



To

Date:-17.06.2020

The Executive Engineer,

HSVP, Division No.- 5

Gurugram

**Subject:- Approval of Revised Service Plan Estimate for "Affordable Group Housing Colony" Area measuring 6.7875 Acres ( Licence No. 154 of 2014 Dated 09.09.2014 And Licence No. 78 of 2018 Dated 17.11.2018 ) in Sector-86, Gurugram-Manesar Urban Complex Being Developed By M/S PYRAMID INFRATECH PVT. LTD.**

Dear Sir,

With reference to the above mentioned subject, we hereby submitting Six sets of the service plan estimate for your consideration please.

Kindly do the needful and oblige.

Thanking you,

Yours truly,

For M/S PYRAMID INFRATECH PVT. LTD.

Authorized Signatory

Authorized Signatory

Received  
S. Manoj  
Executive Engineer  
HSVP Division No.V.  
Gurugram  
17/06/2020

**PYRAMID INFRATECH PVT. LTD.**

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**OFFICE OF THE ADDITIONAL CHIEF ENGINEER, HSVP, GURUGRAM**

To

The Chief Engineer-I,  
HSVP, Panchkula

Memo No. 87402

Dated: 18-06-2020

**Sub.: - Approval of Revised Service plan Estimate for "Affordable Group Housing Colony" area measuring 6.7875 acres (License No. 154 of 2014 dated 09.09.2014 and License No. 78 of 2018 dated 17.11.2018) in Sector-86, Gurugram-Manesar Urban Complex being developed by M/s Pyramid Infratech Pvt. Ltd.**

The Superintending Engineer, HSVP, Circle-I, Gurugram has intimated vide his letter No.87165 dated 18.06.2020 that the firm M/s Pyramid Infratech Pvt. Ltd. vide letter dated 17.06.2020 submitted the Revised Service plan estimate for Affordable Group Housing Colony area Measuring 6.7875 acres (License No. 154 of 2014 dated 09.09.2014 and License No.78 of 2018 dated 17.11.2018) in Sector-86, Gurugram. The service estimate has been checked by the Executive Engineer, HSVP Division No. V, Gurugram vide his office letter No. 87002 dated 18.06.2020 and corrected wherever necessary and submitted for execution and as well as for Bank Guarantee purpose, subject to the following comments:-

1. EXTERNAL DEVELOPMENT CHARGES:-

The colonizer will have to pay the proportionate cost of the external development charges for Affordable Group Housing Colony for the service like water supply, sewerage, storm water drainage, roads, bridges, community building, street lighting, Horticulture and maintenance thereof etc. on gross acreage basis as and when determined by HSVP. These charges will be modifiable as and when approved by the Authority/ State Govt. and will be binding upon the colonizer.

2. DENSITY AREA POPULATION:-

The scheme has designed considering 05 persons per each unit for main units. The total population of the Affordable Group Housing Colony works out to 8405 persons. This may be checked and confirmed by this office that overall density as taken is corrected and overall density of sector should be maintained according to the Final Development Plan of Gurugram Town. The category wise area as shown on the plans and proposed density of population thereof has been treated to be correct for estimation/ services.

3. All technical notes and comments incorporated in this estimate in two sheets will also apply. A copy of these are also appended as Annexure-A.

4. The title and name of the license may be examined by this office.

5. STREET LIGHTING:-

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, CFL lamps shall be provided to meet with the requirement of HVPNL and as well Environment.

6. The layout plan for setting up of Affordable Group Housing Colony in an area of 6.7875 acres supplied by DTCP, HR., Chandigarh have been considered to be correct for the purpose of estimation/ services only.

7. The External Master services for the new area is being planned and yet to be provided, however, the internal services of the Affordable Group Housing Colony is proposed to be connected with the master services yet to be planned/ laid by HSVP sector dividing road Gurugram. The detail of services proposed to be connected are as under:-

- i) **Water Supply:-** The source of water supply in this area is through HSVP water supply mains. 150mm dia water supply line has been proposed to be connected with the proposed water supply line of HSVP Laid/ to be laid on existing/proposed road between Sector- 86/85 Gurugram.
- ii) **Sewerage:-** For disposal of sewage firm has proposed sewage treatment plant of 1200 KLD in their premises. Treated water has been proposed to be utilize to irrigation the landscape area by recycling. Overflow from the STP shall be disposed off into proposed master sewer line laid/to be laid on existing/proposed road between Sector-86/85 Gurugram.
- iii) **SWD:-** For disposal of storm water firm has proposed 400mm I/d RCC pipe for Internal storm water drainage scheme and also made provision of Rain Water Harvesting pits as per requirement in their premises and 400mm I/d RCC pipe line for overflow has been proposed which is to be connected with HSVP master storm water drain line laid/to be laid on sector dividing road between Sector- 86/85Gurugram.
8. It may kindly be clarified to the colonizer that recycled water is proposed to be utilize for irrigation purpose only. No tap or out let of any kind will be provided for irrigation line except in the lawn/ park with suitable arrangement so as to prevent the public to use the recycled water. Caution board shall be installed by providing warning sign/ recycled water not fit for drinking/ human consumption. No cross connection between recycled water system and potable water system shall be made.
9. It may be made clear to the colonizer that he will be fully responsible to make the arrangement of disposal of sewerage and storm water drainage till such time these are made available by HSVP & all link connected with the external system will be done by the colonizer/ firm at his own cost. The colonizer will have to ensure that the sewer and storm water drainage to be laid by them will be connected by gravity with the master services laid/ to be laid by HSVP/ State Govt. in this area as per their scheme.
10. 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.
11. It may be made clear to the colonizer that roof top rain harvesting system shall be provided by them as 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 enter into the system shall also be made by the firm/ colonizer.
12. The service estimate has been checked in this office with the consideration that layout plans appended in the services estimate has been checked approved by competent authority.
13. The estimate do not includes the provision of electrification of the colony. However, it may be clear to colonizer that the supervision charges and O&M charges shall be paid by them directly to the HVPNL.
14. The colonizer will be sole responsible for the construction of various structures such as RCC underground tank etc. according to the standard specifications good quality and its workmanship. The structural stability responsibility will entirely rest upon the colonizer.
15. In case some additional structures are required to be constructed and decided by HSVP at a later stage, the same will be binding upon the colonizer.
16. it may be made clear to the colonizer that he will not make the connection with the master services i.e. water supply, sewerage, storm water drainage, without prior approval of the competent authority.

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17. The estimate doesn't includes the services to be provided by the firm in the Commercial Area.
18. Colonizer will have to obtain the permission for crossing the services in Revenue rasta from concerned department at his own level.
19. It may also be made clear to the colonizer that he shall also comply with the orders passed by National Green Tribunal:-
  - i. The direction given 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 Others shall be implemented by colonizer.
  - ii. Implementation of instruction issued by Hon'ble NGT during hearing held on OA No. 21 of 2014 and OA No. 95 of 2014 in the matter of Vardhman Kaushik V/s Union of India and Others shall be complied with by colonizer.
  - iii. NGT orders in Application No. 45 of 2015 & M.A No. 126 of 15 titled as Haryana Welfare Association V/s State of Haryana Gurgaon.
20. The estimated cost of various services to be provided by the colonizer for the development of internal services has been checked and corrected for purpose of Bank Guarantee and works out as under:-

Sr. No.	Description	Total Cost
1.	Water supply	Rs. 190.84
2.	Sewerage	Rs. 171.88
3.	Storm Water Drainage	Rs. 55.88
4.	Roads and Footpath	Rs. 59.14
5.	Street lighting	Rs. 10.42
6.	Horticulture	Rs. 7.78
7.	Mtc. Charges & resurfacing of roads	Rs. 129.04
	<b>Total</b>	<b>Rs. 624.98</b>

$$\text{Dev. Cost per acre} = \frac{624.98}{6.7875} = \text{Rs. 92.14 Lakh per gross acre}$$

**Say Rs. 92.15 Lakh per acre**

Three copies of the estimate along with plans and proposal as received are submitted herewith duly corrected and signed for further necessary action.


**DA/- Estimate in triplicate  
alongwith Annexure-A**

  
**Additional Chief Engineer,  
HSVP, Gurugram**

**Endst. No.**

**Dated:**

A copy of above is forwarded to the Superintending Engineer, HSVP Circle-I, Gurugram w.r.t. his office memo No.87165 dated 18.06.2020 for information.

  
**Additional Chief Engineer,  
HSVP, Gurugram**

**Approval of Revised Service plan Estimate for "Affordable Group Housing Colony" area measuring 6.7875 acres ( License No. 154 of 2014 dated 09.09.2014 and License No. 78 of 2018 dated 17.11.2018 ) in Sector-86,Gurugram-Manesar Urban Complex being developed by M/s Pyramid Infratech Pvt. Ltd.**

**TECHNICAL NOTE AND COMMENTS**

1. All detailed working drawings would have to be prepared by the colonizer and got approved from Chief Engineer, HSVP Panchkula being developed by GLS Infra Projects Pvt. Ltd.
2. The correctness of the levels will be the sole responsibility of the colonizer for the integrating the internal proposals with the master proposals of Town will be got confirmed before execution.
3. The material to be used shall be same specification as are being adopted by HSVP further shall also confirm to such directions, as issued by the Chief Engineer, HSVP from time to time.
4. The work shall be carried out according to Haryana PWD specification or such specification as are being followed by HSVP, further it shall also confirm to such other directions as are issued by the Chief Engineer, HSVP from time to time.
5. The colonizer will be fully responsible to meet the demand of water supply and allied services till such these are made available by State Govt./HSVP. All link connection with the state Govt./HSVP system and services will be done by the colonizer. If necessary extra tube-wells shall also be installed to meet extra demand of water beyond the provision made in the estimate
6. Working drawings of all the structures, such as pump chamber boosting chamber, RCC OHSR underground tanks quarters, manholes, ventilating shafts for sewerage and masonry ventilating chamber for storm water drainage, temporary disposal/arrangement etc. will be got approved from Chief Engineer, HSVP before execution.
7. Portability of water will be checked and confirmed and the tube-wells will be put into operation after getting chemical analysis of water tested and approved from Chief Engineer, HSVP.
8. Only CI/DI pipes will used in water supply system.
9. A minimum 100mm i/d, 200mm i/d & 400mm i/d pipes will be used for water supply, sewerage and storm water drainage respectively.
10. Standards X-sections for SW pipes sewer, RCC pipes sewer etc. will be followed as are being adopted in Haryana Public Health of HSVP.
11. The X-section, width of roads, will be followed as approved by the Chief Town Planner, Haryana, Chandigarh. The kerbs and channels will also be provided as per approved, X-section and specification.
12. The specification for various roads will be followed as per IRC/MOT specification.
13. The wiring system of street lighting and specification of street lighting fixtures will be as per relevant standards and those fixed by HSVP.
14. This shall confirm to such other conditions as are incorporated in the approved estimate and letter of approval.
15. The colonizer will be fully responsible for maintaining of the terminal head required.

