OFFICE OF THE ADDITIONAL CHIEF ENGINEER, HSVP, GURUGRAM

To

The Chief Engineer-I,
HSVP, Panchkula.

Memo No. 161857 **Dated:** 06-09-2019

Sub: **Approval of Service Plan Estimate for Affordable Plotted Colony area measuring 11.0625 acres located at Village Dhunela Sector-36 Sohna Gurugram Haryana vide license No. 39 of 2019 dated 01.03.2019 being developed by M/s Signature Global Homes Pvt. Ltd.**

The Superintending Engineer, HSVP, Circle-II, Gurugram has intimated vide his letter No.3277 dated 01.05.2019 that the Service Plan Estimate for Affordable Plotted Colony area measuring 11.0625 acres located at Village Dhunela Sector-36 Sohna Gurugram Haryana vide license No. 39 of 2019 dated 01.03.2019 being developed by M/s Signature Global Homes Pvt. Ltd. has been checked and submitted to this office by Executive Engineer, HSVP Division No. VI, Gurugram for taking necessary action.

The service plan estimate is further submitted to your office duly checked for bank guarantee purposes and taking necessary action. It is subject to the following comments:-

1. **DENSITY / AREA / POPULATION:-** The scheme has been designed considering 13.5 persons per Main plot, @32000 Ltrs. Per acre for commercial, @ 25000 Ltrs. Per acre for community place, parks & @5000 Ltrs. Per acre for Roads. Total population of the colony works out to 2660 persons i.e.240 Persons Per Acre with above consideration. This may be checked and confirmed by DGTCP office that over all density as taken is corrected and overall density of sector is maintained according to the final development plan of Sohna town. The category wise area shown on the plans and proposed density of population thereof has been treated to be correct for the purpose of estimation/services.

S.F.I
AEO(ggm)

Note:

i) The internal services of the Affordable Plotted Colony are proposed to be connected with the proposed master services to be provided on dividing road of Sec-34/36 through 24 Mtr. wide Internal Sector road of Sec-36, Sohna. The external services are yet to be provided by HSVP, the firm may be ask to make their own interim arrangement till the HSVP services are made available.

ii) Ground Water shall not be used for the purpose of construction of building in terms of orders of the Hon'ble High Court dated 16.07.2012 in CWP's No. 20032 of 2008, 13594 of 2009 and 807 of 2012.

iii) 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. and instructions issued by Hon'ble NGT during hearing held on 28.04.2015 in OA No. 21 of 2014 and OA No. 95 of 2014 in the matter of Vardhman

Kaushik V/s Union of India &ors by the firm.

iv) NGT orders in application No.45 of 2015 & M.A No.126 of 15 titled as Haryali Welfare Association v/s State of Haryana Gurugram.

v) Implementation of instructions issued by Hon'ble NGT during hearing held on 28.04.2015 in OA No. 21 of 2014 and OA No. 95 of 2014 in the matter of Vardhman Kaushik V/s Union of India &ors, conveyed by the Chief Engineer, HSVP, Panchkula vide No. CE/EE-W/ CHD(G)/4971-89 dated 30.04.2015 shall be complied with in the construction of work.

2. **WATER SUPPLY:-**100 mm dia water supply line has been proposed to be connected with the proposed master water supply line to be laid by HSVP on dividing road of Sec-34/36 through 24 Mtr. wide Internal Sector road of Sec-36, Sohna. Location of C.W.T. & Pump House etc. shown in plan should be checked by DGTCP office.

i) **The use of ground water /fresh water for construction proposes is prohibited. The tested sewage effluent is available at HSVP STP's on payment or colonizer can make their own arrangement and further make fit as per IS 456 for construction purpose before use.**

ii) **The permission / provision of tube-well doesn't entitle to drill tubewells. The permission is to neglect the requirement and provision of funds is made in the estimate but the tubewells shall be subject to all restriction imposed by DC, Gurugram/central Ground Water Department.**

3. **SEWERAGE:-**For the disposal of sewerage, firm has provided 1 No. sewage treatment plant of total capacity 400 KLD capacity in their colony. Treated water has been proposed to be utilized for flushing and as well to irrigate the landscape area. Overflow pipe line of 200 mm i/d from the STP has been proposed to be disposed off in the master sewerage line to be provided by HSVP on dividing road of Sec-34/36 through 24 Mtr. wide Internal Sector road of Sec-36, Sohna. Technology of STP to be ensured either MBBR or equivalent capable of treating the Sewerage to BOD level safe for recycling purpose. Consent to establish the STP be obtained.

4. **STORM WATER DRAINAGE:-** Internal storm water drainage system has been proposed to be connected with proposed master SWD to be provided on dividing road of Sec-34/36 through 24 Mtr. wide Internal Sector road of Sec-36, Sohna by 400 mm i/d RCC NP-3 Pipe Line. However, firm has proposed rain water harvesting pits also. Only overflow of the Storm Water will be disposed off.

a) **Rain Water Harvesting** – Rain Water Harvesting pits be provided so as to recharge non – contained rain water.

5) **Road** – The approachto the colonyis from 60 Mtr. wide Master dividing road of Sec-34/36 i.e. Gurugram -Sohna Road.

Over all, it shall be ensured to maintain the levels of project for W/s, Sewerage & SWD such as to compliant with services of HSVP. Any amendments received time to time will be binding upon the colonizer.

6. **STREET LIGHTING** :-The provision for street lighting @ Rs.2,50,000/- per acre (appx) has been included in this estimate.

7. **HORT**:-The necessary provision for development of parks and roads side plantation has been in the estimate.

8. **AIR TRAFFIC RULES/ REGULATIONS:-**

The colony consist the construction of multi-storied building, RCC water tank has been proposed on the top of the building. The total height of the building and top of the water tank above ground level has not been defined indicated on the plans. The violation of Air Traffic Rules/ Regulations and height of the building may be examined by your office.

9. The layout plan for setting up of Affordable Plotted Colony area measuring 11.0625 acres located at Village Dhunela Sector-36 Sohna Gurugram Haryana vide license No. 39 of 2019 dated 01.03.2019 being developed by M/s Signature Global Homes Pvt. Ltd. appended with service plan estimate duly approved by DGTCP, HR, Chandigarh have been considered to be correct for the purpose of estimation / services only.

10. **FIRE FIGHTING:-** The provision made in the estimate has been checked for estimation purpose. However, it may be made clear to the colonizer that the appropriate provision for firefighting arrangement as required in the NBC/ISI should also be provided by the colonizer and fire safety certificate should also be obtained by the colonizer from the competent authority before undertaking any construction. The colonizer will be sole responsible for fire safety arrangement.

11. **MAINTENANCE** :-Provision for maintenance charges of various service has been included by the colonizers. The provision for Mtc. and resurfacing of roads after Ist 5 years and 10 years of Mtc. has also been included in the estimate of licensed colony of the colonizer.

12. **EXTERNAL DEVELOPMENT CHARGES**:-The colonizer will have to pay the proportionate cost to the external development charges for setting up of affordable plotted colony for the service like water supply, sewerage, storm water drainage, roads, bridges, community building, street lighting, horticulture etc. on gross acreage basis as and when determine by HSVP. These charges will be modifiable as and when supply by the authority / state govt. and will be binding upon colonizer.

13. The title and name of the license may be examined by DGTCP office.

14. All technical notes and comments incorporated on this estimate in two sheets will also apply. A copy of same is appended as Annexure - 'A'

15. The colonizer will have to ensure that sewer / storm water laid by them will be connected with the proposed master services by gravity. If it is not possible to connect the services by gravity, it will be the responsibility of the colonizer to make the pumping arrangement and mtc. thereof for all the time to come.

16. It may be made clear to the colonizer that he will not make the connection with the master services without prior approval of the competent authority, in writing.

17. For disposal of sewage of the colony, the colonizer has proposed provision sewage treatment

plant in their colony. It may be made clear to the colonizer that he will be solely responsible for disposal of sewage of their colony as per requirement of HSPCB / Environment Deptt. till such time the HSVP services are made available as per proposal of the Town. All the link connection with the HSVP services shall be made by the colonizer at his own cost. It may be clarified to the colonizer that recycled water is proposed flushing line, storage tank, metering system, pumping system and plumbing. It may be clarified to developer 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 of each other, will be adopted, one for potable water supply and second for recycled water. Home/office/business establishment will have access to two water pipe lines.

ii) Potable water and recycled water supply lines will be laid on apposite berms of road. Recycled water lines will be above sewer lines. Wherever unavoidable and it all pipes are required to be laid on same side of road, these will be local ied from the ground surface in order of descending quality. Potable water shall be above recycle water which should be above sewer. Minimum clear vertical separation between a potable water line and a recycled water line shall be one foot, if 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, fittings, appurtenances, valves, taps, meters, hydrants will be of Red Color or painted red.

b) Sign and symbols signifying and clearly indicating "Recycle Water" "Not fit for Drinking" must invariable 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 color bearing works "Recycle Water" should be fixed at suitable interval on pipes.

d) Octagonal covers, red in color or painted Red and words "Recycle Water-Non fit for Drinking" embossed on them should be used for recycled water.

