewage Treatment Plant Capacity

Calculations are based on Manning Formula V = (1.486/n) x m2/3 x s1/2 in F.P.S System

Quantity of Water Available after Sewage Treatment:

Waste water available @ 80% of domestic and 90% of flushing water requirement + Sub Soil Water @ 10% AV/WD	=	496884 LPD
Add Sub Soil Water @ 10% AV/WD	=	57672 LPD
Sewerage Treament Plant Capacity	=	554556 LPD
		554.56 KLD
Capacity of STP		**570.00 KLD**

Sewerage Scheme

Calculations are based on Manning Formula V = (1.486/n) x m2/3 x s1/2 in F.P.S System

Quantity of Water Available after Sewage Treatment:

1 **Average Sewerage Contribution Considering 80% of domestic + 90% of flushing**	=	496884 LPD
2 **Sub soil infiltration 10% of average water demand**	=	57672 LPD
3 **Peak discharge 3 times of AV sewerage Contribution + 10 % sub soil infiltration**	=	1548324 LPD
	=	344072 GPD
	=	0.637 Cuses/ Day

Hence 300 dia. pipe having design capacity 0.945 cuses/day is sufficient to carry the above discharge.

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Sub Work No. II					Sewerage Scheme	
Sl No	DESCRIPTION	Qty		Rate		AMOUNT (In Thousand.)
1	Providing, jointing, cutting and testing S.W pipe class 'A' / S.W.R. PVC and lowering into trenches including cost of excavation, bed concrete, cost of manhole etc., complete in all respects along ceiling, along basement ceiling.					
	300 mm I/D Avg. depth upto 0-4.00 M	60	@	1500	Rs.	90000.00
	250 mm I/D Avg. depth upto 0-4.00 M	1050	@	1750	Rs.	1837500.00
2	Provision for lighting and watching L.S				Rs.	100000.00
3	Provision for timbering and shuttering L.S.				Rs.	50000.00
4	Provision for temporary connection with HUDA				Rs.	100000.00
5	Providing boosting arrangement by pump for flushing water supply 10.0 HP capacity 440 L.P.M., 125 Meter Head	2	@	100000	Rs.	200000.00
6	Provision for making STP @ 580 KLD @ 10000/KL				Rs.	5800000.00
7	Provision for carriage of maternal (L.S.)				Rs.	100000.00
	TOTAL				Rs.	**8277500.00**
	Add 3% contingencies				Rs.	**248325.00**
	TOTAL				Rs.	**8525825.00**
	Add 49% Department charges, price esclation, other for unforseen charges.				Rs.	**4177654.25**
	TOTAL				Rs.	**12703479.25**
	SAY				Rs.	**127.03**

Material statement of Sewerage System – As per drawing sheet

S. No.	Name of Pipe Line	Length of Pipe in M	
		300 mm	250 mm
1	S1-S2-S5A	-	325
2	S2-S4	-	250
3	S5A-S5	25	-
4	S3-S4	-	475
5	S4-S5	25	-
6	S5-STP	10	-
	Total	60	1050

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PROPOSED GROUP HOUSING SCHEME MEASURING 14.025 ACRES (LICENCE NO. 46 OF 2013 DATED 08-06-2013) IN SECTOR - 88A, GURGAON MANESAR - URBAN COMPLEX BEING DEVELOPED BY GABINO DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

Sewerage (Hydraulic Design)

S. No.	Ref of line	Length in meter	AV Water Demand	Sewerage demand 80% AV/WD of domestic + 90% of flushing	Sub soil infiltration 10% of AV/WD	Peak discharge 3 time of sewerage discharge + subsoil infliltration	Dia of pipe	Design Capacity	Velocity	Grandient	Drop	Level at start		level at End		Remarks
												G.L.	I.L.	' G.L.	I.L.	
							mm	cusces	mt/sec			mtr	mtr	mtr	mtr	
1	S1-S2-S5A	325	576715 L.P.D.	496884 L.P.D	57672 L.P.D	1548324 L.P.D = 0.637 Cuses	250	0.659	0.75	1:190	1.71	215.50	214.60	215.50	212.89	
2	S2-S4	250					300	0.945	0.75	1:245	0.10	215.50	212.89	215.50	212.79	
3	S5A-S5	25					250	0.659	0.75	1:190	1.32	215.50	214.60	215.50	213.28	
4	S3-S4	475					300	0.945	0.75	1:245	0.10	215.50	212.10	215.50	212.06	
5	S4-S5	25					250	0.659	0.75	1:190	2.50	215.50	214.60	215.50	212.79	
5	S5-STP	10					300	0.945	0.75	1:245	0.04	215.50	212.00	215.50	211.96	