  
**EXECUTIVE ENGINEER,  
HSVP, DIVISION.NO. V,  
GURUGRAM**

**SERVICE ESTIMATE, DESIGN REPORT AND  
CALCULATION OF  
INTERNAL DEVELOPMENT WORKS**

**FOR**

**REVISED "AFFORDABLE GROUP HOUSING COLONY AREA  
OF MEASURING 6.7875 ACRES (LICENSE NO. 154 OF 2014  
DATED 09.09.2014 AND LICENCE NO. 78 OF 2018 DATED  
17.11.2018 ) IN SECTOR – 86, GURUGRAM – MANESAR  
URBAN COMPLEX BEING DEVELOPED BY M/S PYRAMID  
INFRATECHPVT. LTD.**

**SERVICE ESTIMATE, DESIGN REPORT AND CALCULATIONS OF INTERNAL DEVELOPMENT WORKS FOR REVISED "AFFORDABLE GROUP HOUSING COLONY" AREA MEASURING 6.7875 ACRES (LICENSE No. 154 of 2014 Dated 09.09.2014 AND LICENSE NO. 78 OF 2018 DATED 17.11.2018) IN SECTOR – 86, GURUGRAM – MANESAR URBAN COMPLEX BEING DEVELOPED BY M/S PYRAMID INFRATECH PVT. LTD.**

Gurugram town of Haryana State situated on N.H. -8 road at a distance of 35 Km from Delhi. Being in the national capital region, the town has fast developing tendency and potential. Further, it has also started sharing the growing residential, commercial and Industrial load of Delhi. In order to review the growing pressure of population in National Capital of Delhi, It has been decided by the Haryana Government to develop various infrastructure facilities in Gurugram Manesar Urban Complex. This report is for a part of service estimate for Revised "Affordable Group Housing Colony" measuring 6.7875 acres (License No. 154 of 2014 dated 09.09.2014 License No. 78 of 2018 Dated 17.11.2018) in Sector – 86, Gurugram – Manesar urban complex being developed by M/s Pyramid Infratech Pvt. Ltd. has been prepared with the following provisions which are as under :-

**1. WATER SUPPLY**

The source of water supply in this area is by HSVP Mains. It has been proposed to construct underground tanks of capacity as per attached details which has been including future extension water demand and to location for domestic purpose and for fire protection. The underground tanks will be fed from the HSVP based supply, which will feed O.H. tanks on the roof of the Building and has been designed as per the Hazen Williams formula. Presently there is proposed / under execution HSVP W/S in this area. However the provision of tube well have been taken due to non availability of water but after getting the approval from the competent authority through tube wells / tankers / any other approved source till HSVP W/S will made available. The proposed tube wells shall be 510mm bore drilled with reverse rotary rig and installed with 80mm i/d housing pipe and 50mm i/d slotted tube as strainer, hence the provision of One No. Tube Wells have been taken in this estimate.

**DESIGN**

The scheme has been designed for population of 8405 persons considering @ 5 persons / units for Affordable Group Housing and other provision and including density of future extension etc. The combined quantum of water supply (domestic + flushing) per head / day has been taken as 172.50Liters per head per day as per design calculation.

**PUMPING EQUIPMENTS**

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 time electricity failure. Generator will be provided separately or added to the capacity of main generator.

**2. SEWERAGE**

The scheme is designed for sewer connecting to the STP and bypass connection to HSVP sewer scheme.

The sewer lines have designed for three times average D.W.F in relation to water supply demand. It has assumed that about 80% of the domestic and flushing water supply shall find its way into the proposed sewer. Sewer lines shall be running by gravity and discharge to STP proposed. Treated water will be used for Irrigation & Flushing purpose (through recycling) under the pipe line system.

### 3. STORM WATER DRAINAGE

It has been proposed to lay R.C.C pipes with required number of manholes for disposal of storm water, which will be connected to the HSVP drain. The intensity of rain fall has been taken as 6.00mm per hour. A minimum size of 400mm i/d R.C.C pipe for storm water drain will be provided and designed as per Manning's formula. Necessary provision of rainwater harvesting arrangement has also been taken in this estimate.

### 4. ROADS

Road, Parking and Pavement have been provided to above areas and estimate is prepared as revised specifications adopted by HSVP.

### 5. STREET LIGHTING AND ELECTRIFICATION :-

Provision for external lighting and electrification of proposed area has been made.

### 6. HORTICULTURE :-

Estimate and details of plantation, landscaping, signage etc. have been included.

### 7. FIRE FIGHTING :-

Provision of Fire Fighting system has been made.

### 8. Provision of construction of ESS Shed has been taken in this estimate.

### 9. SPECIFICATIONS

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

### 10. RATES

The estimate has been based on the present market rates.

### 11. COST

The total cost of the scheme including cost of all services works out to Rs. 562.61 Laacs (Rupees Five Crores Sixty Two Laacs Sixty One Thousand only) including 3% contingencies and 49% departmental charges + Price escalation and cost per acre comes out to Rs. 82.89 Laacs.

(Authorized Signatory)



**1. DESIGN CALCULATION :-**

Total Area of plot	= 6.7875 Acres or 27467.994 Sqm
Permissible Ground Coverage 50%	= 13733.997 Sqm
Proposed Ground Floor	= 13733.997 Sqm
Permissible F.A.R. @ 2.25% (Resi.)	= 59330.868 Sqm
Proposed F.A.R Achieved (Resi.)	= 59074.033 Sqm
Proposed area of commercial	= 1918.343 Sqm
Community Building	= 203.453 Sqm
Anganwari	= 191.259 Sqm

**2. Detail of Units (A)**

No. of Units	No. of Floors	No. of Block	Unit / Block	Total Unit	Density
Tower -1 to 7	G + 13	7	110	770	3850
Tower -8,9 &10	G + 3	3	31	93	465
Tower -11	G + 14	1	118	118	590
Tower – 12	G + 8	1	70	70	350
<b>Total Density</b>				<b>1051</b>	<b>5255 –‘A’</b>

The provision of future extension scheme (B)

Total Tower = 5 Nos Block @ 126 Unit/each block	= 630 Units
@ 5 Persons / per unit	= 3150 Persons 'B'
Total Density (A+B) = 5255+ 3150	= 8405 Persons

**3. Water Requirement :-**

Total Population	= 8405 Persons
@ 172.50 LPCD	= 1449862.50 LPD
Commercial & Community Buildings :-	
• Commercial	= 1918.343 Sqm
@ 3 Sqm / person = 640 Persons @ 45 LPCD	= 28800 LPD
• Community Building (Area 203.453 Sqm)L.S	= 5000.00 LPD
• Anganwari (Area 204.610 Sqm) L.s	= 5000.00 LPD
<b>Total</b>	<b>= 1488662.50 LPD Or 1489 KLD</b>
	<b>Say 1500 KLD</b>

**II. FIRE DEMAND**

(i) Population	= 8405 Persons
(p) $\frac{1}{2} \times 100/1000 = (8.405) \frac{1}{2} \times 100$	= 289.91 KLD
	Say 300 KLD

**III. Garden Irrigation Requirement (For Total Area) = 80.00 KLD****IV. Total Water Requirement for UGT**

(Excluding Fire Demand)

Hence Domestic Water Requirement (67%)	= 1500 x 67% = 1005.00 KLD
Hence Flushing Water Requirement (33%)	= 1500 x 33% = 495.00 KLD
Half Day Requirement	= 520 K.L. for Domestic
	= 260 K.L. for Flushing

But it is proposed to construct an underground tank i.e. 520 K.L. in two compartment for domestic use and 260 K.L. for non potable water in two compartment (at STP) and 300 K.L. for fire fighting purposes for UGT in two compartment in each UGT as shown location in the plan.

Total Capacity of UGT = 520 + 300 = 820.00 KLD

Total Requirement for Flushing and Irrigation at STP = 260+80 = 340.00 KLD

<b>VI. Tube Well</b>	<b>For UGT</b>
a) Yield	= 15 K.L. / Hr.
b) Working Hour per day	= 16 Hr. / Per Day
c) Total water demand (Domestic)	= 1005 M3/Day
d) Number of tube well required (Water Demand / Discharge / Hr. working Per day)	= 4.18 Nos
e) Add 5% extra	= 0.21
	Total = 4.39 Nos
	Say = 5 Nos

(Water to the proposed development is to be supplied by HSVP. However consider 20% T.W.'s it is proposed to install only one no. tube wells for augmentation / standby purposes and provision has also been taken in the estimates due to non availability of water but after getting the approval from the competent authority.

**i) Pumping Machinery for Tube wells**

a) Gross Working Head	= 80 Mtr
b) Average fall in S.L	= 2 Mtr
c) Depression Head	= 6 Mtr
d) Friction loss in main	= 10 Mtr
Total	= 98 Mtr
e) Discharge	= 15000 LPH (Or 4.17 LPS Say 4.50 LPS)
f) Horse Power	= 9.80 H.P.
HP = $(4.50 \times 98) / (75 \times 0.60)$	
	Say = 10.00 H.P.

It is proposed to provide 1 No. pumping set of 4.50 LPS discharge at 98 Mtr head (1W)

**ii) Boosting Machinery for domestic water For UGT**

<b>Total Water Requirement</b>	<b>= 1005.00 KLD</b>
Pumping per hour @ 8 hr. pumping / day	= 1005 / 8 KL / hr.
	= 125.625 KL / hr.
	= 2093.75 lpm = 34.89 lps
	Say 2 No. 18.00 lps each
Gross working head	For UGT
- Suction lift	= 5.00 mts.
- Frictional loss in mains & specials	= 5.00 mts.
- Clear Head required	= 65.00 mts.
Total	= 75.00 mts.
Say	= 75.00 mts.
Pump HP	= $(18.00 \times 75) / (75 \times 0.60)$
	= 30.00 H.P.
	Say = 30.00 HP

It is proposed to provide 3 Nos of pumping set of 18.00 lps discharge at 75mts Head each (2W + 1S) for UGT

**III) Boosting Machinery for flushing water at STP**

<b>Total Water Requirement</b>	<b>= 495 K.L.D</b>
Pumping per hour @ 8 hr. pumping / day	=495/8 KL / hr.
	= 61.88 KL / hr.
	= 1031.25 lpm = 17.18 lps,
	Say 2 No.9.00 lps each
 Gross working head	
- Suction lift	= 5.00 mts.
- Frictional loss in mains & specials	= 5.00 mts.
- Clear Head required	= 65.00 mts.
Total	= 75.00 mts.
Say	= 75.00 mts.
Pump HP	= (9.00 x 75) / (75 x 0.60)
	= 15.00 HP
	Say = 15.00 HP

It is proposed to provide 3 Nos of pumping set of 9.00 lps discharge at 75 mts Head each (2W + 1S)

**IV) Boosting Machinery for Irrigation water**

<b>Total Water Requirement</b>	<b>= 80 KLD</b>
Pumping per hour @ 5 hr. pumping / day	= 80 /5 KL / hr.
	= 16.00 KL / hr.
	= 266.66lpm = 4.44lps
	Say = 5.00 LPS
 Gross working head	
- Suction lift	= 3.00 mts.
- Frictional loss in mains & specials	= 3.00 mts.
- Clear Head required	= 15.00 mts.
Total	= 21.00 mts.
Say	= 21.00 mts.
Pump HP	= (5.00 x 21) / (75 x 0.60)
	= 2.33 HP
	Say = 3.00 HP

It is proposed to provide 2 No. of pumping set of 5.00 lps discharge at 21 mts Head each (1W + 1S)

**V) Boosting Machinery for Fire water****Total Water Requirement**

Hydrant pump as per CFO Directive	= 2280 LPM, 95M Head and 80 H.P = 1 Nos
Jockey pump (Hydrant) as per NBC table No. 23	= 180 LPM, 95M Head and 7.50 H.P = 1 Nos
Diesel pump as per CFO Directive	= 2280 LPM, 95 M Head and 80 H.P = 1 Nos
<b>Gross working head</b>	
- Suction lift	= 5.00 mts.
- Frictional loss in mains & specials	= 5.00 mts.
- Clear Head required	= 85.00 mts.
<b>Total</b>	<b>= 95.00 mts.</b>
<b>Jockey Pump HP (Fire)</b>	<b>= (3 x 95) / (75 x 0.60)</b>
	<b>= 6.33HP</b>
<b>Say</b>	<b>= 7.50 HP (1W)</b>

**VI) DG Set for plumbing****DG Set Requirement**

Submersible Pump (1 x 10)	= 10 HP
Domestic Pump (2 x 30)	= 60 HP
Flushing Pump (2 x 15)	= 30 HP
Street Light and other etc.	= 4 HP
Fire Jockey pump	= 7.5 HP
<b>Total pump load</b>	<b>= 111.50 HP</b>
	<b>= 111.50 x 0.746 x 1.50</b>
	<b>= 124.77 K.W</b>
<b>Total DG capacity</b>	<b>= 1 No. 125 KVA</b>

Hence it is proposed to provide 1 No. D.G. Set of 125 KVA capacity

**FLOW TO SEWAGE TREATMENT PLANT**

**Total Water Requirement = 1005 KLD for domestic & 495 KLD for flushing**

i) 75% of total Domestic Water Demand = 75% of 1005 KLD	= 753.75 KLD
ii) 75% of total Flushing Water Demand = 75% of 495 KLD	= 371.25 KLD
<b>Total</b>	<b>= 1125.00 KLD</b>
Considering 5% marginal factor	= 56.25 KLD
<b>G. Total</b>	<b>= 1181.25 KLD</b>

**Say 1200 KLD**

**Proposed STP Capacity = 1200 KLD Or 1.20 MLD**

(Authorized Signatory)

