PROPOSED RESIDENTIAL PLOTTED COLONY UNDER DEEN DAYAL JAN AWAS YOJNA IN SECTOR - 29 AT VILLAGE- JAUNDHI, DISTT.- JHAJJAR (HARYANA)

PROJECT REPORT

DEVELOPED BY
M/S VIJAYLAXMI INFRABUILD PVT. LTD.

BRIEF DESCRIPTION

A) PROJECT-

Affordable Residential Plotted Colony under Deen Dayal Jan Awas Yojna(DDJAY) on land ad-measuring 13.125 acres is located at sector 29,village Jhaundhi,Tehsil and District, Jhajjar.Village Jhaundhi of Haryana state situated on near Delhi-Rohtak road at a distance of 70 kms from Delhi.Jhajjar is a small town in the state of Haryana is known for its developing economy and industrial growth.The nearest airport is Indira Gandhi International Airport ,New Delhi which is 54 km away from Jhajjar.Today it counts amongst the fast developing regions of Haryana with focus on public welfare.In order to relieve the growing pressure of population in National capital region of Delhi ,it has been decided by Haryana Govt to establish various residential ,industrial and infrastructure sectors in village Jhaundhi,Distt Jhajjar.

B) LIST OF APPROVALS-

S.NO	LIST OF APPROVALS	DATE
1.	License No. 60 of 2018	07.09.2018
2.	Approval of Revised demarcation cum Layout Plan from DTCP -ZP-1262/AD(RA)/2019/3243	05.02.2019
3	Zoning Plan DTCP ZP-1262/AD(RA)/2019/3243	05.02.2019
4.	Rera Registration No.	
5.	Electrical Scheme from UHBVN Ltd. Memo no. Ch-13/DST/Elect. Plan/Case File no. 27/2018-19	11.01.19

C) AREAS-

Total scheme area	-13.125 Acres
Net Planned area	– 12.789 Acres
Area under plotted	– 6.377 Acres
Area under commercial	- 0.326 Acres
Total saleable area	– 6.703 Acres

D) SUMMARY OF PLOTS-

TYPE	NO.OF PLOTS	AREA IN SQ.M
A	37	4508.64
B	104	12172.40
C	64	6958.37
D	23	2168.19
TOTAL	228	25807.60
AREA IN ACRES		6.377

SUMMARY OF COST

S.NO.	ITEM	COST (LAKH)
1	Internal roads and pavements	201.88
2	Water supply system	178.32
3	Storm water drainage	106
4	Electricity supply system	212.29
5	Sewage treatment & Garbage disposal	128.04
6	Street lighting	22.43
7	Fire Fighting	3.00
8	Play grounds and parks	56.73
9	Club House/ Community Centre	Plot to be handed over to Govt.
10	Shopping Area	80
11	Boundary wall	152.16
12	Hard Landscape	58.01
13	Play Equipment	13.29
14	Security System	12.00
15	DWC	33.86
16	Admin/Taxes/Levies	256.00
	Grand Total	**1514.00 Lacs**

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BRIEF REPORT ON ELECTRICAL INSTALLATIONS, SANITARY ENGINEERING AT PROPOSED DEEN DAYAN JAN AWAS YOJNA AT JHAJJAR

GENERAL

1.1 The project consists of developing a housing township with plots, commercial, community services for Deen Dayal Jan Awas Yojna at Jhajjar.

1.2. The Township will consist of plots of the following types:

S. No.	Description	No. of Plots
A	PLOT TYPE-A	37
B	PLOT TYPE-B	104
C	PLOT TYPE-C	64
D	PLOT TYPE-D	23
	TOTAL PLOTS	**228**
E	COMMUNITY AREA	1
F	COMMERCIAL AREA	1

ELECTRICAL INSTALLATIONS

GENERAL

Electricity – Most Important Utility in any development. Nothing works without it. Be it the lighting, Lifts, Air- Conditioning, kitchen or any equipment.

Design Requirements -

i) Sufficient lighting in service areas etc.

ii) Attractive Landscape and Street Lighting.

iii) Power supply to various consumers and services.