e) All connections from recycle system should be distinguishable from connections of potable supply.

f) No cross connection to be made or allowed between recycle water system and potable water system.

g) The underground and overhead tanks should have "Recycle Water-Not fit for Drinking" and other warning sign embossed / marked on them. All tanks of recycle system shall be Square in shape.

h) No connection of any kind, except for inlet to cisterns, shall be made from recycled water pipe.

i) 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.

j) 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 foot and if not possible then readily identifiable sleeve should be used.

k) Irrespective of immediate availability or non-availability of reclaimed / recycled water, every owner of a house / apartment / flat, commercial Societies, Commercial Complexes and Institutional Building in this colony / licensed area will follow the dual plumbing system so as to receive water separately from potable supply, boosting and utilizing in shape.

l) All plumbing pipes fittings, valves will be of red color or painted red. In case of embedded pipes, marker tapes or red color at suitable intervals shall be fixed. The underground and overhead tanks should have "Recycle Water-Not fit for Drinking" and other warning signs embossed / marked on them. All tanks of recycle system shall be square in shape.

m) If scour outlet is required, the same shall be provided at a place away from easy access and shall preferably be locked.

n) Recycle rater pipes and potable water pipes will be fixed in separate chases and a minimum horizontal distance of 6" will be maintained between them. In case of cross over, suitably colored / taped sleeve shall be used.

o) It is the responsibility of colonizer / developer to supply adequate quantity of recycle water for flushing. In cases of deficit in recycle water of proper quality or if it is temporarily unavailable or when recycle water is not available, potable water will used for meeting recycle water demand also.

18. The correctness of the levels of the colony will be sole responsibility of the colonizer for integrating the internal sewer / storm water drainage of the colony by gravity with the master services. In case pumping is required the same will be provided & maintained by colonizer for all the time to come.

19. It may be made clear to the colonizer that the rain water harvesting system shall be provided by them per Central Ground Water Authority norms / Haryana Govt. notification and the same will be kept operational/maintained all the time. Arrangement for segregation of first rain not to be entered into the system shall also be made by the firm/colonizer.

20. The service estimate as received has been checked in this office with the consideration that layout plans appended in the services estimate has been checked / approved by DGTCP.

21. The estimate include the provision of street light of the colony. However, it may be made clear to the colonizer that the supervision charges and O & M charges shall be paid by them directly to the HVPNL.

22. The colonizer will be solely responsible for the construction of various structures such as RCC under Ground Tank etc. according to the standard specifications good quality and its workmanship. The structural stability responsibility will entirely rest upon the colonizer.

23. In case some additional structures are required to be constructed as decided by HSVP at a

later stage, the same will be binding upon the colonizer. Flow control valves will be installed, preferably of automatic type, on water supply connection with HSVP water supply line.

24. Since the construction of master road is yet to take place, the developer will get the road level / formation level of his services fixed from the concerned Executive Engineer, before execution.

25. The formation level of internal road should match with the sector roads. Similar other services of colonizer 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 the colonizer.

26. Levels of the external services to be planned / to be provided by HSVP i.e. water supply sewerage will be proportionate to EDC deposited.

27. The firm will provide solar water heating system/ all required provisions as per the guide lines and approval issued by the Haryana Govt./Ministry of Environment, Govt. of India.

28. That the colonizer shall obtain the approval / clearance / NOC as per the provision of the notification No. S.O. 1533 (E) dated 14.09.2006 issued by Ministry of Environment and Forest, Government of India before starting the construction / execution of development works at site.

29. CFL lamp shall be provided by the firm for external lighting in respect of energy conservation.

30. That the owner will not resort manual scavenging by engaging sanitation works for cleaning of septic tanks/ such cleaning as per the decision taken in the meeting of the central monitoring committee (CMC) held under the Chairmanship of Cabinet Secretary on 22.03.2013 (D. O. No. Q. 11021/12/ 2010-PHE-II (Vol. IV dated 7th Feb, 2013 of secretary to the Govt. of India, Ministry of Urban Development and further order by the Principal Secretary to Govt. Haryana, Urban Local Bodies Department, Chandigarh vide letter No. 16/24/2013-2C1 dated nil.

31. The owner shall also be abide to take connection of sewage treated/recycled water supply from HSVP recycled water supply system as and when the system is made available and colonizer is asked by HSVP for connection.

32. **<u>SPECIAL CONDITIONS</u>**:-

i) The developer at present has planned his services only for the benefit of his licensed colony. The developers have to dismantle and relocate his already laid services, wherever required to suit the size, capacity and levels of HSVP services in the area / sector.

ii) The colonizer will integrate the services with HSVP services as and when made available.

iii) It will be ensured by the colonizer to install double button system in flushing cistern in all toilets in various buildings to be constructed in his licensed area.

iv) Similarly, the common services if decided to be laid by HSVP along 24mtr wide road / master roads against the development charges charged by HSVP

for common benefit of all developers in the sector. The developers have to dismantle and relocate his already laid services, wherever required to suit the size, capacity and levels of HSVP services in the area / sector.

33. **CONSTRUCTION ACTIVITY OF PROJECT:-**

a) It is clearly stated that the firm / developer shall not be allowed to carry out the construction with underground water.

b) The firm shall also show the source from where the water supply will be taken for construction purpose. The ground water shall not be allowed for use in construction in terms of order of Hon'ble Court dated 16.07.2012 passed in CWP's No. 20032 of 2008, 13594 of 2009 and 807 of 2012.

34. The estimate cost of various services to be provided by the colonizer for the development of internal services has been checked and corrected works for the purposes of bank guarantee as under:-

Sr. No.	Description	Amount (Rs. In lacs)
1.	Water supply scheme	158.80
2.	Sewerage scheme	110.60
3.	Storm Water Drainage	105.10
4.	Road & Footpath	266.20
5.	Street lighting	42.40
6.	Horticulture	7.10
7.	Maintenance of service including resurfacing of roads after 1st five years and 2nd ten years of maintenance (As per HSVP norms)	332.40
	Total	**1022.60**

Net Planned area = 11.0625 acres.
Dev. Cost as per acre =1022.60/11.0625 acres = Rs. 92.44 Lacs per gross acre.
Say Rs. 92.50 lacs

35. It may be made clear to the colonizer that a separate detailed technical scheme including working drawings, designs, levels X-sections / L-sections, specifications and alignments/for connectivity of their intake line outfall/ ultimate disposal lines etc. will have to be prepared by colonizer for the purposes of execution of work and got approved from the concerned Superintending Engineer, HSVP before start of works at site and all works shall be got executed strictly as per approved detailed technical scheme.

Additional Chief Engineer,
HSVP, Gurugram

Endst. No. 16185B **Dated:** 06-09-2019

A copy of above is forwarded to the Superintending Engineer, HSVP, Circle-II, Gurugram w.r.t. his office memo No. 96752 dated 29.05.2019 for information.

Additional Chief Engineer,
HSVP, Gurugram

OFFICE OF THE SUPERINTENDING ENGINEER, HSVP, CIRCLE-II, GURUGRAM

To

The Addl. Chief Engineer,
HSVP, Gurugram.

Recd. on 21-05-19

Diary No. 98678 Date 29-05-2019 Office of the Addl. Chief Engineer (NCR) HSVP, Gurugram

ACE-II

Memo No. 3277 Dated: 1-5-2019

Sub: **Approval of Service Plan Estimate for Affordable Plotted Colony area measuring 11.0625 acres located at Village Dhunela Sector-36 Sohna Gurugram Haryana vide license No. 39 of 2019 dated 01.03.2019 being developed by M/s Signature Global Homes Pvt. Ltd.**

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The service plan estimate is further submitted to your office duly checked for bank guarantee purposes and taking necessary action. It is subject to the following comments:-

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Note:

i) The internal services of the Affordable Plotted Colony are proposed to be connected with the proposed master services to be provided on dividing road of Sec-34/36 through 24 Mtr. wide Internal Sector road of Sec-36, Sohna. The external services are yet to be provided by HSVP, the firm may be ask to make their own interim arrangement till the HSVP services are made available.

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2. **WATER SUPPLY:-** 100 mm dia water supply line has been proposed to be connected with the proposed master water supply line to be laid by HSVP on dividing road of Sec-34/36 through 24 Mtr. wide Internal Sector road of Sec-36, Sohna. Location of C.W.T. & Pump House etc. shown in plan should be checked by DGTCP office.

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a) **Rain Water Harvesting** – Rain Water Harvesting pits be provided so as to recharge non – contained rain water.

5) **Road** – The approach to the colony is from 60 Mtr. wide Master dividing road of Sec-34/36 i.e. Gurugram -Sohna Road.

Over all, it shall be ensured to maintain the levels of project for W/s, Sewerage & SWD such as to compliant with services of HSVP. Any amendments received time to time will be binding upon the colonizer.

6. **STREET LIGHTING :-**The provision for street lighting @ 2.50 lac /- per acre (appx) has been included in this estimate.

7. **HORT**:-The necessary provision for development of parks and roads side plantation has been in the estimate.