Note: 1. All the manhole should be constructed as per HUDA/NBC Norms
2. Ground level is taken with reference to GTS = 215.50 Mts

Vatika Limited

VISHAL MITTAL CA/ 98/23185 ARCHITECT

S. Kukreja and Associates New Delhi

PROPOSED GROUP HOUSING SCHEME MEASURING 14.025 ACRES (LICENCE NO. 46 OF 2013 DATED 08-06-2013) IN SECTOR - 88A, GURGAON MANESAR - URBAN COMPLEX BEING DEVELOPED BY GABINO DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

Sub Work No. III					Drainage Scheme RCC Main	
Sl No	DESCRIPTION	Qty		Rate		AMOUNT (In Thousand.)
1	Providing, lowering, laying and jointing R.C.C NP-2 pipes and specials into trenches including manholes, chambers etc., excavation, back filling and disposal of surplus earth complete in all respects.					
	400 mm I/D Avg. depth upto 2.0 M.	1404	@	1750	Rs.	2457000.00
2	Provision for Road Gullies L.S.	LS			Rs.	150000.00
3	Provision for lighting and watching				Rs.	100000.00
4	Provision for timbering and shoring L.S.				Rs.	100000.00
5	Provision for carriage of material & other foreseen items etc., L.S.				Rs.	100000.00
6	Provision for Rain water harvesting arrangements for 14.025 Acres @ 1.5 Lac / acre				Rs.	2103750.00
7	Provision for temporary connection with HUDA				Rs.	100000.00
	TOTAL				**Rs.**	**5110750.00**
	Add 3% contingencies				**Rs.**	**153322.50**
	TOTAL				**Rs.**	**5264072.50**
	Add 49% Department charges, price esclation, other for unforseen				**Rs.**	**2579395.53**
	TOTAL				**Rs.**	**7843468.03**
	SAY				**Rs.**	**78.43**

Vatika Limited

VISHAL MITTAL CA/93/23185 ARCHITECT

Kukreja and Associates (P) Ltd. New Delhi

STORM WATER DRAIN		
S. No.	Name of Pipe Drain	400 mm dia. R.C.C. Pipe in mtrs.
	Rain Water Harvesting - 1	
1	D1-D2	110
2	D2 - RWH-1	5
	Rain Water Harvesting - 2	
3	D3-D4	60
4	D4-RWH-2	5
	Rain Water Harvesting - 3	
5	D5-D6	55
6	D6-RWH-3	5
	Rain Water Harvesting - 4	
7	D7-D8	80
8	D8 - RWH-4	5
	Rain Water Harvesting - 5	
9	D9-D10	144
10	D10 - RWH-5	5
	Rain Water Harvesting - 6	
11	D11-D12	60
12	D12 - RWH-6	10
	Rain Water Harvesting - 7	
13	D13-D14	40
14	D14 - RWH-7	15
	Rain Water Harvesting - 8	
15	D15-D16	20
16	D16 - RWH-8	10
	Rain Water Harvesting - 9	
17	D17-D19	35
18	D18-D19	10
19	D19 - RWH-9	30
	Rain Water Harvesting - 10	
20	D20-D22	35
21	D21-D22	150
22	D22 - RWH-10	5
	Rain Water Harvesting - 11	
23	D23-D24	35
24	D24 - RWH-11	5
	Rain Water Harvesting - 12	
25	D25-D26	120
26	D26 - RWH-12	5
	Rain Water Harvesting - 13	
27	D27-D28	140
28	D28 - RWH-13	5
	Rain Water Harvesting - 14	
29	D29-D30	55
30	D30 - RWH-14	5
31	Over Flow pipe (14 Nos. x 10 Mtr. AV)	140
	TOTAL	1404