## FINAL ABSTRACT OF COST

SR. NO.	SUB WORK	DESCRIPTION	AMOUNT (Rs. In Lacs)
1	SUB WORK NO. I	WATER SUPPLY SCHEME	190.84
2	SUB WORK NO. II	SEWERAGE SCHEME	171.88
3	SUB WORK NO. III	STORM WATER DRAINAGE	55.88
4	SUB WORK NO. IV	ROAD AND FOOTPATH	59.14
5	SUB WORK NO. V	STREET LIGHTING	10.42
6	SUB WORK NO. VI	HORTICULTURE (PLANTATION & ROAD SIDE TREES)	7.78
7	SUB WORK NO. VII	MTC. OF SERVICES & RESURFACING OF ROADS (After 1st 5 years of 1st Phase & Next 5 years in 2nd Phase)	66.67
		TOTAL	562.61
TOTAL : (Rupees Five Crore Sixty Two Lacs Sixty One Thousand only)			

Cost Per Acre = Rs.562.61 Lacs / 6.7875 = 82.89 Lacs Per Acre

AUTHORISED SIGNATORY

## SUB WORK NO. 1 (Abstract of cost)

## WATER SUPPLY SCHEME

SR. NO.	SUB WORK	DESCRIPTION	AMOUNT (Rs. In Lacs)
1	Sub Head No. 01	Head Works	37.80
2	Sub Head No. 02	Pumping Machinery	37.10
3	Sub Head No. 03	Water Supply Distribution & Rising main pipe	29.47
4	Sub Head No. 04	External Fire Hydrants	17.69
6	Sub Head No. 05	Irrigation	2.29
		<b>TOTAL</b>	<b>124.35</b>
		Add 3% contingency & P.H. Services	3.73
		<b>Total</b>	<b>128.08</b>
		Add 49% Department charges + Price Escalation	62.76
		<b>G. Total</b>	<b>190.84</b>
		<b>Say in Lacs</b>	<b>190.84</b>

(C.O. to Final Abstract Of Cost)

**SUB WORK NO. I**  
**Sub Head No. 01**

**WATER SUPPLY**  
**Head Works**

Sr. NO.	Description	Amount in Rs.
1	Construction of U.G. tanks and Fire Tank Including pipes, valve & Specials. 820 KLD @ Rs. 3500/- per K.L.D	2870000
2	Provision for construction of Boosting Station 1 Nos @ Rs. 250000/- each	250000.00
3	Boring and installing tube well reverse rotary rig complete with pipes and strainer to a depth of about 120 Mtr complete in all respect. 1 Nos @ Rs. 500000/- each	500000.00
4	Provision for construction of tube well chamber size 1.50m x 1.50m complete in all respect. 1 Nos @ Rs. 80000/- each	80000.00
5	Provision for carriage of material and unforeseen items L.S.	50000.00
6	Provision of specials for tube well & rising main to UGT L.S.	30000.00
	<b>Total</b>	<b>3780000.00</b>
	<b>Say in Lacs</b>	<b>37.80</b>

(C.O. to Abstract of cost of Sub Work No. I)

**SUB WORK NO. 1**  
**Sub Head No. 02**

**WATER SUPPLY**  
**Pumping Machinery**

Sr. NO.	Description	Amount in Rs.
1	Providing and installing Hydro pneumatic pumping set of following capacities for domestic water Supply with specials	
	18.00 lps at 75 mts head - 3 No. (2W+1SB) - @ Rs. 2,00,000/- each Set (30.00HP)	600000.00
2	Providing and installing Hydro Pneumatic pumping set of following capacities for Flushing water supply & Irrigation	
	9.00 lps at 75 mts head - 3 No. (2W+1SB) @ Rs. 1,00,000/- 1 Set (15 HP each)	300000.00
	5.00 lps at 75 mts head - 2 Nos (1W+1SB) @ Rs. 15,000/- 1 Set (3 HP each)	30000.00
3	Providing and installing Submersible pump for tube wells with specials	
	5.00 lps at 98 mts head - 1 Nos (1W) @ Rs. 80,000/- 1 Set (10HP each)	80000.00
4	Provision for construction of ESS Shed 2 Nos @ Rs. 30,000/- each	60000.00
5	Providing and installing pumping sets of following capacities for Fire Protection etc. with foundation complete	
	- 180 lpm at 95 M head 1 No. @ Rs. 80,000/- (7.50 HP each)	80000.00
	- 2280 lpm at 95 M head 1 No. @ Rs. 5,50,000/- (80 HP each) (Hydrant )	550000.00
	- 2280 lpm at 95 M head 1 No. @ Rs. 6,50,000/- (80 HP) (Diesel Engine)	650000.00
6	Provision for D.G. Set for stand by arrangement for all machinery = 1 No. 125 KVA @ Rs. 10,00,000/- each	1000000.00
7	Provision for making foundations & erection of pumping machinery	40000.00
8	Provision for pipes, valve & specials inside boosting chamber	150000.00
9	Provision for electric services connection including electric fittings for boosting chambers and pump chamber etc.	120000.00
10	Provision for carriage of materials and other unforeseen items L.S.	50000.00
	<b>Total</b>	<b>3710000.00</b>
	<b>Say in Lacs</b>	<b>37.10</b>

(C.O. to Abstract of cost of Sub Work No. I)



**SUB WORK NO. 1**  
**Sub Head No. 03**

**WATER SUPPLY**  
**Water Supply Distribution & Rising Main Pipe**

Sr. NO.	Description	Amount in Rs.
1	Providing, laying, jointing & testing pipe lines including cost of excavation etc. complete in all respects	
i)	100mm dia D.I. Pipe 635 Mtr @ Rs. 500/- Per Mtr	317500.00
ii)	150mm i/d D.I. Pipes - 1300 Mtr @ Rs. 1000/- Per Mtr	1300000.00
iii)	200mm i/d D.I. Pipes 345 Mtr @ Rs. 1100/- per mtr	379500.00
iv)	250mm i/d D.I. Pipes 135 Mtr @ Rs. 1500/- per mtr	202500.00
2	Providing and fixing sluice valve including cost of surface box and masonry chamber etc. complete in all respect	
	a) 100mm i/d 15 No. @ Rs. 7500/- each	112500.00
	b) 150mm i/d 20 No. @ Rs. 10000/- each	200000.00
	c) 200mm i/d 8 No. @ Rs. 15000/- each	120000.00
	d) 250mm i/d 4 No. @ Rs. 17000/- each	68000.00
3	Providing and fixing indicating plates for sluice valve 47 No. @ Rs. 1000/-	47000.00
4	Provision for carriage of materials and other unforeseen items	50000.00
5	Provision for making connection with HUDA Pipe & T.W's etc.	100000.00
6	Provision for cutting the road and making good the same	50000.00
	<b>Total</b>	<b>2947000.00</b>
	<b>Say in Lacs</b>	<b>29.47</b>

(C.O. to Abstract of cost of Sub Work No. I)

SUB WORK NO. 01

WATER SUPPLY

SUB HEAD NO. 04

EXTERNAL FIRE HYDRANTS

Sr. NO.	Description	Amount in Rs.
1	Providing, Laying, jointing and testing Heavy Class M.S. Pipes for fire rising main including cost of fittings, valves, connection etc. complete in all respect	
a)	100mm dia - 234 M @ Rs. 600/- Per Mtr	140400.00
b)	150mm dia - 1357 M @ Rs. 900/- Per Mtr	1221300.00
2	Providing and fixing fire Hydrant with accessories 39 No. @ Rs. 7500/- each	292500
3	Provision for Security Services for Fire Arrangement L.S.	50000.00
4	Providing and fixing indicating plate -39 No. @ Rs. 1000/- each	39000.00
6	Provision for carriage of material L.S.	25000.00
	<b>Total</b>	<b>1768200.00</b>
	<b>Say In Lacs</b>	<b>17.69</b>

(C.O. to Abstract of cost of Sub Work No. I)

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SUB WORK NO. 01

WATER SUPPLY

SUB HEAD NO. 05

IRRIGATION

Sr. NO.	Description	Amount in Rs.
1	Providing, Laying, jointing and testing UPVC pipe lines suitable for 6 kg pressure including cost of fittings, valves, connection etc. complete in all respect	
a)	25mm dia - 280 M @ Rs. 300/- Per Mtr	84000.00
2	Providing and fixing 25mm dia, Irrigation hydrant valve complete in all respect 35 Nos @ Rs. 2000/- each	70000.00
3	Provision for carriage of materials and other unforeseen items L.S.	20000.00
4	Provision for indicating plate with safety box etc. complet in all respect 35 Nos @ Rs. 1000/- each	35000.00
6	Provision for road cutting and making it condition as original L.S.	20000.00
	<b>Total</b>	<b>229000.00</b>
	<b>Say in Lacs</b>	<b>2.29</b>

(C.O. to Abstract of cost of Sub Work No. I)

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## SUB WORK NO. II

## SEWERAGE SCHEME

Sr. NO.	Description	Amount in Rs.
1	Providing, jointing, cutting and testing stoneware pipe grade A and lowering into trenches including cost of excavation, bed concrete, cost of manholes etc. complete	
	a) SW Pipe 200mm i/d avg, depths 0 - 2.00M 275 M @ Rs. 1180/- per Mtr	324500.00
	b) SW Pipe 250mm i/d avg depth 2.00 M 325 M @ Rs. 1300/- per Mtr	422500.00
	c) SW Pipe 300mm i/d avg depth 2.75 M 140 M @ Rs. 1500/- per Mtr	210000.00
	d) SW Pipe 400mm i/d avg depth 3.00 M 150 M @ Rs. 1800/- per Mtr	270000.00
2	Providing, laying, jointing & testing pipe lines including cost of excavation etc. complete in all respect - 200mm dia Heavy Class DI pipes (overflow for STP)	
	a) 200MM i/d D.I. Pipe - 220 M @ Rs. 1100/- Per Mtr	242000.00
3	Provision of lighting and watching etc.	50000.00
4	Provision for cartage of material	30000.00
5	Provision for making connection with HUDA	50000.00
6	Provision for construction of Sewerage Treatment Plant (STP) including the cost of tertiary treatment level with recycling storage tank and machinery with all arrangement etc. complete in all respect. 1200 KLD or (1.20 MLD) Capacity L.S.	9600000.00
	<b>Total</b>	<b>11199000.00</b>
	Add 3% contingency & P.H. Services	335970
	<b>Total</b>	<b>11534970</b>
	Add 49% Department charges + Price Escalation	5652135
	<b>G. Total</b>	<b>17187105</b>
	<b>Say in Lacs</b>	<b>171.88</b>

(C.O. to Final Abstract of Cost)

## SUB WORK NO. III

## STORM WATER DRAINAGE SCHEME

Sr. NO.	Description	Amount in Rs.
1	Providing, lowering, laying, jointing RCC pipe class Np3 with cement joint, a) RCC Np3 pipe 400mm i/d = 1187 M @ Rs. 1500/- Per Mtr	1780500.00
2	Provision for Rain Water Harvesting arrangement including the cost of screening chamber and pit with all type of pipes and other material etc. complete in all respect as per standard drawing and bore upto requirement of site etc. 7 Nos RWH @ Rs. 2,00,000/- each	1400000.00
2	Provision for road gulley & pipe with connection	300000.00
3	Provision for lighting and watching	20000.00
4	Provision for timbering and shoring	20000.00
5	Provision for cartage of material	20000.00
6	Provision for making connection with HUDA storm water drain	100000.00
	<b>Total</b>	<b>3640500.00</b>
	Add 3% contingency & P.H. Services	109215.00
	<b>Total</b>	<b>3749715.00</b>
	Add 49% Department charges + Price Escalation	1837360.35
	<b>G. Total</b>	<b>5587075.35</b>
	<b>Say in Lacs</b>	<b>55.88</b>

(C.O. to Final Abstract of Cost )