8. **AIR TRAFFIC RULES/ REGULATIONS:-**

The colony consist the construction of multi-storied building, RCC water tank has been proposed on the top of the building. The total height of the building and top of the water tank above ground level has not been defined indicated on the plans. The violation of Air Traffic Rules/ Regulations and height of the building may be examined by your office.

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13. The title and name of the license may be examined by DGTCP office.

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b) Sign and symbols signifying and clearly indicating "Recycle Water" "Not fit for Drinking" must invariable 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 color bearing works "Recycle Water" should be fixed at suitable interval on pipes.

d) Octagonal covers, red in color or painted Red and words "Recycle Water-Non fit for Drinking" embossed on them should be used for recycled water.

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21. The estimate include the provision of street light of the colony. However, it may be made clear to the colonizer that the supervision charges and O & M charges shall be paid by them directly to the HVPNL.

22. The colonizer will be solely responsible for the construction of various structures such as RCC under Ground Tank etc. according to the standard specifications good quality and its workmanship. The structural stability responsibility will entirely rest upon the colonizer.

23. In case some additional structures are required to be constructed as decided by HSVP at a later stage, the same will be binding upon the colonizer. Flow control valves will be installed, preferably of automatic type, on water supply connection with HSVP water supply line.

24. Since the construction of master road is yet to take place, the developer will get the road level / formation level of his services fixed from the concerned Executive Engineer, before execution.

25. The formation level of internal road should match with the sector roads. Similar other services of colonizer 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 the colonizer.

26. Levels of the external services to be planned / to be provided by HSVP i.e. water supply sewerage will be proportionate to EDC deposited.

27. The firm will provide solar water heating system/ all required provisions as per the guide lines and approval issued by the Haryana Govt./Ministry of Environment, Govt. of India.

28. That the colonizer shall obtain the approval / clearance / NOC as per the provision of the notification No. S.O. 1533 (E) dated 14.09.2006 issued by Ministry of Environment and Forest, Government of India before starting the construction / execution of development works at site.

29. CFL lamp shall be provided by the firm for external lighting in respect of energy conservation.

30. That the owner will not resort manual scavenging by engaging sanitation works for cleaning of septic tanks/ such cleaning as per the decision taken in the meeting of the central monitoring committee (CMC) held under the Chairmanship of Cabinet Secretary on 22.03.2013 (D. O. No. Q. 11021/12/ 2010-PHE-II (Vol. IV dated 7th Feb, 2013 of secretary to the Govt. of India, Ministry of Urban Development and further order by the

Principal Secretary to Govt. Haryana, Urban Local Bodies Department, Chandigarh vide letter No. 16/24/2013-2C1 dated nil.

31. The owner shall also be abide to take connection of sewage treated/recycled water supply from HSVP recycled water supply system as and when the system is made available and colonizer is asked by HSVP for connection.

32. **SPECIAL CONDITIONS**:-

i) The developer at present has planned his services only for the benefit of his licensed colony. The developers have to dismantle and relocate his already laid services, wherever required to suit the size, capacity and levels of HSVP services in the area / sector.

ii) The colonizer will integrate the services with HSVP services as and when made available.

iii) It will be ensured by the colonizer to install double button system in flushing cistern in all toilets in various buildings to be constructed in his licensed area.

iv) Similarly, the common services if decided to be laid by HSVP along 24mtr wide road / master roads against the development charges charged by HSVP for common benefit of all developers in the sector. The developers have to dismantle and relocate his already laid services, wherever required to suit the size, capacity and levels of HSVP services in the area / sector.

33. **CONSTRUCTION ACTIVITY OF PROJECT:-**

a) It is clearly stated that the firm / developer shall not be allowed to carry out the construction with underground water.

b) The firm shall also show the source from where the water supply will be taken for construction purpose. The ground water shall not be allowed for use in construction in terms of order of Hon'ble Court dated 16.07.2012 passed in CWP's No. 20032 of 2008, 13594 of 2009 and 807 of 2012.

34. The estimate cost of various services to be provided by the colonizer for the development of internal services has been checked and corrected works for the purposes of bank guarantee as under:-

Sr. No.	Description	Amount (Rs. In lacs)
1.	Water supply scheme	158.80
2.	Sewerage scheme	110.60
3.	Storm Water Drainage	105.10
4.	Road & Footpath	266.20
5.	Street lighting	42.40
6.	Horticulture	7.10
7.	Maintenance of service including resurfacing of roads after 1st five years and 2nd ten years of maintenance (As per HSVP	332.40

	norms)	
	Total	**1022.60**

Net Planned area = 11.0625 acres.

Dev. Cost as per acre =1022.60/11.0625 acres = Rs. 92.44 Lacs per gross acre.

Say Rs. 92.50 lacs

35. It may be made clear to the colonizer that a separate detailed technical scheme including working drawings, designs, levels X-sections / L-sections, specifications and alignments/for connectivity of their intake line outfall/ ultimate disposal lines etc. will have to be prepared by colonizer for the purposes of execution of work and got approved from the concerned Superintending Engineer, HSVP before start of works at site and all works shall be got executed strictly as per approved detailed technical scheme.

DA/- 1) 03 sets of estimate along with plan
2) Annexure-A

(Bhoop Singh)
Superintending Engineer,
HSVP, Circle-II, Gurugram

Endst. No. Dated:

A copy of the above is forwarded to the Executive Engineer, HSVP, Div. No. VI, Gurugram for information w.r.t. her office memo No. 70091 dated 12.04.2019.

(Bhoop Singh)
Superintending Engineer,
HSVP, Circle-II, Gurugram

INDEX

PROJECT REPORT/ESTIMATE FOR PROVIDING WATER SUPPLY, SEWERAGE, STORM WATER DRAINAGE, ROADS, STREET LIGHTING AND HORTICULTURE IN RESPECT OF 11.0625 ACRES RESIDENTIAL PLOTTED COLONY UNDER DD JAY IN SECTOR 36 SOHNA

REPORT

The Haryana Government has prepared a master plan for development of Residential/Industrial / Commercial urban estate SOHNA. M/S SIGNATURE GLOBAL HOMES PVT LTD has decided to develop a part of the area in this master plan and has named this part as 11.0625 Acres Residential plotted colony . This scheme is located in sector –36 of Haryana Urban Development Authority SOHNA. License has already been granted under by DGTCP Lc. The brief details of the colony are as under:-

WATER SUPPLY

1 Source

The source of water supply in this area is tubewells at present as the underground water is potable and fit for human consumption. Moreover water is available at reasonable depth. The average yield of tubewell with 40-45 ft strainers will be about 20,000 litre per hour. The recharging of underground water table in this belt is stated to be good. However still we shall resort to rain water harvesting system to keep up the recharging system. The number of tubewells required for the above area has been worked out and the tubewells will be bored in tune with growth of demand to avoid absolence of the tubewells. The ultimate requirement of tubewells includes provisions of 10% stand by. Ultimately, water shall be supplied to the Project by HARYANA URBAN DEVELOPMENT AUTHORITY, SOHNA.

2 Design

The scheme has been designed for approved population of 2659.50 persons. The rate of water supply per head per day has been taken as 172.5litres (150 + 15 %) as per HUDA norms. In addition to above necessary provision of water for community area, shopping centres, parks etc. have been taken into account for calculating the maximum quantity of water requirement.

3 Pump chambers and Pumping Machinery

[Pick the date]

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It is proposed to equip each tubewell with an electrically driven set ejecto type or submersible pump capable of delivering of 20,000 litre per hour. It is also proposed to equip required Nos pumping sets with stand by diesel engins / gen set engines for operation during failure of electricity.

4 Under Ground Storage

Underground storage tank provision has been made for 300KL capacity.

(a) In two compartments, which caters for the domestic as well as for firefighting requirement. The water for domestic water compartment shall overflow the fire compartment so that the water in the fire compartment also remains fresh.

5 Boosting Station

The boosting station is being planned near UGSR catering to the above requirement

6 Distribution System

The distribution system for this development has been designed to supply @ 172.5litre per head her day @ 3 times the average rate of flow on Hazen William formula. Necessary provision for laying CI/DI pipes conforming to relevant 1S standards along with valves and specials has been made in the project. The minimum terminal head at any point will be more than 27.00 meters so that it can serve the stilt and four floors stories construction envisaged in the plan. Minimum pipe dia for distribution is kept as 100 mm dia. For drinking water supply and 80mm dia for flushing cum irrigation water supply.

7 Rising mains

Rising mains from HUDA water main or sector road to water works have also been proposed and provision has been made in this estimate.

8 Sewerage

The sewer lines have been designed for 3 times average DWF in relation to the water supply demand assuming that 75% of the domestic water supply shall find its way into the proposed sewer. SW/RCC pipe sewers have been proposed and designed to run half full. The sewers have been designed on 0.77 M per second minimum velocity i.e. self cleansing velocity. Necessary provision for laying s.w. /R.C.C. pipes manholes etc. has been made in this estimate.

9 Storm water Drainage

The storm water drainage is being designed to carry 6.25mm rainfall per hour. Also suitable provisions are contemplated in our scheme to ensure better recharging of underground water table in the area R.C.C. Hume pipes drain with minimum 400mm dia is proposed in this area.