Design Philosophy - Power distribution system to be designed keeping in view the Following:

i) Continuity and reliability of power supply.

ii) Flexibility of operation.

iii) Concentration/ distribution of loads.

iv) Safety of personnel and equipment.

v) Investment and operational costs.

vi) Compliance with various statutory provisions such as Indian Electricity Act and Rules, National Electrical Code and the relevant B.I.S. Specifications and State Electricity Authority' norms.

vii) Easy future extensions/ modifications.

viii) Ease of maintenance.

ix) Maximum interchangeability of equipment resulting in minimum inventories and spare parts.

x) Minimum fire risk.

xi) Simplicity of operation.

ENERGY CONSERVATION

To economize on the use of energy, following main systems are proposed to be adopted:

i) Adequate design to limit the losses in the distribution system.

ii) Use of energy efficient devices like light sources such as true-lite fluorescent lamps and LED lamps.

iii) All high efficiency motors will be used.

ILLUMINATION SYSTEM

The provision of sufficient lighting will be done on the roads. The luminaries will be selected keeping in mind Aesthetics, location requirement, and ease of maintenance and energy conservation.

S. No.	DESCRIPTION OF SPACE	TYPE OF LIGHTING	ILLUMINATION (LUX LEVEL)
i)	Internal roads 9 Mtrs.	8Mtrs. High poles with LED lamp Fixtures	15-20
ii)	External roads 24Mtrs.	8Mtrs. High poles with LED lamp Fixtures	15-20
iii)	Internal Parks/ Gardens	Post tops, LED Bollards & LED up lighters etc. as per landscape lighting.	6 – 8 & glare free beautification

PROVISION OF SOCKET OUTLETS

Shall be made as per space requirements. All 16 amp. Sockets shall be 6pin 6/16 amp. type. All sockets shall be modular shuttered type. Sockets are proposed to be provided in the utility room like sub-stations, pump room/ park rooms etc.

PROVISION IN INDIVIDUAL PLOTS

All Villa's/ plots will be provided with three phase power supply. The installation of the HT equipment's, HT cabling work, distribution transformers, Feeder pillars etc. shall be provided by the developer. The electrical connection will be given by the state electricity board on the request of the plot owner subsequently.

DG backup have been considered for all common services only e.g. Street lighting, water supply pumps, STP & Commercial areas as per load requirement.

TOTAL ELECTRICAL LOAD

Total electrical load on the basis of Haryana norms works out to be as under:

ELECTRICAL LOAD CALCULATION FOR AFFORDABLE RESIDENTIAL PLOTTED COLONY @ 13.125 ACRES										
AS PER CLASS 'C' CITY										
S. No.	DESCRIPTION	No. Of Units	Area Per Unit (in sq.mtr.)	Area per Unit (Sq.Ft.)	Area in marla per Unit	Connected Load (KW)	TOTAL Conncted LOAD (KW)	Demand factor	Demand Load (KW)	DG Load
ESS-1										
1	**COMMERCIAL**		1320.19			16.00	211.23	0.6	126.74	
	TRANSFORMER SELECTION									
	Taking Loading @ 0.8 & PF @ 0.9, Transformer Capacity works out to be								**176.03**	
	Transformer Selection - 1X 200kVA Pole mounted									
ESS-2										
1	**TYPE - A**	18	121.66	1309.06	4.81	6.00	108.00	0.4	43.20	
2	**TYPE - A**	19	122.04	1313.15	4.82	6.00	114.00	0.4	45.60	
3	**TYPE - B**	24	119.00	1280.44	4.70	6.00	144.00	0.4	57.60	
4	**TYPE - B**	7	117.13	1260.32	4.63	6.00	42.00	0.4	16.80	
5	**TYPE - B**	72	116.38	1252.25	4.60	6.00	432.00	0.4	172.80	
6	**TYPE - C**	31	108.40	1166.38	4.28	6.00	186.00	0.4	74.40	
7	**TYPE - D**	7	93.03	1001.00	3.68	6.00	42.00	0.4	16.80	