Vatika Limited

VISHAL MITTAL CA/ 98/23185 ARCHITECT

V. Sri. Khurana and Associates Pvt. Ltd. New Delhi

PROPOSED GROUP HOUSING SCHEME MEASURING 14.025 ACRES (LICENCE NO. 46 OF 2013 DATED 08-06-2013) IN SECTOR - 88A, GURGAON MANESAR - URBAN COMPLEX BEING DEVELOPED BY GABINO DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

Hydraulic Chart

Storm Water Drain

$V = (1.486/n) \times m^{2/3} \times s^{1/2}$ in F.P.s System

S. No.	Ref. of Line	Length of Line	Catchman Area in sqmt		Total Area	Discharge in Cusecs (1 Acre = 1 cusecs)	Proposed pipe size in mm	Velocity	Design Capacity of Drain	Gradient	Drop	Level at Start			Level at End			Remarks if any
			Self	Additional								GL	IL	Depth	GL	IL	Depth	
		Mtrs.			Sqmt			mt / Sec	Cusecs		mts	mts	mts	mts	mts	mts	mts	
Rain Water Harvesting - 1																		
1	D1-D2	110	110 x 60 = 6600	-	6600	1.631	400 dia.	0.75	3.28	1:500	0.22	215.50	214.60	0.90	215.50	214.38	1.12	-
2	D2 - RWH-1	5	5 x 60 = 300	Line D1-D2 = 6600	6900	1.705	400 dia.	0.75	3.28	1:500	0.01	215.50	214.38	1.12	215.50	214.37	1.13	-
Rain Water Harvesting - 2																		
3	D3-D4	60	60 x 60 = 3600	-	3600	0.890	400 dia.	0.75	3.28	1:500	0.12	215.50	214.60	0.90	215.50	214.38	1.12	-
4	D4-RWH-2	5	5 x 60 = 300	Line D3-D4 = 3600	3900	0.964	400 dia.	0.75	3.28	1:500	0.01	215.50	214.60	0.90	215.50	214.47	1.03	-
Rain Water Harvesting - 3																		
5	D5-D6	55	55 x 60 = 3300	-	3300	0.815	400 dia.	0.75	3.28	1:500	0.11	215.50	214.60	0.90	215.50	214.49	1.01	-
6	D6-RWH-3	5	5 x 60 = 300	Line D5-D6 = 3300	3600	0.890	400 dia.	0.75	3.28	1:500	0.01	215.50	214.49	1.01	215.50	214.48	1.02	-
Rain Water Harvesting - 4																		
7	D7-D8	80	80 x 30 = 2400	-	2400	0.593	400 dia.	0.75	3.28	1:500	0.08	215.50	214.60	0.90	215.50	214.44	1.06	-
8	D8 - RWH-4	5	-	Line D7-D8 = 2400	2400	0.593	400 dia.	0.75	3.28	1:500	0.01	215.50	214.44	1.06	215.50	214.43	1.07	-
Rain Water Harvesting - 5																		
9	D9-D10	144	144 x 60 = 8640	-	8640	2.135	400 dia.	0.75	3.28	1:500	0.29	215.50	214.60	0.90	215.50	214.31	1.19	-
10	D10 - RWH-5	5	-	Line D9-D10 = 8640	8640	2.135	400 dia.	0.75	3.28	1:500	0.01	215.50	214.31	1.19	215.50	214.30	1.20	-
Rain Water Harvesting - 6																		
11	D11-D12	60	60 x 30 = 1800	-	1800	0.445	400 dia.	0.75	3.28	1:500	0.12	215.50	214.60	0.90	215.50	214.48	1.02	-
12	D12 - RWH-6	10	-	Line D11-D12 = 1800	1800	0.445	400 dia.	0.75	3.28	1:500	0.02	215.50	214.48	1.02	215.50	214.47	1.03	-
Rain Water Harvesting - 7																		
13	D13-D14	40	40 x 30 = 1200	-	1200	0.297	400 dia.	0.75	3.28	1:500	0.08	215.50	214.60	0.90	215.50	214.52	0.98	-
14	D14 - RWH-7	15	15 x 30 = 450	Line D13-D14 = 1200	1650	0.408	400 dia.	0.75	3.28	1:500	0.03	215.50	214.52	0.98	215.50	214.49	1.01	-
Rain Water Harvesting -																		

