

DETAIL PROJECT REPORT

ON

Vishwakarma Yojana: Phase VIII

AN APPROACH TOWARDS RURBANISATION

BORVAV Village

GIR SOMNATH District

Prepared By

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BHARGAV TANK	ELECTRICAL	186920309015

COLLEGENAME

NOBLE GROUP OF INSTITUTIONS

NODAL OFFICERS NAME

Prof. KISHAN VEKARIYA

COLLEGE LOGO



Year: 2020-21

**Gujarat Technological University,
Chandkheda, Ahmedabad – 382424 Gujarat**

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Chandkheda, Ahmedabad – 382424 Gujarat**

CERTIFICATE

This is to certify that the following students of Degree/ Diploma Engineering successfully submitted

Detail Project Report for,

VILLAGE: BORVAV

DISTRICT: GIR SOMNATH

Under

Vishwakarma Yojana: Phase-VIII

In partial fulfillment of the project offered by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

During the academic year 2020-21.

This project work has been carried out by them under our supervision and guidance.

STUDENT NAME	BRANCH NAME	ENROLLEMENT NO
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ABSTRACT

Vishwakarma Yojana is one of the approaches to reduce urban city Pressure and lower the migration rate by developing village with a ‘rural soul’ but with all urban amenities that a city may have. The developmental work in villages that could undertake as per the need of the village in particular includes Physical, Social and Renewable infrastructure Facilities.

Borvav is a large village located in Talala Taluka of Junagadh district, Gujarat with total 972 families residing. The Borvav village has populations of 5247 of which 2718 are males while 2529 are females as per Population Census 2011.

In Borvav village population of children with age 0-6 is 522 which make up 9.95 % of total population of village. Average Sex Ratio of Borvav village is 930 which is higher than Gujarat state average of 919. Child Sex Ratio for the Borvav as per census is 758, lower than Gujarat average of 890.

Borvav village has lower literacy rate compared to Gujarat. In 2011, literacy rate of Borvav village was 73.02% compared to 78.03% of Gujarat. In Borvav Male literacy stands at 78.98% while female literacy rate was 66.75%.

There are many type of minor problem that usually occurs in the every village as per our view. Like as road, lack of education facility, network issue, travelling difficulties and many more.

My view for village development need the program like nested institutions, massive program requires, implementation of village infrastructure project, redefine the role of government and NGO, proper services, Strengthening the public health system, Area expansion through rapid extension.

KEY WORDS: Facilities, Sustainability, Rural Development, Smart Village, Urbanization, design, common service centre.

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We are highly indented to Gujarat Technological University, Ahmadabad for providing us such opportunity to work under Vishwakarma Yojana to get real work experience and applying our technical knowledge in the development of villages.

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(For Allocated village development, villagers happiness, comfortable and for enhancement of the village) (With the Smart village development Concept As Per Your Idea And Village Visit, modern technology with innovation). with doing small changes, Period, Amount Expenditure and Benefit – a) Immediatelyb) Within 1year c) Long term (3-5 years) along with cost estimation. b) If possible, List the sources of the funding available with the Village gram panchayat	188
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ABBREVIATIONS

Sr. No.	Short form	Full form
1.	KM	Kilometer
2.	Govt.	Government
3.	LPG	Liquefied Petroleum Gas
4.	KV	Kilo Watt
5.	SHGs	Self Help Groups
6.	CC	Cement Concrete
7.	PHC	Primary Health Centre
8.	CSS	Centrally Sponsored Schemes
9.	RO	Reverse Osmosis
10.	Hrs.	Hours
11.	LED	Light Emitted Diode
12.	PPPs	Public Privet Partnerships
13.	NIIF	National Investment and Infrastructure
14.	HPEC	High-Power Expert Committee
15.	PCIC	Per Capita Investment Cost
16.	GDP	Grows Development Products
17.	SMEs	Small and Medium Enterprises
18.	SMC	Surat Municipal Corporation
19.	SUDA	Surat Urban Development Authority
20.	SIR	Special Investment Region
21.	IGBC	Indian Green Building Council
22.	CCTV	Closed Circuit Television
23.	IPS	Intrusion prevention systems
24.	VPN	Virtual Private Networks
25.	CHP	combined heat and power plant
26.	PUE	Power Usage Effectiveness
27.	WCCD	World Council on City Data
28.	TOD	Transit Oriented Development
29.	IDD	Infrastructure Development Department
30.	NSSO	National Sample Survey Organization
31.	CSOs	civil society organizations
32.	SAGY	Sansad Adarsh Gram Yojana
33.	GP	Gram Panchayat
34.	STD	Subscribers Trunk Dialing
35.	CSP	concentrated solar power
36.	NREL	National Renewable Energy Laboratory
37.	BOD	Biological Oxygen Demand
38.	COD	Chemical Oxygen Demand
39.	RTTP	Rural Travel and Transport Project

1. CHAPTER 1. IDEAL VILLAGE VISIT FROM DISTRICT OF GUJARAT STATE (CIVIL & ELECTRICAL CONCEPT)

1.1 Background & Study

Area Location

Background

- Shapur is a Village in Vantali Taluka in Junagadh District of Gujarat State, India. It is located 14 KM towards South from District head quarters Junagadh.. 4 KM from. 357 KM from State capital Gandhinagar
- Shapur Pin code is 362205 and postal head office is Shapur(S).
- Dhanfuliya (3KM) , Bandhda (4KM), Selar(5KM), Kajaliya Mota (5KM), Ghnithila (5KM) are the nearby village to Shapur.
- Shapur is surrounded by Junagadh Taluka towards East , Menadarda Taluka towards South, Keshod Taluka towards south, Dhoraji Taluka towards North.
- Junagadh, Keshod, Manavadar Upleta are nearby cities to Shapur.
- Shapur is Located in rural area of Junagadh district of Gujarat, it is one among the
- 72 villages of Junagadh district. According to the administration register, the village number of Shapur . The village has 1798 houses.
- The village has received several awards from Government of Gujarat and India
- **NIRMAL GRAM PURSAKAR** has been awarded to on attaining full sanitation coverage in households, Schools, Anganwadis, etc and for outstanding contribution in promotion of Rural Sanitation by his Excellency **Dr.A.P.J.Abdul Kalam** President of India on 4th May, 2007.
- **SWARNIM AWARDED** has been awarded to on attaining Best Gram Panchayat of Taluka level by **Shree Narendra Modi** Chief Minister of Gujarat on Year of 2010-11.

Study Area Location:

- This topic gives details of village like village location, Brief history, Regional setting & linkage of village, Population statistics, Economic Profile, Social Scenario, Land use details and Base map of village etc.

Approach & Methodology:

- The study will focus the development trend, intensity of growth of the village, and find out the problems related to the physical development of the area and infrastructure services of the village. Project proposal and sustainability aspect not consider in micro level, it is only guide way. The study focused to only following village.



FIG: 1 Map of Gujarat



FIG: 2 Map of Gir Somnath District in Gujarat

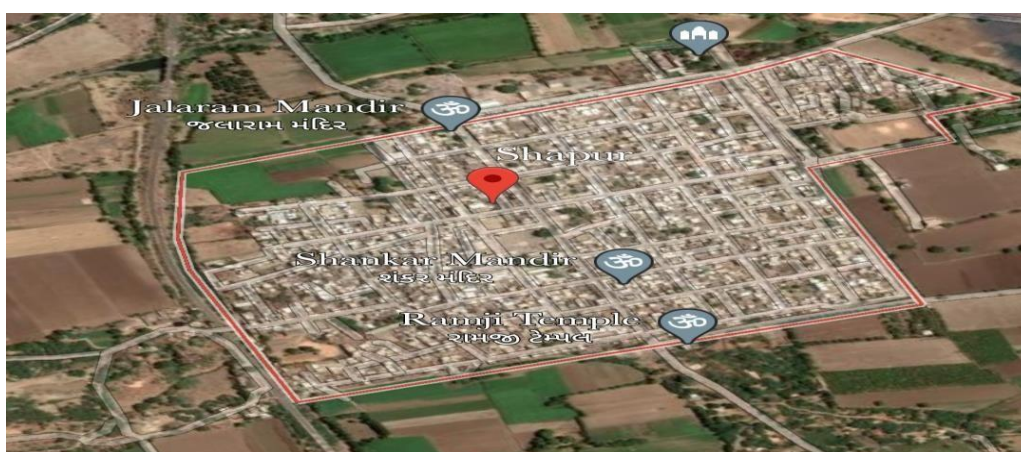


FIG: 3 Map of Shapur

- Shapur is a village located in Junagadh district in the state of Gujarat, India. The village is located at about 14 km from the District, Junagadh.
- The geographical coordinates i.e. latitude and longitude of Shapur is 21.4690* and 70.3703* respectively.

1.2 Concept: Ideal Village, Normal Village

- To trigger processes which lead to holistic development of the identified Gram panchayats.
- To substantially improve the standard of living and quality of life of all sections of the population through
- Improved basic amenities
- Higher productivity

1.2.1 Example / Live Case studies of ideal village of India/Gujarat

Shapur is a village in Vanthli taluka in Junagadh district of Gujarat state India. It is located 14 km toward south from district head quarters Junagadh.

Shapur Pin code is 362205.

Shapur village



FIG: 4
Class Modal

Various buildings



FIG: 5
Government Buildings

1.2.2 Ancient History Civil / Electrical concept about Indian Village / Foreign Countries Perspective and its Development Civil concept /Method/Usage in the Ideal Village

ROADS

- In Shapur village approach road are good condition.
- This rural road is connected to nearest highway at 1 km distance.
- This road construction is built in last few year.
- Many tree are grows in road boundaries.
- In Shapur Village Internal streets are Interlocking Concrete Paver Blocks.
- There are many distinct features of ICBP as compared to the conventional methods of pavement construction and hence make it a suitable option for Application in the specified Mass production under factory conditions ensures availability of blocks having consistent quality and high dimensional accuracy.



FIG: 6
Ideal Village Road

1.2.3 Physical Requirements:

- Since zero slump concrete is used in production of paver blocks, the quality of blocks produced will depend upon various parameters like the capacity of compaction and vibration of machine, grade of cement used, water content, quality of aggregates used, Their gradation and mix design adopted, additives used, handling equipment employed, curing method adopted, level of supervision, workmanship and quality control achieved, etc.

1.2.4 Civil Benefit available in the Ideal Village:

- Road construction is very good condition in Shapur village.
- Water tank facility are good condition. There overhead tank capacity is 50000 liters, and underground tank capacity is 1.5 lakh liters.

1.3 Civil Case Study of any other state Ideal Village:

- As many regions in India are reeling under drought and severe water crisis, there is a village in Maharashtra by the name of Hiware Bazar, which has over the years proved itself to be a shining example of how you can overcome crisis, if mother nature and the government fails you.

1.3.1 Water conservation initiatives:

- The village decided to not dig any bore wells for farming and instead do everything possible to save water. Drip irrigation was made compulsory.

1.3.2 Change in cultivation pattern:

- Water-guzzling crops like sugarcane, rice and banana made way for such vegetables.

1.3.3 Dairy development as backup:

- To ensure that the income is not solely dependent on agricultural farming, dairy farming was encouraged which also raked in the money and played a balancing act financially, to compensate for the loss incurred for giving up sugarcane cultivation which is a cash

Aforestation:

- Cattle were not allowed to graze in forest areas to prevent deforestation while the villagers and the Forest Department began constructing trenches along forest areas and planted 4.5 lakh trees.

Result:

- The village is now completely self-reliant for it's water needs. In fact, groundwater levels have gone.

1.4 Dairy development as backup

- To ensure that the income is not solely dependent on agricultural farming, dairy farming was encouraged which also raked in the money and played a balancing act financially, to compensate for the loss in curred for giving up sugarcane cultivation which is a cash crop. The daily collection of milk in the village is around 4,000 litre
- Cattle were not allowed to graze in forest areas to prevent deforestation while the villagers and the Forest Department began constructing trenches along forest areas and planted 4.5lakh trees.

Result

The village is now completely self-reliant for its water needs. In fact, ground water levels have gone up from 80-120 ft in 1995 to an astounding 15-40ft in 2016.

1.5 Civil Case Study of any other Outside Countries of Village/city



FIG: 7
OUTSIDE COUNTRY OF INDIA

- These street lights have been designed to provide 30 to 50% more brightness as compared to the solar street light and within built light weight and maintenance free lithium ion batteries.
- This standalone street light consists of a pole, battery bank, solar panel and LED or CFL lights.

1.6 Electrical Case Study of any other state Ideal Village

Dharnai, a village in Bihar, is India's first fully solar powered village:

- Dharma is a small village with 2400 people. Located near Bodh Gaya in Bihar's Jehanabad district, it didn't have access to electricity.
- But a few years ago, the villagers took things in their own hands and changed their fate forever. With the help of Greenpeace, the village installed a solar-powered micro-grid, which provides 24x7
- Electricity to more than 450 households and 50 commercial establishments. The entire project cost the Crores, making Dharnai India's first fully solar powered village.

1.6.1 Electrical Case Study of any other Outside Countries of Village /city:

- The United Kingdom is one of the best locations for wind power in the world and is considered to be the best in Europe.
- Wind power contributed 15% of UK electricity generation in 2017 and 18.5% in the final quarter of 2017.
- Onshore wind power has the lowest levelised cost per MWh of electricity generation technologies in the United Kingdom when a carbon cost is applied to generating technologies.
- Detail study (Socio economic, physical, demographic and infrastructure details) of Ideal village / Smart Village with photogra

1.6.2 Physical & Demographical Growth:

Physical:

- There are various facility such as one public gardens, One mobile tower, One public toilet, one community hall in village.
- In village use 100 % of people LPG in home.

1.7 SWOT analysis of Ideal village / Smart Village:



FIG: 8
SWOT analysis Diagram

2. Chapter 2:

Literature Review – (Civil & Electrical Concept)

Introduction: Urban & Rural:

Real Urban



FIG: 9
Urban cities

All places with a municipality, corporation, cantonment board or notified town area committee, etc. All other places which satisfied the following criteria. A minimum population of 5,000; At least 75% of the male main working population engaged in non-agricultural pursuits. A density of population of at least 400 persons per sq.km.

2.1 Rural

Rural areas are also known as the 'countryside' or a 'village' in India. It has a very low population density. In rural areas, agriculture is the chief source of livelihood along with fishing, cottage industries, pottery etc.

According to the Planning Commission, a town with a maximum population of 15,000 is considered rural in nature. In these areas the panchayat makes all the decisions. Rural areas are large and isolated areas of an open country with low population density. Rural areas are also known as 'countryside' or a 'village' in India. It has a very low density of population.

Base line survey is a benchmark for any intervention during and post implementation of any development programme. A detailed baseline survey was undertaken which involved household census survey, Bio-physical survey and Village level data collection from Sarpanch



FIG: 10
Rural Area

2.2 Ancient Villages / Different Definition of: Rural Urban Villages

A village is a small settlement usually found in a rural setting. It is generally larger than a "hamlet" but smaller than a "town".

According to the Planning Commission:-

A town with a maximum population of 15,000 is considered rural in nature. In these areas the panchayat takes all the decisions. There are five people in the panchayat.

According to Reserve Bank of India (RBI):-

Defines rural areas as those areas with a population of less than 49,000

According to the National Sample Survey Organization

An area with a population density of up to 400 per square kilometer, Villages with clearly surveyed boundaries but no municipal board,

According to UK:-

A small community or group of houses in a rural area, larger than a hamlet and usually smaller than a town, and sometimes (as in parts of the U.S.) Incorporated as a municipality the inhabitants of such a community collectively.

2.3 Scenario: Rural / Urban India & Gujarat as per Census 2011 and latest

- The Indian population census 2011 covered a number of parameters during the survey. These parameters include population, growth rate in population, rate of literacy, density of population, sex ratio and child sex ratio

- According to the census reports of Indian census 2011, the population of India is, 210,193,422 with 623,724,248 males and 586,469,174 females. The total literacy rate in the country at 74.04%. The density of population is 382person/sq.km.

Table-2:-Populations of India (In Crore)

Populations Of India (In Crore)			
Year	2001	2011	Difference
India's Population	102.9	121.0	18.1
Rural Population	74.2	83.3	9.0
Urban Population	28.6	37.7	9.1

- Rural – Urban distribution: 68.84%&31.16%
- The proportion of rural population declined from 72.19% to68.84%

2.4 Growth Rate of Population (in %)

- The slowing down of the overall growth rate of population is due to the sharp decline in the growth rate in rural areas, while the growth rate in urban area remains almost the same.

County	1991-2001	2001-2011	Difference
India	21.5	17.6	-3.9
Rural	18.1	12.2	-5.9
Urban	31.5	31.8	+0.3

	1991-2001	2001-2011	Difference
EAG	25.0	20.9	-4.1
Rural	23.5	18.7	-4.8
Urban	31.6	29.9	-1.7
Non EAG	18.9	15.0	-3.9
Rural	13.2	5.7	-7.5
Urban	31.5	32.7	+1.2

Table 3:- Growth Rate of Population (in %)

2.5 Populations of Gujarat (In Crore)

Though the growth rate of population in rural areas of EAG States is nearly 3 times that in rural areas in non EAG States, it is for the first time that significant fall of growth rate is seen in the rural areas of EAG States

2.6 Growth Rates (Rural):

- General decline in Rural Growth Rate among all the three categories during the last decade 2001-11 Where as Non-EAG States have shown decline in grow the since 1971-81, the EAG States have declined only during the last decade.
- The Growth in Rural Areas in Non-EAG States during 2001-11 has sharply declined 5.71%.

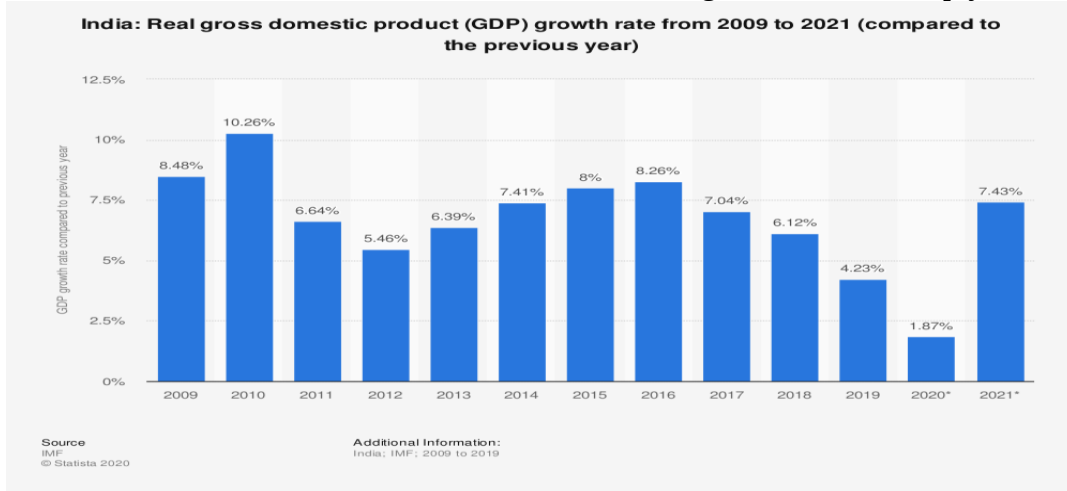


FIG: 11
Growth Rate Analysis

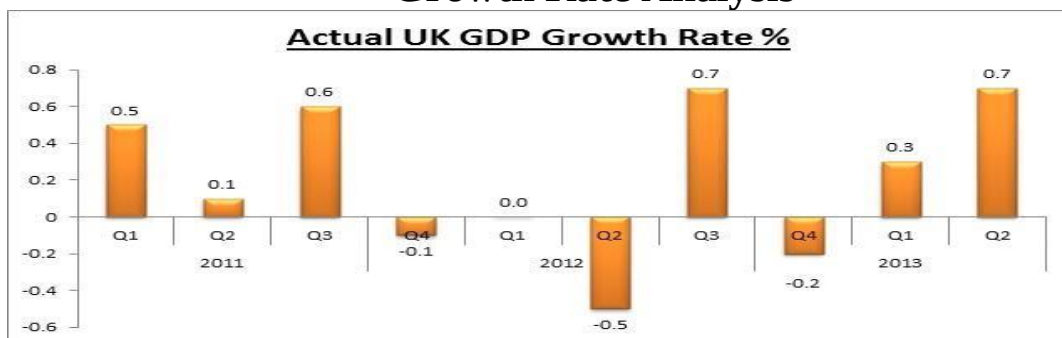


FIG: 12

Actual Growth Rate

There has been a spurt in growth of population in urban areas in the country, which could be due to

- Migration
- Natural increase and
- Inclusion of new are as under Urban
- More than 30% growth in Urban population in States, viz., Sikkim (153%), Kerala (93%), Tripura (76%) insignificant

Year	2001	2011	Difference
INDIA'S Population	5.07	6.04	0.97
Rural Population	3.11	3.46	0.35
Urban Population	1.81	2.53	0.75

Table 4:- Growth Rates (Urban)

2.7 Growth analysis (urban)

- Gujarat has witnessed descent grow thin its population in the last 60 years. From a small figure of 16 Lakh in 1950, it has gone passed 6.03 Crore In 2011.
- Rapid Industrialization and development of the Gujarat state has attracted people from all over India.
- Thus Population of Gujarat has increased a lot in the last 6 decades beginning from 1950.