10 Roads

The roads in the colony have been planned 9m wide. The following specifications have been adopted which are reproduced below.

(i) 300 mm GSB

(ii) 250 mm stone aggregate

(iii) 50 mm thick B.M

(iv) 20 mm MSS

The above construction shall be done on well compacted sub grade as per specifications. Complete work will be carried out as per MORTH specifications, IRC guide lines or HUDA specifications, which ever applicable.

11 Street lighting

The provision has been made on lump sum basis.

12 Horticulture

The usual provision of road side plantation of tree guards has been made for all roads. The parks shall be developed by providing lawns etc.

13 Specifications

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

14 Rates

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

Signature global Homes Pvt. Ltd.

15 Cost

The total cost of development in this project including various P.H. and B & R services works out to Rs 1022.60 Lacs. Including 3% contingencies & P.E. charges and 49% departmental administrative , unforeseen and escalation charges.

The cost per gross acre for the phase works out to be Rs 92.44 which covers the provision of services like water supply, sewerage, storm water drainage, roads, street lighting and plantation including maintenance thereof.

11.0625 ACRES RESIDENTIAL PLOTTED COLONY
SECTOR -36 SOHNA
DESIGN CALCULATIONS

Daily Requirement

1.	**Total No. of Plots**		= 197
	Population per plot (@ 13.5)		=2659.50 Persons
	Therefore population	= 13.5 x 197	
	Water requirement for plots @ 172.5 litres/head/day		=458763.75litres
	2659.5 x 172.5		or 458.76
		Say	=465.00
2.	**Add Requirement for Institutions etc.**		
a.	No of commercials	= 2 No	
	Daily water requirement	@ 32000 litre/Acre	
	Area of commercial =0.410 Acre		
	Therefore daily water requirement	= 0.410 x 32000	= 13120.00 litres = 13.12 KL
b.	Community place		
	Area of community place		= 1.109 acres
	Daily water requirement @25000litre/acre = 1.109X 25000		= 27725.00 litres = 27.72 KL
	Total		**= 40.84 KL**
	say		**= 45.00 KL**
3.	**Area under Parks** Green Parks		
	Therefore daily water requirement		= 0.837
	@ 25000 litre/Acre		=20925.00 Litres
	= 0.837x 25000		= 21.00 KL

[Pick the date]

4.	**Area under roads** out of 11.0625acres		= 2.38 acres
	Therefore daily water requirement for sweeping of roads	= 2.38 x 5000	= 11900.00 litres = 11.90KL
	Total daily requirement		
	a. For domestic use (1+2)	= 465.00+45.00	= 510.00 KL
	b. Under parks & roads (3+4)	= 21.00+11.90	= 32.90 KL
	Assuming requirement for flushing as 1/3 of total domestic demand and therefore daily requirement for flushing		= 1/3 X 510.00 = 170.00 KL
	Daily requirement of potable drinking water supply = 510.00 – 170.00		= 340.00 KL

11.0625 ACRES RESIDENTIAL PLOTTED COLONY

SECTOR -36 SOHNA

TUBEWELL

Assuming working hours of tube well	= 16
Assuming discharge/hour of each tube well	= 20000 lit/hour
Total domestic demand (DRINKING)	= 340.00 KL
No. of tubewells required for drinking water supply	= 340.00 / 20X16 = 1.06
No. of tube wells Required for Total demand = (510.00+32.90) / 20 x 16	= 1.69
Add 10% stand by	= 0.17
Total no of tubewells required = 1.69 + 0.17	=1.86 nos.
Say	= 2 nos

So it is proposed to provide 1 Nos of tube wells at present. Therefore provision for installation of 1 no. tube well has been made in the estimate. More tube wells will be installed when required. Moreover the requirement of flushing water supply is to met from treated water from S.T.P. and ultimately water is to be supplied by HUDA

Pumping machinery for tube wells

Gross working load		= 45.00 m
Average fall in is S.L.		= 3.00 m
Depression head		= 9.00 m
Friction Loss		= 3.00m
Total		= 60.00 m
B.H.P. = 20000 x 60 / 60x60x75x0.6	With 60% efficiency	= 7.40
	Say	= 8.50

Boosting Machinery (Drinking water)

Daily requirement for domestic use (Drinking)		= 340.00 KLD
Assuming 8 hours running 1 pump (with one stand by) discharge/hour.	= 340.00 / 8	= 42.50 KL/HR = 708.33 ltr/m
say		= 720.00 ltr/m

Head of Pump

i)	Suction Lift	4m
ii)	Friction Loss in main & specials	4m
iii)	Clear Head	27m
		35m
say		40m

B.H.P. of Motor	720.00 x 40 / 60x75x0.6	= 10.66
	Say	12.00 H.P.

Underground Storage Tank (Drinking water supply)

Daily requirement for domestic use including institutional demand		= 340.00 KL
Capacity of under ground tank taking storage (25 + 33 = 58%) say 60% of daily demand	= 340 x 0.6	= 204.00 KL
Demand for	Say	= 200.00 KL
Fire fighting 100√P	= 100√2.66	= 266.00 KL
1/3 demand = 1/3 x 266.00		= 89.00 KL
	Say	= 100.00 KL

[Pick the date]

Hence it is proposed to provide underground tank of capacity 300 KL which also includes 100 KL capacity for firefighting as well.

This tank will have two compartments, one for fire and the other for domestic use. The water first enters the fire compartment then over flows to the domestic use compartment so that the water in the fire compartment shall remain fresh.

BOOSTING MACHINERY(Flushing water supply)

Daily requirement for domestic use (flushing)		= 170.00 KL
Add for horticulture and roads		= 32.90 KL
TOTAL		= 202.90 KL
Assuming 8 hours running 1 pumps (with one stand by)		
Discharge/hour	$= \frac{202.90}{8}$	= 25.36 KL
Discharge/minute		= 422.70 liter/m
	say	= 425.00 liter/m

HEAD OF PUMP

i)	Suction lift	= 4 M
ii)	Friction Loss in main & specials	= 4 M
iii)	Clear head	= 27 M
TOTAL		= 35 M
SAY		= 40 M
B.H.P. of Motor	$= \frac{425 \times 40.00}{60X75X0.6}$	= 6.28
	say	= **7.00**

UNDERGROUND STORAGE TANK(Flushing water supply)

Daily requirement for flushing including horticulture	= 202.90 KL
Capacity of underground tank taking 8 hours storage = (25 + 33=58 %) = 202.90 x 0.6	= 121.74 KL
	= 125.00 KL
SAY	= 125.00 KL

DIESEL GENERATING SET(BOOSTING MACHINERY

Pumping sets 1 Nos. 10.0 H.P. each	= 12.00 H.P.
Pumping sets 1 Nos. 6.00 H.P. each	= 7.00 H.P.
Lightening etc	= 2.00 H.P.
	= 21.00 H.P.
Or 21 x 0.746 x 1.50	= 23.49KVA
Add 10 % extra	= 2.35
	= 25.84
SAY	= 27.50 KVA

DIESEL GENERATING SET FOR TUBE WELL

Capacity of Diesel gen set = 8.5x 0.746 x 1.5 x1.10 = 10.46KVA

OVER HEAD SERVICE RESERVIOR

There is no necessity of O.H.S.R. as the capacity of U.G.S.T. has been increased from 33 % to 60% which includes 25 % capacity of O.H.S.R. of daily requirement

Capacity of S.T.P.

Capacity of S.T.P. = 0.75 X 510.00	= 382.50 KLD
SAY	= 400.00KLD
	= 0.40 MLD

[[Pick the date]

11.0625 ACRES RESIDENTIAL PLOTTED COLONY

SECTOR -36 SOHNA

FINAL ABSTRACT OF COST

		Amount (Rs. In Lacs)
Sub Work No. I	Water Supply	Rs. 158.80
Sub Work No. II	Sewerage	Rs. 110.60
Sub Work No. III	Storm Water Drainage	Rs. 105.10
Sub Work No. IV	Road and Footpath	Rs. 266.20
Sub Work No. V	Street Lighting	Rs. 42.40
Sub Work No. VI	Horticulture Work	Rs. 7.10
Sub Work No. VII	Maintenance Charges for 10 years i/c resurfacing of roads after 1st 5 years and 2nd 5 years	Rs. 332.40
	Total	Rs. 102.60

Executive Engineer
HSVP Division No. VI
Gurugram

Superintending Engineer
HSVP, Circle-II, Gurugram

Addl. Chief Engineer
HSVP, Gurugram

[Pick the date]

FINAL ABSTRACT OF COST (WATER SUPPLY)

	Amount (Rs in Lacs)
Sub Head No. 1 Head Works	58.30
Sub Head No. 2 Pumping Machinery	36.10
Sub Head No. 3 Distribution System (Drinking)	37.50
Sub Head No. 4 Distribution System	26.90
(Flushing) Irigation	158.80
Total	**181.40**

[Pick the date]

Sub Work-I

Sub Head No. 1 — **Water Supply**

Head Works Rs (Lacs.)

1. Boring and installing 200 i/d tubewells with reserve/ direct rotary rig complete with pipe strainer to a depth of about 150m complete.