6	**EXTERNAL LIGHTING**						10.00	1	10.00	10.00
7	**UGT**						25.00	0.6	15.00	15.00
	Total	**178**					**1103.00**		**452.20**	**25.00**
	TRANSFORMER SELECTION									
	Taking Loading @ 0.8 & PF @ 0.9, Transformer Capacity works out to be								**628.06**	
	PSS SELECTION - 1X400KVA+1X315 kVA									
					ESS-3					
1	**TYPE - C**	32	109.06	1173.49	4.31	6.00	192.00	0.4	76.80	
2	**TYPE - C**	1	107.18	1153.26	4.24	6.00	6.00	0.4	2.40	
3	**TYPE - C**	1	109.27	1175.75	4.32	6.00	6.00	0.4	2.40	
4	**TYPE - D**	15	94.93	1021.45	3.75	6.00	90.00	0.4	36.00	
5	**TYPE - D**	1	93.03	1001.00	3.68	6.00	6.00	0.4	2.40	
4	**STP**						30.00	0.6	18.00	18.00
5	**EXTERNAL LIGHTING**						5.00	1	5.00	5.00
	Total	**50**					**335.00**		**143.00**	**23.00**
	TRANSFORMER SELECTION									
	Taking Loading @ 0.8 & PF @ 0.9, Transformer Capacity works out to be								**198.61**	
	PSS SELECTION - 1X200kVA									

ESS-4										
1	**COMMUNITY AREA**		5464.70			16.00	874.35	0.6	524.61	
	TRANSFORMER SELECTION									
	Taking Loading @ 0.8 & PF @ 0.9, Transformer Capacity works out to be								**728.63**	
	PSS SELECTION - 1X750kVA									
DG SET SELECTION										
	Total Electrical load for DG Set									**48.00**
	Taking Loading @ 0.85 & PF @ 0.8, DG Capacity works out to be									**70.59**
	DG SET Selected	**-**	**1 x 82.5 kVA**							

The electrical supply will be made available at 11 KV from the electricity board. To transform this supply to the useable voltage, step-down system 11KV/ 0.433KV shall be installed at receiving substation along with 11KV breakers with required protections & earthing equipment etc. for which space has been provided.

PROVISION OF ESSENTIAL SUPPLY

DG backup will be provided for all common services e.g. water supplies Pumps, street lighting, STP & community building services as per the above calculations etc.

Diesel Generators have been selected as per the calculations of KVA with Residential type silencers & stack heights as per CPCB norms for each DG set.

SELECTION OF EQUIPMENT

1. H.T. Equipments

Receiving Sub Station:-

11KV single breaker with extendable bus bars for future provision to be coupled alter on.

11KV/ 0.433KV Transformer with OFF LOAD Tap changer etc.

All 11 KV system shall be with (RMU) Ring main arrangement as per requirement.

All the required protections & metering shall be considered for all the breakers.

2. Distribution transformers

Transformer 11000/433 volt delta/star double wound core type with copper wounded, outdoor mounting oil filled natural cooled type (ONAN) transformer with fittings (completely self protected), (Vector Group Dyn 11) and OFF load taps of +10%,+7.5%,+5%, +2½%, -2½%, -5%, -7½%, -10% on HT side to give constant secondary voltage of 433 volts. Maximum Losses shall be as per IS:1180,level-2 and 4 star rated.Transformer shall complying with regulation of IEC and relevant indian standards .

The transformers will be provided with all the necessary protection and neutral grounding etc.

3. L.T.PANEL AND POWER DISTRIBUTION

The L.T. Panel will have air circuit breakers for controlling the feeders of more than 630 Amp. Rating whereas feeders of 630 Amp. And below will have MCCB.s to control them. Feeder pillars will be set up to distribute the power to the Plots etc.

4. Cables

All cables proposed to be used shall be of aluminum conductor, XLPE Insulated armored type. All wires shall be PVC insulated FRLS with multi-stranded copper conductors. All cables & wires shall be new & ISI marked only as per up to date amended IS codes.

EARTHING SYSTEMS

Earthing system including earthing strips/ cables and earth pits will be provided.

Main earth electrode will be suitable to achieve a maximum resistance to earth of 1 Ohm.