2.8 Rural Issues & Concerns

Crime Free / Dispute free:

- Pune district where 790 out of 1,134 villages have become dispute-free' in the last two and a half years. It is acknowledged by the state government that high amount of civil, revenue, criminal and other cases are resolved at the village level.
- The initiative has shed enormous load of petty cases to the law enforcement bodies and judiciary.
- Initiative has strengthened the community participation in the matters of village development which has strengthened the governance at the local level.
- The intervention has strengthened the decentralized model of governance and has paved way for inducting transparency and accountability to the processes.
- The village level committee has been empowered In the process to flag issues concerning to citizens with the administration and have been a strong facilitator for the village development The committee for dispute free village has helped to share the burden of panchayat by carrying out activities of bridging community gap and resolving contentions among groups
- Rural development is the process of improving the quality of life and economic well-being of people living in rural areas, often relatively isolated and sparsely populated areas.
- Rural development has traditionally centered on the exploitation of land-intensive natural resources such as agriculture and forestry. However, changes in global production networks and increased urbanization have changed the character of rural areas. Increasingly tourism, niche manufacturers, and recreation have replaced resource extraction and agriculture as dominant economic drivers.
- The need for rural communities to approach development from a wider perspective has created more focus on a broad range of development goals rather than merely creating incentive for agricultural or resource based businesses.
- Education, entrepreneurship, physical infrastructure, and social infrastructure all play an important role in developing rural regions. Rural development is also characterized by its emphasis on locally produced economic development strategies.
- In contrast to urban regions, which have many similarities, rural areas are highly distinctive from one another.
- For this reason there is a large variety of rural development approaches used globally.

3. Chapter 3. Smart (Cities/ Village) Concept as per your Idea and its Visit (Civil & Electrical Concept)



FIG:13
Ajab Map



FIG:14
Government Buildings

3.1 Concepts, Definitions and Practices Our smart Village name is Ajab

- Ajab is a Village in Keshod Taluka in Junagadh District of Gujarat State, India. It is located 16 KM towards South from District head quarters Junagadh. 17 KM from 343 KM from State capital Gandhinagar

Limbdhi Dhar (2 KM) , Toraniya (2 KM) , Anandpur (3 KM) , Bordevi (3 KM) , Datar (4 KM) are the nearby Villages to Ajab. Ajab is surrounded by Keshod Taluka Towards South, Vanthali Taluka towards west, Visavadar Taluka towards East , Bhesan Taluka towards east.

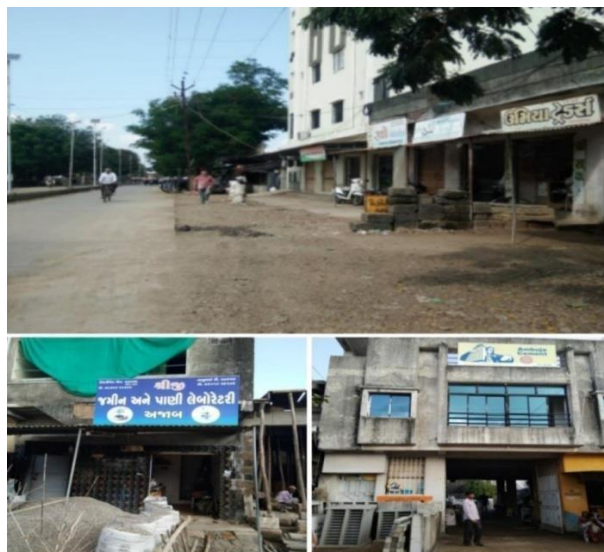


FIG: 15

3.1.1 Location and Administration

Ajab is a Village in Junagadh Taluka in Junagadh District of Gujarat State, India
It is located 13 KM towards South from District head quarters Junagadh 9KM
From 343 KM from State capital Gandhinagar.

Ajab Pin code is 362229 and postal head office is Ajab.

3.1.2 Ajab 2011 Census Details:

Ajab Local Language is Gujarati. Ajab Village Total population is 4960 and
Number of houses are 1057. Female Population is 47.9%. Village literacy rate is
63.8% and the Female Literacy rate is 26.9%.

Nearby villages of Ajab are Raningpura, Kaneri, Pransli, Mesvan, Silodar,
Char, Sandarda, kevadra, Dhrabavad, Nonjhanvav, Bava Simroli.

The total geographical area of village is 3238.08 hectares. Ajab has a total population
Of 8,026 peoples. There are about 1,898 houses in Ajab village. As per 2019 stats,
Ajab villages come under Keshod assembly & Porbandar parliamentary Constituency.
Keshod is nearest town to Ajab which is approximately 12km away.

Agriculture:

- Mango, Onion and Cotton are agriculture commodities grow in this village. 8 hours agricultural power supply in summer and 8 hours agricultural power supply in winter is available in this village. Total irrigated area in this village is from Boreholes/Tube wells is the source of irrigation.

3.2 Drinking-Water and Sanitation:

- Treated Tap Water Supply all round the year and in summer also available. Uncovered Well, Hand Pump and Tube Wells/Boreholes are other Drinking Water sources.
- Open Drainage System Available in this Village. House to House waste Collection available. There is system to collect garbage on street. Drain water is discharged into sewer plant.

Communication:

- Sub Post Office is available in this Village. Landline available. Mobile Coverage is available. Internet Centre available in this village. No Private Courier Facility in less than 10km.

Transportation:

- Public Bus service available in this village. There is no Railway Station in less than 10 km. Animal Driven Carts are there in this Village.
- No Nearest National Highway in less than 10 km. State Highway passes through this village. District Road passes through this village.

Commerce:

- No ATM in less than 10 km. Commercial Bank available in this village. No Cooperative Bank in less than 10 km. Agricultural Credit Society is available in this village.

3.3 Other Amenities:

- More than half of the World's population now lives in urban areas
- This Village has a power supply with 24 hour power supply in summer and 24 hour power
- This shift from a primarily rural to a primarily urban population is projected to continue for the next couple of decades. Such enormous and complex congregations of people inevitably tend to become messy and disordered places.
- Cities, megacities, generate new kinds of problems. Difficulty in waste management, scarcity of resources, air pollution, human health concerns, traffic congestions, and inadequate, deteriorating and aging infrastructures are among the more basic technical, physical, and material problems.
- Another set of problems are more social and organization a nature rather than technical, physical or material. Problems of these types are associated with multiple and diverse stakeholders, high levels of interdependence, competing objectives and values, and social and political complexity. In this sense, city problems become wicked and tangled.
- Ensuring livable conditions within the context of such rapid urban population growth world wide requires a deeper understanding of the smart city concept. The urgency around these challenges is triggering many cities around the world to find smarter ways to manage them. These cities are increasingly described with the label smart city. One way to conceptualize a smart city is as an icon of a sustainable and livable city.



FIG: 16

Smart Representative Model

- Although there is an increase in frequency of use of the phrase “smart city”, there is still not clear and consistent understanding of the concept among practitioners and academia. Only a limited number of studies investigated and began to systematically consider questions related to this new urban phenomenon of smart cities.
- By exploring an extensive array of literature from various fields such as e- government, information science, urban studies, and public administration, we identify and discuss challenges, success factors, and impacts of government-driven initiatives to that make a city.

3.5 Civil Concept

3.5.1 Rainwater Harvesting:

Problem Identification

- The current scenario of water supply in Gandhinagar city is, such that it is not available 24*7. The water to Gandhinagar city is supplied from Sabarmati River but it is not sufficient to fulfill the daily needs or to get water 24*7.
- GMC provides water hardly for 3hrs daily and to cater daily needs & people store this water in underground tanks.
- Also a large quantity of water is required for maintaining tree plantation and gardens of the entire city.

3.5.2 Detailed Scope of Work:

- The average rain fall received by Gandhinagar has the potential to overcome the above mentioned problem if the rainwater is stored and used judiciously.
- Rain water harvesting canopies are proposed to develop at suitable location in the entire city for using the rainwater efficiently when required. The canopy also consists.
- Filtration device within the steel column which filters the rain water prior to being stored in the underground tank
- As preferred aesthetically the canopy can be installed in square(4m*4m to 6m*6m) as well as round (4-6m diameter) shape.
- The filtration device can provide water with turbidity below 5NTU which meets WHO standards for water
- It has a weight of about 100-140kg and wind tolerance up to 120km/h
- The harvesting capacity ranges from 48,000-108,000 liters per canopy annually Depending upon the rainfall received.
- The canopy can also be customized with high efficiency mono-crystalline solar panels integrated into the structure. The generated electricity can be used for many purposes.

Various locations can be selected for this purpose like

- a) Parks
- b) St Bus Stand
- c) Government Building Campus
- d) Islands
- e) Footpath
- f) Cafeteria
- g) Petrol-Pumps
- h) Case Study

3.5.3 Swarnim Park, Gandhinagar:

- These areas can be developed as canopies that can store rainwater as well as serve as shades.
 - Without the use of canopies the rainwater simply flows below the ground and gets wasted while the various benefits of canopies can be listed as under
 - Multipurpose alternative to conventional shade structures that do not have a pay back
 - Captures Rainwater in its purest form Patented integrated filtration chamber provides water quality below 5NTU.
 - Contains no chemicals (and is BPA-free) and uses no batteries for water filter.
 - Low maintenance effort which can be carried out by onsite facilities management staff
 - Integrated LED fixtures provides self-sufficient lighting through Solar technology
 - Higher Solar Energy yield per square foot through our highly optimized structures which use minimal ground area and maximum elevated area for solar absorption.
- Green Building Certification points through rainwater harvesting, renewable energy

3.6 Electrical Concept:

3.6.1 Energy (Streetlights for Smart Gandhinagar) Problem:

- For Gandhinagar to evolve as a smart city, it is of prime importance to focus on the management of energy. There are certain areas within the Gandhinagar district where there is a complete blackout after sunset because of the absence of streetlights. One such area is the approach road to PDPU from Bhaijipura. Absence of streetlights is extremely unsafe for students as many of the students choose to go for a walk in the evening and when they return after sunset, it is completely dark.
- Electric street lights are essential elements of a municipal environment and services. They affect resident sense of safety while influencing a city's ability to create an inviting environment for business and tourism.
- Therefore following are desired in designing, implementation and O&M of LED based Smart Street Lighting
- Reduce energy consumption, cost, and its maintenance. Enhance situational awareness, real-time collaboration, and decision making across city.
- Creation of the foundation of Smart City Gandhinagar by implementing a smart city platform through 'networked' LED street light installation and an advanced Centralized LED Control & Monitoring application.

3.6.2 Scope of Work – Smart LED:

- Supply, installation, testing and commissioning, O&M of all equipment system to meet the requirement as defined in specifications.
- Bidder shall be responsible for conducting GIS/GPS mapping of street lightings withing points and rationalizes the coverage area under the switching points.
- Reliability tests and performance and guarantee tests on completion of commissioning.

- Design, Installation, testing and O&M of Central Management Software for remotely monitoring and Controlling of LED luminaries from the Command and Control Centre.
- Technical Architecture of the Smart Street Light
- Following is an indicative technical architecture of the Smart Street Light for Concessionaire's reference;
- The luminary's roads can communicate via a Low Power Radio Frequency (LPRF) through a gateway or directly through GPRS/GSM etc. with Centralized Command and Control software. Operation Maintenance
- Energy efficiency should be achieved by a comprehensive Operation & Maintenance. Following are the indicative activities perform during O&M period;
- Replacing defective lamps, accessories, and wires
- Regular maintenance of service cabinet/fuse box to avoid loose connections
- Regular cleaning of the luminaries' cover to keep it free of dust/dirt and increase light output.
- Regular maintenance of smart street light control system like LED controller, feeder panels etc.
- Regular updates and upgrades of the centralized software at command and control centre.

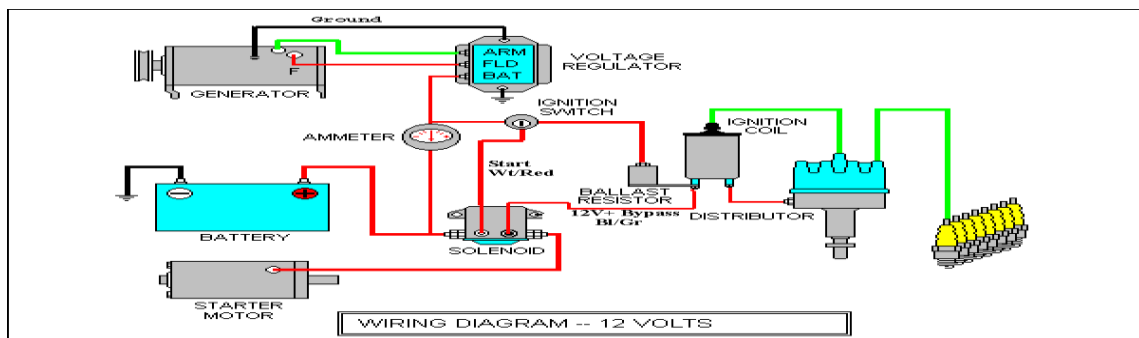


FIG: 17

Smart LED

3.7 Bench Marks-Vision-Goals, Standards and Performance Measurement Indicators:

Vision

- Gandhinagar, a vibrant and future ready city that provides good quality of life to its citizens by providing sustainable infrastructure and services through confluence of physical and digital.

- Provide social infrastructure that is accessible, affordable and of best quality to all citizens of Gandhinagar.
- Make Gandhinagar future ready city while making ‘environmental sustainability’ a cornerstone of development.

Several standards and standardization attempts are presented, all coming from well known international organizations. 6 of them (from ISO, ITU and BSI) are presented in detail.

1. The ISO 37120 standard

- The standard presents a set of (around 100) indicator to measure the performance of city services and quality of life.
- The standard is applicable to any city, municipality or local government that wants to measure its performance, in a comparable and verifiable manner, irrespective of size and location.
- The standard is available at the ISO web site (at a price). A free summary can be obtained here (ISO preview facility)
- My view: a very good start for measuring your smart city initiatives. But, some indicators are quite “indirect” and maybe difficult to gather. No real assessment of ICT infrastructures.

2. The ISO/DIS 37101

- This is a standard in draft status (DIS), published in September 2015.
- The standard, titled “Sustainable development of communities -- Management systems - Requirements with guidance for resilience and smartness”, presents the main axes of activities for a smart city.
- The draft standard is available at a cost from the ISO website.
- My view: very helpful to evaluate for smart city initiative.
- To sustainable development of smart city for gap analysis
- No real assessment of ICT infrastructure

3.8 Various Performance Measurement Indicator

1. Smart energy

2. Smart care

- To adapt to changes in population demographics, the development of smarter healthcare services will provide quality services also in the future. Smarter care will reduce costs and connect users within the healthcare industry to provide necessary patient information.

- Giving caretakers access to patient information will help doctors collaborate in new ways to give the best patient care possible.
- A smart city will respond better to emerging population challenges than traditional city management. By utilizing resources more efficiently governments can save money, improve life quality and meet the needs of future generations.

3.9 Road Map and Safeguards

- Road Map and Safe Guards is denoted as a figure.

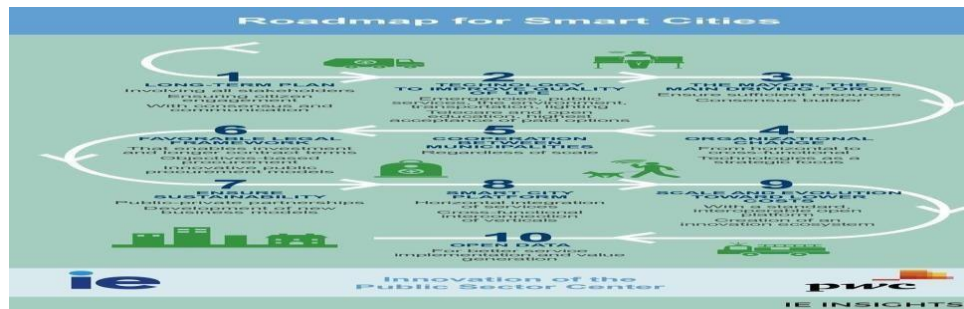


FIG: 18

Roadmap For Smart Guide

3.9.1 Issues & Challenge:

- In addition, 3 billion are still cooking on dangerous and inefficient stoves. Many of them live in remote rural village communities.
- Until such communities have access to modern energy services, little progress can be made to develop their economies and improve their lives.
- Following the successful conclusion of this first phase of activities the smart villages Initiative intends to take forward their findings, and leverage the unique global base of knowledge and network that we have assembled, to pursue the linked goal so universal energy access and rural development.

3.9.2 Research Group Ltd – we intend to focus on:

- Facilitating the establishment, in partnership, of pilot “Smart Villages” around the world to act as examples of the concept and provide a base for demonstrating the sustainable impact of this holistic and sustainable rural development approach.
- Working with research partners around the world to evidence the impact of the holistic “Smart Villages” development model, through baseline studies and long- term impact assessment across multiple development metrics, across multiple SDGs.
- Developing and testing innovative technologies that can help deliver some of these integrated development objectives – for example innovative agricultural technology, cold storage, ICT access, remote education and telemedicine.

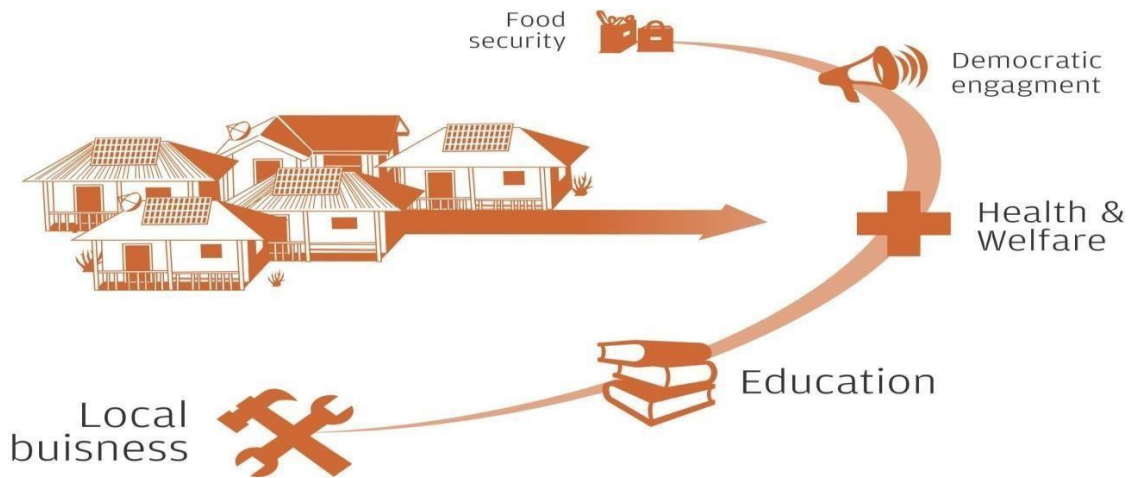


FIG: 19
Village Issues & Challenges Area

3.10 Smart Infrastructure

- Smart Infrastructure involves applying this to economic infrastructure for the benefit of all stakeholders. It will allow owners and operators to get more out of what they already have, increasing capacity, efficiency and resilience and improving services.
- It brings better performance at lower cost. Gaining more from existing assets is the key to enhancing service provision despite constrained finance and growing resource scarcity.
- It will often be more cost-effective to add to the overall value of mature infrastructure via digital enhancements than by physical enhancements—physical enhancements add 'More of the same', whereas digital enhancements can transform the existing as well.
- Data is the key—the ownership of it and the ability to understand and act on it. Industry, organizations and professionals need to be ready to adjust in order to take advantage of the emerging opportunities. Early adopters stand to gain the most benefit.
- Everyone in the infrastructure sector has a choice as to how fast they respond to the changes that Smart Infrastructure will bring. But everyone will be affected. Change is inevitable. Progress is optional. Now is the time for the infrastructure industry to choose: to be Smart.