   1 Nos. @ 7.00 Lacs each — 7.00

2. Constructing pump chambers as per standar design of PWD PH/HUDA of size 1.25 x1.25 x1.25 m

   1 Nos. @ 4.00 Lacs each — 1.00

3. Construction of boundary wall around the Tubewell site

   Water Works 1 No. @ Rs 3.00 lac — 1.00

   Tube wells 1 Nos. @ Rs 1.00 — 1.00

4. Provision of footpath hedges and lawns at tubewell 1 Nos.

   (L.S.) — 1.00

5. Construction of boosting chambers of suitable size along with under ground tank of capacity 525 KL pumping machinery and generating set etc. complete in all respects.

   Details of boosting station

   i) Construction of boosting chamber — 3.00

   ii) U.G. tank 425 KL capacity incl 100 KL For fire fighting in two compartments And 125 KL for flushing @ RS 425/KL = 4000x425 — 17.00

6.	Provision for staff quarters for Maintenance/ store			
	i)	1 No 350 sft @ Rs 6.00 Lac	6.00 lac	6.00
7.	Prov. for carriage of material (L.S.)		1.00 lac	1.00
	P.E. & contingency charges @ 3%			38.00 1.14
				39.74
	Department escalation unforeseen and administrator charges @ 49%			19.18
			Total	**58.32**
			Say	**58.30**

C.O to final abstract of cost

Sub Work I — **Water Supply**

Sub Head No. 2 — **Pumping Machinery**

Amount (Rs.)

(in Lacs)

1.	Providing and installing electricity driven electro or submersible pumping sets capable of delivering about 20.00KL water per hour against a total head of 60 M complete with motor and other accessories (8.50 B.H.P.)	
	1 Nos. @ Rs 3.00 lac each	2.00
2.	Provision for diesel engine genset stand by arrangement for tubewells (12KVA) (L.S.)	2.00
3.	Provision for cheap pressure type chlorination plant complete	
	1 Nos. @ Rs 1,00,000/-	1.00
4.	Provision for making foundations and erection of pumping machinery (L.S.)	2.00
5.	Provision for pipes, valves, and specials inside the pump chamber	2.00
6.	Provision for electric services connection including electric transformer and fittings for tubewells chambers complete including transformers L.S.	2.50
7.	Providing and installing centrifugal boosting pumping sets, capable of delivering water at 40 M head complete in all respects (2X12+2X7.00=38H.P.) domestic & flushing	
	4 Sets @ Rs 1.50 lac each	6.00
8.	Providing Gen set 27.50 KVA	5.00

9.	Provision for carriage for materials and other unforeseen items L.S.	1.00
	Total	23.50
	P.E. & contingency charges @ 3%	0.70
		24.20
	Department escalation unforeseen and administrator charges @ 49%	11.86
	Total	36.06
	say	**36.10**

C.O to final abstract of cost

11.0625 ACRES RESIDENTIAL PLOTTED COLONY

SECTOR -36 SOHNA

SUB WORK NO. I — **WATER SUPPLY**

SUB HEAD NO. 3 — **DISTRIBUTION SYSTEM/RISING MAIN**

		Amount (Rs in lacs)
1.	Providing, laying, jointing and testing C.I/D.I. K9 Pipes including cost of excavation complete as per specifications.	
	100 mm dia i/d 630 mtrs @ Rs. 1250/- mtr	7.87
	150 mm dia i/d 600mtrs @ Rs. 1575/- mtr	9.45
2.	Providing and fixing sluice valve including cost brick masonry chambers complete in all respect.	
	100 mm dia i/d 2Nos. @ Rs. 12000/- each	0.24
	150 mm dia i/d 3 Nos. @ Rs. 15000/- each	0.45
3.	Providing and fixing air valves and scour valves or scour taps including cost of brick masonry chamber	
	4 Nos. @ Rs. 10,000/- each	0.40
4.	Providing and fixing fire hydrants complete with masonry chambers	
	4 Nos. @ Rs. 10,000/- each	0.40
5.	Providing and fixing indicator plates for sluice valve, air valve etc.	
	13Nos. @ Rs. 1000/- each	0.13
6.	Provision for rising main D.N. 110mm from main HUDA water line to U.G.S.T. 20 mtrs @ Rs. 1250/- mtr	0.25
7.	Provision for D.N. 150mm D.I. rising main from tube well to U.G.S.T. 260mtrs @ Rs. 1575/- mtr	3.25

[Pick the date]

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8.	Providing for carriage of material L.S.	2.00
		24.44
	Add P.E. & Contingency charges @ 3%	0.73
		25.17
	Department escalation unforeseen and administrator charges @ 49%	12.33
	Total	37.50
	Say:	37.50

Sub Work No. I

Sub Head No. 4

Water Supply
Flushing and Irrigation

			Amount (Rs. in Lacs)
1	Providing, laying, jointing and testing DI pipe K-9 pipes including cost of excavation etc. complete in all respect.		
	a)	80mm dia C.I./D.I. 680m @ Rs. 1000/- M	6.80
	b)	100mm dia C.I./D.I. 620 m @ Rs. 1250/- M	7.75
	c)		
2	Providing and fixing sluice valves including cost of brick masonry chambers complete in all respect.		
	a)	100mm dia 3nos. @ Rs. 12000/- each	0.36
	b)	80mm dia 2nos. @ Rs. 10000/- each	0.20
3.	Providing and fixing air valves and scour Valves or scour taps including cost of brick masonry chambers 8 nos. @ Rs. 10000/- each		0.80
4.	Providing and fixing indicating plates for sluice Valves, air valves etc. 13 nos. @ Rs. 1000/- each		0.13
5	Provision for carriage of material and other unforeseen items.		1.50
	Total		**17.54**
	Add 3% contingencies & P.E. charges		0.53
			18.07

Add 49% departmental, escalation, adm. and unforeseen charges.		8.85
	Total	**26.92**
	say	**26.90**

11.0625 ACRES RESIDENTIAL PLOTTED COLONY

SECTOR -36 SOHNA

SUB WORK II **SEWERAGE SCHEME**

		Amount (Rs. In Lacs)
1.	Providing, lowering, cutting, salt glazed stoneware pipes and specials into trenches including cost of excavation, bed concrete, cost of manholes complete in all respect.	
	200 mm i/d	
	Av. Depth upto 2 M – 855M @ Rs. 1250- per M	10.69
	200 mm i/d	
	Av. Depth upto 3 M – 235M @ Rs. 4100- per M	3.29
	200 mm i/d Av. Depth upto 4 M – 160M @ Rs. 1600- per M	
2.	Provision for providing oblique junctions (L.S.)	2.56
3.	Provision for providing and fixing vent shafts at suitable places as per PH requirement (L.S.)	2.00
4.	Provision of temporary disposal arrangement till HUDA sewer laid (including cost of STP capacity 0.40MLD) and over flow pipe	50.00
	upto main HUDA sewer	
5.	Provision of temporary timbering etc.	1.00
6.	Provision for cutting of roads and carriage of materials etc. and other unforeseen charges (L.S.)	1.50
7.	Provision for connection with HUDA main (L.S.)	1.00
	Total	72.04
	P.E. & Contingency charges @ 3%	2.16
		74.20
	Department escalation unforeseen and administrator charges @ 49%	36.36
	Total	110.56
	Say:	**110.60**

11.0625 ACRES RESIDENTIAL PLOTTED COLONY
SECTOR -36 SOHNA

SUB WORK – III **STORM WATER DRAINAGE**

		Amount (Rs. in Lacs)
1.	Providing, laying RCC pipes drain class NP – 3 with cement joint, manholes, excavation etc. complete in all respect 400 mm i/d Av. Depth upto 2.0 m – 1200M @ Rs. 2500/- per M	30.00
2.	Provision for road gullies with 300 mm dia pipe connection L.S.	3.00
3.	Provision for lighting, watching and temporary diversion of traffic	2.00
4.	Provision for cutting of roads and carriage of materials etc. and other unforeseen items L.S.	2.00
5.	Provision for temporary arrangement of recharge pit at selected place.	20.00
6.	Provision for connection with HUDA on master line	1.00
7.	Provision for timbering and shoring	0.50
8.	Provision for temporary disposal arrangement Till HUDA services are provided (LS)	10.00
	TOTAL	68.50

[[Pick the date]

P.E. & contingency charges @ 3%		2.06
	Total	70.56
Department escalation unforeseen and administrator charges @ 49%		34.57
	Total	105.13
	say	105.10

11.0625 ACRES RESIDENTIAL PLOTTED COLONY

SECTOR -36 SOHNA

Sub Work No. IV **Road Work**

Item No.	Description of Item	Unit	Qty.	Rate (Rs)	Amount (Rs in lacs)
1	**Site Clearance**				
1.1	Clearing and grubbing road land including uprooting rank, vegetation, grass, bushes, shrubs, saplings and trees girth upto 300 mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable materials to be used or auctioned, upto a lead of 1000mm including removal and disposal of top soil not exceeding 150 mm thickness by manual means in areas of light jungle as per drawings and Clause 201 of Morth Specifications.	Hectare	1.66	50000	0.83
2	**Earth Works**				
2.1	Provision for leveling + earth filling as per site condition approximate	Acre	11.0625	1,50,000	16.59
3	**Provision for**				
i.	300mm GSB				
ii.	250mm thick stone aggregate				
iii.	50mm thick B.M.				
iv.	20mm thick MSS				
	Total	Sqm	9900	1200	118.80
4	**Miscellaneous Items**				
4.1	Construction of cement concrete Kerb and Channels as per specifications	Meter	3100	600	18.60
4.2	Construction of footpaths as per specification on 24 m wide road 2x1.50x150 =450	Sqm	450	600	2.70