Proper Grounding will be provided for

a) HT Metering, HT panels.
b) Transformers body & neutral earthing
c) DG's body & neutral earthing.
d) LT panels body earthing
e) Feeder pillars & Meter boards.
f) All apparatus and metal pieces
g) Steel Structures

LIST OF APPLICABLE INDIAN STANDARDS FOR ELECTRIFICATION WORK

S. No.	STANDARDS	TITLE
(1)	IS: 732 - 1989	Code of practice for electrical wiring installations.
(2)	IS: 4648 - 1968	Guide for electrical layout in residential buildings.
(3)	IS: 8061 - 1976	Code of practice for design, installation and Maintenance of service lines up to and including 650V
(4)	IS: 8884 - 1978	Code of practice for installation of electric bells And call system.
(5)	IS: 5578 - 1985	Guide for marking of insulated conductor.
(6)	IS: 11353- 1985	Guide for uniform system of marking and Identification of conductors and apparatus Terminals .
(7)	IS: 5728 - 1970	Guide for short-circuit calculations.
(8)	IS: 7752(Part-1)-1975	Guide for improvement of power factor in Consumer installation: Low and medium supply voltages.
(9)	IS: 3646(Part-1)-1966	Code of practice for interior illumination: Principles for good lighting and aspects of design .
(10)	IS: 3646(Part-2)-1966	Code of practice for interior illumination: Schedule Of illumination and glare index.
(11)	IS: 2672 - 1966	Code of practice for library lighting.
(12)	IS: 10118(Part-1)-1982	Code of practice for selection, installation and Maintenance of switchgear and control gear : General.
(13)	IS: 10118(Part-2)-1982	Code of practice for selection, installation and Maintenance of switchgear and control gear .
(14)	IS: 10118(Part-3)-1982	Code of practice for selection, installation and Maintenance of switchgear and control gear: Installation.
(15)	IS: 10118(Part-4)-1982	Code of practice for selection, installation and Maintenance of switchgear and control gear: Maintenance .

(16)	IS: 2309 - 1989	Code of practice for the protection and allied Structures against lightning .
(17)	IS: 3043 - 1987	Code of practice for earthing.
(18)	IS: 5216(Part-1)-1982	Guide for safety procedures and practices in Electrical work: General.
(19)	IS: 4237 – 1983	General requirements for switchgear and control Gear for voltages not exceeding 1000 V AC or 1200 V DC .
(20)	IS: 6875(Part-1)-1973	Control switches (switching devices for control And auxiliary circuits including contractor relays) for voltages up to and including 1000 V AC and 1200 DC : General requirements and tests.
(21)	IS: 4064(Part-1)-1978	Air break switches, air break dis-connectors, air-Break switch disconnectors and fuse-combination units for voltages not exceeding 1000 V AC or 1200 DC: General requirements.
(22)	IS: 8828 - 1978	Miniature air break circuit breakers for voltages Not exceeding 1000 volt.
(23)	IS: 13032 - 1991	Miniature circuit breaker boards for voltages up to And including 1000 volts AC .
(24)	IS: 12640 - 1988	Residua current operated circuit breakers.
(25)	IS: 2959 – 1985	Contactors for voltages not exceeding 1000 V AC Or 1200 V DC .
(26)	IS: 8623(Part-1)-1977	Factory built assemblies of switchgear and control Gear for voltages up to and including 1000 V AC and 1200 V DC: General requirements.
(27)	IS: 8623(Part-2)-1980	Factory assemblies of switchgear and control Gear for voltages up to and including 1000 V AC and 1200 V DC : Particular requirements for bus bar trunking system (bus ways).
(28)	IS: 694 – 1990	PVC Insulated cables for working voltages up to And including 1100 V.
(29)	IS: 1554(Part-1)-1988	PVC insulated (heavy duty) electric cables: For Working voltages up to and including 1100 V.