Vatika Limited

VISHAL MITTAL CA/96/23185 ARCHITECT

V. S. Khurana and Associates Pvt. Ltd. New Delhi

PROPOSED GROUP HOUSING SCHEME MEASURING 14.025 ACRES (LICENCE NO. 46 OF 2013 DATED 08-06-2013) IN SECTOR - 88A, GURGAON MANESAR - URBAN COMPLEX BEING DEVELOPED BY GABINO DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

Hydraulic Chart
Storm Water Drain
$V = (1.486/n) \times m^{2/3} \times s^{1/2}$ in F.P.s System

S. No.	Ref. of Line	Length of Line	Catchman Area in sqmt		Total Area	Discharge in Cusecs (1 Acre = 1 cusecs)	Proposed pipe size in mm	Velocity	Design Capacity of Drain	Gradient	Drop	Level at Start			Level at End			Remarks if any
			Self	Additional								GL	IL	Depth	GL	IL	Depth	
		Mtrs.			Sqmt			mt / Sec	Cusecs		mts	mts	mts	mts	mts	mts	mts	
15	D15-D16	20	20 x 20 = 400	-	400	0.099	400 dia.	0.75	3.28	1:500	0.04	215.50	214.60	0.90	215.50	214.56	0.94	-
16	D16 - RWH-8	10	10 x 20 = 200	Line D10-D11 = 1260	600	0.148	400 dia.	0.75	3.28	1:500	0.02	215.50	214.56	0.94	215.50	214.54	0.96	-
				Rain Water Harvesting - 9														
17	D17-D19	35	½(60 x 40) = 1200	-	1200	0.297	400 dia.	0.75	3.28	1:500	0.07	215.50	214.60	0.90	215.50	214.53	0.97	-
18	D18-D19	10	10 x 10 = 100	-	1300	0.321	400 dia.	0.75	3.28	1:500	0.02	215.50	214.53	0.97	215.50	214.51	0.99	-
19	D19 - RWH-9	30	-	Line D17-D19 = 1200 Line D18-D19 = 100	1300	0.321	400 dia.	0.75	3.28	1:500	0.06	215.50	214.51	0.99	215.50	214.45	1.05	-
				Rain Water Harvesting - 10														
20	D20-D22	35	½(60 x 40) = 1200	-	1200	0.297	400 dia.	0.75	3.28	1:500	0.01	215.50	228.08	0.900	215.50	228.08	0.920	-
21	D21-D22	150	90 x 60 = 5400 60 x 25 = 1500	-	6900	1.705	400 dia.	0.75	3.28	1:500	0.01	215.50	227.48	0.920	215.50	228.07	0.930	-
22	D22 - RWH-10	5	-	Line D20-D22 = 5400 Line D21-D22 = 1500	8100	2.001	400 dia.	0.75	3.28	1:500	0.01	215.50	227.48	0.920	215.50	228.07	0.930	-
				Rain Water Harvesting - 11														
23	D23-D24	35	60 x 20 = 1200	-	1200	0.297	400 dia.	0.75	3.28	1:500	0.01	215.50	228.08	0.900	215.50	228.08	0.920	-
24	D24 - RWH-11	5	60 x 5 = 300	Line D23-D24 = 1200	1500	0.371	400 dia.	0.75	3.28	1:500	0.01	215.50	227.48	0.920	215.50	228.07	0.930	-
				Rain Water Harvesting - 12														
25	D25-D26	120	120 x 58 = 6960	-	6960	1.720	400 dia.	0.75	3.28	1:500	0.01	215.50	228.08	0.900	215.50	228.08	0.920	-
26	D26 - RWH-12	5	-	Line D25-D26 = 6960	6960	1.720	400 dia.	0.75	3.28	1:500	0.01	215.50	227.48	0.920	215.50	228.07	0.930	-
				Rain Water Harvesting - 13														
27	D27-D28	140	140 x 60 = 8400	-	8400	2.076	400 dia.	0.75	3.28	1:500	0.01	215.50	228.08	0.900	215.50	228.08	0.920	-
28	D28 - RWH-13	5	5 x 60 = 300	Line D27-D28 = 8400	8700	2.150	400 dia.	0.75	3.28	1:500	0.01	215.50	227.48	0.920	215.50	228.07	0.930	-
				Rain Water Harvesting - 14														
29	D29-D30	55	55 x 30 = 1650	-	1650	0.408	400 dia.	0.75	3.28	1:500	0.01	215.50	228.08	0.900	215.50	228.08	0.920	-
30	D30 - RWH-14	5	5 x 60 = 300	Line D10-D11 = 1260	1950	0.482	400 dia.	0.75	3.28	1:500	0.01	215.50	227.48	0.920	215.50	228.07	0.930	-