## Sub Work No. IV

## ROAD AND FOOTPATH

S. No.	Description	Unit	Qty	Rate (In Rs.)	Amount (In Rs.)
1	Provision for leveling & earth filling as per site conditions	Per Acre	6.7875	50000	339375
2	i) Providing and laying 100mm thick PCC under pavement, cement concrete of specified grade 1:4:8 and 150mm thick RMC grade M-40 ii) Providing and laying Bituminous road (250mm GSB, 300mm WMM, 50mm DBM, 40mm BC).	Sqm	7390	200	1478000
3	Provision for kerbs & channels of C.C. 1:2:4	Metre	1240	340	421600
4	Provision for arrangement of guide map and indicating board etc.	LS			30000
5	Provision for parking arrangement with 100mm thick PCC under pavement cement concrete of specified grade 1:4:8 and 150mm thick RMC Grade M-40 or Bituminous road with 250mm GSB, 300mm WMM, 50mm thick DBM & 40mm thick BC etc. as per requirement of site for surface car parking and approach to Tower / Block etc. complete in all respect	Sqm	7770	200	1554000
5	Provision for carriage of material	LS			30000
	<b>Sub Total</b>				<b>3852975</b>
	Add 3% contingencies & PH Services				115589
	<b>Sub Total</b>				<b>3968564</b>
	Add 49% Departmental Charges + Price Escalation				1944596
	<b>Total</b>				<b>5913161</b>
	<b>Say Rs. In Lacs</b>				<b>59.14</b>

(C.O. to Final Abstract of cost )

## Sub Work No. V

## STREET LIGHTING

S. No.	Description	Unit	Qty	Rate (In Rs.)	Amount (In Rs.)
1	Provision for Street Lighting at surrounding area as per standard specifications of HVPN etc. complete	Acre	6.7875	100000	678750
	Add 3% contingencies & PH Services				20363
	<b>Total</b>				<b>699113</b>
	Add 49% Departmental Charges + Price Escalation				342565
	<b>Total</b>				<b>1041678</b>
	Say Rs. In Lacs				10.42

(C.O. to Final Abstract of cost )

## Sub Work No. VI

## HORTICULTURE

S. No.	Description	Unit	Qty	Rate (In Rs.)	Amount (In Rs.)
1	Development of Lawn Areas				
a.	Trenching of ordinary soil upto depth of 60 cm i/c removal & stacking of serviceable material & disposing by spreading and levelling within a lead of 50 M and making up the trench area for proper levels by filling with earth or earth mixed with manure before and after flooding trench with water i/c cost of imported earth and manure with all fitting and valve etc. complete				
b.	Rough dressing of turfed area				
c.	Grassing with "Cynadon dactylon" i/c watering and maintenance of lawns for 30 days till the grass forms a thick lawn, free from weeds and fit for moving in row 7.5 cm part in either direction				
d.	organized green 5901.90 Sqm Or 1.46 Acres (As per detail given in green park area calculation)	Acre	1.46	250000	365000
2	Providing and planting trees along boundary @ 6 m interval (Length appx 1172M) = $1172/6 = 196$ Nos Say No. of trees = 196 Nos Cost details : Excavation = Rs. 73 Manure = Rs. 100 Tree Plant = Rs. 550 Total Rs. = Rs. 723				
		Each	196	723	141708
	<b>Total</b>				<b>506708</b>
	Add 3% contingencies & PH Services				15201
	<b>Total</b>				<b>521909</b>
	Add 49% Departmental Charges + Price Escalation				255736
	<b>Total</b>				<b>777645</b>
	<b>Say Rs. In Lacs</b>				<b>7.78</b>



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## Sub Work No. VII

## Mtc. Of services &amp; Resurfacing of Road

S. No.	Description	Unit	Qty	Rate (In Rs.)	Amount (In Rs.)
1	Mtc. Of water supply, sewer, storm water drain, roads, street light, hort. Etc. for period of 10 years including operation charges full establishment etc. complete in all respects 6.7875 acres @ Rs. 1.50 lacs per acre	Acre	6.7875	150000	1018125
2	Provision for resurfacing of roads after 5 years of 1st phase with provision of 50mm thick BM including leveling coarse and 25mm BC as per crust design whichever is safer	Sqm	7390	200	1478000
3	2nd phase after next five years of 1st phase (50mm DBM & 25mm BC or as per crust design whichever is safer	Sqm	7390	250	1847500
	<b>Sub Total</b>				<b>4343625</b>
	Add 3% contingencies & PH Services				130309
	<b>Sub Total</b>				<b>4473934</b>
	Add 49% Departmental Charges				2192228
	<b>Total</b>				<b>6666161</b>
	<b>Say Rs. In Lacs</b>				<b>66.67</b>

(C.O. to Final abstract of cost)

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**SUMMARY OF DESIGN REQUIREMENT**

<b>S. No.</b>	<b>Description</b>	<b>Qty</b>	<b>Unit</b>
1	Total Population	8405	Persons
2	Total Water Requirement (Domestic)	1005	KLD
3	Total Water Requirement (Flushing)	495	KLD
4	Total Water Requirement (Horticulture)	80	KLD
5	U. G Tank (Domestic - 520 KLD)	1	No.
6	U.G.T Fire Tank 300 KLD	1	No.
7	No. of Domestic WS pumps UGT	2+1	Set
8	STP (Capacity 1200 KLD)	1	No.
9	No. of Flushing pumps	2+1	No.
10	No. of submersible pumps	1	No.
11	Main Fire Hydrant electrical pumps	1	No.
12	Diesel fire pumps	1	No.
13	Jockey fir pumps	1	No.
14	Generating sets (125 KVA)	1	125 KVA

TOTAL MATERIAL STATEMENT FOR WATER SUPPLY i.e. DOMESTIC, FLUSHING & RISING MAIN ETC. 22

S. No.	Description	Size of pipe upto valve in 100mm	Size of pipe upto valve in 150mm	Size of pipe upto valve in 200mm	Size of pipe upto valve in 250mm
1	Domestic	70M	605M	290M	135M
2	Flushing	520M	535M	55M	-
3	Rising Main	45M	160M	-	-
	<b>Total</b>	<b>635M</b>	<b>1300M</b>	<b>345M</b>	<b>135M</b>

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**MATERIAL STATEMENT (DOMESTIC WATER SUPPLY)**

S. No.	Line Designation		Size of Pipe Provided	Length of Pipe (Mtr)	Length in Mtr			
	From	To			250MM	200MM	150MM	100MM
1	UGT	A	250	10	10	-	-	-
2	A	B	250	125	125	-	-	-
3	B	C	200	140	-	140	-	-
4	C	D	200	35	-	35	-	-
5	D	E	200	40	-	40	-	-
6	A	F	200	45	-	45	-	-
7	F	G	200	30	-	30	-	-
8	G	H	150	45	-	-	45	-
9	H	I	150	150	-	-	150	-
10	I	E	150	50	-	-	50	-
11	B	B1	150	35	-	-	35	-
12	B1	G1	150	40	-	-	40	-
13	B1	D	150	140	-	-	140	-
14	G	G1	150	55	-	-	55	-
15	G1	G2	150	70	-	-	70	-
16	G2	I	150	20	-	-	20	-
17	H	G2	100	70	-	-	-	70
	<b>Total</b>			<b>1100</b>	<b>135</b>	<b>290</b>	<b>605</b>	<b>70</b>

250mm i/d Pipe Length

135 Mtr

200mm i/d Pipe Length

290 Mtr

150mm i/d Pipe Length

605 Mtr

100mm i/d Pipe Length

70 Mtr

**MATERIAL STATEMENT (FLUSHING WATER SUPPLY)**

S. No.	Line Designation		Size of Pipe Provided	Length of Pipe (Mtr)	Length in Mtr		
	From	To			200MM	150MM	100MM
1	STP	a	200	20	20	-	-
2	a	b	150	140	-	140	-
3	b	c	100	170	-	-	170
4	a	d	200	35	35	-	-
5	d	e	150	40	-	40	-
6	e	f	150	50	-	50	-
7	f	g	100	150	-	-	150
8	g	h	100	45	-	-	45
9	h	c	100	30	-	-	30
10	b	b1	150	35	-	35	-
11	b1	f2	150	40	-	40	-
12	f2	h	100	55	-	-	55
13	d	b1	150	140	-	140	-
14	f	f1	150	20	-	20	-
15	f1	f2	150	70	-	70	-
16	f1	g	100	70	-	-	70
	<b>Total</b>			<b>1110</b>	<b>55</b>	<b>535</b>	<b>520</b>

200mm i/d Pipe Length

55 Mtr

150mm i/d Pipe Length

535 Mtr

100mm i/d Pipe Length

520Mtr

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**MATERIAL STATEMENT FOR BOREWELL RISING MAINS AND HUDA MAIN**

S. No.	Name of Line		Size of Pipe Provided	Length of Pipe (Mtr)	Length in Mtr	
	From	To			100mm	150mm
1	T.W.	UGT	100	45	45	-
2	HSVP Line	UGT	150	160	-	160
	<b>Total</b>			<b>205</b>	<b>45</b>	<b>160</b>

**MATERIAL STATEMENT FOR SEWERAGE SCHEME**

S. No.	Line No.		Length (In Mtr)	Pipe Dia	Av. Depth	Length in Mtr			
	From	To				200mm i/d 0 to 2.00 Mtr	250mm i/d 0 to 2.00 Mtr	300mm i/d 0 to 2.75 Mtr	400mm i/d 0 to 3.00 Mtr
1	A	B	120	200	1.24	120	-	-	-
2	B1	B	110	250	1.43	-	110	-	-
3	B	C	140	300	1.92	-	-	140	-
4	C4	C3	70	250	1.37	-	70	-	-
5	C7	C3	65	200	1.19	65	-	-	-
6	C3	C2	20	250	1.59	-	20	-	-
7	C6	C2	90	200	1.25	90	-	-	-
8	C2	C1	85	400	2.09	-	-	-	85
9	C5	C1	125	250	1.34	-	125	-	-
10	C1	C	40	400	2.48	-	-	-	40
11	C	S.T.P.	25	400	2.52	-	-	-	25
12	STP HSP / Sewer By Pumping 200mm i/d D.I. Pipe = 220 Mtr								
	<b>Total</b>		<b>890</b>			<b>275</b>	<b>325</b>	<b>140</b>	<b>150</b>

200mm i/d Pipe Length 275 Mtr

250mm i/d Pipe Length 325 Mtr

300mm i/d Pipe Length 140 Mtr

400mm i/d Pipe Length 150 Mtr

200mm i/d D.I. Pipe (By Pumping) = 220 Mtr

## MATERIAL STATEMENT OF STORM WATER DRAINAGE SCHEME

Sr. No.	Line Reference		400mm i/d RCC Np3 Pipe
	From	To	Length in Mtr
1	A	B	150
2	B1	B	55
3	B	C	75
4	C	D	150
5	D4	D3	135
6	D5	D3	45
7	D3	D2	40
8	D6	D2	135
9	D2	D1	40
10	D8	D7	70
11	D7	D1	140
12	D1	D	25
13	D	Mster SWD (HSVP)	70
	<b>Total Length</b>		<b>1130</b>

Total Length 400mm i/d RCC Np3 pipe =1130 Mtr

Add 5% Extra = 57 Mtr

**Total = 1187 Mtr**

Total Rain Water Harvesting (RWH) = 7 Nos



**Material Statement of Road Works**

Sr. No.	Road No.	Road Width	Length	Width	Area	
1	1	6.00	160.00	6.00	960.00	Sqm
2	2	6.00	155.00	6.00	930.00	Sqm
3	3	6.00	90.00	6.00	540.00	Sqm
4	4	6.00	74.00	6.00	444.00	Sqm
5	5	6.00	130.00	6.00	780.00	Sqm
6	6	6.00	130.00	6.00	780.00	Sqm
7	7	6.00	120.00	6.00	720.00	Sqm
8	8	6.00	58.00	6.00	348.00	Sqm
9	9	6.00	110.00	6.00	660.00	Sqm
10	10	6.00	115.00	6.00	690.00	Sqm
11	11	12.00	30.00	6.00	180.00	Sqm
	<b>G. Total</b>		<b>1172.00</b>		<b>7032.00</b>	Sqm
Add 5% extra for curves					352	Sqm
<b>Total</b>					<b>7384</b>	<b>Sqm</b>
					<b>Say</b>	<b>7390</b>
						<b>Sqm</b>

## ii) Kerbs &amp; Channels

6 Mtr wide Road	1142 Mtr
12 Mtr wide Road	30 Mtr
<b>Total</b>	<b>1172 Mtr</b>
Add 5% for curves	59 Mtr
<b>G. Total</b>	<b>1231 Mtr</b>
<b>Say</b>	<b>1240 Mtr</b>