FIG: 20

Smart Infrastructure

3.11 Cyber Security or any other concept as per the(ANNEXURE1):

Definition: Computers, networks, programs and data from unauthorized access or attacks that are aimed for exploitation.

Description:

Major areas covered in cyber security are:

- 1) Application Security
- 2) Information Security
- 3) Disaster recovery
- 4) Network Security

3.11.1 Some basic techniques used for application security are:

- A) Input parameter validation,
- B) User/Role Authentication & Authorization,
- C) Session management, parameter manipulation & exception management.

Major techniques used to cover this are:

- A) Identification, authentication & authorization of user,
 - B) Cryptography.
- Disaster recovery planning is a process that includes performing risk assessment, establishing priorities, developing recovery strategies in case of a disaster. Any business should have a concrete plan for disaster recovery to resume normal business operations as quickly as possible after a disaster.
 - Network security includes activities to protect the usability, reliability, integrity and safety of the network. Effective network security targets a variety of threats and stops them from entering or spreading on the network.

3.11.2 Network security components include:

- Anti-virus and anti-spyware.

3.12 Green building

- This is the first high rise mixed use development in Ahmedabad. This is LEED, Gold Certified building. There are 3 different programs within this building. Part 1 is a 100 room Crown Plaza Hotel, Part 2 is a High End Boutique Retail and Part 3 is 17 floors of Office space. This is the first High rise and LEED Certified building in the state of Gujarat.

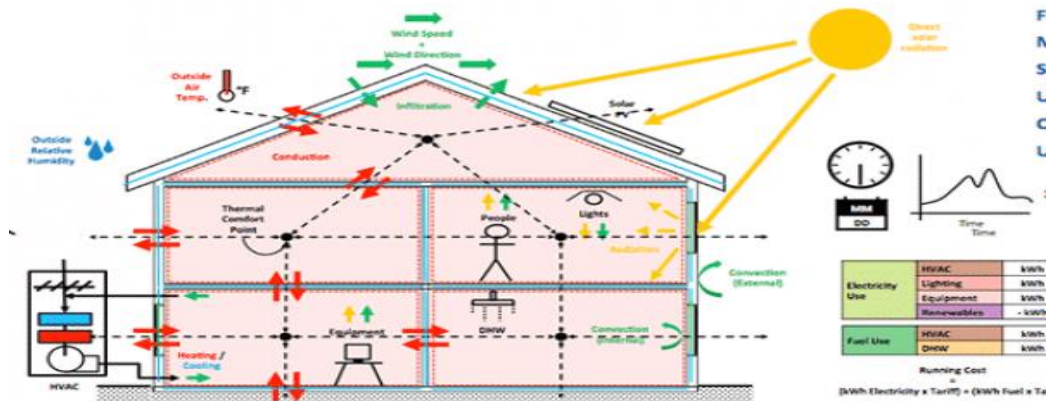


FIG: 21

Model For Green Building

3.12.1 Construction

- Sourcing local construction material
- Efficient use of water
- Water efficient land scalping
- Use of ash bricks, aluminum, frames, glass, low VOS paint and CRI certified carpeting

3.12.2 Environment Control

- Optimum use of daylight
- Maintaining air quality
- Natural airflow
- Installation air handling unit
- Controlled air exhaust
- Use of LED and Colligating

3.12.3 Water management

- Rain water harvesting
- Water efficient plumbing and fixtures
- Water treatment and recycling and minimal disposal

- Retrofitting will introduce planning in an existing built-up area to achieve smart city objectives, along with other objectives, to make the existing area more efficient and loveable.
- In retrofitting, an area consisting of more than 500 acres will be identified by the city in consultation with citizens. Depending on the existing level of infrastructure services in the identified area and the vision of the residents, the cities will prepare a strategy to become smart.
- Since existing structures are largely to remain intact in this model, it is expected that more intensive infrastructure service levels and a large number of smart applications will be packed into the retrofitted smart city. This strategy may also be completed in a shorter time frame, leading to its replication in another part of the city.
- Redevelopment will effect a replacement of the existing built-up environment and enable co-creation of a new layout with enhanced infrastructure using mixed land use and increased density. Redevelopment envisages an area of more than 50 acres, identified by Urban Local Bodies (ULBs) in consultation with citizens. For instance, a new layout plan of the identified area will be prepared with mixed land-use, higher FSI and high ground coverage. Two examples of the redevelopment model are the Saifee Burhani Up liftmen Project in Mumbai (also called the Bhendi Bazaar Project) and the redevelopment of East Kidwai Nagar in New Delhi being undertaken by the National Building Construction Corporation.
- Greenfield development will introduce most of the Smart Solutions in a previously vacant area (more than 250 acres) using innovative planning, plan financing and plan implementation tools (e.g. land pooling/ land reconstitution) with provision for affordable housing, especially for the poor. Greenfield developments are required around cities in order to address the needs of the expanding population. One well known example is the GIFT City in Gujarat.

3.13 India's Urban Water and Sanitation Challenges and Role of Indigenous Technologies:

3.13.1 India's Urban Water and Sanitation Challenge:

- India has to grapple with many challenges in its quest to provide safe drinking water and access to adequate sanitation to all by 2030
- On March 22 this year, the world, including India, will observe World Water Day, the theme of which is “Leaving no one behind”. Conceived in 1993 by the United Nations, this year this Day aims to create an awareness for the need of water and sanitation for all, and to emphasize that their universal access can be drivers for change and sustainable development.
- The Sustainable Development Goals 2015-2030, a successor to Millennium Development Goals, include Goal 6 for clean water and sanitation for ensuring their availability and sustainable management. Goal 6.1 specifically says that by 2030, countries including India should ‘achieve universal and equitable access to safe and affordable drinking water for all’, and Goal 6.2 stipulates that by 2030, countries should also “achieve access.

- Hygiene poses another challenge; safe drinking water and sanitation in the absence of hygienic habits will not prevent face-oral infections. In many households, even if the original source of water is safe, the water is frequently contaminated by unhygienic conditions and practices in homes posing adverse health impacts. In fact, poor hygiene and unsafe water are responsible for 90 per cent of worldwide diarrheal deaths. The adverse economic impact of not investing in water and sanitation,
- According to the World Bank, is the reduction of gross domestic product to the tune of 6.4 per cent in India.
- The world's largest number of open defecators lives in India. Open defecation is a cause of concern despite the Swachh Bharat Abhiyan scheme of the Central government. Human excreta are often captured in unlined latrine pits from where excreta freely leach into groundwater.
- Also where latrines are emptied, the faecal sludge is frequently dumped into surrounding water bodies. Both pollute water, and cause negative health impacts on communities. In order to avoid contamination in water, the sanitation policy must ensure effective implementation of human waste management policy. Such policy exists on paper, but its implementation, even during the Swachh Bharat Abhiyan is practically non-existent. There is a need to popularise and implement this policy in the field.

3.14 Indigenous water purification technologies:

- These technologies can improve the drinking water quality of smaller villages as well as larger cities. It uses the Pressure Driven Membrane Processes.
- These are suitable for all capacity units e.g. they are adaptable from household level unit or community level unit to large scale unit. Water purification technologies make use of the nuclear energy and solar energy

3.15 Initiatives in village development by local Self- Government:

- In Masan various initiatives in development by local self-government
- There replace the old water pumps and motors with efficient systems.
- There is an immediate replace the street lights with efficient LED systems.
- Plantation works in the vacant lands.

3.15.1 Smart Initiatives by District Municipal Corporation

- Since 1992, local governance in India takes place in two very distinct forms. Urban localities, covered in the 74th amendment to the Constitution, have Nagar Palika but derive their powers from the individual state governments, while the powers of rural localities have been formalized under the panchayati raj system, under the 73rd amendment to the Constitution. For the history of traditional local government in India and South Asia.
- and district levels. The modern system is based in part on traditional panchayat

3.15.2 Present Scenario:

- At present, there are about 3 million elected representatives at all levels of the panchayat, one-half clarification needed of which are women. These members represent more than 2.4 lakh (240,000) Gram Panchayats, about 6,000 intermediate level tiers and more than 500 district panchayats. Spread over the length and breadth of the country, the new panchayats cover about 96% of India's more than 5.8 lakh (580,000) villages and nearly 99.6% of the rural population.
- This is the largest experiment in decentralization of governance in the history of humanity.

3.15.2 NGO/ Other Digital Country concept

- Promoting use of digital tools to bring efficiency and large-scale impact among non-profit communities by recognizing NGOs that are using for mass impact.
- The eNGO Challenge aspires to create an ecosystem of NGOs, which use Information Communication Technology (ICT) and digital media tools for good governance practices for the benefit of societies and communities at large. The challenge seeks to recognize, salute and honor best NGO practices using ICT in any part of the world.

4. Chapter 4: Introduction about BORVAV

4.1 Introduction

Borvav Village

details:

Borvav is a large village located in Junagadh Taluka of Junagadh district, Gujarat with total 1084 families residing. The Borvav village has population of 5039 of which 2973 are males while 2813 are females as per Population Census 2011.

In Borvav village population of children with age 0-6 is 715. 2644 are males and 2395 are females. Borvav village has lower literacy rate compared to Gujarat. In 2011, In BORVAV Male literacy stands at 62% while female literacy rate was 44%.

As per constitution of India and Panchayati Raj Act, Borvav village is administrated by Sarpanch (Head of Village) who is elected representative of village. Our website, don't have information about schools and hospital in Borvav village.

4.1.1 Justification/ need of the study:

- The developmental work in villages that could undertake as per the need of the village in particular includes.
- Physical infrastructure facilities (Water, Drainage, Road, Electricity, Solid waste Management, Storm Water Network, Telecommunication & other), Social infrastructure facilities
- (Education, Health, Sanitation), Socio- Cultural Facilities (Community Hall, Library, Recreation Facilities & other
- Toilets, Solar Street lights & other) for effective development of Villages.

4.1.2 Study Area (Broadly define):

- Borvav is a Village in Junagadh Taluka in Junagadh District of Gujarat State, India. It is located 10 KM towards west from District head-quarters Junagadh and 347KM from State capital Gandhinagar.
- Borvav Pin code is 362263 and postal head office is Junagadh Joshipura
- Creation of infrastructure connectivity, civic and social infrastructure along with provision of alternative Economy generation is the key pillars that the concept hinge son.



FIG: 22
Study Area Concept

- Gram Panchayat Building School Building
- Water Tank facilities Drainage facilities Storm Water network Sanitation availability
- Solid waste Management facilities Road network

4.1.3 List of Objects Available related to Electrical Methodology

- Electricity Networks
- Use of non-conventional energy sources Irrigation system

4.2 Borvav Study Area Profile

Study Area Location

Village Name	Borvav
Taluka Name	Junagadh
District Name	Junagadh
State	Gujarat
Language	Gujarati
Co-ordinates	21.4454° N, 70.4938° E
Pin Code	362263
Elevation / Altitude	86 meters. Above Sea level
STD Code	0285

Table 6:- Borvav Study Area Profile

4.2.1 Physical & Demographical Growth:

BORVAV is a large village located in Junagadh Taluka of Junagadh district, Gujarat with total 1059 families residing. The BORVAV village has population of 5039 of which 2644 are males while 2395 are females as per Population Census 2011.

In BORVAV village population of children with age 0-6 is 715.

BORVAV village has lower literacy rate compared to Gujarat. In 2011, literacy rate of BORVAV village was 54 % compared to 78.03 % of Gujarat. In BORVAV Male literacy stands at 62% while female literacy rate was 44%.

Census Parameter	Census Data
Total Population	5247
Total No of Houses	972
Female Population %	48.2%
Total Literacy rate %	65.8%
Female Literacy rate	29.3%
Scheduled Tribes Population%	1.4% (31)
Scheduled Caste Population %	6.8 % (738)
Working Population %	39.5 %
Child(0 -6) Population by 2011	522
Girl Child(0 -6) Population by% 2011	43.1%

Table 7:- Physical & Demographical Growth in Borvav

4.2.2 Physical Growth Water:

- Treated Tap Water Supply all round the year and in summer also available. Un Covered Well and Hand Pump are other Drinking Water sources.
- This village has one overhead water tank 50000 liter capacity and underground well are 1 lakh liter providing in village.
- And also home to home tap connection are available.

4.2.3 Drainage System:

Closed drainage system available in this Village. House to House waste collection available. There is system to collect garbage on street. Drain water is discharged directly into water bodies.

4.2.4 Transportation:

- Public Bus service available in this village. Private Bus service available in this village. Nearest Railway Station is in 10 km. Autos Available in this Village tractors available in this Village. Animal Driven Carts are there in this Village.
- Pakka road, Kaccha road, Macadam road and foot path are other Roads and transmission within.

4.2.5 Brief history:

- Borvav is a large village located in Junagadh Taluka of Junagadh district, Gujarat with total 1084 families residing. The BORVAV village has population of 5039 of which 2644 are males while 2395 are females as per Population Census 2011.

4.2.6 Economic profile / Banks

Borvav is a well developed village and there was an available agricultural activity, labour activities and also available good transportation facilities with the village are too clean and free from noise pollution

The number of occupied people of Borvav town is 2204 whereas 2835 are un- employed and out of 2204 occupied people 84 peoples are fully dependent on agriculture. Map of Borvav

Vishwakarma Yojana has provided the platform for real world experience to engineering students and simultaneously applies their technical knowledge in the rural infrastructure development.



FIG: 23
Map Of Borvav Village

4.2.7 Preservation of traditions, Festivals, Cuisine:

To know the reasons of migration / trends of migration / problems and potentials of migrants

4.2.8 Study area land use details:

- Borvav Village Gram Panchayat name is **Borvav**. Borvav is 10 km distance from District Headquarter Junagadh and it is 18 km distance from District Head Quarter Junagadh.
- Nearest Statutory Town is **Borvav** in 10 km Distance. Borvav Total area is 1663.37 Non- Agricultural area is 3.36 hectares and Total irrigated area is 794.02 hectares

4.3 Data Collection Borvav

4.3.1(Photograph/Graphs/Charts/Table)Methods for data

collection:

- First we are going to village. And meet the locality person and discuss about the village condition. Like drinking water, drainage facility, waste disposal, etc.
- Then we are going to gram panchayat of village. And meet the Sarpanch and Tatati Mantri of village. Then discuss about village with Sarpanch and Talati Mantri. Like facilities, infrastructures, water supply, electricity, etc. this data gives the Sarpanch and Tatati Mantri of the village.
- We are showing the village and observed village condition.

4.3.2 Data collection is done by filling two forms namely:

- Techno-economic survey form
- Smart village survey form

4.3.3 Geo-Tagging of House

- BORVAV is a Village in Talala taluka in Gir Somnath District of Gujarat State, India. It is located 32 KM from District head-quarters Gir Somnath, 371 KM from State capital Gandhinagar.
- BORVAV Pin code is 362150 and postal head office is Borvav Gir.
- The geographical coordinate's i.e. latitude and longitude of BORVAV is 21.1030° N, 70.5681°E respectively.

4.3.4 Which Material used locally:

- Low cost floor materials
- Stones
- Mood flooring
- Wooden floor
- Cement floor

4.3.5 Out Sourced Material

- The out sourced material is construction material & fuel. Because this material generally not available in the village. So this material is purchase on out of village markets

4.3.6 Labor work doing:

The out sourced material is construction material & fuel. Because this material generally Not available in the village. So this material is purchase on out of village.

4.3.7 Any Costing:

- Costing of material is carried out by personally or individual of house member and also any new construction are building up by govt. then the rematerialize costing is carried out by gram panchayat

4.3.8 Geographical Detail:

- Borvav village is located in Talala Tehsil of Junagadh district in Gujarat, India.
- It is situated 6km away from sub-district headquarter Talala and 75km away from District headquarters Junagadh.

4.3.9 Demographical Detail:

The BORVAV has population of 5247 and male population is 2718 and female population is 2529.

4.3.10 Agricultural Details / Organic Farming / Fishery:

There major crops in the village is like a Kharif

4.3.11 Crop:

- In Village Kharif Crop is sown in June-July when rains first begin (Monsoon crop). Harvested in September-October.
- Requires lot of water and hot weather to grow.
- Example: Rice, Jowar, Bajra, Maize, Cotton, Groundnut, Jute, Sugarcane, Turmeric, Pulses (like Urad Dal) etc.

4.3.12 Rabi Crops:

- In Village Rabi Crop Sown in October-November
- Harvested in April-May.
- Requires warm climate for germination of seeds and maturation and cold climate for the growth.
- Example: Wheat, Oat, Gram, Pea, Barley, Potato, Tomato, Onion, Oil seeds (like Rapeseed, Sunflower, Sesame, Mustard) etc

4.3.13 Manufacturing HUB / Ware Houses:

- No villagers have not any one yet because they do not need this facility

4.3.14 Tourism Cluster:

- There is no tourism cluster involved with village.

4.3.15 Services Cluster:

- Borvav gram panchayat is a services cluster

4.3.16 Male / Female Details:

- As per 2011 census in BORVAV village male and female are 2718 and 2529 respectively.

4.3.17 Cast Wise Population Details / Which ID proof using by villagers

Caste	Population	Male	Female
Scheduled Castes	360	200	160
Scheduled Tribes	73	45	28
Other (General And OBC)	5247	2718	2529

Table 9:- Cast Wise Population Details**4.3.18 Occupation wise Details / Majority business:**

The first occupation group is agriculture, second is labor working, and third is private sector job.

Physical infrastructure facilities containing Drinking water, Drainage water, Transportation Facilities, Road network, Sanitary Facilities all are in normal conditions.

4.3.19 Infrastructure Details (With Exiting Photograph) Drinking:



FIG: 24

Water tank

4.3.20 Drainage Network / Sanitation Facilities:

In Borvav village there is less drainage network. Therefore, the people make own drainage sumps in front of house. The solid waste thrown in outside of village and liquid waste flow through out by sumps.

In village some place drainage system are available is in good condition. A drainage network is open and pucca and drain water is discharge directly in strip.

There required some place to build a drainage system.

4.4 Transportation & Road Network:

4.4.1 Road network:

In village their internal road network is bad condition. Some internal streets is and c.c road..

- Village approach road is bitumen pucca road. That is approx 10 km. nearest Junagadh – Somnath highway.
- Some internal road is poor condition that required maintenance.

4.4.2 Transportation:

- For Local Transportation Public uses Auto, Chhakda and private vehicles for locally transportation.
- Bus station has bad condition and location also. As per our point of view, we can say Bus station is not at present.

4.4.3 Housing condition:

The house condition is 60% of kutchha and 40% of pucca approximate. But all house condition is well & good and also some house condition is very bad.

Total number of houses is 1067.

Social Infrastructure Facilities, Health, Education, Community Hall, Library

Social infrastructure can be broadly defined as the construction and maintenance of facilities that support social services. Types of social infrastructure include healthcare (hospitals), education (schools and universities), public facilities (community housing and prisons) gram panchayat and transportation (railways and roads).

There gram panchayat building is normal condition. 2 floors are available in gram panchayat. That require to maintenance.

4.4.4 Health Facilities:

There one Primary health centre (PHC) is available that are good condition.