Vatika Limited

VISHAL MITTAL CA/05/2181 ARCHITECT

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PROPOSED GROUP HOUSING SCHEME MEASURING 14.025 ACRES (LICENCE NO. 46 OF 2013 DATED 08-06-2013) IN SECTOR - 88A, GURGAON MANESAR - URBAN COMPLEX BEING DEVELOPED BY GABINO DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

Sub Work No. IV — **Roads Work**

	Name of Road	Length of Road (in Mtrs.)	Metalled Width (Mtrs.)	Area in Sqm.
	A	B	C	B x C
	Road A	350	8	2800
	Road B	280	8	2240
	Road C	70	6	420
	Road D	120	12	1440
	Road E	150	6	900
	Road F	120	6	720
	Road G	200	6	1200
	Road H	210	6	1260
				10980
			Add 10% curves	1098
			Open surface ground floor Parking (128 x 5 x 5)	3200
			Total Area	15278
			Say	**15300**
				Sqm.

	Total Length	1500	
	Add 10% curves	150	
	Total Length	1650	
	Say	**1650**	**Mts.**
	Paved Path 1:2:4 = 1650 x2	**3300**	**Mts.**

Vatika Limited

VISHAL MITTAL CA/93/23185 ARCHITECT

V. Sl Kukreja and Associates Pvt. Ltd. New Delhi

PROPOSED GROUP HOUSING SCHEME MEASURING 14.025 ACRES (LICENCE NO. 46 OF 2013 DATED 08-06-2013) IN SECTOR - 88A, GURGAON MANESAR - URBAN COMPLEX BEING DEVELOPED BY GABINO DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

Sl No	DESCRIPTION	Qty		Rate		AMOUNT
	SUB WORK NO. - IV (Road Work)					
1	Provision for leveling - earth filling / cutting as per site conditions. (In Acres)					
	Area = 14.025 Acre	14.025	@	100000	Rs.	1402500.00
2	Construction of road of hardly by providing:					
	a) Granular sub base 300mm as per mart confirming to Clause 401-grade II 400.1					
	b) Providing & laying specification & confirming hand parlor / crushed stone aggregate to wet mix confirming to physical repot unreent laid in 400 of marth hun two layers by taping metal 1.32 tinctured 50mm thick BM & 20mm thick mix seal surface.					
	c) 25 mm thick premix carpet with seal coat	15300	@	500	Rs.	7650000.00
3	Provision for Kerbs & channels of CC 1:2:5	3300	@	300	Rs.	990000.00
3A	Provision of Paved Path CC 1:2:4	3300	@	250	Rs.	825000.00
4	Provision for making approach to each block and pavements L.S				Rs.	250000.00
5	Provision of guide maps and other unforeseen and indicating board etc (L.S.)				Rs.	100000.00
6	Provision for Traffic Lights arrangement - L.S.				Rs.	100000.00
7	Provision of carriage of material and unforseen items - L.S.				Rs.	200000.00
	TOTAL				**Rs.**	**11517500.00**
	Add 3% contingencies				**Rs.**	**345525.00**
	TOTAL				**Rs.**	**11863025.00**
	Add 49% Department charges, price esclation, other for unforseen charges.				**Rs.**	**5812882.25**
	TOTAL				**Rs.**	**17675907.25**
	SAY				**Rs.**	**176.76**