## II) PARKING :-

(i) Surface Car Parking = 592 Nos	
Area = 592 Nos x 2.50 Mtr x 5.00 Mtr = 7400.00 Sqm	
Add 5% Extra	= 370.00 Sqm
<b>Total</b>	<b>= 7770 Sqm</b>
<b>Say</b>	<b>= 7770 Sqm</b>

**MATERIAL STATEMENT (FIRE FIGHTING)**

S. No.	Line Reference		Length in Mtr	Size of M.S. Pipe 150mm i/d Fire Rising	Remarks
	From	To			
				150mm	
1	UGT	A	10	10	
2	A	B	130	130	
3	B	C	95	95	
4	C	D	90	90	
5	D	E	50	50	
6	E	F	45	45	
7	F	G	40	40	
8	A	H	45	45	
9	H	I	35	35	
10	I	J	45	45	
11	J	K	30	30	
12	K	L	85	85	
13	L	M	37	37	
14	M	G	45	45	
15	C	E	45	45	
16	B	P	45	45	
17	P	F	140	140	
18	P	N	40	40	
19	I	N	55	55	
20	N	O	75	75	
21	O	M	30	30	
22	J	O	80	80	
	<b>Total</b>		<b>1292</b>	<b>1292</b>	
	<b>Add 5% Extra</b>		<b>65</b>	<b>65</b>	
	<b>Total</b>		<b>1357</b>	<b>1357</b>	

- i) Length of 150mm i/d M.S. Pipe = 1357 Mtr  
ii) Length of 100mm i/d F.H. = 39 X 6 = 234 Mtr  
iii) Nos of F.H. = 39 Nos

## SUBHEAD : IRRIGATION WATER SUPPLY SCHEME - DESIGN CALCULATION (HORTICULTURE)

## HYDRAULIC STATEMENT OF IRRIGATION WATER SUPPLY

S. No.	Line Reference	Population	Peak Flow in LPH	Velocity (m/s)	Size of the pipe required (in mm)	Size of the Pipe Recommend (mm)	Hydraulic Radius	Total Friction Loss in m/m	Length (M)	Loss of Head in Line (M)	Formation Level	Available head (M)
1	From Flushing Water Supply line	80000	-	-	25.00	25	-	-	280	-	-	-

Note :- 35 Nos connections are to be done from flushing water supply line i.e. 35 Nos x 8 Mtr/each = 280 Mtr for 25mm i/d

HYDRAULIC STATEMENT OF WATER SUPPLY (DOMESTIC)

SUBHEAD : DOMESTIC WATER SUPPLY SCHEME - DESIGN CALCULATION

S. No.	Line Reference	Tower No.	Flat / Unit					Population @ 5 person per flat	Water Requirement @ 172.50 LPCD	Other Water Requirement i.e. Commercial/Community Centre and Anganwadi	Total Water Requirement in LPD	Water Requirement @ 85% of total water requirement	Peak Flow in LPS	Velocity (m/s)	Size of the pipe in (mm)	Total Friction Loss in M/W	Length in (M)	Loss of Head in Line (M)	Formation Level at Lower End	Available Head at Lower end (M)	Terminal Head (M)	Remarks
			From	To	Self	Branch	Total															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
1	1057	A	-	-	1883	1684	8405	1449863	38860	1480623	997404	374030	0.78	250	0.004	10	0.04	230.05	505.01	74.96	Formation Level at Water Works i.e. DGT = 230.05 M	
2	A	B	Contra	-	1128	1138	5640	972900	28600	1001500	671139	251683	0.89	250	0.005	125	0.37	230.00	504.64	74.64	Boosing Head = 74.00 M	
3	B	C	L-2,3,12	200	564	704	3520	607200	0	607200	406878	152563	0.81	200	0.003	140	0.42	230.30	504.22	73.92	Hydraulic Head = 505.05 M	
4	C	D	Extn	252	252	504	2520	434700	0	434700	291283	105221	0.54	200	0.003	95	0.10	230.32	504.12	73.00		
5	D	E	Extn	252	0	252	1260	217350	0	217350	145635	54611	0.49	200	0.002	40	0.08	230.35	504.04	73.69		
6	A	F	Current-A	-	553	553	2765	476963	110000	466963	326365	122552	0.61	200	0.003	45	0.13	230.10	504.88	74.78		
7	F	G	-	-	553	553	2765	476963	0	476963	319605	115840	0.61	200	0.003	30	0.09	230.10	504.79	74.69		
8	G	H	-	-	278	278	1390	239775	0	239775	169649	60245	0.62	150	0.005	65	0.22	230.12	504.57	74.45		
9	H	I	R-9,10	48	185	233	1165	200963	0	200963	136645	50493	0.43	150	0.003	150	0.45	230.25	504.12	73.87		
10	I	E	11 Extn	185	0	185	925	159963	0	159963	108907	40081	0.43	150	0.003	50	0.15	230.35	503.97	73.62		
11	H	B1	-	-	424	424	2120	365700	0	365700	245019	91884	0.62	150	0.005	35	0.12	230.05	504.47	74.42		
12	B1	G1	-	-	0	0	0	0	0	0	0	0	0.36	150	0.002	40	0.08	230.10	504.39	74.28		
13	B1	G	1 to 5	404	0	404	2020	365700	0	365700	245019	91884	0.62	150	0.005	140	0.70	230.31	503.77	73.45		
14	G	G1	7	55	220	275	1375	237188	0	237188	158916	59595	0.62	150	0.005	95	0.27	230.10	504.52	74.42		
15	G1	G2	5,6,7	165	55	220	1100	189750	0	189750	127131	47676	0.48	150	0.005	70	0.35	230.20	504.17	73.97		
16	G2	I	4	55	0	55	275	47438	0	47438	31783	11919	0.24	150	0.001	20	0.02	230.25	504.15	73.90		
17	H	G2	8,9,10	48	0	48	240	36613	0	36613	26004	9752	0.39	100	0.003	70	0.21	230.20	504.36	74.16		

HYDRAULIC STATEMENT OF WATER SUPPLY (FLUSHING) RECYCLING OF TREATED SEWAGE WATER  
SUBHEAD : FLUSHING WATER SUPPLY SCHEME - DESIGN CALCULATION

S. No.	Line Reference	Tower No.	Unit / Flat				Population @ 5 Persons per flat	Water Requirement @ 172.50 LPCD	Other Water Requirement i.e. Commercial, Community Centre / Anganwadi in LPD	Total Water Requirement in LPD	Water Requirement @ 33% of total water requirement	Peak Flow in LPH	Velocity (m/s)	Size of the pipe in (mm)	Total Friction Loss in M/M	Length in (M)	Loss of Head in Line (M)	Formation Level at Lower End	Available Head at Lower end (M)	Terminal Head (M)	Remarks
			Self	Branch	Total																
1	2	3	4	5	6	7	8	9	11	12	13	14	15	16	17	18	19	20	21	22	
1	STP	a	-	0	1681	1681	8405	1449683	38800	491259	184220	0.74	200	0.005	20	0.10	230.30	305.20	74.90	Formation Level at STP = 230.30 M	
2	a	b	1,2,3,12	200	55	255	1275	219938	38800	85383	32018	0.38	150	0.002	140	0.28	230.00	304.52	74.92	Boosting Head = 73.00 M	
3	b	c	Comm.Ang. Centn.	0	0	0	0	0	38800	12804	4801	0.39	100	0.003	170	0.58	230.10	304.34	74.24	Flushing Hydraulic Head in STP = 305.30 M	
4	a	d	Extn.	252	1174	1426	7130	1229925	0	402875	152202	0.61	200	0.003	35	0.10	230.32	305.10	74.78		
5	d	e	Extn.	252	498	750	3750	646875	0	213449	80050	0.62	150	0.005	40	0.20	230.35	304.90	74.55		
6	e	f	11, Extn.	185	313	498	2490	429525	0	141743	53153	0.43	150	0.003	50	0.15	230.25	304.75	74.50		
7	f	g	8,9,10	48	0	48	240	41400	0	13662	5123	0.23	100	0.001	150	0.15	230.12	304.60	74.48		
8	g	h	-	0	0	0	0	0	0	0	0	0.23	100	0.001	45	0.04	230.10	304.56	74.46		
9	h	c	-	0	0	0	0	0	0	0	0	0.23	100	0.001	30	0.03	230.10	304.53	74.43		
10	b	b1	-	0	55	55	275	47438	47438	15654	5870	0.24	150	0.001	35	0.03	230.05	304.89	74.84		
11	b1	f2	-	0	55	55	275	47438	47438	15654	5870	0.24	150	0.001	40	0.04	230.10	304.85	74.75		
12	f2	h	7	55	0	55	275	47438	0	15654	5870	0.23	100	0.001	55	0.05	230.10	304.80	74.70		
13	d	b1	1 to 6, 11, 12	404	0	424	2120	365700	0	120681	45255	0.43	150	0.003	140	0.42	230.05	304.68	74.63		
14	f	f1	4	55	210	265	1325	228563	0	75476	28284	0.38	150	0.002	20	0.04	230.20	304.71	74.51		
15	f1	f2	5,6,7	165	0	165	825	142313	0	46963	17611	0.27	150	0.001	70	0.07	230.10	304.64	74.54		
16	f1	g	8,9,10	45	0	45	225	38813	0	12808	4803	0.23	100	0.001	70	0.07	230.10	304.64	74.54		

DESIGN STATEMENT OF SEWERAGE SCHEME

SUBHEAD : SEWERAGE SCHEME - DESIGN CALCULATION

S. No.	Line Reference		Tower No.	Unit / Flat			Population @ 5 Person per flat	Water Requirement @ 172.50 LPCD	Other Requirement i.e. comm. / community building / Anganwadi	Total water requirement (PO)	Sew. Quantity after evaporator in loss @ 20% (In lpm)	Sewerage Discharge Peak Flow (m <sup>3</sup> /sec)	Size of pipe in (mm)	Grade in (m)	Velocity (m/sec)	Carrying capacity of pipe (m <sup>3</sup> /sec)	Length in Mtr	Fall + Extra Fall in line due to slope (m)	Ground Level			Formation Level			Invert Level			Depth								
	From	To		Self	Branch	Total													Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Average			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28									
1	A	B	88800 - 88800 +Avg	0	0	0	0	0	38800	38800	31040	0.0011	300	225	0.76	0.022	120	0.13	229.65	229.70	230.05	230.00	229.05	228.52	1.00	1.49	1.74									
2	B1	B	7	55	0	55	275	47438	47438	0	37950	0.0013	250	305	0.76	0.019	110	0.36	229.75	229.70	230.10	230.00	228.80	228.44	1.30	1.56	1.43									
3	B	C	1,2,3,12	200	55	255	1275	219038	219038	248748	206990	0.0073	300	385	0.76	0.027	140	0.36	229.70	229.95	230.00	230.30	228.41	228.02	1.59	2.25	1.92									
4	C4	C3	5,6,7	165	0	165	825	342313	0	142313	113850	0.0039	250	305	0.76	0.019	70	0.23	229.80	229.80	230.10	230.20	228.80	228.67	1.20	1.53	1.37									
5	C7	C3	8,9,10	45	0	45	225	98813	0	98813	31050	0.0011	200	225	0.76	0.012	65	0.29	229.65	229.80	230.12	230.20	229.12	228.83	1.00	1.37	1.19									
6	C3	C2	4	55	210	265	1325	228563	0	228563	102050	0.0063	250	305	0.76	0.019	20	0.07	229.80	229.85	230.20	230.25	228.47	228.60	1.53	1.65	1.59									
7	C6	C2	8,9,10	45	0	45	225	41600	0	41600	33120	0.0011	200	225	0.76	0.012	90	0.40	229.65	229.85	230.15	230.25	229.15	228.75	1.00	1.50	1.25									
8	C2	C1	11, Extn	437	313	750	3750	646875	0	646875	517500	0.0279	400	570	0.76	0.049	85	0.15+0.50 =0.65	229.85	229.95	230.25	230.32	228.52	227.87	1.73	2.45	2.09									
9	C3	C1	1 to 6,1,1,12	414	0	414	2120	365700	0	365700	292560	0.0201	250	305	0.76	0.019	125	0.41	229.75	229.95	230.05	230.32	229.05	228.64	1.00	1.68	1.34									
10	C1	C	Extn.	252	1174	1426	7130	1229925	0	1229925	988940	0.0341	400	570	0.76	0.048	40	0.07	229.95	229.95	230.32	230.30	227.87	227.80	2.45	2.50	2.48									
11	C	STP	C	0	1683	1683	8405	1449863	38800	1488663	1190930	0.0412	400	570	0.76	0.049	25	0.04	229.95	229.95	230.30	230.30	227.80	227.76	2.50	2.54	2.52									
12	STP	Master Sewer	C	0	0	0	0	0	0	0	0	0	400	570	0.76	0.049	220	1.00	229.95	229.95	230.30	230.30	228.50	227.50	1.80	2.10	1.95									