4.4.5 Education Facilities:

In Kanjha village there two schools is available first is primary school and second is Secondary and higher secondary school is available.

- Both schools are government.
- In primary school total 15classrooms.
- There is normal condition. That required maintenance.

4.4.6 Technology Mobile/ WIFI / Internet Usage Details. (In %):

- The 60 % people used smart phone and internets. And others 40%used normal mobile.
- No WIFI available in village.

Summary of images:



FIG: 26



FIG: 25

ENTRANCE OF THE VILLAGE IN BORVAV



FIG: 27



FIG: 28

PHOTO WITH THE PRINCIPAL IN BORVAV PRIMARY SCHOOL

PRIMARY SCHOOL OF BORVAV VILLAGE



FIG: 29



FIG: 30

**PHOTO IN THE GRAM PANCHAYAT
BORVAV VILLAGE.**

**WITH THE MEMBER OF GRAM
PANCHAYAT.**

GRAM PANCHAYAT OFFICE BORVAV (GIR)



FIG: 31

OVERHEAD TANK IN BORVAV VILLAGE WITH (1 LAKH) LITRE CAPACITY



FIG: 32



FIG: 33

CONSTRUCTION WORK OF NEW HOSPITAL IN BORVAV VILLAGE



FIG: 34

PRESENT HEALTH CARE CENTRE OF BORVAV VILLAGE



FIG: 35

SAURASHTRA GRAMIN BANK BORVAV BRANCH



FIG: 36

SAURASHTRA GRAMIN BANK :

FIG: 37
GRAHMIN BANK



FIG: 38
BUSSTAND OF BORVAV VILLAGE



FIG: 39
COMMUNITY HALL BORVAV



FIG: 40



FIG: 41

ROAD OF THE BORVAV VILLAGE



FIG: 42
ROAD OF BORVAV VILLAGE



FIG: 43
GRAM PANCHAYAT OFFICE

The above picture is of the member of social group of justice which provides the help related to social affairs to the people of Borvav village.

The head member of social group of justice is MAVJIBHAI SOMABHAI MAKADIYA who handles the group.



FIG: 44
GRAM PANCHAYAT OFFICE

THE ABOVE PICTURE IS OF GRAM PANCHAYAT OF BORVAV VILLAGE WHICH IS LOCATED IN THE CENTRE OF THE VILLAGE



FIG: 45



FIG: 46

4.4.7 Sustainable Infrastructure Facilities & Repair & Maintenance:

- There no any sustainable infrastructure facilities available in village
- There some electrical street light is old condition that required a repair and maintenance.
- Also some street light is missing so required to Inseminate of LED street light in pole.
- There required a door to door waste disposal collection system.

4.4.8 Maintenance of existing Public Infrastructures:

- In BORVAV village their gram panchayat building is week, so required to repair and maintenance of the building.

4.4.9 Electrical Concept:

- Under the Jyoti gram Yojana government provide 24 hour power supply to respective village power produced GETCO and distribute by PGVCL (privet sector).
- Electricity is the basic need for the better facilities. And this facility is available in village. Single phase ac supply is available in 24 hours in domestic area.
- Agriculture purpose 8 hour power supply available in the village.
- In village internal street light is also available. It required to maintenance and also required some place street light.

4.4.9.1 Irrigation Facilities:

- The main sources of irrigation are canal, bore and well.
- Although there mostly private bore and well are available.
- And also there village is near to madhuvanti river. Then water is adequate.

4.4.9.2 Electricity Facilities with Area:

- Under the Jyoti gram Yojana government provide 24 hour power supply to respective village power produced GETCO and distribute by PGVCL (private sector).
- Electricity is the basic need for the better facilities. And this facility is available in village. Single phase ac supply is available in 24 hours in domestic area.

4.4.10 Existing Institution like - Village Administration – Detail ProfileBachatMandali:

- BachatMandali is a kind of organization in which villagers invest their money. BachatMandali provides facilities almost similar to bank. Villagers can invest their money in bachatmandali and withdraw their money whenever they want

5. CHAPTER 5: Sustainable Technical Options with Case Studies of the Existing Village:

5.1 Concept (Civil)

5.1.1 Advance construction techniques:

The construction industry is repeatedly criticized for being inefficient and slow to innovate. The basic methods of construction, techniques and technologies have changed little since Roman times. But the application of innovation in the construction industry is not straight forward.

Every construction project is different, every site is a singular prototype, construction works are located in different places, and involve the constant movement of person land machinery. In addition, the weather and other factors can prevent the application of previous experience effectively.

The term 'advanced construction technology' covers a wide range of modern techniques and practices that encompass the latest developments in materials technology, design procedures, quantity surveying, facilities management, services, structural analysis and design, and management studies.

Incorporating advanced construction technology into practice can increase levels of quality, efficiency, safety, sustainability and value for money. However, there is often a conflict between traditional industry methods and innovative new practices, and this is often blamed for the relatively slow rate of technology transfer within the industry.

The adoption of advanced construction technology requires an appropriate design, commitment From the whole project team, suitable procurement strategies, good quality control, appropriate training and careful commissioning.

3D printing. Materials.

Building information modeling (BIM). Cladding systems.

Computer aided design and computer aided manufacturing (CAD/CAM). Computer numerical control.

5.1.2 Causes Prevention and Repair of Cracks In Building /rectification of building tilt / rehabilitation techniques

UNDERSTANDING THE CRACKS Generally cracks can be divided into two types: Structural cracks and Non-structural cracks.

(a) Structural Cracks: Structural cracks may rise due to various reasons such as incorrect design, over loading of the structural components. Structural cracks and danger the stability of the building and may be difficult to be rectified

(b) Non-structural cracks (Hair cracks): Non-structural cracks are generally due to Internal forces developed in the building materials due to moisture variation, temperature

Changes and suitable remedial measures can be taken to control it. Cracks may appreciably Vary in Width from very thin hair crack barely visible to naked eye to gaping crack.

Depending upon The crack width, the cracks are classified as:

- Thin Crack -less than 1 mm in width.
- Medium Crack -1 to 2 mm in width.
- Wide Crack -more than 2 mm in width.
- Cracking-Occurrence of closely spaced fine cracks at the surface of a material is called cracking
- Cracking is the development of a network of fine random cracks on the surface of concrete or mortar caused by shrinkage of the surface layer.

5.1.3 Disaster management in natural calamities

Disaster management in India refers to conservation of lives and property during a natural and man-made disaster. Disaster management plans are multi-layered and are planned to address issues such as floods, hurricanes, fires, mass failure of utilities and the rapid spread of disease. India is especially vulnerable to natural disasters because of its unique geo-climatic conditions, having recurrent floods, droughts, cyclones, earthquakes, and landslides. As India is a very large country, different regions are vulnerable to different natural disasters. For example, during rainy season the peninsular regions of South India is mostly affected by cyclones and states of West India experience severe drought during summer.

5.1.4 Various types of Roads / Intelligent transport system

CLASSIFICATION OF ROADS IN INDIA:

- National highways.
- State highways.
- District highways.
- Major district roads.
- Minor district roads.
- Village roads.

5.1.5 Intelligent transportation system (ITS)

Intelligent transportation system (ITS) is the application of sensing, analysis, control and communications technologies to ground transportation in order to improve safety, mobility and efficiency. ITS includes a wide range of applications that process and share information to ease congestion, improve traffic management, minimize environmental impact and increase the benefits of transportation to commercial users and the public in general.

ITS, which is part of the Internet of Things, includes vehicle-to-vehicle (V2V) and vehicle infrastructure (V2I) technology and incorporates both wireless and wire line communications-based information and electronics technologies. Wireless technology is used to connect vehicle information and location to other vehicles, other transportation modes (such as pedestrians or bicyclists), local infrastructure and remote infrastructure in the cloud.

ITS is having a significant effect on transportation in applications such as electronic toll collection, ramp meters, traffic light cameras, traffic-signal coordination, transit signal priority and traveler-information systems. The adoption of ITS is expected to increase in applications such as fleet monitoring, tolling management, ticket management, transportation pricing, telematics and traffic monitoring. Key beneficiaries of ITS safety improvements as x

5.1.6 Floating car data/floating cellular data:

Triangulation method. Vehicle re-identification GPS based methods Smartphone-based rich monitoring.

Sensing technologies:

Inductive loop detection Video vehicle detection Bluetooth detection information fusion from multiple traffic sensing modalities

5.1.7 Various type of Environmental Factors:

External factors and loads influence and impact the life and quality of structure and buildings. Forces of nature are some of the harshest tests that these structures are subjected to. From different kinds of wind loads to seismic loads, effects of corrosion and solar radiation – there are many factors to consider in the engineering and design of buildings and structures

5.1.8 Wind Effects on Structures:

Wind is a powerful force that has a great deal of effect on structures. There are two broad types of effects of wind on structures: static and dynamic. The static load mainly leads to elastic bending and twisting of structure. Dynamic analysis of wind is required for sky scrapers, taller, long-span and slender structures. This is because gusts of wind cause fluctuating forces on the structure that induce large dynamic motion, including oscillations.

5.1.9 Impact Of Solar Radiation, Corrosion, Wind On Civil Structures:

In contemporary architecture, tall buildings and sky scrapers have increasingly complex design and scale that puts them at a greater risk to wind effects and induced forces on the structure. How various structures respond to wind depends on the characteristics of wind. With taller structures that have high aspect ratios, it is vital to analyze the unsteady vortex shedding because this can cause oscillating cross wind forces with a certain frequency. And if this coincides with the natural frequency of the structure then it could lead to a lot of damage or even structural failure.

Thus, the architectural, civil and structural design engineers must create safe, sustainable and cost-efficient design with the help of wind engineering skill and studies. Wind engineering is an industry standard and is used to first review the dynamic impact of wind on structures and also understand the ways in which design can be optimized to mitigate the effect.

5.1.10 Impact of Corrosion on Structural Integrity:

Put simply, corrosion is the damage to metals over a period of time because of their reaction with the environment.

For civil and structural engineers, corrosion is not simply an aesthetic issue; it causes severe damage and deterioration to buildings, bridges, equipment and pipelines. While the metal components on the exterior of the building are more prone to atmospheric damage and corrosion, the effect of corrosion on all the metal elements especially within the building – like foundation and structural walls are equally bad.

If suitable corrosion control and prevention measures are not applied, corrosion can lead to irreparable structural damage and serious problems in the long-term. Whilst most corroded x

Corrosion in building structures can diminish the overall value of various buildings because it can result in:

Thinning of metals used, leading to loss of mechanical strength, damages and ultimately failure. Environmental damage: leaking pipes, fuel tanks and vessels can have grave consequences on public health and the entire ecosystem.

5.1.11 Corrosion of Steel In Concrete:

Concrete is as cure protective layer for steel and prevents corrosion and rusting of steel. Owing to high in it alkalinity, a thin passive film offer is oxideis automatically formed on the steel surface. It is this layer, however thin, that protects steel from corrosion. However, once the environment loses its alkalinity, the layer is no longer effective and the steel starts corroding. To maintain the alkalinity of the environment, the concrete needs to be impermeable. The following preventive measures can be taken to mitigate corrosion:

Ensure reinforcement is not heavily congested specifically at the intersection of beams and columns.

Prevent steel from coming in contact with soil, wood, bricks and other porous non-alkaline substances.

Use materials sensibly, avoiding those that promote the corrosion process that is aggregates with high salt, water containing high salt etc.

Best-in-class structural design practices with provision of cover giving cathode protection to reinforcements.

Corrosive resistant surface coatings with paints, tars, asphalts, etc. Using high grade, impermeable concrete. Correct water-cement ratio.

5.1.12 Solar Radiation:

Solar radiation or UV rays are the energy from the sun. The quantity of solar radiation on a particular site depends on the location – that is latitude and sunlight hours in that area.

5.1.13 Effect of Solar Radiation on Buildings:

UV radiation impacts the durability of many building materials. The paints fade, plastic-based materials become brittle, timber twists and moves, and expansion and contraction owing to heating and cooling causes stress on various materials, so UV radiation is an important consideration in the building's sustainability.

Engineers must choose materials with a higher UV index number as they have higher resistance to UV degradation.

5.1.14 E – Waste disposal / Any West disposal:

Electronic waste or e-waste describes discarded electrical or electronic devices. Used electronics which are destined for refurbishment, reuse, resale, salvage recycling through material recovery, or disposal are also considered e-waste. Informal processing of e-waste in developing countries can lead to adverse human health effects and environmental pollution.

Electronics crap components, such as CPUs, contain potentially harmful materials such as lead, cadmium, beryllium, or brominated flame retardants. Recycling and disposal of e-waste may in valve significant risk to health of workers and communities in developed countries.

5.1.15 Structure Mechanism of Corrosion

The corrosion process that takes place in concrete is electrochemical in nature. Corrosion will result in the flow of electrons between anodic and cathodic sites on the rebar. For corrosion to occur, four basic elements are required:

- Anode – site where corrosion occurs and current flows from.
- Cathode – site where no corrosion occurs and current flows to.

Electrolyte – a medium capable of conducting electric current by ionic current flow (i.e. soil, water or concrete).

Metallic Path – connection between the anode and cathode, which allows the current return and completes the circuit.

The anode is the location on a steel reinforcing bar where corrosion is taking place and metal is being lost. At the anode, iron atoms lose electrons to become iron ions (Fe^{+2}). This oxidation reaction is referred to as the anodic reaction. The cathode is the location on a steel reinforcing bar where metal is not consumed. At the cathode, oxygen in the presence of water, accepts electrons to form hydroxyl ions (OH^-). This reduction reaction is referred to as the cathode reaction. The electrolyte is the medium that facilitates the flow of electrons (electric current) between the anode and the cathode. Concrete, when exposed to wet and dry cycles, has sufficient conductivity to serve as an electrolyte. the corrosion cell for a steel reinforcing bar.

5.2 Concept (Electrical) 5.2.1

Local / Out Source of Energy:

Local Source of Energy:

For the in rural areas the no immediate prospect of being connected to the central electricity grid and other commercial energy sources are often too expensive for poor people.

However, many rural are asdo have local access too the resources of energy, such as solar energy, water streams, wind and biomass. There are opportunities for these resources to be tapped using existing technologies and thereby release a range of useful services.

Out Sourced Energy:

- Their Kanjha village electricity is delivered by Gujarat State Electricity Corporation Limited (GSECL) is a wholly owned subsidiary company of the Gujarat Electricity Board (GEB), which came into existence in August 1993 after the unbundling of the GEB.
- It is a power generation company working in the territory of Gujarat, India.
- It delivers electricity through four distribution companies DGVCL, MGVCL, PGVCL, and UGVCL.
- PGVCL is supplied a electricity in Kanjha village.
- The PGVCL is one of the distribution companies which started functioning from 1st April; 2005. Area served by PGVCL is the largest of all four distribution companies. The area of operation under PGVCL includes Saurashtra and Kachchh regions. Gujarat Urja Vikas Nigam Ltd. is the company under which all the six companies are working, created after restructuring of rest while GEB.

5.2.2 Auto Intensity Controlled Solar LED Street Light / High Power LED:

Keeping this in mind in this article, we are discussing about a solar powered LED street light with auto intensity control. This project is driven by solar energy used to control the light intensity from morning to evening based on the brightness. demonstrate solar LED street light

to the other lights which are a light to their maximum intensity at all times after they are turned on Solar Powered Led Street Light with Auto Intensity Control Circuit and Its Working.



FIG: 47

Solar Powered Led Street Light

The solar powered street light work on the principle of solar cells or PV cells to absorb the solar energy in the day time. The PV cells the electrical energy. The converted energy is stored in the battery and the solar street lights use solar energy. Nowadays solar street lights are available beside the roads. At the night time the lamps start automatically and it uses the electrical energy which is stored in the battery. Every day this process continues

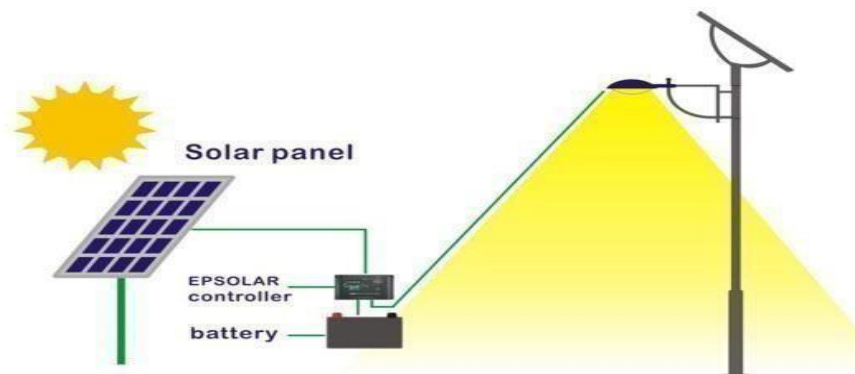


FIG: 48

Concept For Solar LED Street Light

Light emitting diode comprises of the chemical compound. When the direct current from the battery passes through the light, then it gives the light. Solar LEDs are available in different shapes, styles and sizes. Generally, the life span of light emitting diode is very high and it requires very little current.

5.2.3 Don't Miss: Solar Energy Projects for Engineering Students. Working of a Solar Powered Led Street Light with Auto Intensity Control Circuit and Its Working

The solar powered led street lights activate from dusk to dawn. The LED street light automatically turns ON after the dusk and turns OFF after the dawn. The designing of the entire system includes: Solar panels, LED light, Rechargeable battery, Controller, Pole and Inter connecting cables.

Solar Powered LED Street Light with Auto Intensity Control Circuit Diagram

Solar Panels:

The solar panel or PV cell in the solar street light is one of the most essential parts. These cells are available in two types: mono crystalline and poly crystalline. The mono crystalline conversion rate is higher than the poly crystalline. The light energy used by the solar panels from the sun is used to change solar energy into electricity, which can be used in various applications.

Electrical connections of this project are made in series to achieve a no/p voltage and to afford a current facility connections are made in parallel. The majority of the modules uses silicon (Si) but most of the solar panels are fixed.

Light Emitting Diode:

LEDs are used in modern street lights to provide brighter light with low energy consumption. The energy consumption of LED fixture is lesser than the high pressure sodium fixture, which is commonly used in traditional streetlights.

Compare to the other lamps, LED lights do not produce light in all directions. The design of lamps can be affected by the uniqueness of the LEDs. The single LED o/p is not equal to the incandescent and fluorescent lamps. But, a bunch of LED swill gives bright light than these two lamps. The advantages of LEDs mainly include Eco friendly, durable, zero UV emissions and long life.

Rechargeable Battery

Rechargeable battery is a one kind of electrical battery and it has electro mechanical reactions to adjust so it is also called as secondary cell. Generally, there are two kind so batteries, namely gel cell deep cycle and lead acid battery. A rechargeable battery is used in solar LED street lights, to store generated from the solar panel during the sunrise to afford energy in the sunset. The lifetime and capacity of the rechargeable battery are essentials they affect the backup power days of the lights.

Controller

Device in solar street light, used to decide the status of the charging and lighting by switch on or switch off. Some recent controllers are preprogrammed and it consists of a battery charger,

battery can be controlled by the controller from the under and over charging conditions. The battery can be charged by the power received from the solar panels in the sunrise and while in the sunset it charges the battery.

Pole

A strong pole is mandatory for each and every street light and also for a solar street light. There are various components such as panels, batteries and fixtures fixed on the top of the pole. In this light, the i/p operating voltage is 12V DC which is a nominal system voltage, and the light o/p at the height of 12 feet is a minimum of 09 LUX (unit of luminance).

Interconnecting Cables

The cable is used to interconnect the LED, solar panel and battery box which is fixed on the top of the pole. This cable is used to connect a Photo voltaic module to the controller, controller to the lamps and battery. The size and length of the cable depend on the current being carried to the LED lights and the height of the pole. The assembling of the entire solar LED street light system can be connected using all the above components which use sun energy to give the power to the LED lamps fixed on street poles.