[Pick the date]

4.3	Providing and fixing guide maps at selected locations (L.S.)				1.00
4.4	Provision for plot indicators (L.S.)				1.00
4.5	Provision for demarcating burgies (L.S.)				1.00
4.6	Provision for traffic arrangement				2.00
4.7	Provision for carriage of material (L.S.)				1.00
4.8	Construction of pavement in shopping area	sqm	830	1200	9.96
					173.48
	Add 3% contingency & P.E. charges				5.20
	Total				178.68
	Department escalation unforeseen and administrator charges @ 49%				87.55
	Total				266.23
	Say				266.20

SUB WORK – V

11.0625 ACRES RESIDENTIAL PLOTTED COLONY
SECTOR -36 SOHNA

Street Lighting

		Amount (Rs. in lacs)
Providing street lighting on internal Roads as per standard specification in 10.84 acre area @ Rs. 2,50,000/- per acre		= 27.66
11.0625 x 2,50,000/-		= 0.83
Add 3% contingencies & P.E. charges		= 28.49
Add Department escalation unforeseen and administrator charges @ 49%		= 13.96
	Total	= 42.45
	Say	= 42.40

C/O to final abstract of cost

[Pick the date]

11.0625 ACRES RESIDENTIAL PLOTTED COLONY

SECTOR -36 SOHNA

SUB WORK – VI

COST ESTIMATE

HORTICULTURE

		AMOUNT (RS. IN LACS)
1	**Development of Lawn area**	
	a) Trenching the ordinary soil up to 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 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 rows 7.50 cm in either direction including for hedges and grill and barbed wire fencing around park and green belts (as per HUDA Norms) Area 0.837 Acres @ Rs. 1,50,000/- per acre	1.26
2	**Planting of trees with tree guards on Roads at 40' intervals**	
	Total length of roads = 1550.00mtr	
	No. of trees @ 12 m c/c = 1550x 2 / 12 = 257 Nos.	
	Say = 260 Nos	
	Cost of the tree	
	Excavation Rs. 60/-	
	Manure Rs. 90/-	
	Tree plants Rs. 150/-	
	Tree guards Rs. 1000/-	
	Total = 1300x 260	3.38
	TOTAL	4.64
	Add 3 % contingencies and P.E charges	0.14
		4.78

[Pick the date]

Signature Global Homes Pvt. Ltd.

Add 49% departmental charges, price escalation , unforeseen and Adm charges	2.34
TOTAL	**7.12**
SAY	**7.10**

SUB – WORK NO VII

MAINTENANCE CHARGES AND RESRURFACING OF ROADS

Amount (Rs. in lacs)

2nd phase after 5 yrs of 1st phase

1. Provision for maintenance charges for water supply, sewerage, storm water drainage, roads, streetlights, horticulture etc. complete including operation and establishment charges as per HUDA norma after completion and resurfacing of roads after 10 years.

   11.0625 acres@ Rs. 7.50 lacs per acre = 82.97

2. Provision for resurfacing of roads after 1st 5 years of maintenance i.e. 100mm thick B.M. and 25mm premix carpet with mechanical paver

   9900 sqm @ Rs 600/- Per Sqm = 59.40

3. Resurfacing of road after 10 years of maintenance by providing 25 mm thick premix carpet with seal coat with mechanical paver

   9900 sqm @ Rs 750/- Per Sqm = 74.25

	= 216.62
TOTAL	
Add 3% PE and contingency charges	= 6.50
	= 223.12
Add 49% Departmental charges, price escalation unforeseen and administrator charges.	= 109.33
Total	= 332.45
Say	**= 332.40**

HYDRAULIC DESIGN STATEMENT OF WATER SUPPLY

Providing Water Supply Scheme11.0625ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

Sr. No.	Name of Pipe Line	Residential plots		Population @13.5 or 9 persons per plot	Water requirement @ 155 l/head /day in KLD	Water requirement for non residential plots				Gross requirement in KLPD	Gross water requirement in gallons per day (Total)
		As per plan	Total			Plots area in acres	Type of building	Basis of water requirement	Total water requirement		
1	2	3	4	5	6	7	8	9	10	11	12
1	RA	-		-	-	-	-	-	-	-	-
2	AB	-		-	-	-	-	-	-	-	-
3	BB1	-		-	-	0.41	Commercial	32KL/ Acer	13.12	13.12	2870
4	BC	3		40.5	4.65	-	-	-	-	4.65	1020
5	CC1	10		135	15.52	-	-	-	-	15.52	3410
6	CD	6		81	9.31	-	-	-	-	9.31	2050
7	DD1	6		81	9.31	-	-	-	-	9.31	2050
8	DE	8		108	-	-	-	-	-	12.42	2720
9	EE1	6		81	9.31	-	-	-	-	9.31	2050
10	E1E2	20		270	31.05	-	-	-	-	31.05	6830

HYDRAULIC DESIGN STATEMENT OF WATER SUPPLY

Providing Water Supply Scheme11.0625ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

Sr. No.	Name of Pipe Line	Residential plots		Population @13.5 or 9 persons per plot	Water requirement @ 155 l/head /day in KLD	Water requirement for non residential plots				Gross requirement in KLPD	Gross water requirement in gallons per day (Total)
		As per plan	Total			Plots area in acres	Type of building	Basis of water requirement	Total water requirement		
1	2	3	4	5	6	7	8	9	10	11	12
11	E1E3	4		54	6.21	-	-	-	-	6.21	1370
12	EF	14		189	21.73	-	-	-	-	21.73	4780
13	FG	6		81	9.31	-	-	-	-	9.31	2050
14	GG1	2		324	37.26	-	-	-	-	37.26	8200
15	GH	9		121.5	13.97	-	-	-	-	13.97	3070
16	HH1	24		324	37.26	-	-	-	-	37.26	8200
17	HI	7		94.5	10.86	-	-	-	-	10.86	2390
18	II1	12		162	18.63	-	-	-	-	18.63	4100
19	IJ	7		94.5	10.86	-	-	-	-	10.86	2390
20	JJ1	24		324	37.26	-	-	-	-	37.26	8200
21	JK	7		94.5	10.86	1.11	Community	25KL/Acre	27.72	38.58	8490

DESIGN STATEMENT

Providing Water Supply Scheme 11.0625ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

S. No	Name of line	Water load in gallons per day			3 times water load in gallons per day	Designed water load in gallons per day	Size in mm	Length in m	Head loss per 1000m	Head loss in pipe line in m	Hydraulic levels in mtr		R.L. at L/E in mtr	Terminal head at L/E in m
		Self	Branch	Total							U/E	L/E		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	RA	-	76240	76240	228720	317000.00	150	20.00	10.14	0.20	247.40	247.20	210.92	36.25
2	AB	-	76240	76240	228720	317000.00	150	25.00	10.14	0.25	247.20	246.95	210.94	36.01
3	BB1	2870	-	2870	8610	24000.00	100	55.00	0.62	0.03	246.95	246.92	210.97	35.95
4	BC	1020	72350	73370	220110	317000.00	150	60.00	10.14	0.61	246.95	246.34	210.92	35.42
5	CC1	3410	-	3410	10230	24000.00	100	60.00	0.62	0.04	246.34	246.30	210.95	35.33
6	CD	2050	66890	68940	206820	283000.00	150	50.00	8.27	0.41	246.34	245.93	210.90	35.03
7	DD1	2050	-	2050	6150	24000.00	100	60.00	0.62	0.04	245.93	245.89	210.93	34.96
8	DE	2720	62120	64840	194520	283000.00	150	90.00	8.27	0.74	245.93	245.19	210.87	34.32
9	EE1	2050	8200	10250	20750	42000.00	100	60.00	1.74	0.10	245.19	245.09	210.87	34.22
10	E1E2	6830	-	6830	20490	30000.00	100	65.00	0.94	0.06	245.09	245.03	210.91	34.12

DESIGN STATEMENT

Providing Water Supply Scheme 11.0625ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