(30)	IS: 3961 (Part-5)-1968	Recommended current ratings for cables: PVC Insulated light duty cables .
(31)	IS: 9537(Part-1)-1980	Conduits for electrical installations :General Requirements .
(32)	IS: 9537(Part-2)-1981	Conduits for electrical installations Rigid steel Conduits .
(33)	IS: 3480 - 1966	Flexible steel conduits for electrical wiring.
(34)	IS: 2667 - 1988	Fittings for rigid steel conduits for electrical wiring.
(35)	IS: 3837 - 1976	Accessories for rigid steel conduits for electrical Wiring .
(36)	IS: 5133(Part-1)-1969	Boxes for enclosure of electrical accessories : Steel and cast iron boxes.
(37)	IS: 371 - 1979	Ceiling roses.
(38)	IS: 3854 - 1988	Switches for domestic and similar purposes.
(39)	IS: 4615 - 1968	Switch socket outlets (non-interlocking type).
(40)	IS: 4160 - 1967	Interlocking switch socket outlet.
(41)	IS: 1293 - 1988	Plugs and socket outlets of rated voltage up to and Including 250 volts and rated current up to and Including 16 amperes .

1. INTRODUCTION

1.1 Water supply and wastewater disposal constitute a very important part of the services in a building. Maintenance of hygiene and cleanliness are indispensable to the well being of the occupants as a whole.

1.2 It is proposed to design the services, storage capacities and piping network of the township in totality.

1.3 It is proposed to locate all the pumps and equipments in the underground pump room which shall accommodate all major pumps and equipments and electrical panels etc.

1.4 This report intends to highlight the details of the following proposed services, which are to be provided from the point view of Sanitary Engineering, Fire Fighting and other allied services.

- Water Supply System
- Wastewater Disposal System
- Sewerage and drainage system including disposal
- Sewage Treatment Plant and Recycling of Waste Water
- Rain Water Harvesting

2. WATER SUPPLY SYSTEM

At present the source of water supply in this area is borewells. As the underground water is potable, provision for 2 number of borewells has been made on temporary basis in this estimate. It has been proposed to construct the under ground tanks of capacity as per attached details, and at location for domestic purpose and for fire protection. The underground tanks will be fed from the borewells and HUDA supply, which will feed overhead tanks on the roof of the buildings. The water supply system has been designed as per Hazen Williams formula.

2.1 Total Water Requirement

DESIGN

The scheme has been designed for population a of approx. 3078 persons for Housing. The rate of water supply per head / day has been taken as 135+20.25 (U.F.W.)=155.25 liters as per HUDA norms in addition to above necessary provision of water for club and parks etc. have been taken into account for calculating the maximum quantity of water requirement.

PUMPING REQUIREMENTS

It has been proposed to install pumping set as described with standby of equal capacity. The provision for standby generating set has also been provided in case of any electricity failure.

PUMPING CHAMBER AND PUMPING EQUIPMENTS

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

UNDERGROUND STORAGE TANK

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

BOOSTING STATION

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

DISTRIBUTION SYSTEM

The distribution system for this development has been designed to supply @ 135+15% UFW = 155.25 liter per head per day @ 3 times the average rate of flow on Hazen William formula. Necessary provision for laying CI/DI pipes confirming to relevant IS standard along with valves and special has been made in the project. The minimum terminal head at any point will be more than 40 Mtrs. so that it can be serve the G+2 floors construction envisaged in the plan. Minimum pipe dia. for distribution is kept as 100 mm dia.

RISING MAIN

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

FIRE

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

SPECIFICATIONS

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

ROADS

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

The specification of 6M wide roads:

1. GSB-200 mm in one layer
2. WBW-250 mm in three layer
3. BW-50 mm thick
4. MSS-20 mm thick

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

The total water requirement is proposed to be catered by an underground water tank. The water requirement as per I.S. specifications and Govt. manuals shall be as below:

TOTAL WATER REQUIREMENT

(I) DAILY WATER REQUIREMENT

A

a)	A TYPE	=	37	Plots
b)	B TYPE	=	104	Plots
c)	C TYPE	=	64	Plots
d)	D TYPE	=	23	Plots
	Total	=	228	Plots
	@13.5 Persons/Plot	=	3078	Persons

Total population = 3078 Persons
@155.25 LPCD (135+15% U.F.W.) = 477860 Liters/ Day
Say = 480000 Liters/ Day

B Commercial

a) Commercial Building (0.326 Acres = 1319.27 sqm @ 3 sqmt/ person = 440 Persons

i 10% staff / shopkeepers 44 Persons
For staff @ 45 lpcd 1980 Liters/day

ii 90% Visitors 396 Persons
For staff @ 15 lpcd 5940 Liters/day

b) Community Building 1.35 Acres =5463.25 sqm area = 5463.2 Sqmt.