200mm I/d D.I. Pipe (By pumping) STP to Master Sewer (HSVP)

## DESIGN CALCULATION OF STORM WATER DRAINAGE SCHEME

INTENSITY OF RAIN FALL = 0.006 MTR /HR

IMPERMEABILITY FACTOR = 0.6

S. No.	Name of Node		Area (Self)	Area (Self)	Branch Area	Total Area	Total Area	Rain fall	Discharge @ 17.36 LPS/ Hecctor	Length	Pipe dia	Slope	Velocity	Cap. Of drain	Fall + Extra Fall	Ground Level		Formation Level		Invert Level		Depth of M.H's		Average Depth	Remarks
	From	To														In Mtr	End	In Mtr	End	In Mtr	Start	End	In Mtr		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
1	A	B	4000	0.39	0	0.99	0.40	6.00	6.95	150	400	5/70	0.76	98.57	0.26	229.85	229.65	230.25	230.12	229.05	228.79	1.20	1.33	1.27	RWH-1
2	B1	B	1500	0.37	0	0.37	0.15	6.00	2.60	55	400	5/70	0.76	98.57	0.10	229.80	229.65	230.20	230.12	229.00	228.90	1.20	1.22	1.21	
3	B	C	3000	0.74	1.36	2.10	0.85	6.00	14.76	75	400	5/70	0.76	98.57	0.13	229.65	229.75	230.12	230.10	228.79	228.66	1.33	1.44	1.39	RWH-2
4	C	D	4200	1.04	2.1	3.14	1.27	6.00	22.05	150	400	5/70	0.76	98.57	0.26	229.75	229.75	230.10	229.95	228.66	228.40	1.44	1.55	1.50	
5	D4	D3	2000	0.49	0	0.49	0.20	6.00	3.47	135	400	5/70	0.76	98.57	0.24	229.90	229.80	230.35	230.10	228.55	228.31	1.80	1.79	1.79	RWH-3
6	D5	D3	1200	0.29	0	0.29	0.12	6.00	2.04	45	400	5/70	0.76	98.57	0.08	229.75	229.80	230.10	230.10	228.90	228.82	1.70	1.28	1.24	
7	D3	D2	8000	0.20	0.78	0.98	0.40	6.00	6.88	40	400	5/70	0.76	98.57	0.07	229.80	229.75	230.10	230.05	228.31	228.24	1.79	1.85	1.82	
8	D6	D2	4200	1.04	0	1.04	0.42	6.00	7.31	135	400	5/70	0.76	98.57	0.24	229.95	229.75	230.32	230.05	229.12	228.88	1.20	1.17	1.19	RWH-4
9	D2	D1	800	0.20	2.02	2.22	0.99	6.00	17.19	40	400	5/70	0.76	98.57	0.07	229.75	229.70	230.05	230.00	228.24	228.17	1.81	1.83	1.82	
10	D8	D7	2100	0.52	0	0.52	0.21	6.00	3.65	70	400	5/70	0.76	98.57	0.12	229.90	229.95	230.35	230.30	228.55	228.43	1.80	1.87	1.83	RWH-5
11	D7	D1	3160	0.78	0.52	1.30	0.53	6.00	9.13	140	400	5/70	0.76	98.57	0.25	229.95	229.70	230.30	230.00	228.43	228.38	1.87	1.82	1.85	RWH-6
12	D1	D	300	0.07	3.52	3.59	1.45	6.00	25.22	25	400	5/70	0.76	98.57	0.04	229.70	229.75	230.00	229.95	228.17	228.13	1.83	1.82	1.83	
13	D	Master SMD (HSVP)	200	0.05	6.73	6.78	2.74	6.00	47.63	70	400	5/70	0.76	98.57	0.12	229.25	229.30	229.95	229.60	228.13	228.01	1.82	1.59	1.71	RWH-7





# SEWERAGE SCHEME

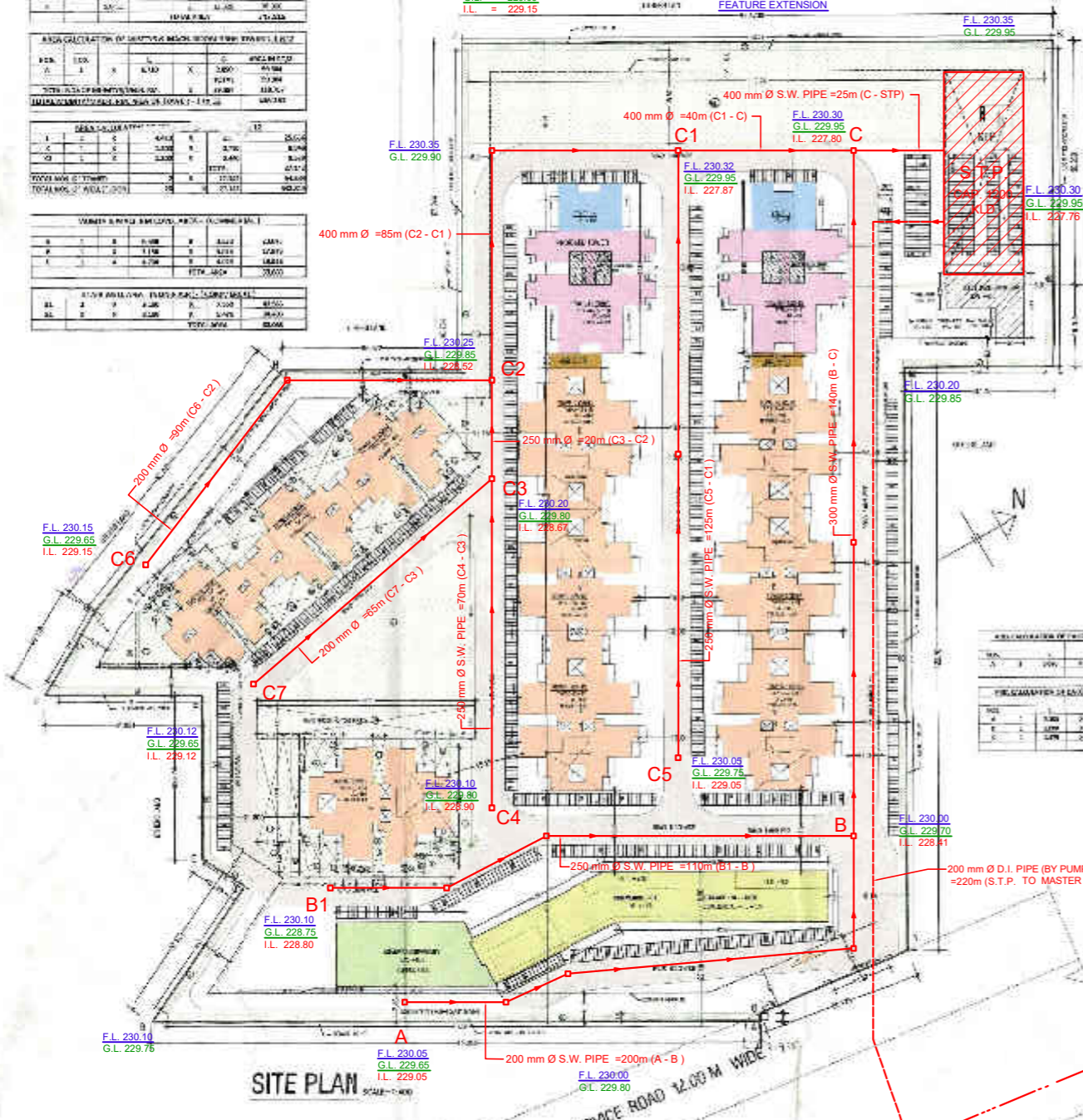
## LEGEND

- SEWER LINE
- D.I. PIPE LINE (BY PUMPING)
- MASTER SEWER (HSVP)
- S.T.P.
- FL = 230.15  
GL = 229.65  
LL = 229.15

## FEATURE EXTENSION

NO.	DESCRIPTION	UNIT	QTY	AMOUNT
1	SEWER LINE	M	100	100.00
2	D.I. PIPE LINE (BY PUMPING)	M	50	50.00
3	MASTER SEWER (HSVP)	M	200	200.00
4	S.T.P.	NO.	1	1.00
5	FL = 230.15 GL = 229.65 LL = 229.15			

NO.	DESCRIPTION	UNIT	QTY	AMOUNT
1	SEWER LINE	M	100	100.00
2	D.I. PIPE LINE (BY PUMPING)	M	50	50.00
3	MASTER SEWER (HSVP)	M	200	200.00
4	S.T.P.	NO.	1	1.00
5	FL = 230.15 GL = 229.65 LL = 229.15			



NO.	DESCRIPTION	UNIT	QTY	AMOUNT
1	SEWER LINE	M	100	100.00
2	D.I. PIPE LINE (BY PUMPING)	M	50	50.00
3	MASTER SEWER (HSVP)	M	200	200.00
4	S.T.P.	NO.	1	1.00
5	FL = 230.15 GL = 229.65 LL = 229.15			

NOTES:

- ALL DIMENSIONS TO BE STRUCTURAL.
- DESIGN AND STRUCTURAL QUALITY OF THE BUILDING BLOCK SHALL BE SOLELY THE ARCHITECT'S RESPONSIBILITY.
- THE BUILDING BLOCK SHALL BE PROVIDED WITH MECHANICAL VENTILATION SYSTEM SHALL BE CALLED ON VENTILATION SYSTEM WITH CCS & POWER RATING.

NO.	DESCRIPTION	UNIT	QTY	AMOUNT
1	SEWER LINE	M	100	100.00
2	D.I. PIPE LINE (BY PUMPING)	M	50	50.00
3	MASTER SEWER (HSVP)	M	200	200.00
4	S.T.P.	NO.	1	1.00
5	FL = 230.15 GL = 229.65 LL = 229.15			



NO.	DESCRIPTION	UNIT	QTY	AMOUNT
1	SEWER LINE	M	100	100.00
2	D.I. PIPE LINE (BY PUMPING)	M	50	50.00
3	MASTER SEWER (HSVP)	M	200	200.00
4	S.T.P.	NO.	1	1.00
5	FL = 230.15 GL = 229.65 LL = 229.15			

NO.	DESCRIPTION	UNIT	QTY	AMOUNT
1	SEWER LINE	M	100	100.00
2	D.I. PIPE LINE (BY PUMPING)	M	50	50.00
3	MASTER SEWER (HSVP)	M	200	200.00
4	S.T.P.	NO.	1	1.00
5	FL = 230.15 GL = 229.65 LL = 229.15			

NO.	DESCRIPTION	UNIT	QTY	AMOUNT
1	SEWER LINE	M	100	100.00
2	D.I. PIPE LINE (BY PUMPING)	M	50	50.00
3	MASTER SEWER (HSVP)	M	200	200.00
4	S.T.P.	NO.	1	1.00
5	FL = 230.15 GL = 229.65 LL = 229.15			

NO.	DESCRIPTION	UNIT	QTY	AMOUNT
1	SEWER LINE	M	100	100.00
2	D.I. PIPE LINE (BY PUMPING)	M	50	50.00
3	MASTER SEWER (HSVP)	M	200	200.00
4	S.T.P.	NO.	1	1.00
5	FL = 230.15 GL = 229.65 LL = 229.15			

NO.	DESCRIPTION	UNIT	QTY	AMOUNT
1	SEWER LINE	M	100	100.00
2	D.I. PIPE LINE (BY PUMPING)	M	50	50.00
3	MASTER SEWER (HSVP)	M	200	200.00
4	S.T.P.	NO.	1	1.00
5	FL = 230.15 GL = 229.65 LL = 229.15			