S. No	Name of line	Water load in gallons per day			3 times water load in gallons per day	Designed water load in gallons per day	Size in mm	Length in m	Head loss per 1000m	Head loss in pipe line in m	Hydraulic levels in mtr		R.L. at L/E in mtr	Terminal head at L/E in m
		Self	Branch	Total							U/E	L/E		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
11	E1E3	-	-	1370.00	4110.00	24000.00	100	18.00	0.62	0.01	245.69	245.08	210.87	34.21
12	EF	4780.00	47090.00	51870.00	153610.00	217000.00	150	90.00	5.00	0.45	245.19	244.74	210.89	33.85
13	FG	2050.00	45040.00	47090.00	141270.00	217000.00	150	45.00	5.00	0.26	245.74	245.48	210.90	34.58
14	GG1	8200.00	-	8200.00	24600.00	33600.00	100	85.00	1.12	0.09	245.48	245.39	210.95	34.45
15	GH	3070.00	33770.00	36840.00	110620.00	167000.00	150	72.00	3.10	0.21	245.48	245.27	210.91	34.36
16	HH1	8200.00	-	8200.00	24600.00	33600.00	100	100.00	1.12	0.11	245.27	245.16	210.96	34.20
17	HI	2390.00	23180.00	25570.00	76710.00	117000.00	150	40.00	1.62	0.06	245.27	245.21	210.92	34.29
18	II1	4100.00	-	4100.00	12300.00	24000.00	100	40.00	0.62	0.02	245.21	245.19	210.96	34.23
19	IJ	2390.00	16690.00	19080.00	57240.00	83000.00	150	50.00	0.70	0.04	245.21	245.17	210.93	34.24
20	JJ1	8200.00	-	8200.00	24600.00	33600.00	100	75.00	1.12	0.08	245.17	245.09	210.98	34.21
21	JK	8490.00	-	8490.00	25470.00	58000.00	150	40.00	0.44	0.02	245.17	245.15	210.94	34.21

SCHEDULE OF QUANTITIES

Providing Water Supply Scheme 11.0625ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

Sr. No.	Name of Pipe Line	Pipe (length in M size in mm)					S.V. Qty. in Nos. Size in mm				
		100	150	200	250	300	100	150	200	250	300
1	2	3	4	5	6	7	8	9	10	11	12
1	RA	-	20.00					1			
2	AB	-	25								
3	BB1	55	-								
4	BC	-	60								
5	CC1	60	-								
6	CD	-	50								
7	DD1	60	-								
8	DE	-	90					1			
9	EE1	60	-								
10	E1E2	65	-								

SCHEDULE OF QUANTITIES

Providing Water Supply Scheme 11.0625ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

Sr. No.	Name of Pipe Line	Pipe (length in M size in mm)					S.V. Qty. in Nos. Size in mm				
		100	150	200	250	300	100	150	200	250	300
1	2	3	4	5	6	7	8	9	10	11	12
11	E1E3	18.00	-								
12	EF	-	90.00								
13	FG	-	45.00								
14	GG1	85.00	-								
15	GH	-	72.00					1			
16	HH1	100.00	-				1				
17	HI	-	40.00								
18	II1	40.00	-								
19	IJ	-	50.00								
20	JJ1	75.00	-								
21	JK	-	40.00								
	Total	**618.00**	**582.00**				**2**	**3**			
	Say	**630.00**	**600.00**				**3**	**3**			

Schedule of Quantities

PROVIDING FLUSHING CUM HORTICULTURE SCHEME 11.0625 ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

S.No.	Name of Line	Pipe length in m size in m	
		100mm	80mm
1	R'A'	20.00	
2	A'B'	55.00	
3	B'B1'		55.00
4	B'C'	50.00	
5	C'C1'		55.00
6	C'D'	45.00	
7	D'D1'		55.00
8	D'E'	75.00	
9	E'E1'		60.00
10	E1'E2'		90.00

Schedule of Quantities

PROVIDING FLUSHING CUM HORTICULTURE SCHEME 11.0625 ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

S.No.	Name of Line	Pipe length in m size in m	
		100mm	80mm
11	E1'E3'		25.00
12	E'F'	120.00	
13	F'G'	50.00	
14	G'G1'		85.00
15	G'H'	70.00	
16	H'H1'		110.00
17	H'I'	40.00	
18	I'I1'		50.00
19	I'J'	50.00	
20	J'J1'		85.00
21	J'K'	35.00	
	TOTAL	**610.00**	**670.00**
	SAY	**620.00**	**680.00**

STATEMENT FOR CALCULATION OF SEWAGE LOAD

PROVIDING SEWERAGE SCHEME 11.0625ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

S.No.	Name of Line	Water Requirement of plots			Demand of non residential areas			Total requirement in KLPD	Quantity of Sewage @ 75% of water requirement in cusecs.
		No. of Plots	Population @13.5 or 9 persons /plot	Water requirement @155 LPCD in KLPD	Nature of bdg	Basis of water requirement	Gross requirement in KLPD		
1	AB	6	81	13.97	COMMUNITY 1.109 Acre	25 KL /Acre	27.72	41.69	0.013
2	B1B	25	337.5	58.22	-	-	-	58.22	0.017
3	BC	6	81	13.97	-	-	-	13.97	0.004
4	C1C	13	175.5	30.27	-	-	-	30.27	0.009
5	CD	7	94.5	16.3	-	-	-	16.3	0.005
6	D1D	25	337.5	58.22	-	-	-	58.22	0.017
7	DE	9	121.5	20.96	-	-	-	20.96	0.006
8	E1E	24	324	55.89	-	-	-	55.89	0.017
9	EF	6	81	13.97	-	-	-	13.92	0.004
10	FG	14	189	32.6	-	-	-	32.6	0.01

STATEMENT FOR CALCULATION OF SEWAGE LOAD

PROVIDING SEWERAGE SCHEME11.0625ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

S.No.	Name of Line	Water Requirement of plots			Demand of non residential areas			Total requirement in KLPD	Quantity of Sewage @ 75% of water requirement in cusecs.
		No. of Plots	Population @13.5 or 9 persons /plot	Water requirement @155 LPCD in KLPD	Nature of bdg	Basis of water requirement	Gross requirement in KLPD		
11	G1G3	20	270	46.57	-	-	-	46.57	0.014
12	G2G3	4	54	9.31	-	-	-	9.31	0.003
13	G3G	6	81	13.97	-	-	-	13.97	0.004
14	GH	8	108	18.63	-	-	-	18.63	0.005
15	H1H	5	67.5	11.64	-	-	-	11.64	0.003
16	HI	6	81	13.97	-	-	-	13.97	0.004
17	I1I	10	135	23.29	-	-	-	23.29	0.007
18	IJ	3	40.5	6.99	-	-	-	6.99	0.002
19	J1J	-	-	-	Commercial 0.410Acre	32KL/ Acre	13.12	13.12	0.004
20	JK	-	-	-	-	-	-	-	-
21	K-STP	-	-	-	-	-	-	-	-

DESIGN STATEMENT

PROVIDING SEWERAGE SCHEME11.0625ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

S. No.	Name of Line	Sewage Load in cusecs			3 times sewage load in cusecs	Designed discharge in cusecs	Size in mm	Length in m	Slope 1 in	Velocity in m/sec	Fall in m	Formation level in m		Invert level in m		Depth in m		Avg depth in m
		Self	Branch	Total								U/E	L/E	U/E	L/E	U/E	L/E	
1	AB	0.013	-	0.013	0.039	0.43	200	35.00	220	0.76	0.16	210.94	210.93	210.00	209.84	0.94	1.09	1.02
2	B1B	0.017	-	0.017	0.051	0.43	200	85.00	220	0.76	0.39	210.98	210.93	210.00	209.61	0.98	1.32	1.15
3	BC	0.004	0.03	0.034	0.102	0.43	200	45.00	220	0.76	0.21	210.93	210.92	209.61	209.40	1.32	1.52	1.42
4	C1C	0.009	-	0.009	0.027	0.43	200	50.00	220	0.76	0.23	210.96	210.92	210.00	209.77	0.96	1.15	1.06
5	CD	0.005	0.043	0.048	0.014	0.43	200	45.00	220	0.76	0.21	210.92	210.92	209.40	209.19	1.52	1.73	1.63
6	D1D	0.017	-	0.017	0.051	0.43	200	100.00	220	0.76	0.45	210.96	210.92	210.00	209.55	0.96	1.37	1.17
7	DE	0.006	0.065	0.071	0.213	0.43	200	70.00	220	0.76	0.32	210.92	210.90	209.19	208.87	1.73	2.03	1.88
8	E1E	0.017	-	0.017	0.051	0.43	200	90.00	220	0.76	0.41	210.95	210.90	210.00	210.59	0.95	1.31	1.04
9	EF	0.004	0.088	0.092	0.276	0.43	200	40.00	220	0.76	0.19	210.90	210.89	208.87	208.68	2.03	2.21	2.12
10	FG	0.01	0.092	0.102	0.306	0.43	200	120.00	220	0.76	0.55	210.89	210.87	208.68	208.13	2.21	2.74	2.48

DESIGN STATEMENT

PROVIDING SEWERAGE SCHEME 11.0625ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