i 50% for office area 2732 Sqmt.
For office building @ 10 sqmt / person 273 Persons
For staff @ 45 lpcd 12285 Liters/day

ii 50% for community building 2731 Sqmt.
For community building @ 1.4 sqmt / person 1950 Persons
For staff @ 15 lpcd 29250 Liters/day

c) Maintenance Staff (Such as Gardener, ESS Staff, Security Guards etc.) =20 Persons
@45 LPCD = 900 Liters/day

d) Back Wash Filters - L.S. = 10000 Liters/day

e) Floating Population 10% of Population = 308 Persons
@ 15 LPCD = 4620 Liters/day
Total Commercial 64975 Liters/day
SAY 65000 Liters/day

C Horticulture & Road side plantation

a) Area under Green area (0.985 Acres = 3986.15 sqmt. @ 5 Liters / sqmt. = 19931.00 Liters/day

b) Area under road & paved area of 13.125-9.038 =4.087 Acres@ 25 KL/Acer = 102175.00 Liters/day
Total = 122106.00 Liters/day

Or Say = 122200.00 Liters/day

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

Total Water demand (A + B)	542835	Liters/day
Total Water demand (KLD)	542.83 KLD	
Or Say	550.00 KLD	

Domestic water demand

65% of AV/WD of (A) +35% of [B (a+b+c+e) + 100% of B (c)] = 341250.00 Liters/day
Domestic water demand (KLD) = 341.25 KLD
Or Say = 345.00 KLD

Flushing water demand

35% of AV/WD of (A) +65% of [B(a+b+d)] = 203750 Liters/day
Flushing water demand (KLD) = 203.75 KLD
Or Say = 205.00 KLD

Sewage Treatment Plant Capacity

Average Sewerage Contribution Considering 80% of AV domestic water demand & 90% of AV/Flushing demand = 460500 Liter / Day
Sewage Treatment Plant Capacity (KLD) = 460.50 KLD
Or Say = 460.00 KLD

Sewage scheme

Peak discharge @3 times of sewage discharge plus sub soil infiltration @ 10% of total water demand = 1435000 Liters
= 318889 GPD
= 0.591 Cusces

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

BOREWELLS

Approx. discharge of borewells @ 18 KL/hour and working 16 hours/day

(a) Total domestic water demand = 345KLD
(b) Number of borewells 345/(18 x 16) = 1.198
Total = 1.198
Say = 2.00
Total 2 Nos.

So, it is proposed to provide 2 Nos. of tube wells (1W+1S.) Moreover, the water demand for horticulture purposes is to meet from recirculated water after treatment at STP and ultimate water supply is to provided by HUDA.

Pumping Machinery for Borewell

Gross working Head = 30.0 Meters
Average Fall in S.L. = 5.0 Meters
Depression Head = 5.0 Meters
Friction loss in main + Postive head = 10.0 Meters
Total = 50.0 Meters
Or Say = 50.0 Meters

"Pump HP = 18000 x 50 x 100
60 x 60 x 75 x 70" = 4.76 H.P.
Or Say 5.00 H.P.
It is proposed Nos Tube Wells of 5H.P. each 50M head

Under Ground Water Tanks

Total Domestic Water Demand = 341250 Liters/day
Storage (One day) = 341 KLD
Or Say = 345.00 KLD

Fire Tank provided as per N.B.C. norms = 50 KLD

It is proposed to construct an underground tank of 395 KLD having 175 KLD for treated water, 175 KLD as raw water, 50 KLD for Fire

For Under Ground Tank

Total water demand (Domestic) = 345.00 KLD
Pumping 4 hour pumping = 1437.50 LPM
Or Say = 1500.00 LPM

Gross Working Head
Suction lift = 3.00 Meters
Delivery head = 5.00 Meters
Frictional loss in Mains & Specials+ Positive head = 7.00 Meters
Clear head required (G+2) =10+2x4 = 18.00 Meters
Total = 33.00 Meters
Or Say = 35.00 Meters

"Pump HP = 1500 x 35 x 100
60 x 75 x 70" = 16.67 H.P.
Or Say = 17.50 H.P.