5.2.4 Automatic Water Plant System / Designing of DC Motor Speed Control Unit

/Irrigation Water Pump Controller for Illiterates Using GSM

52.4.1 Automatic Water Plant System

Explained in this section is a simple and exciting automatic plant watering system that you can build you in Just a few hours. It is an Arduino based automatic plant watering system that uses soil moisture Sensor

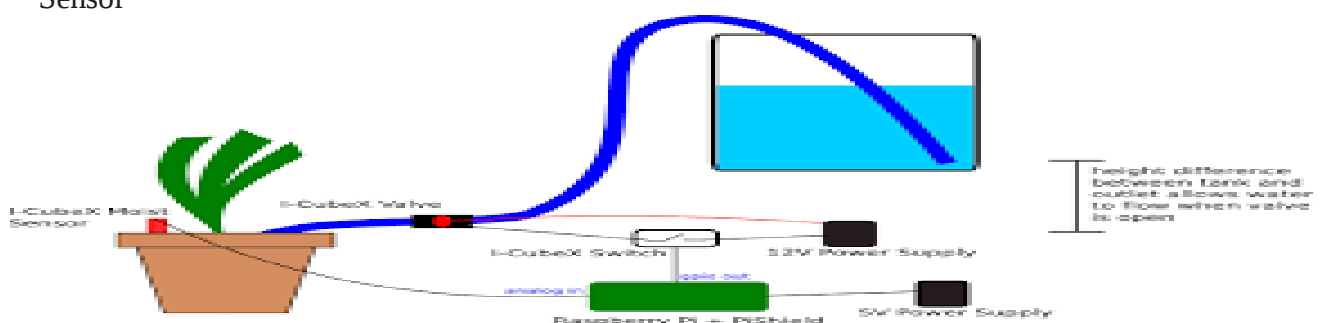


FIG: 49

Designing of Automatic Water Plant System

Timers are commonly used nowadays because they can be set up in a way that your plants will never be under watered or over watered. They can be integrated with an irrigation system –sprinkler system, hose, or drip system – and then scheduled to conserve water. One of the best timers is the electric hose model which is attached to a water spigot and connected to a hose. When you choose frequency and length of the watering, you can program that to the timer

Even though there are a number of indoor plant watering systems, the most popular is the plant watering globes and spikes. It uses the capillary action principle to water your plants because water is stored in the globe.

Drip watering system is another option that will keep your mind at peace because you don't need to remember watering your plants every time. Interestingly, there are no pots to fill or refill water because the drip can be run to those pots and then a timer is set.

5.2.4.2 Designing of DC Motor Speed Control Unit

The DC motor speed control project is intended to manage the pace of a DC motor by means of an 8051 sequence micro-controller. The pace of DC motor is straight forwardly relative to the voltage functional across its terminals. Therefore, if voltage through motor terminal different, then pace can too be different

5.2.4.3 Irrigation Water Pump Controller for Illiterates Using GSM

The aim of this project is to provide an efficient solution for automatic control of irrigation motor for illiterates here the automation process is done through the micro controller based technology. In our project we make use of one microcontroller, which is dedicated at the water pump

Features:

Controls high voltage water pumps, highly sensitive, power savings, low cost, remote controls.

5.2.5 Central Control Unit for Irrigation Water Pumps Construction

Irrigation is the artificial application of water to land for the purpose of agricultural production. Effective irrigation will influence the entire growth process from seedbed preparation, germination, root growth, nutrient utilization, plant growth and regrowth, yield and quality.

The key to maximizing irrigation efforts is uniformity. The producer has a lot of control over how much water to supply and when to apply it but the irrigation system determines uniformity. Deciding which irrigation systems is best for your operation requires knowledge of equipment, system design, plant species, growth stage, root structure, soil composition, and land formation. Irrigation systems should encourage plant growth while minimizing salt imbalances, leaf burns, soil erosion, and water loss. Losses of water will occur due to evaporation, wind drift, run-off and water (and nutrients) sinking deep below the root zone

5.2.6 Design of Sensing Soil Moisture Content By Auto Irrigation System:

- Water is a very precious resource and must be properly utilized. Agriculture is one of those areas which consume a lot of water. Irrigation is a time consuming process and must be done on a timely basis
- The aim of the article is to develop an auto irrigation system which measures the moisture of the soil and automatically turns on or off the water supply system.
- The aim of the project is to control a motor based on the moisture in the soil. The design of the circuit is as follows. PIC 16F877A is the main processing IC.
- The idea of the project is to implement an automatic irrigation system by sensing the

moisture of the soil. The working of the circuit is as follows. Wet soil will be more conductive than dry soil. The soil moisture sensor module has a comparator in it. The soil moisture sensor is inserted in the soil. Depending on the quality of the sensor, it must be inserted near the roots of the plant. The soil moisture sensor measures the conductivity of the soil.



FIG: 50

Energy Meter Reading with Load Control Using GSM

5.2.6.1 INTRODUCTION:

The main objective of the project is to develop a GSM based energy meter reading system and load control through SMS. Electricity department sends employees to take meter reading every month, which is an expensive and time consuming job. The proposed project provides a convenient and efficient method to avoid this problem. The electricity department and the user can get the readings of the energy meter of consumers via SMS. The loads can also be controlled by the user of this system via SMS using this project. A microcontroller input is effectively interfaced to a digital energy meter that takes the reading from the energy meter and displays the same on an LCD. The reading of the energy meter is also sent to the control room via SMS via SIM loaded GSM modem. This GSM modem can also receive commands from the cell phone to control the owner's electrical loads. It uses a standard digital energy meter that delivers output pulses to the microcontroller to perform counting for necessary action. On receiving command it can switch ON/OFF the loads.

5.2.6.1 BRIEF LITERATURE SURVEY:

Automatic Meter Reading (AMR) technology, electrical utilities (EUs) has been exploiting their own infrastructure to bill their customers in an efficient and economical way. Since the amount of data that has to be sent is quite low related to the available time to perform this task, AMR applications have been demanding low bitrates. At this moment, EUs are exploring and demanding other services as load and alarm management, remote monitoring and disconnections, etc. In this context, the Low Voltage modes should provide more throughput while keeping the cost of the hardware low. The results of this low complexity AMR technology are that in order to deploy an AMR network, the cost of the equipment on the customer premises and the added value services that the system provides are two key factors in its business case. It describes the different methods by which distribution transformer loads can be allocated for power-flow studies. Individual distribution loads are calculated using four different methods of allocation. The results of the power-flow studies are compared to those determined using the actual customer meter readings. Daily kWh, Monthly kWh, Transformer KVA

5.2.7 Street Light Monitoring and Control System:

Street Light Monitoring and Control System using Smart Feeder Panel is a unique combination of Smart Meter with GPRS based technology installed inside a feeder panel for remote. Street Light Monitoring and Control System using Smart Feeder Panel is a unique combination of Smart Meter with GPRS based technology installed inside a feeder panel for remote monitoring and controlling group of street lights. It is group wise cloud based monitoring system. Smart Meter with Astronomical timer based controller is an Automatic Street light control throughout the year on basis of precise sunrise and sunset time depending on the geographical location. Cloud based remote monitoring performs analytics and reporting of street light consumption through smart metering and provide power failure, fault occurrence information to the cloud server. It achieves instant fault reporting via SMS/email along with fault information & details of location. Feeder Panel has IP 55 protect.

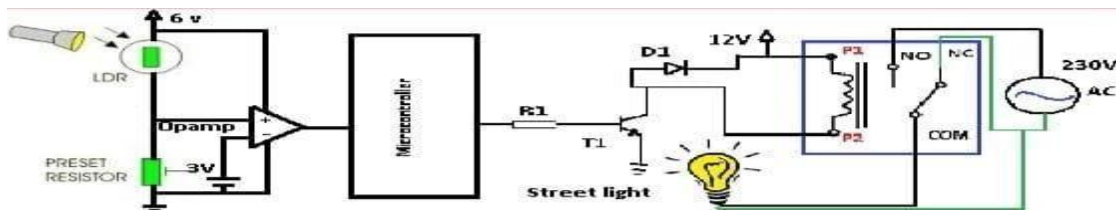


FIG: 51
Automatic street light control

6. CHAPTER 6: Feasibility, Construction, Operation and maintenance of various designs for sanitation facility options in Rural Areas along with cost Various Designs in Rural Areas along with cost with AutoCAD designs / planning

6.1 Civil

6.1.1 Deep wells with submersible pumps:

Deep Well Submersible Pumps only need to be primed once because they are submerged in the water being pumped and avoid pump cavitations, which damages the pump and decreases performance. Deep Well Pumps can be used in wells as deep as 300' below ground and work by pushing the fluid to the surface of the well.

6.1.2 Shallow wells:

A shallow well is a hole which has been dug, bored, driven or drilled into the ground for the purpose of extracting water is a well. A well is considered to be shallow if it is less than 50 feet deep. The source of a well is an aquifer. An aquifer is an underground layer of permeable soil (such as sand or gravel) that contains water and allows the passage of water. Aquifers are replenished as rainfall seeps down through the soil. Ground water travels through permeable soil on top of hard or impermeable layers. Shallow wells usually are only deep enough to intercept the uppermost (or most easily reached) perched water table.

6.1.3 Rain water harvesting:

Rain water harvesting is a technique of collection and storage of rainwater into natural reservoirs or tanks, or the infiltration of surface water into subsurface aquifers (before it is lost as surface runoff). One method of rainwater harvesting is rooftop harvesting. With rooftop harvesting, most any surface tiles, metal sheets, plastics, but not grass or palm leaf can be used to intercept the flow of rain water and provide a house hold with high- quality drinking water and year-round storage. Other uses include water for gardens, livestock, and irrigation, etc.

6.1.4 The reasons for using rainwater harvesting systems answer three questions:

What: Rainwater harvesting will improve water supply, food production, and ultimately food security.

Who: Water insecure households or individuals in rural areas will benefit the most from rainwater harvesting systems.

How: Since rainwater harvesting leads to water supply which leads to food security, this will greatly contribute to income generation.

6.1.5 Deep wells with submersible pumps:

A submersible pump (or sub pump, electric submersible pump (ESP)) is a device which has a hermetically sealed motor close-coupled to the pump body. The whole assembly is submerged in the fluid to be pumped. The main advantage of this type of pump is that it prevents pump cavitations, a problem associated with a high elevation difference between pump and the fluid surface. Submersible pumps push fluid to the surface as opposed to jet pumps which create a vacuum and rely upon atmospheric pressure. Submersibles are more efficient than jet pumps. Hydraulic submersible pumps (HSP's) use pressurized fluid from the surface to drive a hydraulic motor down hole, rather than an electric motor, and are used in heavy oil applications with heated water as the motive fluid.

6.1.7 Shallow wells with lined walls and covers:

Lined wells: These wells are artificially produced by digging into the ground and supporting the walls with bricks in a circular pattern. Unlined wells: These wells are mainly formed by different natural phenomenon and incidents and no human work is involved in it's manufacturing process

6.2 Electrical:

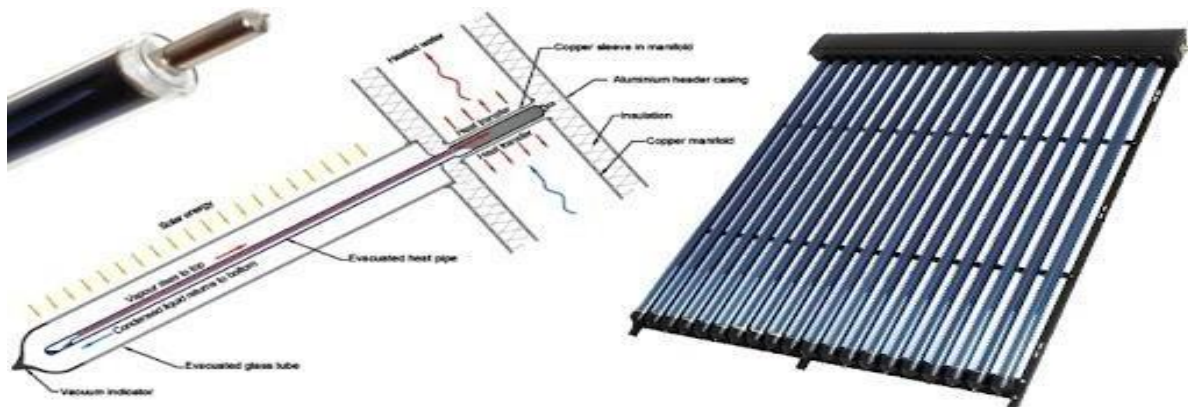


FIG: 52
Solar thermal collector

6.2.1 Solar module:

- Available in 10 W to 300Wp
- No. of cell may be 36, 48, 54, 60, 72
- One cell has 0.5 to 0.6V
- Module voltage may be 12, 24, 36V
- The area of 250 W, 60 Cell panel is 6x3foot

6.2.2 Working of Solar Cell:

- The electrons begin to flow from the top layer to the bottom. And as we know, when a bunch of electrons starts to move along in the same direction, we have electricity.
- Put two metal contacts on either side of the silicon sandwich and we have electricity moving through a circuit.
- The electricity generated by PV solar cells is DC (direct current).
- The electricity used in your house is AC (alternating current).
- So the current from the solar panel system has to go through an inverter, to convert it from DC to AC before it can be supplied in your house.
- Solar absorption index: A relation of the sun's angle at various latitudes and local times with the ionosphere absorption.
- Solar collectors transform solar radiation into heat and transfer that heat to a medium (water, solar fluid, and or air). Then solar heat can be used for heating water, to heating or cooling systems, or for heating swimming pools. Solar cooling technologies demand high temperatures and not all the type of solar collectors are capable of producing them.
- The collectors needed are based on technologies, which can supply hot water at relatively high temperature (90-150C).
- Flat-plate collectors are the most widely used kind of collectors in the world for domestic water-heating systems and solar space heating/cooling. The first accurate Model of flat plate solar collectors was developed by Hottel and Whillier in the 1950's.

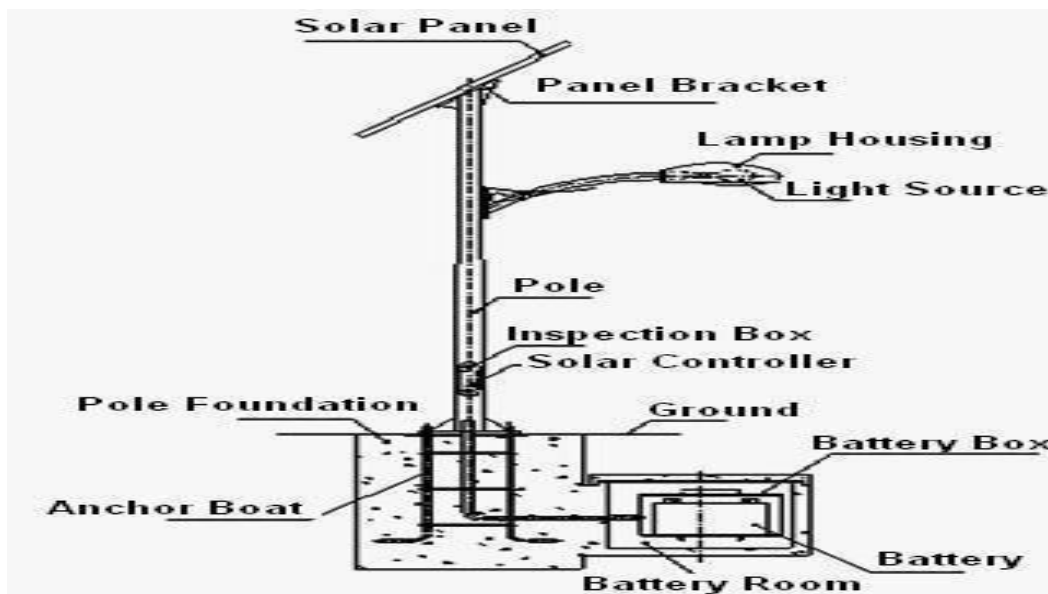


FIG:53
Working Of Solar Cell

6.2.3 Zero emission generation methods:

Vehicles and other mobile machinery used for transport (over land, sea, air, rail) and for other uses (agricultural, mobile power generation, etc.) contribute heavily to climate change and pollution, so zero emission engines are an area of active research. These technologies almost in all cases include an electric motor powered by an energy source compact enough to be installed in the vehicle. These sources include hydrogen fuel cells, batteries, super capacitors, and flywheel energy storage devices.

In some cases, such as compressed air engines, the engine may be mechanical rather than electrical. This mechanical engine is then powered by a passive energy source like compressed air, or a combustible non-po

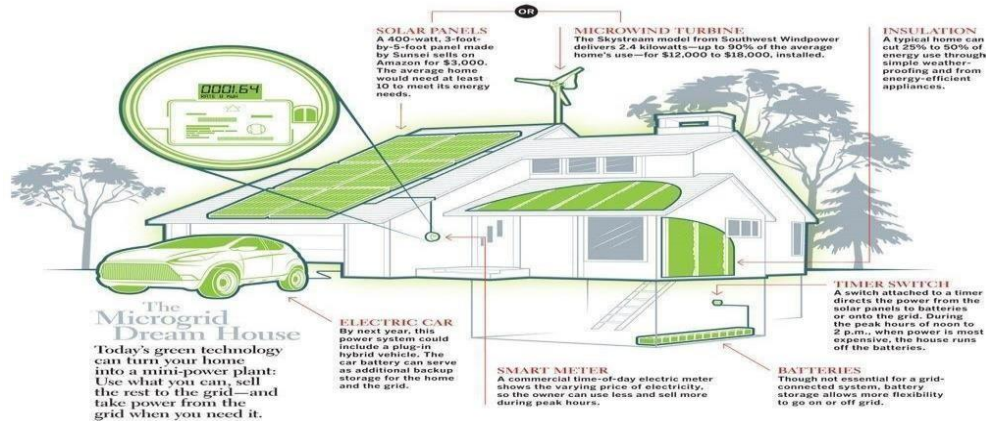


FIG: 54

Eco Friendly home

The above engines can be used in all vehicles, from cars to boats to propeller airplanes. For boats, energy sources such as nuclear power and solar panels can also be a viable option, in addition to traditional sails and turbo sails

A concept like vegetable oil economy produces emissions.

6.2.4 Wind Power:

- Wind energy (or wind power) describes the process by which wind is used to generate electricity. Wind turbines convert the kinetic energy in the wind into mechanical power. A generator can convert mechanical power into electricity.
- Wind turbines operate on a simple principle. The energy in the wind turns two or three propeller-like blades around a rotor. The rotor is connected to the main shaft, which spins a generator to create electricity.

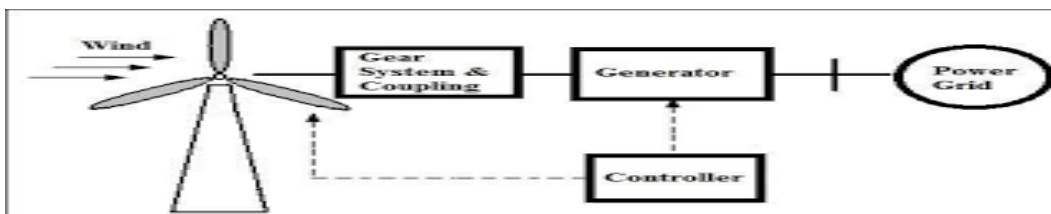


FIG: 55

Concept Of Wind Power Plant

Wind Energy

It is a free, renewable resource, so no matter how much is used today, there will still be the same supply in the future. Wind energy is also a source of clean, non-polluting, electricity. Unlike conventional power plants, wind plants emit no air pollutants or green house gases.

Advantages:

- 1 No pollution
- 2 Lowest prices renewable resources
- 3 Don't produce atmospheric emissions that cause acid rains and green house effects.