SEWERAGE SCHEME

SITE PLAN

DETAIL OF AREA

OWNER'S SIGNATURE

ASSOCIATE SIGNATURE

DATE: 10/10/2019

RAO AND ASSOCIATE

RAO AND ASSOCIATE

RAO AND ASSOCIATE

RAO AND ASSOCIATE

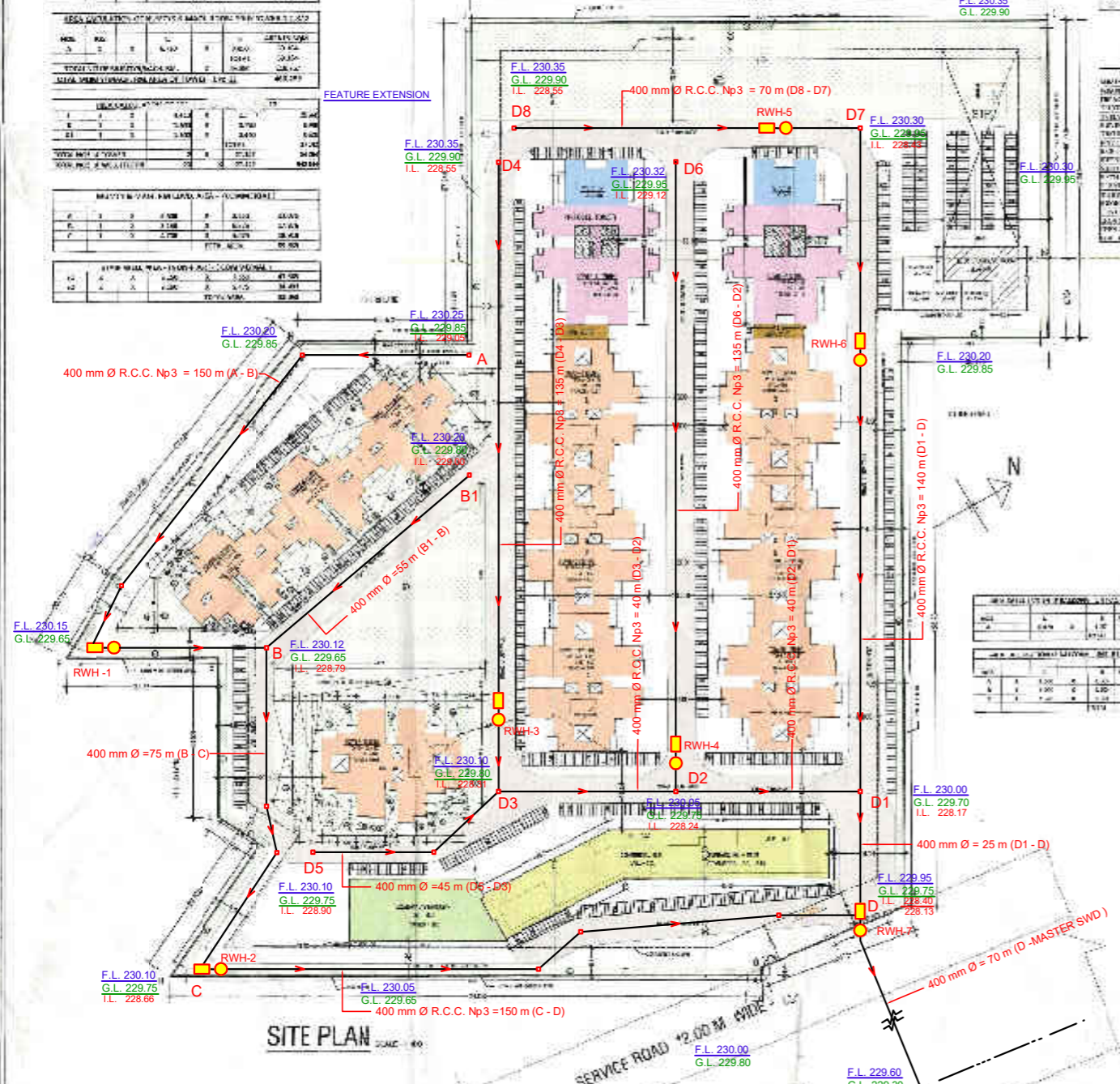
SEWERAGE SCHEME

# STORM WATER DRAINAGE SCHEME

GENERAL INFORMATION	
PROJECT NO.	KA-3975
DATE	07/2019
SCALE	AS SHOWN
DESIGNER	RAO AND ASSOCIATE
CHECKER	[Signature]
APPROVER	[Signature]

- LEGEND**
- 1. STORM WATER DRAINAGE LINE
  - 2. RAIN WATER HARVESTING PIT
  - 3. MASTER SWD LINE (HSVP)
  - 4. F.L. = 230.10  
G.L. = 229.75  
I.L. = 229.10

FEATURE EXTENSION



**LEGEND**

[Symbol]	STORM WATER DRAINAGE LINE
[Symbol]	RAIN WATER HARVESTING PIT
[Symbol]	MASTER SWD LINE (HSVP)
[Symbol]	FEATURE EXTENSION

NO.	DESCRIPTION	UNIT	QTY
1	400mm R.C.C. NP3	M	150
2	400mm R.C.C. NP3	M	135
3	400mm R.C.C. NP3	M	140
4	400mm R.C.C. NP3	M	140
5	400mm R.C.C. NP3	M	150
6	400mm R.C.C. NP3	M	150
7	400mm R.C.C. NP3	M	150
8	400mm R.C.C. NP3	M	150
9	400mm R.C.C. NP3	M	150
10	400mm R.C.C. NP3	M	150

NO.	DESCRIPTION	UNIT	QTY
1	400mm R.C.C. NP3	M	150
2	400mm R.C.C. NP3	M	135
3	400mm R.C.C. NP3	M	140
4	400mm R.C.C. NP3	M	140
5	400mm R.C.C. NP3	M	150
6	400mm R.C.C. NP3	M	150
7	400mm R.C.C. NP3	M	150
8	400mm R.C.C. NP3	M	150
9	400mm R.C.C. NP3	M	150
10	400mm R.C.C. NP3	M	150

NO.	DESCRIPTION	UNIT	QTY
1	400mm R.C.C. NP3	M	150
2	400mm R.C.C. NP3	M	135
3	400mm R.C.C. NP3	M	140
4	400mm R.C.C. NP3	M	140
5	400mm R.C.C. NP3	M	150
6	400mm R.C.C. NP3	M	150
7	400mm R.C.C. NP3	M	150
8	400mm R.C.C. NP3	M	150
9	400mm R.C.C. NP3	M	150
10	400mm R.C.C. NP3	M	150

NO.	DESCRIPTION	UNIT	QTY
1	400mm R.C.C. NP3	M	150
2	400mm R.C.C. NP3	M	135
3	400mm R.C.C. NP3	M	140
4	400mm R.C.C. NP3	M	140
5	400mm R.C.C. NP3	M	150
6	400mm R.C.C. NP3	M	150
7	400mm R.C.C. NP3	M	150
8	400mm R.C.C. NP3	M	150
9	400mm R.C.C. NP3	M	150
10	400mm R.C.C. NP3	M	150

NO.	DESCRIPTION	UNIT	QTY
1	400mm R.C.C. NP3	M	150
2	400mm R.C.C. NP3	M	135
3	400mm R.C.C. NP3	M	140
4	400mm R.C.C. NP3	M	140
5	400mm R.C.C. NP3	M	150
6	400mm R.C.C. NP3	M	150
7	400mm R.C.C. NP3	M	150
8	400mm R.C.C. NP3	M	150
9	400mm R.C.C. NP3	M	150
10	400mm R.C.C. NP3	M	150

NO.	DESCRIPTION	UNIT	QTY
1	400mm R.C.C. NP3	M	150
2	400mm R.C.C. NP3	M	135
3	400mm R.C.C. NP3	M	140
4	400mm R.C.C. NP3	M	140
5	400mm R.C.C. NP3	M	150
6	400mm R.C.C. NP3	M	150
7	400mm R.C.C. NP3	M	150
8	400mm R.C.C. NP3	M	150
9	400mm R.C.C. NP3	M	150
10	400mm R.C.C. NP3	M	150

NO.	DESCRIPTION	UNIT	QTY
1	400mm R.C.C. NP3	M	150
2	400mm R.C.C. NP3	M	135
3	400mm R.C.C. NP3	M	140
4	400mm R.C.C. NP3	M	140
5	400mm R.C.C. NP3	M	150
6	400mm R.C.C. NP3	M	150
7	400mm R.C.C. NP3	M	150
8	400mm R.C.C. NP3	M	150
9	400mm R.C.C. NP3	M	150
10	400mm R.C.C. NP3	M	150

REVISIONS

NO.	DESCRIPTION	DATE
1	ISSUED FOR TENDER	07/2019
2	REVISED AS PER COMMENTS	08/2019
3	REVISED AS PER COMMENTS	09/2019
4	REVISED AS PER COMMENTS	10/2019
5	REVISED AS PER COMMENTS	11/2019
6	REVISED AS PER COMMENTS	12/2019
7	REVISED AS PER COMMENTS	01/2020
8	REVISED AS PER COMMENTS	02/2020
9	REVISED AS PER COMMENTS	03/2020
10	REVISED AS PER COMMENTS	04/2020

**SITE PLAN**

**DETAIL OF AREA**

**CANED SIGNATURE**

**RAO AND ASSOCIATE**

**RAO AND ASSOCIATE**

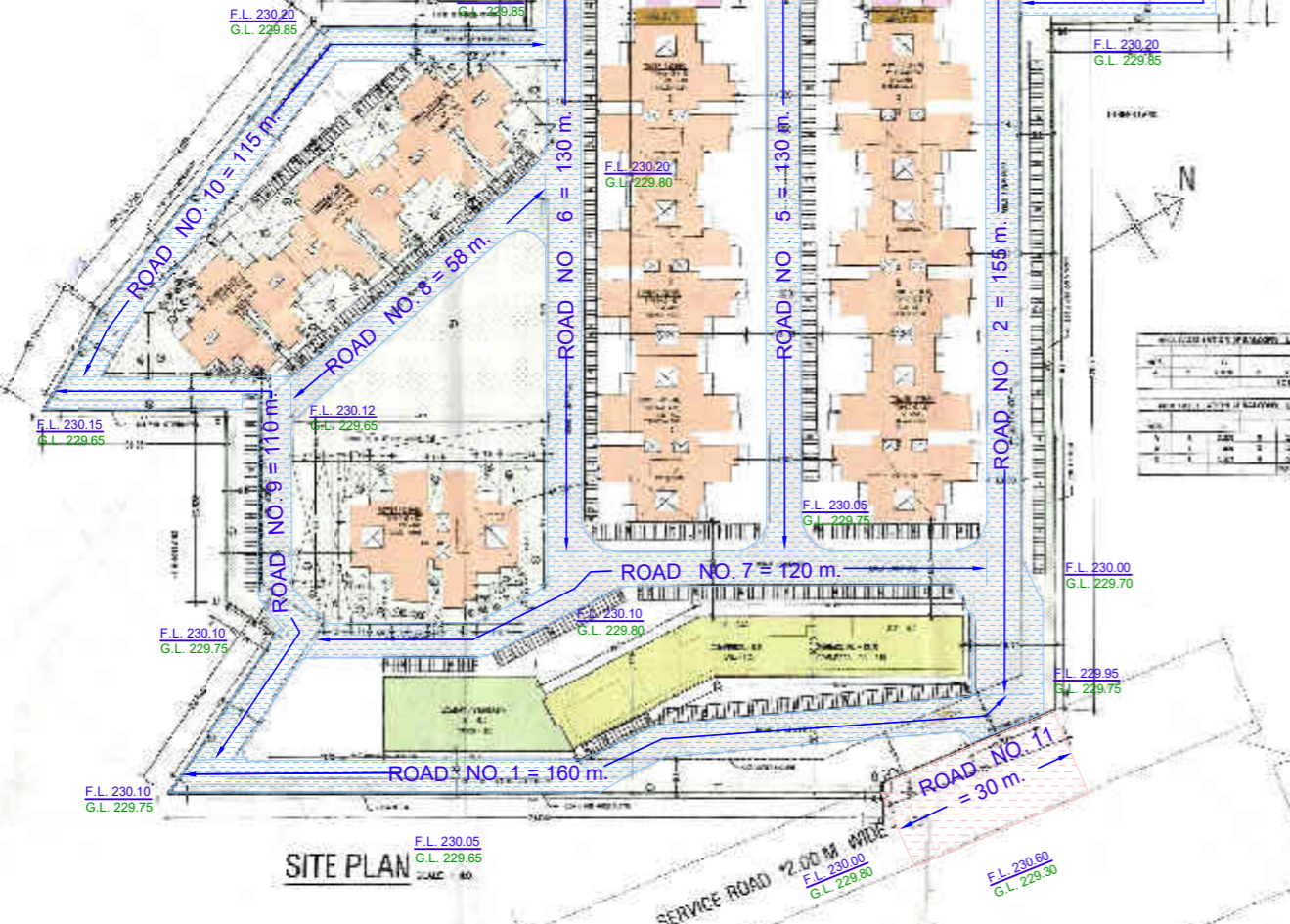
PROJECT NO: KA-3975  
 DATE: 07/2019  
 SCALE: AS SHOWN  
 DRAWN BY: [Name]  
 CHECKED BY: [Name]  
 APPROVED BY: [Name]