Vatika Limited

VISHAL MITTAL CA/98/23185 ARCHITECT

V. S. Kukreja and Associates Pvt. Ltd. New Delhi

PROPOSED GROUP HOUSING SCHEME MEASURING 14.025 ACRES (LICENCE NO. 46 OF 2013 DATED 08-06-2013) IN SECTOR - 88A, GURGAON MANESAR - URBAN COMPLEX BEING DEVELOPED BY GABINO DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

Estimate for Provision of Street Lighting

Sub Work No. V					Street Lighting	
Sl No	**DESCRIPTION**	**Qty**		**Rate**		**AMOUNT (In Thousand.)**
1	Providing street lighting on roads as per standard specifications on HVPN					
	Area = 14.025 Acre	14.025	@	100000	Rs.	1402500.00
	TOTAL				**Rs.**	**1402500.00**
	Add 3% contingencies				**Rs.**	**42075.00**
	TOTAL				**Rs.**	**1444575.00**
	Add 49% Department charges, price esclation, other for unforseen charges.				**Rs.**	**707841.75**
	TOTAL				**Rs.**	**2152416.75**
	SAY				**Rs.**	**21.52**

Vatika Limited

VISHAL MITTAL CA/93/23185 ARCHITECT

Khurana and Associates Pvt. Ltd. New Delhi

PROPOSED GROUP HOUSING SCHEME MEASURING 14.025 ACRES (LICENCE NO. 46 OF 2013 DATED 08-06-2013) IN SECTOR - 88A, GURGAON MANESAR - URBAN COMPLEX BEING DEVELOPED BY GABINO DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

Sub Work No. VI						**Plantation & Road Side Trees**
Sl No	**DESCRIPTION**	**Qty**		**Rate**		**AMOUNT (In Thousand.)**
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= 2.708 (10959.951 green area) Acre	2.708	@	100000	Rs.	270800.00
2	Providing & Planting of trees with tree guards on roads at 6 m intervals					
	Total Road Length (M.)	1650				
	Trees @ 6 M. c/c	138				
	Say (2x 138) = 276, say 300	300				
	Cost of One Tree :-					
	Excavation (Rs.) 30/-					
	Manure (Rs.) 40/-					
	Tree Plants (Rs.) 80/-					
	Tree Guards (Rs.) 600/-					
	Total Cost (each)			750		
	Cost of Total trees	300	@	750	Rs.	225000.00
	TOTAL				**Rs.**	**495800.00**
	Add 3% contingencies				**Rs.**	**14874.00**
	TOTAL				**Rs.**	**510674.00**
	Add 49% Department charges, price esclation, other for unforseen charges.				**Rs.**	**250230.26**
	TOTAL				**Rs.**	**760904.26**
	SAY				**Rs.**	**7.61**

Vatika Limited

VISHAL MITTAL CA/98/23785 ARCHITECT

V. S. Khurana and Associates Pvt. Ltd. New Delhi

PROPOSED GROUP HOUSING SCHEME MEASURING 14.025 ACRES (LICENCE NO. 46 OF 2013 DATED 08-06-2013) IN SECTOR - 88A, GURGAON MANESAR - URBAN COMPLEX BEING DEVELOPED BY GABINO DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

Sub Work No. VII						MTC. Charges and Resurfacing of Roads
Sl No	DESCRIPTION	Qty		Rate -		AMOUNT (In Thousands)
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 = 14.025 Acre	14.025	@	300000	Rs.	4207500.00
2	Provision for resurfacing of roads after first five years of maintenance i.e. 100mm thick with 25mm thick premix carpet with seal coat with mechanical paver. (Sqm)	15300	@	450	Rs.	6885000.00
3	Provision for resurfacing of roads after 10 years of Mtc. i.e. 25mm thick premix carpet with seal coat with mechanical paver. (Sqm)	15300	@	300	Rs.	4590000.00
	TOTAL				**Rs.**	**15682500.00**
	Add 3% contingencies				**Rs.**	**470475.00**
	TOTAL				**Rs.**	**16152975.00**
	Add 49% Department charges, price esclation, other for unforseen charges.				**Rs.**	**7914957.75**
	TOTAL				**Rs.**	**24067932.75**
	TOTAL				**Rs.**	**240.68**

Vatika Limited

VISHAL MITTAL CA/98/23185 ARCHITECT

V. S. Khera and Associates New Delhi