Disadvantages:

- 1 Depending on how energetic a wind site is, the wind farm may or may not be cost competitive.
- 2 Wind energy cannot be stored (unless batteries are used)
- 3 Sometimes birds have been killed by flying into the rotors

6.2.5 Wireless Data Acquisition System for Energy Tapping Identifier

The concept involved in the system is to measure the current flowing in the energy transmission line at sensitive areas, sensitive area is defined as where the transmission lines are passing very near to a village or passing over an agriculture field and people are tapping energy to run the pump sets. At these areas the current is measured with two CT's (Current transformers), these CT's are arranged at either side of the sensitive area, in series with phase. Now the current flowing through the CT primary is converted into digital and is fed to microcontroller. The controller displays the current in amps, since two CT's current is to be measured; two different systems are designed with two microcontroller units. One unit, which is supposed to be installed at starting point of particular zone, can be called as master unit. The other unit can be installed at other end of that particular zone, the current flowing through this unit Ct is transmitted in digital form. The master unit receives this data and displayed in LCD, the remote data acquired through zip bee network is compared with master CT output and difference is displayed in separated row. The current flowing through both the CT's is almost equal, line loss is considered, whenever the energy is tapped between the two CT's, more current is passed through first CT, and the system is programmed such that when the difference is more than 3-4% approximately, system energizes the alarm automatically.

Software's used:

1. PIC-C compiler for Embedded C programming.
2. PIC kit 2 programmer for dumping code into Microcontroller.
3. Express SCH for Circuit design.
4. Proteus for hardware simulation.

7. CHAPTER 7: Swatch Bharat Abhiyan (Clean India)

7.1 Which type of swatchhta needed in your village explaining Existing Situation with photograph?

The rural sanitation programmed in India was introduced in the year 1954 as a part of the First Five Year Plan of the Government of India. The 1981 Census revealed rural sanitation coverage was only 1%.

According to Census 2011, India's urban population is 377 million or 31% of the total population. These numbers are expected to increase to 600 million by 2031.

The Census 2011 also showed that in 4,041 statutory towns, close to eight million households do not have access to toilets and defecate in the open (7.90 million). Weak sanitation has significant health costs and untreated sewage from cities is the single biggest source of water resource pollution in India. This indicates both the scale of the challenge ahead of the Indian cities and the huge costs incurred from not addressing them.



FIG: 56

Swachh Bharat Abhiyan (Clean India)

The International Decade for Drinking water and Sanitation during 1981-90, began giving emphasis on rural sanitation. Government of India introduced the Central Rural Sanitation Programmed (CRSP) in 1986 primarily with the objective of improving the quality of life of the rural people and also provide privacy from 1999, a demand driven approach under the -Total Sanitation Campaign (TSC) emphasized more Information, Education and Communication (IEC), Human Resource Development (HRD), Capacity.

7.2 Guidelines for the process of the implementation in your village with Photograph:

7.2.1 IMPLEMENTATION:

Implementation of SBM (G) is proposed with District as the base unit, with the goal of creating ODF GPs. The District Collectors/Magistrates/CEOs of Zilla Panchayats are expected to lead the Mission themselves, so as to facilitate district wide planning of the Mission and optimum utilization of resources. The Baseline Survey data of 2013 collected by States and entered on the IMIS of MDWS by 31.1.2015 will be considered as the base for States where the survey is complete. For other States the data entered on completion of the Survey will be taken as the base data.

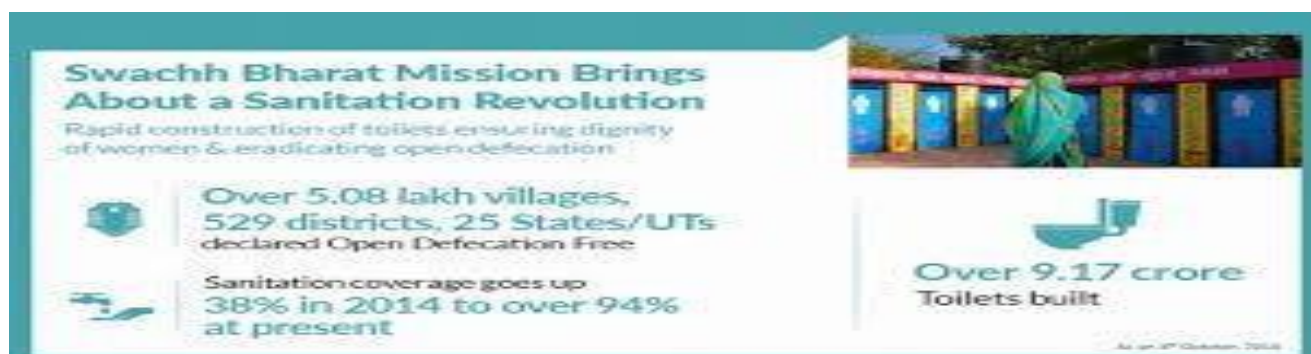


FIG: 57

Figures Of Swachh Bharat Mission

Government into a State Plan. The State Plan with district wise details will be shared with the Government of India (Swachh Bharat Mission-Ministry of Drinking Water and Sanitation). This Plan will include a 5-year Plan along with 5 independent Annual Plans which merge into the 5- year Plan.

These plans shall be approved by the Ministry each year. On the basis of formative research and consultation rounds, the State shall develop a tailor-made Communication Strategy, a Communication Plan, and material and will train community mobilizers to use these tools. The State plans shall provide details of the IEC, BCC, triggering exercise, Capacity building, Implementation, Financial support and Monitoring activities planned in each district, consolidated for all GramPanchayats.

The District-wise plans will have Gram Panchayat wise details. The State Project Implementation Plans currently prepared by States on a perspective basis shall be revised based on the Base line data and there wise norms of the SBM(G). The States will be allowed to make inter-district changes in allocation of resources to the individual districts within the overall funding of the state as per the approved Annual Implementation Plan (AIP), in consultation with the MDWS.

7.3 Start-Up Activities:

- The start-up activities include
- Updating of Base line survey – Conducting of preliminary survey to assess the status of sanitation and hygiene practices
- Orientation of key personnel at the District/GP level and preparation of District Plans
- Preparation of State Plan (Program Implementation Plan-PIP).

8. CHAPTER 8: Sustainable Design Planning Proposal (Prototype Design) - Part-I (Scenario / Existing Situation / Proposed Design in Auto cad / Recapitulation Sheet/ Measurement Sheet / Abstract Sheet / Sustainability of Proposal):

8.1 Design Proposals:

- After the carried out of Techno-Economic survey of village, the bus-stand has very poor condition of interior and exterior surface and it is essentially need to renovation of building
- We think to design after carried out techno-economic survey of village.
- The Gram panchayat building is so poor condition in external and internal surface so we think it is essentially need to renovation building.
- The village bus stop is also poor condition so it is need to renovation.
- There is no any social culture facility so we think built a new garden.

Amenities	Condition	Recommendations
Post office	Poor	Need renovation
Bus stand	poor	Need new construction
Garden	-	Need new construction

8.2 Recommendations of the Design:

A suggestion or proposal as to the best course of action, especially one put forward by an authoritative body. Road network near gram panchayat was damaged during rain. So, it should need the proper maintenance. In BORVAV village very bad condition of Sanitation so we are new design of Sanitation and Road network.

8.3 Suggestions / Benefit Of the villagers:

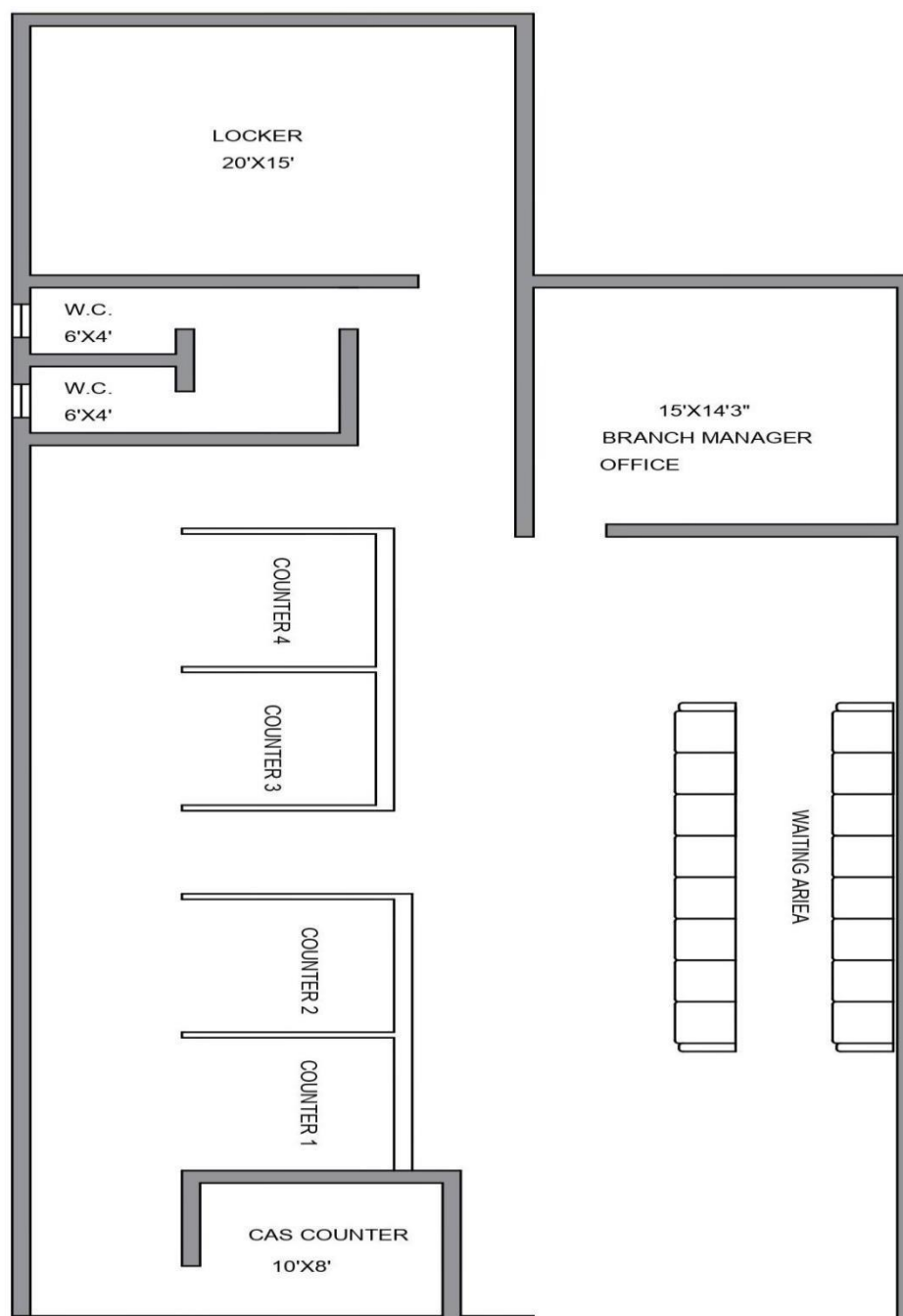
There are following structures need to build up to Progress of village and their people: Socio-Cultural Infrastructure Facilities should have needed such as: Public park, Library, Recreational activities, Drainage systematic.

Social Infrastructure Facilities should have needed such as: Primary Schools, Primary Health center, community Housing, C.C. Road Eco sanitation etc.

Sustainable Infrastructure Facilities should have needed such as: Natural Resources (petrol, diesel), Solar system, Biogas plant, Rain Water Harvesting, solar LED Light etc.

8.3 Sustainable Design (Civil) Post office Building:

Need & application of post office building in agatrai village post office is general requirement Of any Well developed village and agatrai village need a post office building in village for the purpose of improving communication and information so this design provide required facilities.

POST OFFICE DESIGN**TOP VIEW**

Estimation of Post Office

P.C.C in foundation & steps in 1:4:8						
long wall	3	10.12	0.9	0.3	8.1972	
Short wall	2	5.5	0.9	0.3	2.97	
wall-1	4	2.44	0.9	0.3	2.6352	
wall-2	2	1	0.9	0.3	0.54	
					TOTAL=	14.3424
brick work in foundation (up to g.l)						
long wall						
step-1	3	9.82	0.6	0.15	2.6514	
step-2	3	9.72	0.5	0.15	2.187	
step-3	3	9.52	0.3	0.9	7.7112	
short wall						
step-1	2	5.8	0.6	0.15	1.044	
step-2	2	5.9	0.5	0.15	0.885	
step-3	2	6.1	0.3	0.9	3.294	
extra wall-1						
step-1	4	2.14	0.6	0.15	0.7704	
step-2	4	2.04	0.5	0.15	0.612	
step-3	4	1.84	0.3	0.9	1.9872	
extra wall-2						
step-1	2	1.2	0.6	0.15	0.216	
step-2	2	1.3	0.5	0.15	0.195	
step-3	2	1.6	0.2	0.9	0.576	
					total=	18.3486
brick work in super structure in C.M. 1:6						
long wall(g.l to plinth)	3	9.52	0.3	0.45	3.8556	
short wall(g.l to plinth)	2	6.1	0.3	0.45	1.647	
extra wall-1	4	1.84	0.3	0.45	0.9936	
extra wall-2	2	1.6	0.2	0.45	0.288	
long wall (plinth to slab)	3	9.52	0.3	3	25.704	
short wall(plinth to slab)	2	6.1	0.3	3	10.98	
extra wall-1	4	1.84	0.3	3	6.624	
extra wall-2	2	1.6	0.2	3	1.92	
Deduction	2	1	0.3	3	1.8	
					total=	53.8122
long wall		9.52	0.2	0.9	3.4272	
short wall	2	6.1	0.2	0.9	2.196	

					total=	5.6232
deduction for door and window						
D-1	4	1.2	0.3	2.1	3.024	
D-2	2	0.8	0.2	2.1	0.672	
Window	8	2.1	0.3	1.2	6.048	
Ventilation	2	0.45	0.3	0.3	0.081	
					total=	9.825
deduction for r.c.c lintels						
door-1	4	1.4	0.3	0.15	0.252	
door-2	2	1	0.2	0.15	0.06	
Window	8	2.3	0.3	0.15	0.828	
Ventilation	2	0.65	0.3	0.15	0.0585	
					total=	1.1985
					net quantity=	48.4119
R.C.C work in slab,chajja and lintels						
(0.1m bearing on wall)						
slab:	1	9.52	6.7	0.15	9.5676	
Chajja	8	2.3	0.6	0.15	0.207	
Lintels					1.1985	
					total=	10.9731
Flooring	1	8.92	6.4		57.088	
Deduction					4.454	
					total=	52.634
Plaster for inner face						
long wall	4	8.92		3	107.04	
short wall	2	6.4		3	38.4	
extra wall-1	4	2.44		3	29.28	
extra wall-2	2	1		3	6	
deduction for door/window					1.1985	
Deduction	2	0.3		3	1.8	
					total=	171.722
Plaster for outer face						
long wall	2	9.52		3.9	74.256	
short wall	2	6.7		3.9	52.26	
deduction for door and window					1.1985	
					total=	125.318

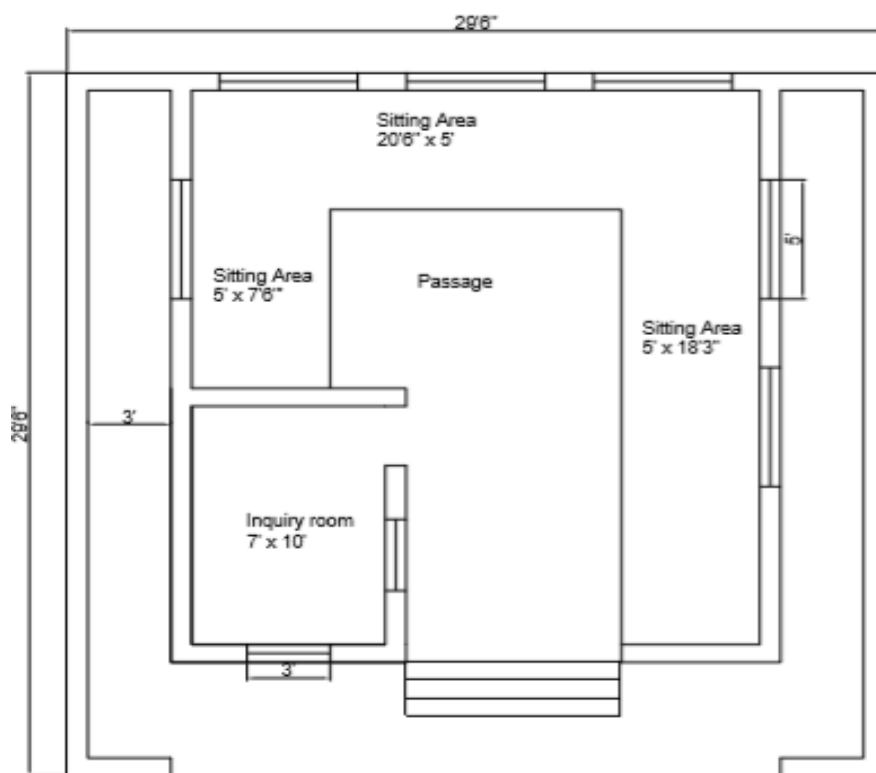
[illegible]

Sr. No.	Materials with Specification	Quantity Reqd.	Unit	Rate		Total Cost (Rs.)
				Rs.	Per	
1	240 V, 16 A, 2 Way MCB Type Board	1		370	Each	370
2	MCB	1		600	Each	600
3	Board 10- module	1		325	Each	325
	Board 8- module	1		315	Each	315
	Board 6- module	1		220	Each	220
4	PVC Conduit Pipe 25MM Diameter	50	M	22	M	1100
5	1/1 80mm, 650v Grade Single core aluminum PVC cable	0.5	M	10	M	5
6	1/1 40mm, 650 V grade Single Core Aluminum PVC Cable	150	M	10	M	1500
7	Single Way 5A Anchor Switch, 240V	15		20	Each	300
8	Single Way 15A Anchor Switch, 240V	1		40	Each	40
9	pvc Type Two Plate Ceiling Rose	9		20	Each	180
10	pvc type petant holder	6		35	Each	210
11	flexible Wire 23/0 193 mm	30	M	10	M	300
12	Earthling wire 14 SWG GI Wire	0.3	M	35	M	11
13	Nut, Bolt with Earthing Thimble	5		15	Each	75
14	51mm screw	30		100	200 no	30
15	6 A, 3 Pin Socket	6		40	Each	240
16	15 A, 3 Pin Socket	1		60	Each	60
17	Cement, Soil Warnice					300
18	Fan Regulator	6		300	Each	1800
19	Fan	6		1200	Each	7200
20	Lamp	13		200	Each	2600
21	Labour Charge	20 Point		150	Each	3150
	5 % miscellaneous charge					600
					Total	20631 RS

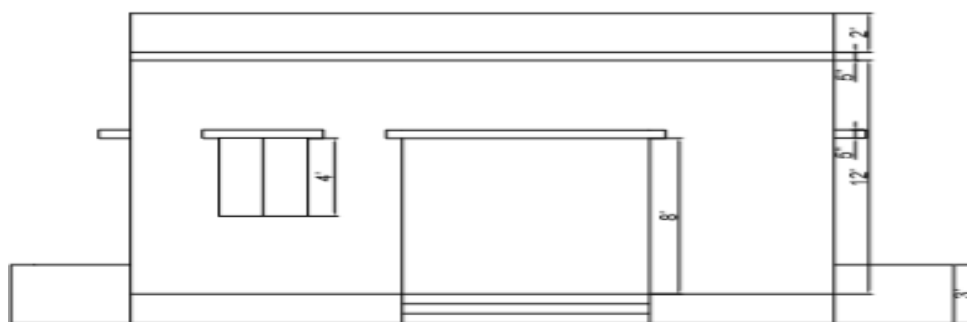
8.5 Bus stand design (Civil part)

We observed that one bus-stand is available at Kanjha and its existing condition is poor. Also, the sitting arrangement of bus stand is smaller than require area of bus stand