# ROADS

- LEGEND**
- 1. 6.0 M. WIDE ROAD
  - 2. 12.0 M. WIDE SERVICE ROAD
  - 3. F.L. = 230.00
  - 4. G.L. = 229.70

**AREA TABLE**

NO.	DESCRIPTION	AREA (SQ. M)	TOTAL AREA
1	ROAD	1200.00	1200.00
2	ROAD	1200.00	2400.00
3	ROAD	1200.00	3600.00
4	ROAD	1200.00	4800.00
5	ROAD	1200.00	6000.00
6	ROAD	1200.00	7200.00
7	ROAD	1200.00	8400.00
8	ROAD	1200.00	9600.00
9	ROAD	1200.00	10800.00
10	ROAD	1200.00	12000.00
11	ROAD	1200.00	13200.00
12	ROAD	1200.00	14400.00
13	ROAD	1200.00	15600.00
14	ROAD	1200.00	16800.00
15	ROAD	1200.00	18000.00
16	ROAD	1200.00	19200.00
17	ROAD	1200.00	20400.00
18	ROAD	1200.00	21600.00
19	ROAD	1200.00	22800.00
20	ROAD	1200.00	24000.00



**DATA TABLE**

NO.	DESCRIPTION	AREA (SQ. M)	TOTAL AREA
1	ROAD	1200.00	1200.00
2	ROAD	1200.00	2400.00
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6	ROAD	1200.00	7200.00
7	ROAD	1200.00	8400.00
8	ROAD	1200.00	9600.00
9	ROAD	1200.00	10800.00
10	ROAD	1200.00	12000.00
11	ROAD	1200.00	13200.00
12	ROAD	1200.00	14400.00
13	ROAD	1200.00	15600.00
14	ROAD	1200.00	16800.00
15	ROAD	1200.00	18000.00
16	ROAD	1200.00	19200.00
17	ROAD	1200.00	20400.00
18	ROAD	1200.00	21600.00
19	ROAD	1200.00	22800.00
20	ROAD	1200.00	24000.00

**STATEMENT OF WORK**

NO.	DESCRIPTION	AREA (SQ. M)	TOTAL AREA
1	ROAD	1200.00	1200.00
2	ROAD	1200.00	2400.00
3	ROAD	1200.00	3600.00
4	ROAD	1200.00	4800.00
5	ROAD	1200.00	6000.00
6	ROAD	1200.00	7200.00
7	ROAD	1200.00	8400.00
8	ROAD	1200.00	9600.00
9	ROAD	1200.00	10800.00
10	ROAD	1200.00	12000.00
11	ROAD	1200.00	13200.00
12	ROAD	1200.00	14400.00
13	ROAD	1200.00	15600.00
14	ROAD	1200.00	16800.00
15	ROAD	1200.00	18000.00
16	ROAD	1200.00	19200.00
17	ROAD	1200.00	20400.00
18	ROAD	1200.00	21600.00
19	ROAD	1200.00	22800.00
20	ROAD	1200.00	24000.00

**DATA TABLE**

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5	ROAD	1200.00	6000.00
6	ROAD	1200.00	7200.00
7	ROAD	1200.00	8400.00
8	ROAD	1200.00	9600.00
9	ROAD	1200.00	10800.00
10	ROAD	1200.00	12000.00
11	ROAD	1200.00	13200.00
12	ROAD	1200.00	14400.00
13	ROAD	1200.00	15600.00
14	ROAD	1200.00	16800.00
15	ROAD	1200.00	18000.00
16	ROAD	1200.00	19200.00
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18	ROAD	1200.00	21600.00
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16	ROAD	1200.00	19200.00
17	ROAD	1200.00	20400.00
18	ROAD	1200.00	21600.00
19	ROAD	1200.00	22800.00
20	ROAD	1200.00	24000.00



**RAO AND ASSOCIATE**

PROJECT NO. RA-3875

DATE: 2023-10-10

SCALE: 1:100

PROJECT LOCATION: [Address]

PROJECT OWNER: [Name]

PROJECT DESCRIPTION: [Description]

PROJECT STATUS: [Status]

PROJECT VALUE: [Value]

PROJECT AREA: [Area]

PROJECT PERIOD: [Period]

PROJECT TEAM: [Team]

PROJECT CONTACT: [Contact]

PROJECT WEBSITE: [Website]

PROJECT PHONE: [Phone]

PROJECT EMAIL: [Email]

PROJECT ADDRESS: [Address]

PROJECT CITY: [City]

PROJECT STATE: [State]

PROJECT COUNTRY: [Country]

PROJECT ZIP: [ZIP]

PROJECT FAX: [Fax]

PROJECT URL: [URL]

PROJECT LOGO: [Logo]

PROJECT SIGNATURE: [Signature]

PROJECT STAMP: [Stamp]

# FIRE FIGHTING SCHEME

**LEGEND**

- 1. MAIN FIRE RING LINE
- 2. FIRE HYDRANT
- 3. U.G.T.

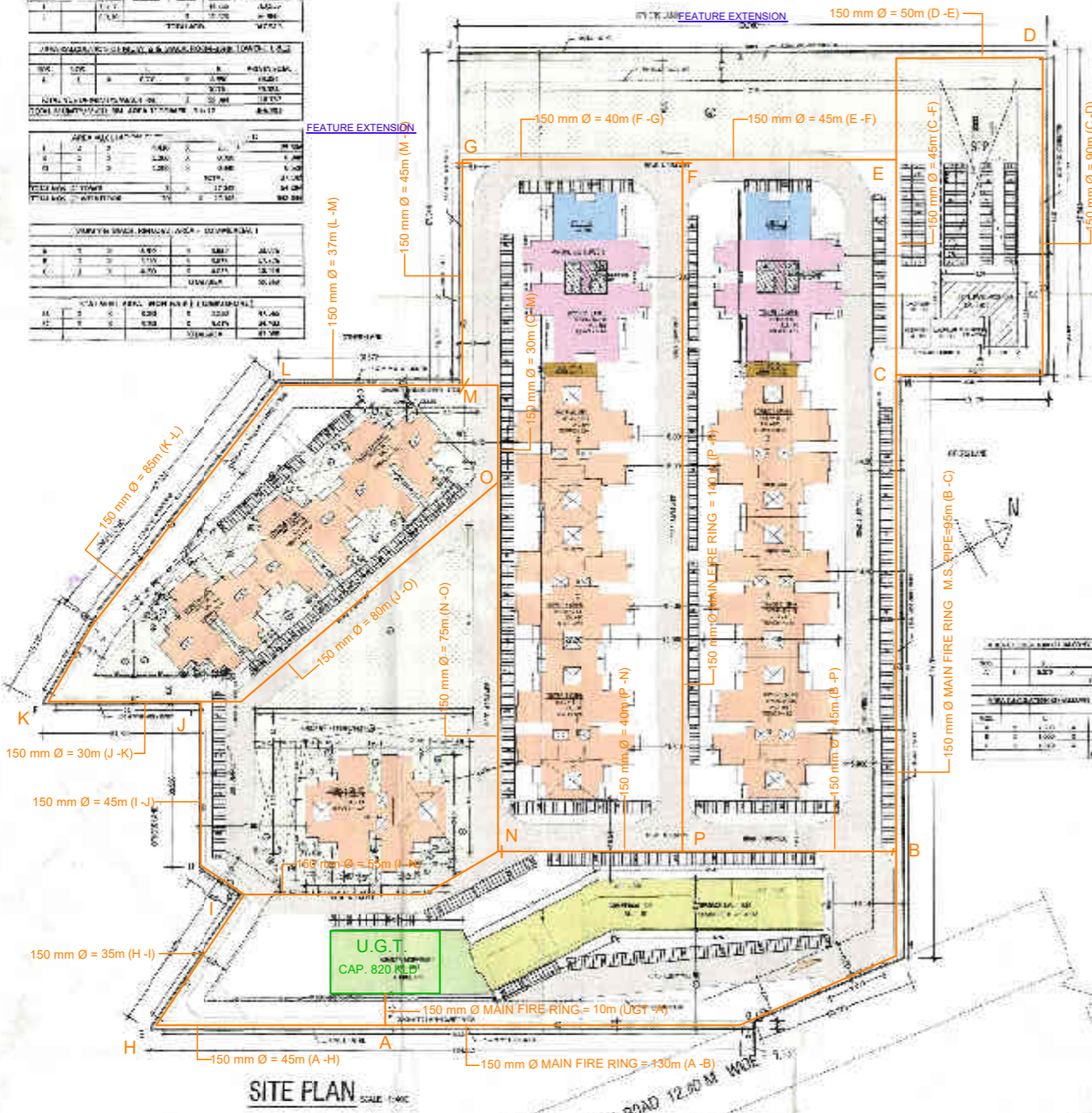


NO.	REV.	DATE	BY	CHKD.	DESCRIPTION
1	0				ISSUED FOR PERMIT
2	1	15/08/2024	...	...	REVISIONS

NO.	REV.	DATE	BY	CHKD.	DESCRIPTION
1	0				ISSUED FOR PERMIT

NO.	REV.	DATE	BY	CHKD.	DESCRIPTION
1	0				ISSUED FOR PERMIT

NO.	REV.	DATE	BY	CHKD.	DESCRIPTION
1	0				ISSUED FOR PERMIT



NO.	REV.	DATE	BY	CHKD.	DESCRIPTION
1	0				ISSUED FOR PERMIT

NO.	REV.	DATE	BY	CHKD.	DESCRIPTION
1	0				ISSUED FOR PERMIT

NO.	REV.	DATE	BY	CHKD.	DESCRIPTION
1	0				ISSUED FOR PERMIT

NO.	REV.	DATE	BY	CHKD.	DESCRIPTION
1	0				ISSUED FOR PERMIT

NO.	REV.	DATE	BY	CHKD.	DESCRIPTION
1	0				ISSUED FOR PERMIT



**SITE PLAN** SCALE: 1:1000

NOTE: GATE & WALL AS PER STD. DESIGN

NOTE: THE RESPONSIBILITY TO THE STRUCTURAL DESIGN AND THE LOAD BEARING OF THE BUILDING IS SOLELY OF THE ARCHITECT/STRUCTURE ENGINEER'S OWN.

NOTE: THE BUILDING SHOULD BE 100 METERS HIGH. MECHANICAL VENTILATION SYSTEM SHALL BE INSTALLED ON VENTILATION SYSTEM WITH 100% POWER BACK UP.

NOTE: THE ARCHITECT/STRUCTURE ENGINEER SHALL BE RESPONSIBLE FOR THE DESIGN OF THE BUILDING AND THE LOAD BEARING OF THE BUILDING IS SOLELY OF THE ARCHITECT/STRUCTURE ENGINEER'S OWN.

**SITE PLAN**

**DETAIL OF AREA**

**ENGINEER SIGNATURE**

**ARCHITECT SIGNATURE**

**ARCHITECT'S SIGNATURE**

**RAO AND ASSOCIATE**

SCALE: 1:1000

DATE: 15/08/2024

PROJECT NO: RA-01/24

CLIENT: M/S. RAO AND ASSOCIATE

PROJECT: RAO AND ASSOCIATE

SCALE: 1:1000

DATE: 15/08/2024

PROJECT NO: RA-01/24

CLIENT: M/S. RAO AND ASSOCIATE

PROJECT: RAO AND ASSOCIATE