S. No.	Name of Line	Sewage Load in cusecs			3 times sewage load in cusecs	Designed discharge in cusecs	Size in mm	Length in m	Slope 1 in	Velocity in m/sec	Fall in m	Formation level in m		Invert level in m		Depth in m		Avg depth in m
		Self	Branch	Total								U/E	L/E	U/E	L/E	U/E	L/E	
11	G1G3	0.014	-	0.014	0.042	0.43	200	95.00	220	0.76	0.43	210.91	210.89	210.00	209.57	0.91	1.32	1.12
12	G2G3	0.003	-	0.003	0.009	0.43	200	15.00	220	0.76	0.07	210.89	210.89	210.00	209.93	0.89	0.96	0.93
13	G3G	0.004	0.017	0.021	0.063	0.43	200	60.00	220	0.76	0.27	210.89	210.87	209.57	209.30	1.32	1.57	1.45
14	GH	0.005	0.123	0.128	0.384	0.43	200	75.00	220	0.76	0.34	210.87	210.90	208.13	207.79	2.74	3.11	2.93
15	H1H	0.003	-	0.003	0.009	0.47	200	50.00	200	0.82	0.25	210.93	210.90	210.00	209.75	0.93	1.15	1.04
16	HI	0.004	0.131	0.0135	0.405	0.47	200	50.00	200	0.82	0.25	210.90	210.92	207.79	207.54	3.11	3.38	3.25
17	I1I	0.007	-	0.007	0.021	0.47	200	50.00	200	0.82	0.25	210.95	210.92	210.00	209.75	0.95	1.17	1.06
18	IJ	0.002	0.142	0.144	0.432	0.47	200	50.00	200	0.82	0.25	210.92	210.94	207.54	207.29	3.38	3.65	3.52
19	J1J	0.004	-	0.004	0.012	0.47	200	50.00	200	0.82	0.25	210.97	210.94	210.00	209.75	0.97	1.19	1.08
20	JK	-	0.148	0.148	0.444	0.47	200	40.00	200	0.82	0.20	210.94	210.95	210.29	207.09	3.65	3.86	3.76
21	K-STP	-	0.148	0.148	0.444	0.47	200	20.00	200	0.82	10.00	210.95	211.40	207.09	206.99	3.86	4.41	4.74

Schedule of Quantities of S.W. Pipes

PROVIDING SEWERAGE SCHEME 11.0625ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

S.No.	Name of Line	Dia of pipe in mm and Length in meters						
		200mm	250mm	300mm	350mm	400mm	450mm	500mm
1	AB	35.00						
2	B1B	85.00						
3	BC	45.00						
4	C1C	50.00						
5	CD	45.00						
6	D1D	100.00						
7	DE	70.00						
8	E1E	90.00						
9	EF	40.00						
10	FG	120.00						

Schedule of Quantities of S.W. Pipes

PROVIDING SEWERAGE SCHEME 11.0625ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

S.No.	Name of Line	Dia of pipe in mm and Length in meters						
		200mm	250mm	300mm	350mm	400mm	450mm	500mm
11	G1G3	95.00						
12	G2G3	15.00						
13	G3G	60.00						
14	GH	75.00						
15	H1H	50.00						
16	HI	50.00						
17	I1I	50.00						
18	IJ	50.00						
19	J1J	50.00						
20	JK	40.00						
21	K-STP	20.00						
	TOTAL	**1235.00**						
	SAY	**1250.00**						

DESIGN STATEMENT

PROVIDING STORM WATER DRAINAGE SCHEME 11.0625ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

S. No.	Name of Line	Area in Acres			Discharge in cusecs@¼" rainfall intensity	Designed discharge in cusecs	Size in mm	Length in mtr	Slope 1 in	Velocity in m/sec	Fall in mtr	Formation Levels in mtr		Invert level in mtr		Depth in mtr		Avg depth in mtr
		Self	Branch	Total								U/E	L/E	U/E	L/E	U/E	L/E	
1	AB	0.3	-	0.3	0.08	3.52	400	90.00	560	0.77	0.16	210.90	210.94	209.90	209.74	1.00	1.20	1.10
2	BIB	0.85	-	0.85	0.21	3.52	400	55.00	560	0.77	0.1	210.97	210.94	210.00	209.90	1.00	1.04	1.02
3	BC	0.25	1.15	1.4	0.35	3.52	400	50.00	560	0.77	0.09	210.94	210.92	209.74	209.65	1.20	1.27	1.24
4	C1C	0.60	-	0.60	0.15	3.52	400	60.00	560	0.77	0.11	210.95	210.92	209.95	209.84	1.00	1.08	1.04
5	CD	0.37	2.00	2.37	0.6	3.52	400	50.00	560	0.77	0.09	210.92	210.90	209.65	209.56	1.27	1.34	1.31
6	D1D	0.75	-	0.75	0.19	3.52	400	55.00	560	0.77	0.1	210.93	210.90	209.93	209.83	1.00	1.10	1.05
7	D-HUDA STORM	0.65	3.12	3.77	0.94	3.52	400	90.00	560	0.77	0.16	210.90	211.05	209.56	209.40	1.34	1.65	1.50
8	FG	0.27	-	0.27	0.07	3.52	400	35.00	560	0.77	0.06	210.94	210.93	209.94	209.88	1.00	1.05	1.03
9	G1G	0.9	-	0.90	0.23	3.52	400	80.00	560	0.77	0.14	210.98	210.93	209.98	209.84	1.00	1.09	1.05
10	GH	0.37	1.17	1.54	0.39	3.52	400	50.00	560	0.77	0.09	210.93	210.92	209.84	209.75	1.09	1.17	1.13

DESIGN STATEMENT

PROVIDING STORM WATER DRAINAGE SCHEME 11.0625ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

S. No.	Name of Line	Area in Acres			Discharge in cusecs@¾" rainfall intensity	Designed discharge in cusecs	Size in mm	Length in mtr	Slope 1 in	Velocity in m/sec	Fall in mtr	Formation Levels in mtr		Invert level in mtr		Depth in mtr		Avg depth in mtr
		Self	Branch	Total								U/E	L/E	U/E	L/E	U/E	L/E	
11	H1H	0.46	-	0.46	0.12	3.52	400	45.00	560	0.77	0.08	210.96	210.92	209.96	209.88	1.00	1.04	1.02
12	HI	0.37	2.00	2.37	0.59	3.52	400	40.00	560	0.77	0.07	210.92	210.91	209.75	209.68	1.17	1.23	1.20
13	I1I	87.00	-	0.87	0.22	3.52	400	100.00	560	0.77	0.18	210.96	210.91	209.96	209.78	1.00	1.13	1.07
14	IJ	0.82	3.24	4.06	1.02	3.52	400	75.00	560	0.77	0.13	210.94	210.90	209.68	209.55	1.23	1.35	1.29
15	J1J	1.13	-	1.13	0.28	3.52	400	90.00	560	0.77	0.16	210.95	210.90	209.95	209.79	1.00	1.11	1.06
16	JK	0.37	5.19	5.56	1.39	3.52	400	45.00	560	0.77	0.08	210.90	210.89	209.55	209.47	1.35	1.42	1.38
17	K-HUDA STORM	0.65	5.56	6.21	1.55	3.52	400	100.00	560	0.77	0.18	210.89	211.05	209.47	209.29	1.42	1.76	1.59
18	L-HUDA STORM	0.70	-	0.70	1.17	3.52	400	70.00	560	0.77	0.14	210.95	211.07	209.95	209.81	1.00	1.14	1.07

Schedule of Quantities of R.C.C. Pipes

PROVIDING STORM WATER DRAINAGE SCHEME 11.0625ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

S.No.	Name of Line	Dia of pipe in mm and Length in meters					
		400mm	500mm	550mm	600mm	800mm	900mm
1	AB	90.00					
2	B1B	55.00					
3	BC	50.00					
4	C1C	60.00					
5	CD	50.00					
6	D1D	55.00					
7	D-HUDA STORM	90.00					
8	FG	35.00					
9	G1G	80.00					
10	GH	50.00					

Schedule of Quantities of R.C.C. Pipes

PROVIDING STORM WATER DRAINAGE SCHEME 11.0625ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

S.No.	Name of Line	Dia of pipe in mm and Length in meters					
		400mm	500mm	550mm	600mm	800mm	900mm
11	H1H	45.00					
12	HI	40.00					
13	III	100.00					
14	IJ	75.00					
15	J1J	90.00					
16	JK	45.00					
17	K-HUDA STORM	100.00					
18	L-HUDA STORM	70.00					
	TOTAL	**1180.00**					
	SAY	**1200.00**					

DESIGN DATA OF ROADS

11.0625ACRES RESIDENTIAL PLOTTED COLONY IN SECTOR 36, SOHNA

9.0 M WIDE ROAD

S.NO	Name of Road	Length in M
1	R1	240.00
2	R2	65.00
3	R3	65.00
4	R4	65.00
5	R5	70.00
6	R6	90.00
7	R7	90.00
8	R8	102.00
9	R9	50.00
10	R10	83.00
11	R11	330.00
	Total length of 9 m wide roads	1250.00
	Add 10 % at curves	125.00
	TOTAL	1375.00
	SAY	1400.00

24 M WIDE ROAD

S.NO	Name of Road	Length in M	
1	R24	135.00	
	Add 10 % at curves	13.00	
	TOTAL	148.00	
	SAY	150.00	
	Metalled Area of Roads= 1400 M X 5.5 M + 150 X 14=	9800.00	SQ.M
	SAY	9500.00	SQ.M
	Total length of Roads = 1400.00+150.00	1550.00	M
	Length of kerbs = 1550X 2	3100.00	M