8.5.1 The design of bus-stand as follow:



PLAN



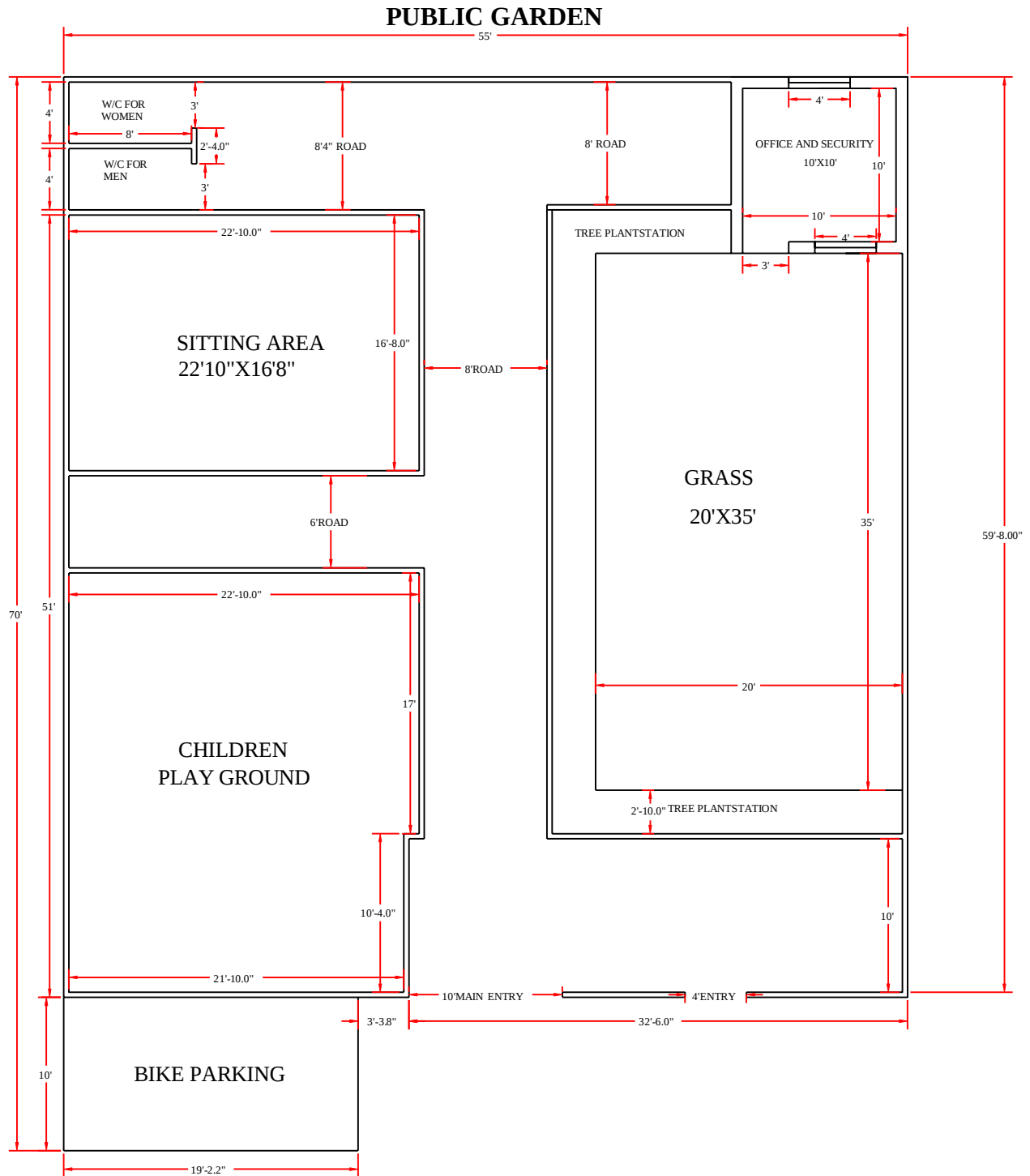
ELEVATION

Sr. No.	Description	No.	Length	Width	Depth	Quantity
			(m)	(m)	(m)	cu. M
1	Total centre line of all walls		41.03	0.9	1.5	55.39
					Total :-	55.39
2	P.C.C. in foundation		41.03	0.9	0.06	2.21
	1:2:4					
3	Masonry in foundation 1:3 standard brick		41.03	0.6	1.5	35.44
					Total:-	35.44
4	Brick masonry up to slab level 1:4	1	41.03	0.3	3.04	34.41
	internal wall		5.09	0.3	3.04	4.64
					Total:-	39.05
	Deduction					
5	Door and window	7	0.94	0.94		6.18
		2	1.82	2.13		7.76
					Total:-	13.94
6	Net masonry work					39.05
						13.94
					Total:-	25.11
7	Plaster work in 1:3					
	according to masonry work		46012	3.04		140.2
	Internal					13.94
					Total:-	126.26
	Qty R.C.C slab		3.04	6.09	0.15	2.77
	01:05.5		9.14	6.09	0.15	8.34
					Total:-	11.11

Abstract Sheet of Bus Stand Design

8.6 Public garden design:

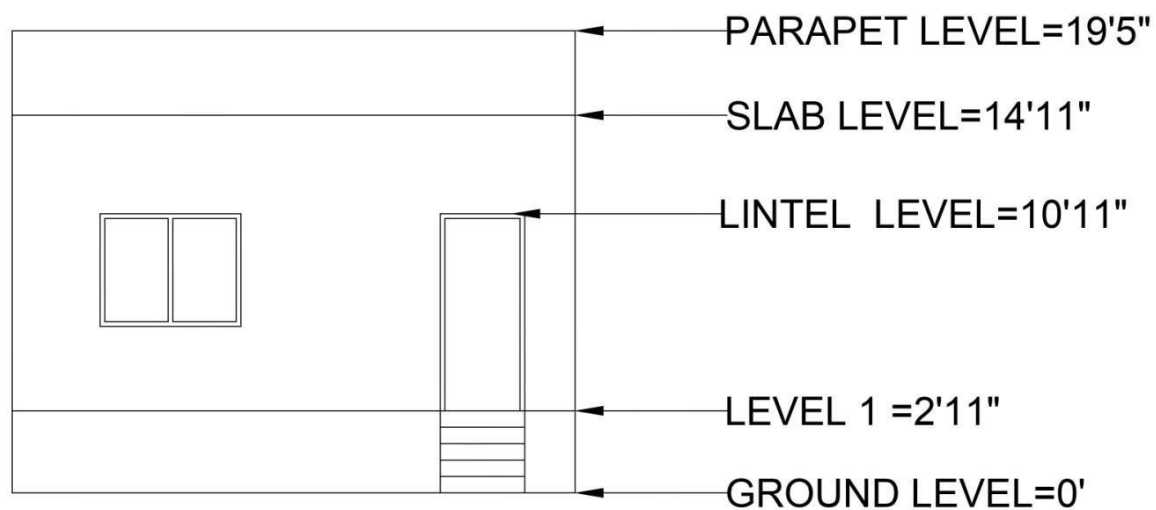
- A **public garden** is an institution that maintains collections of plants for the purposes of **public** education and enjoyment, in addition to research, conservation, and higher learning. It must be open to the **public** and the **garden's** resources and accommodations must be made to all visitors.



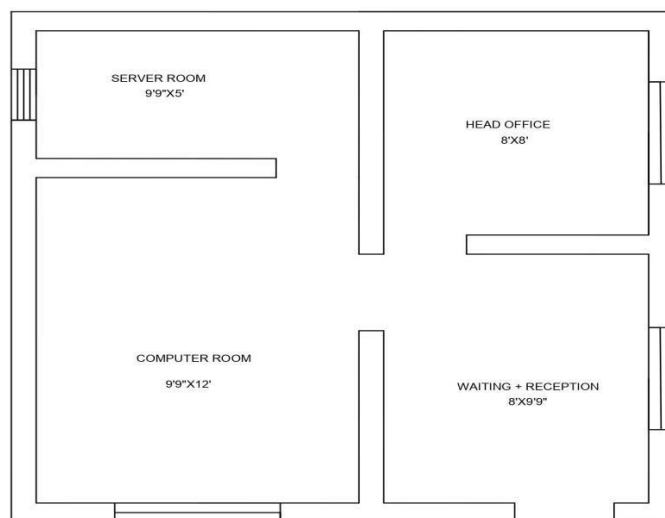
MEASUREMENT SHEET FOR PUBLIC GARDEN							
SR NO.	ITEM DISCRIPTION	N O	LENGTH	WIDTH	HEIGHTH	QUANTITY	
1	Excavation for compound wall						
	long wall	2	56.7	0.45	1	51.03	cu. m
	short wall	2	28.048	0.45	1	25.2432	cu. m
					total=	76.2732	
2	pcc work for foundation	1	168	0.9	0.15	22.68	cu. m
3	brick masonry for compound wall	1	168	0.3	1.52	76.608	cu. m
4	plaster work for compound wall	1	168		1.52	255.36	sq. m
5	paver block for walking track	1	154	1.52		234.08	sq. m
6	paint on compound wall	1	168		1.52	255.36	sq. m

SR NO.	ITEM DISCRIPTION	QUANTITY	RATE(IN RS/-)	PER	COST	
1	excavation in foundation	76.2732	235	cu.m	17924.2	
2	pcc in foundation in 1;4;8	22.68	2604	cu.m	59058.72	
3	brick masonry	76.608	3321	cu.m	254415.2	
4	plaster work	255.36	105	sq.m	26812.8	
5	paver flooring walking track	234.08	335	sq.m	78416.8	
6	Painting	255.36	80	sq.m	20428.8	
7	Fountain	1	8000	nos	8000	
8	Swings	5	1600	nos	8000	
9	Benches	6	800	nos	4800	
				total=	477856	Rs/-
				RS:	477009	Rs/-

Various Planning For Some Suitable Places
COMMON SERVICE CENTRE (CSC):



ELEVATION



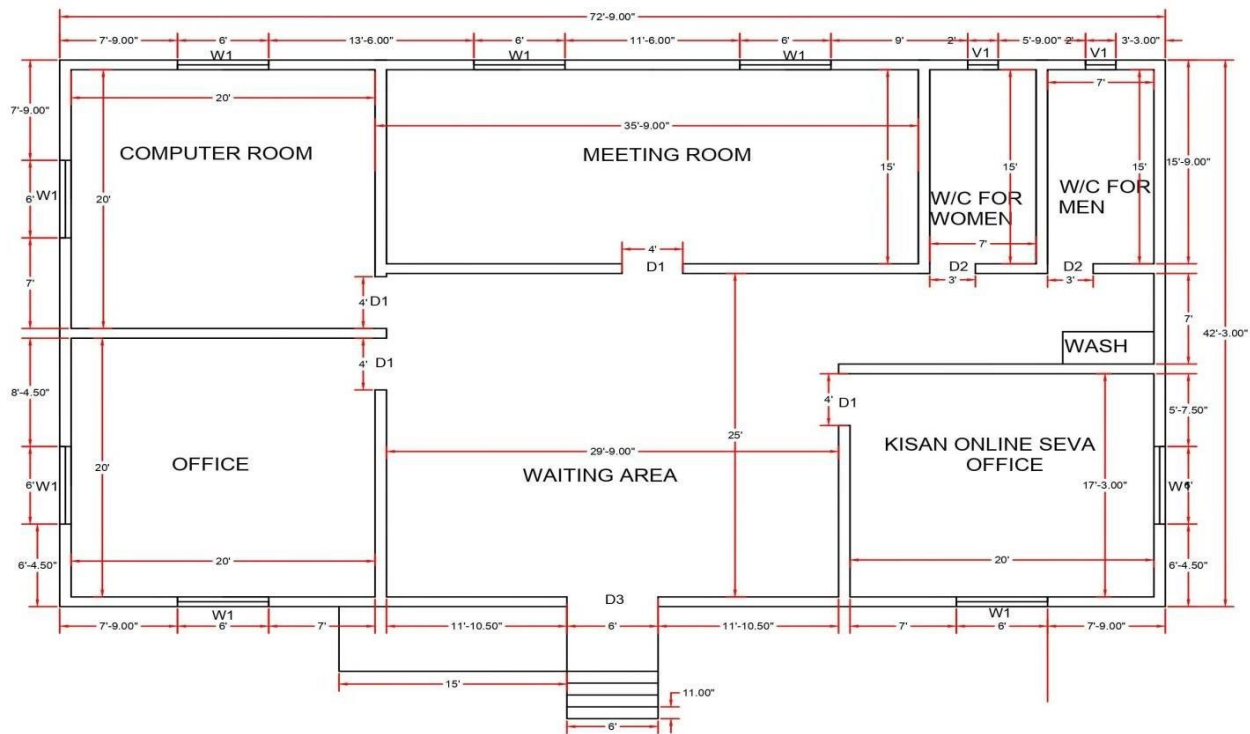
TOP VIEW

Name of work: - Common service center
ESTIMATE

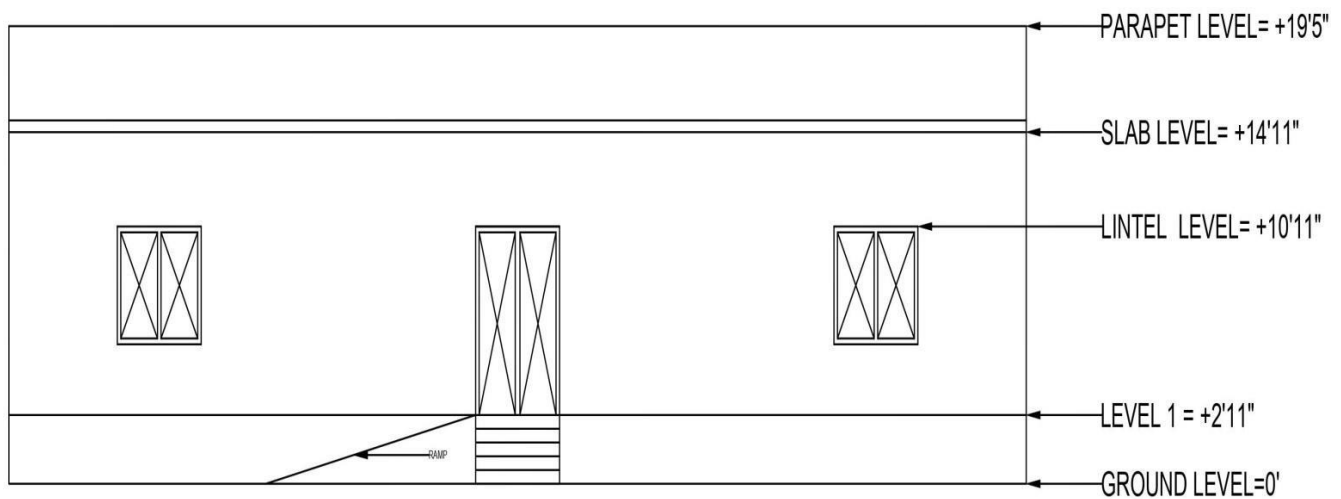
CIVIL ITEM					
Sr. No.	Description of item	Qty	Rate	Per	Amount
1	2	3	4	5	6
1	Providing, laying & constructing in true line & level white stone below masonry block in course in & above plinth level super structure with stone of approved quality in cement mortar 1:6 (1 cement : 6 coarse sand) in true line and level including racking out joints, curing ,scaffolding etc complete as directed by Engineer in-charge	871 SQ.FT.			
		80.91SQ.MTR.	270	SQ.MTR	21845.7RS
2	Providing and applying 10mm thick smooth cement plaster in single coat on brick/ concrete wall for interior/exterior plastering for Ground floor up to floor two level in true line and level in C.M. 1:4 (1 cement : 4 coarse sand) including finishing even and smooth with floating coat of neat cement slurry including scaffolding , curing etc complete as directed by Engineer in-charge P69/ 1(17.58)II+4(17.69)+6(17.91)+7(17.94)	1742 SQ.FT.			
		161.82SQ.MTR	132	SQ.MTR	21360.24
	Providing & Applying finishing Decorative paint ACE (two coats) on wall surface to give an approved quality, brand and manufacture and of required shade and one coat of cement primers of approved brand & mfg.				
	after thoroughly brushing the				

3	surface to remove all dirt and remains of loose powdered materials etc. approved and shade to wall/ceiling surface two coats incl. cleaning the surfaces, scaffolding etc. complete(R.A.)	1742 SQ.FT.			
		161.82SQ.MTR	74.74	SQ.MTR	12094.42RS
4	Providing and laying ordinary cement concrete 1:1.5:3 mix (1 cement : 1.5 coarse sand: 3 graded stone aggregate 20mm nominal size of B.T. Kapchi) For R.C.C Slab 10 to 13 cm thick for super structure for first floor up to floor three level including finishing in C.M. 1:3 (1 cement : 3 sand) smooth with floating coat of neat cement slurry including curing etc complete including the cost of form work but excluding the cost of reinforcement etc complete as directed by Engineer in charge (R.A.)	400 SQ.FT.			
		37.16SQ.MTR.	5940.11	SQ.MTR	220734.48.RS
5	Providing and fixing 30mm thick prelaminated machine press fush shutter for door of BLOOM make or equivalent of approved quality with Prestress cement concrete frame of 250x65 mm size including teak wood beading of 12 mm thick & YAMA or I-twenty make stainless steel fixtures & fastening including one coat of primer and two coats of oil paint and etc complete as directed by Engineer in charge(R.A.)	21SQ.FT.			
		1.95 SQ.MTR.	3715	SQ.MTR	7244.25RS
TOTAL =283279.09RS					

KISHAN SEVA KENDRA



WORKING DRAWING



ELEVATION

Sr.No.	Description of item	Qty	Rate	Per	Amount
6	Providing, laying & constructing in true line & level white stone bela masonry block in course in & above plinth level super structure with stone of approved quality in cement mortar 1:6(1 cement : 6 coarse sand) in true line and level including racking out joints, curing ,scaffolding etc complete as directed by Engineer in-charge	270.07	3697.61	Cmt	998613.53
		Cmt			
7	Providing, laying & casting in true line & Level cement concrete 1:1.5:3 mix (1 cement : 1.5 coarse sand: 3 graded stone aggregate 20mm nominal size of B.T. Kapchi) for R.C.C. Beam having for super structure of ground floor up to floor two level including the cost of form work , centering , shuttering compacting with vibrators , curing etc complete including , finishing the exposed face even and smooth with C.M. 1:3 (1 cement : 3 sand) but excluding the cost of reinforcement etc complete as directed by Engineer in-charge (R.A.)	16.53	6183.54	Cmt	102213.92
		Cmt			
8	Providing and laying ordinary cement concrete 1:1.5:3 mix (1 cement : 1.5 coarse sand: 3 graded stone aggregate 20mm nominal size) For R.C.C Lintel in true line and level up to two level including finishing smooth exposed face in C.M. 1:3 (1 cement : 3 sand) smooth curing compacting with vibrators etc. complete including the cost of form work scaffolding shuttering but the excluding the cost of reinforcement etc complete as directed by Engineer in charge (R.A.)	12.46	6045.41	Cmt	75325.81
		Cmt			
9	Providing and laying ordinary cement concrete 1:1.5:3 mix (1 cement : 1.5 coarse sand: 3 graded stone aggregate 20mm nominal size of B.T. Kapchi) For R.C.C Slab 10 to 13 cm thick for super structure for first floor	119.98	5940.11	Cmt	712694.40
		Cmt			

Sr.No.	Description of item	Qty	Rate	Per	Amount
	up to floor three level including finishing in C.M. 1:3 (1 cement : 3 sand) smooth with floating coat of neat cement slurry including curing etc complete including the cost of form work but excluding the cost of reinforcement etc complete as directed by Engineer in charge (R.A.)				
10	Providing and laying mild steel reinforcement for R.C.C work for ground floor up to floor three level including cleaning, straightening , cutting bending, binding with 16 gauge annealed wire & placing in position as per detail structural design drawing etc. complete as directed by Engineer in-charge P19/13(5.4.10)	420.00 Kg	49.49	Kg	20785.80
11	Providing and laying twisted T.M.T. bar reinforcement for R.C.C work for ground floor upto floor three level including cleaning ,straightening , cutting , bending , binding with 16 gauge annealed wire and placing in position as per detail drawing and structure design etc. complete as directed by Engineer in- charge P27/36(5.4.11)	7985.00 Kg	56.00	Kg	447160.00
12	Providing and fixing 30mm thick prelaminated machine press fuse shutter for door of BLOOM make or equivalent of approved quality with Prestress cement concrete frame of 250 x 65 mm size including teak wood beading of 12 mm thick & YAMA or I- twenty make stainless steel fixtures & fastening including one coat of primer and two coats of oil paint and etc complete as directed by Engineer in charge (R.A.)	18.22 Smt	3715.64	Smt	67698.96

Sr.No.	Description of item	Qty	Rate	Per	Amount
17	Providing and laying Vitrified tiles 8mm thick in flooring treads of steps laid on a bed of 20mm thick base of C.M. 1:3 (1 cement 3 sand) laid in true line level and slope jointed with white cement, color pigment, adhesive solution including curing rubbing polishing etc. comp. As directed by Engineer in-charge P62-A / 10(14.36)	238.87	932.23	Smt	222681.78
		Smt			
18	Providing, laying and fixing Ceramic tiles flooring of approved make for flooring , treads of steps and landings laid on 12mm thick base of cement or plaster of C.M. 1:3(1 cement : 3 coarse sand) laid in true line and level slope and jointed with white cement slurry, curing etc complete as directed by Engineer in-charge P60/(8.14.29)	76.12	821.13	Smt	62504.42
		Smt			
19	Providing & Applying finishing Decorative paint ACE (two coats) on wall surface to give an approved quality, brand and manufacture and of required shade and one coat of cement primers of approved brand & mfg. after thoroughly brushing the surface to remove all dirt and remains of loose powdered materials etc. approved and shade to wall/ceiling surface two coats incl. cleaning the surfaces, scaffolding etc. complete (R.A.)	990.84	74.74	Smt	74055.38
		Smt			
				Total Rs	3,575,326.47

8.7 Sustainable Design (ELECTRICAL)

8.7.1 Sustainable design Electrical

Solar street light design proposal for BORVAV village Problem Statement

Design thinking is processing to do what you think about projects to solve someone's problem, create something new in world to help peoples & solve them problems.