It is proposed to provide 2 nos. of motors of 17.50 HP (1W+1S) sets of 1500 LPM discharge at 35 M head for domestic supply & generator set of same capacity in case of electric failure) for domestic purpose.

Under Ground Flushing Water Tanks (from STP)

Average Water Demand	=	542835	Liters/day
Flushing Water Demand	=	201.59 KLD	
Or Say	=	205 KLD	
Pumping 4 hour pumping	=	854.17 LPM	
Or Say	=	860.00 LPM	

"Pump HP = 860 x 35 x 100
60 x 75 x 70" = 9.56 H.P.
Or Say = 10.00 H.P.

It is proposed to provide 2 nos. of motors of 10 HP (1W+1S) sets of 860 LPM discharge at 35 M head for flushing supply & generator set of same capacity in case of electric failure) for flushing purpose.

Irrigation Pumping

Plot Area = 13.125 Acres
= 53114.90 Sqmt

Water Demand of Horticulture + Road Area Plantion = 122200.00 LPD
4 Hours Pumping = 509.17 LPM
Say = 510 LPM
Head = 35 Mtr.

"Pump HP = 510 x 35 x 100
60 x 75 x 70" = 5.67 H.P.
Or Say = 5.00 H.P.

It is proposed to provide 2 nos. of motors of 5.0 HP sets of 510 LPM discharge at 35 M head (One pump are working and one as standby & generator set of same capacity in case of electric failure.)

IMPORTANT INDIAN STANDARDS PLUMBING & SANITARY WORK

	TITLE
IS 651-1965	Specification for salt Glazed stoneware pipes and fittings (First revision).
IS 782-1978	Specification for caulking lead.
IS 1172-1971	Code of basic requirements for water supply, drainage and sanitation (revised).
IS 1239-1968 (Part-I)	Specifications for mild steel tube, tubular and other steel pipe fittings.
IS 1239-1968 (Part-II)	Specifications for mild steel tube, tubular and other steel pipe fittings.
IS 1537-1976	Specification for vertically cast iron pressure pipes for water, gas and sewage.
IS 1536-1976	Specification for centrifugally Cast (Spun) Iron pressure pipes for water, gas and sewage.
IS 1538 (Part 1 to 23)	Specification for Cast Iron fittings for pressure pipes for water, gas and sewage.
IS 1626-1960	AC building pipes, gutters and fittings (Spigot and socket type).
IS 1726-1960	Code for cast iron manhole frame and cover.
IS 1729-1979	Specification for Sand cast iron Spigot and Ventilating pipes, fittings and accessories.
IS 1742-1960	Code of practice for building drainage.
IS 2064-1962	Code of practice for selection, installation and maintenance of sanitary appliances.
IS 2065-1963	Code of practice for water supply to buildings.
IS 3114-1965	Code of practice for laying of C.I. Pipes.
IS 3589-1981	Specification for electrically welded steel pipes for water, gas and sewage.
IS 3989-1970	Centrifugally cast spun iron and socket soil and ventilating

pipe, fittings and accessories.

IS 4111-1967	Code of practice for Ancillary structure in sewerage system.
IS 4127-1967	Code of Practice for laying glazed stone ware pipe.
IS 4515	Specification for unplasticized PVC pipe fittings.
IS 4985-1981	Specification for unplasticized PVC pipes for portable water supplies.
IS 1703-1984	Ball Valves
IS 2548-1970	Toilet Seat Cover
IS 4736-1986	Galvanizing G.I. Pipes
IS 780-1984	Cast iron sluice valves
IS 778-1984	Full way valves
IS 2692-1978	Brass ferrule
IS 458-1971	R.C.C. pipes

National building code for water supply, drainage and sanitation Part IX Plumbing services section 1 & 2.

The installation shall also be in conformity with the bye-laws and requirements of the local authority are so far as these become applicable to the installation. Where-ever this specification calls for a higher standard of materials and/or workmanship then those required by any of the above regulations and standards, hen this specification shall take precedence over the said regulations and standards. Wherever drawings and specifications require something that may violate the regulations, the regulation shall government.