We are inspired by observing wasting of electricity in street light due to absence of the user. He starts the mission of save energy and save electricity through renewable energy. With design thinking we can create a new future for world. In short words.

Design thinking is the confidence that new, better things are possible and that you can make it happen. One I observed in the mid night that, street light was operating without any use; it means it was wasting of electricity due to street light without any use of it. So I inspired to make solar street lighting system which can operate on the movement of the object. It means can be switch on in presence of object automatically and can be switch off absence of object. We can save energy which was wasting in absence of the object, so we decided to make this project titled solar based automatic street light control.

8.7.2 Problem definition:

The rural areas have no solar street light system, the rural areas of people has difficulties of late night working. The rural area is far from the main cities so supply of electricity is not possible to every village. The resources of electricity are also less than the demand which is increasing continuous every year. This research focus on sustainable development in rural areas through solar street lights this research focuses on the latest eco- friendly technology and its suitable use for rural development.

8.7.3 Problem limitation:

9-watt, 18-watt, 15 watts and 30-watt light use in the solar street CFL and LED light. Take the energy efficiency of solar panel in 14% efficiency of the available in India. 12-volt battery in the nominal voltage and tubular battery use in the streetlight installation system. G. I. pole in the nominal height in 4m and 5m with the 2cores segment wire.

8.7.4 Concept of smart streetlight:

Automatic Street Light Control System is a simple and powerful concept, which uses transistor as a switch to switch ON and OFF the street light automatically. By using this system manual works are removed. It automatically switches ON lights when the sunlight goes below the visible region of our eyes. It automatically switches OFF lights under illumination by sunlight.

the use of transistor as a switch. Light dependent resistor, a photoconductive device has been used as the transducer to convert light energy into electrical energy. The central dogma of the circuit is that the change transistor between cut- off region or saturation region and switches OFF and ON the LED.

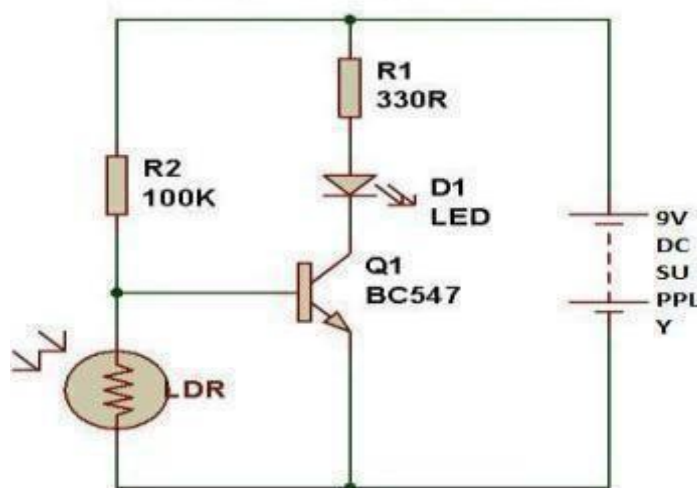
CFL Cost (In Rupees)

9 Watt	10707
15 Watt	16322
18 Watt	18244
30 Watt	26586

LED Cost (In Rupees)

11676	9 Watt	8551
18151	15 Watt	11676
21844	18 Watt	15458
33016	30 Watt	20926

Sr. No.	Component	No	Used
1	Solar panel	1	Power generate
2	100K Resistor	1	To offer resistance
3	15K Resistor	1	To offer resistance
4	47K Resistor	1	To offer resistance
5	Diode	4	Indicator
6	10K Variable Resistor	1	Switch ON point tuning
7	LDR 10 mm	2	Photoconductor
8	Battery (9v-12v)	1	To storage supply
9	BC 547 Transistor	2	Amplifier and switch
10	BC 557 Transistor	2	Amplifier and switch
11	LM 324	1	Op-amp IC
12	Stepper motor (10 RPM)	1	Rotate panel
13	PCB	1	Circuit Board

**Volt Battery Levels**

8.7.5 Calculation of CFL for life

Total life of CFL = 6000 hours CFL will glow 10 hours in a day

So no of days are $6000/10 = 600$ days To convert into year $600/365 = 1.6$ year

CFL (WATT)	Volts Required	AH required	Cost Of Battery
9	12	37	2890
15	12	62	3670
18	12	75	4338

LED (WATT)	LED Life (Hours)	LED Life (Years)
9	20,000	5.5 Years
15	20,000	5.5 Years
18	20,000	5.5 Years
30	20,000	5.5 Years

8.7.6 Calculation of spacing of street light for 9-watt LED light:

Calculation of space of two street light poles having the fixed wattage is 9 watts.

The luminaries of street light 819l m. For the sufficient road which has width of 12 foot in rural

areas. Lux (E) = 10 lux

Coefficient of Utilization Factor (Cu) = 5.3 Light lumen depreciation factor (LLD) = .8

Luminaries dirt

depreciation factor (LDD) = .9 For distance between two street lights

$$= LM * CU * LLD * LDD / E * W$$

$$= 1000 * 5.3 * .8 * .9 / 10 * 12$$

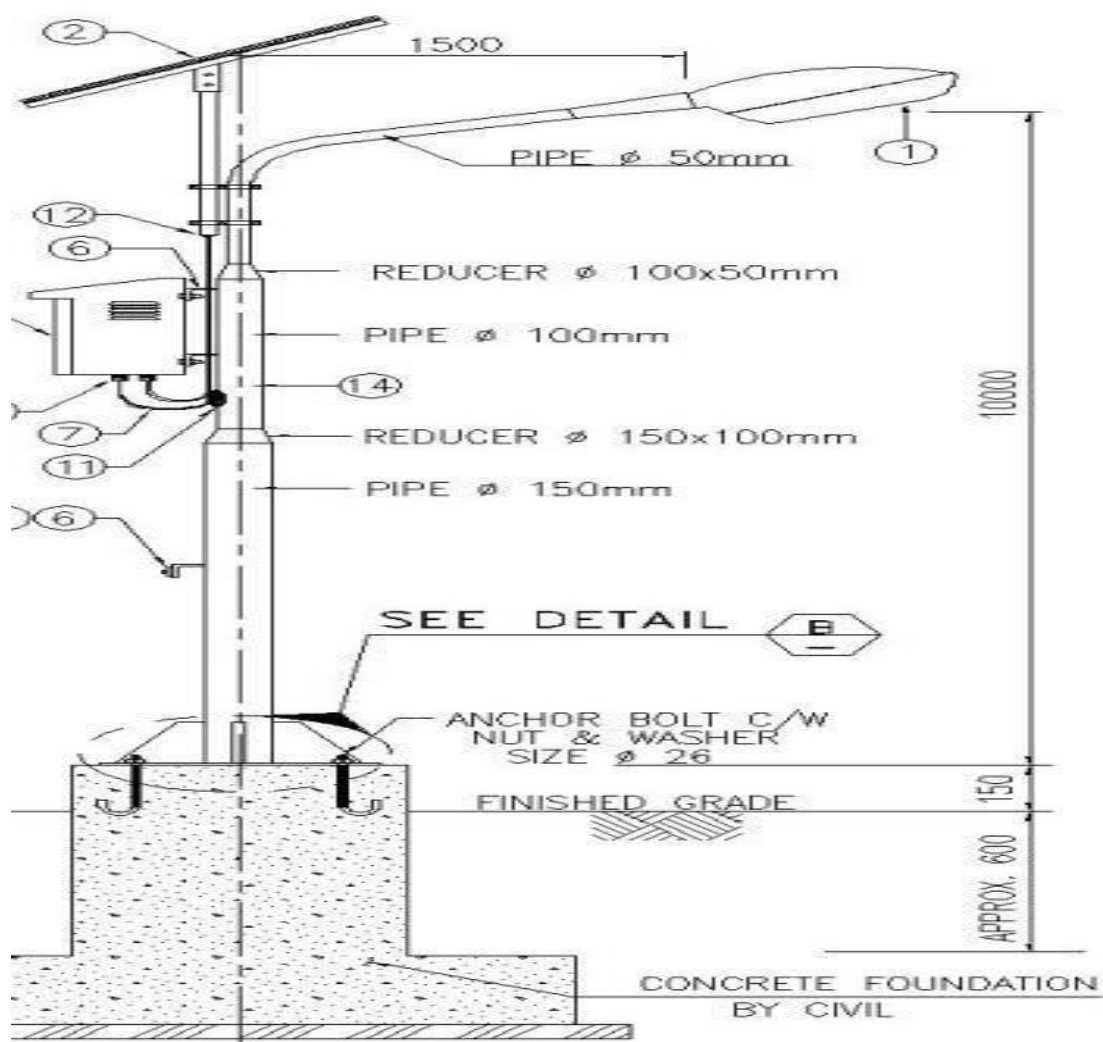
$$= 3816 / 120$$

$$= 32 \text{ ft. [1 meter = 3.2 ft.]}$$

8.7.7 Solar Street Light Design:



Solar Street Light Design



STREET POLE DESIGN

Component	Rating
System working condition	10 hours/night lighting time and automatically 3days
Light Source: Life Span:50000-100000 Hrs	50W 24V LED, 75850LM, Water-proof, IP65, 2800-6500K(Warm colour or white color)
Solar Panel: Lifespan:10-25 Years	95W*2PCS for 24V Lighting, Crystalline silicon. Adding Aluminium Frame, Tempered Glass.
Solar Battery Lifespan: 5-8 years	120Ah/12V*2PCS for 24V, sealed type, deep cycle Gelled.
Controller: Lifespan:5-10 Years	10A/24V, Water-proof, IP68, Intelligent micro-computer, Automatic light control and time control system, switch on automatically with light sensor.
Pole Height	8M pole, hot dip galvanized steel, Plastic coated, rust proof Lifespan: More than 20 year
Working Temperature	-30 degree C-65 degree C
Fittings	Lamp Arm, Solar panel brackets, Battery Box, Screws, Cables,etc. Battery Box: Water proof junction box, Galvanized Steel

9. CHAPTER 9: Future Development of the Village (for the PART- II Design)

9.1 Why is Development of primary health center?

In BORVAV village population is 8011. So as per requirement of primary health center. So that we are design of primary health center. And we are also discussing about our projects. And after that design of primary health center. And, we make Post-Office design also.

The concept of Primary Health Centre (PHC) is not new to India. The Bhore Committee in 1946 gave the concept of a PHC as a basic health unit to provide as close to the people as possible, an integrated curative and preventive health care to the rural population with emphasis on preventive and primitive aspects of health care.

The health planners in India have visualized the PHC and its Sub-Centers (SCs) as the proper infrastructure to provide health services to the rural population. The Central Council of Health at its first meeting held in January 1953 had recommended the establishment of PHCs in community development blocks to provide comprehensive health care to the rural population. These centers were function in gas peripheral health service institutions with little or no community involvement. Increasingly, these centers came under criticism, as they were not able to provide adequate health coverage, partly, because they were poorly staffed and equipped and lacked basic amenities.

Primary Health Centre is the cornerstone of rural health services- a first port of call to a qualified doctor of the public sector in rural areas for the sick and those who directly report or referred from Sub-Centers for curative, preventive and primitive healthcare

9.2 Why is Development of primary health center?

- In BORVAV village population is 8011. So as per requirement of primary health center. So that we are design of primary health center. And we are also discussing about our projects. And after that design of primary health center. And, we make Post-Office design also.
- The Post Office is unique: a commercial business set apart by its public purpose.
- At the Post Office our aim is to provide you with the things that are important to you.
- The Town Center, with its small neighborly shops and pedestrian scale is increasingly becoming lost as regional and national retail chains locate in suburban shopping plazas and along U.S. highways. It has become increasingly difficult for small town centers to survive amid national TV and print advertising campaigns by these large retailers.

10. Chapter: 10 Conclusion

After working on the Vishwakarma project our conclusion is this around 70% of the State's population is living in rural areas. People in rural areas should have the same quality of life as is enjoyed by people living in sub urban and urban areas. By this Vishwakarma Yojana project government, want technical solution of the problem of villages at the engineering point of view. In this project the common problem of village is solved by the engineering students. Through various government departments are involved in various infrastructural development works, a holistic view and modern solutions etc. can be provided by new engineers under Vishwakarma yojana. There is increasing demand for facilities in urban areas, which result in several negative effects like undeveloped rural areas, ignorance of lower class group, demolitions and several destructions. Many people; mainly farmers who move to cities in search of better life and better occupational opportunities end up as casual labour. This leads to menacing problem of urbanization. BORVAV is one of the village of Junagadh district. So, it is necessary to develop the village for growth of Junagadh district, state and country also. In BORVAV village infrastructure facilities like drinking water, 10% pukka road, 65% pukka house. In BORVAV village general facilities like chowk, public latrine block and drainage are not available ,and they are not using the any sustainable energy.

BORVAV is one of the villages in Junagadh district. Surrounded by agricultural activities. The city is facing issues of lack infrastructure development of internal roads, residential houses, Post- Office building. For understanding the actual situation of the village, we have collected different data for number of population. School, water tank, Aaganwadi, hospital etc. By providing design of civil work such as repairing of old building. New road development and bus stop design. For drinking water, we have designed rain water harvesting system installation in individual houses which will benefit the villager.

According to UDPFI norms, lacking in basic amenities and Smart Amenities can be provided

- Bio-Gas Plant
- Gaushala
- Primary School
- Garden
- Gram Panchayat
- Primary Health Centre
- Automatic Street Light Control
- Water Level Indicator
- Optimum management system

11. Chapter: 11 References:

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Gujarat Technological University,
Ahmedabad, GujaratVishwakarma Yojana: Phase VIII
Techno Economic Survey**Techno Economic Survey****Vishwakarma Yojana: Phase VIII****SMART VILLAGE SURVEY**

An approach towards "Rurbanisation for Village Development"

Name of District:	Tumkur
Name of Taluka:	Venkatpur
Name of Village:	Shree
Name of Institute:	Noble Group of Institutions
Nodal Officer Name & Contact Detail:	Kishan Vekariya 99045 52249
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Samir Bheer N. Rathod (Talati-Mamta)
Date of Survey:	14/9/20

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	8108	4237	3871	1798

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hect.) Coordinates for Location:	1898 Hect. (2012/2011)
2.	Forest Area (In hect.)	0
3.	Agricultural Land Area (In hect.)	1522 2012 2011 2010
4.	Residential Area (In hect.)	1369 2012 2011 2010
5.	Other Area (In hect.)	1522 2012 2011 2010
6.	Distance to the nearest railway station (in kilometers):	0 km.



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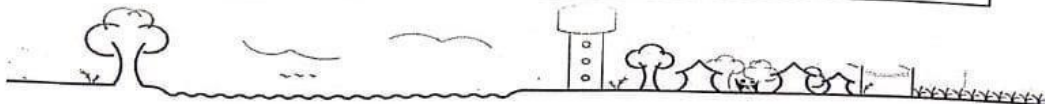
Vishwakarma Yojana: Phase VIII
Techno Economic Survey

3. Occupational Details:

Name of Three Major Occupation groups in Village	1. Agriculture
	2. Shopkeepers
	3. Employee

4. Physical Infrastructure Facilities:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	Main Source of Drinking water				
	• Tap Water (Treated/ Untreated)	Yes	✓		
	• RO Water	No			
	• Well (Covered/ Uncovered)	Yes	✓		
	• Hand pumps	Yes			
	• Tube well/ Borehole	Yes		✓	9
	• River/ Canal/ Spring/ Lake/ Pond	Yes	✓		6
Suggestions if any:					
B.	Water Tank Facility				
	Overhead Tank	Capacity: 21uc	✓		
	Underground Sump	Capacity: 1.7 Luc	✓		
Suggestions if any:					
C.	Drainage Facility				
	Available (Yes/ No)	Yes	✓		
Suggestions if any:					
D.	Type of Drainage				
	Closed/ Open	85% closed	✓		
	If Open than Pucca / Kutchcha	-			
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	Yes	✓		
Suggestions if any:					



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E.	Road Network : All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
Village approach road	WBM	✓			
Main road	PCC	✓			
Internal streets	CC	✓			
Nearest NH/SH/MDR/ODR Dist. in kms.	NH- 7KM SH - 3KM	✓			
Suggestions if any:					
F.	Transport Facility				
Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Yes	✓			
Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes	✓			
Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto, chhakda				
Suggestions if any:					
G.	Electricity Distribution				
(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Govt. Private (24 hrs)	✓			
Power supply for Domestic Use	Yes	✓			
Power supply for Agricultural Use	Yes	✓			
Power supply for Commercial Use	Yes	✓			
Road/ Street Lights	Yes	✓			



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Techno Economic Survey

Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
Renewable Energy Source Facilities (Y/ N)	No			
LED Facilities	No			

Suggestions if any:

H.	Sanitation Facility				
	Public Latrine Blocks If available than Nos.	Yes	✓		
	Location Condition	Good			
	Community Toilet (With bath/ without bath facilities)	No			
	Solid & liquid waste Disposal system available	No			
	Any facility for Waste collection from road	Direct to Direct	✓		

Suggestions if any:

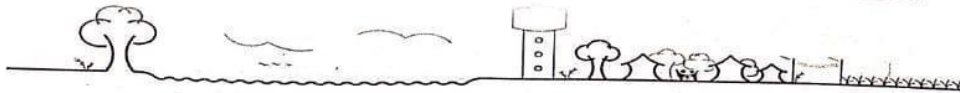
I.	Irrigation Facility:				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	tubewell canal	✓		

Suggestions if any:

J.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)	8-10 Pucca 12-1 Kucha			

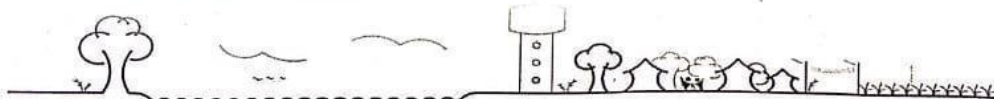
5. Social Infrastructural Facilities:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
---------	--------------	---------------------	----------	------------	---------



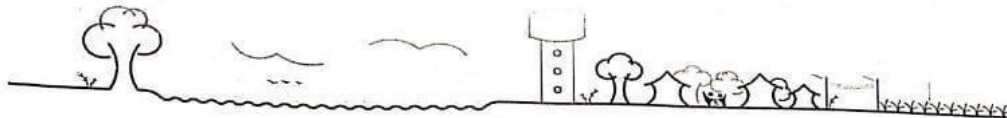
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Techno Economic Survey

K.	Health Facilities:				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	CHC Govt. Hospital Yes.	✓		
	Private Clinic/Private Hospital/ Nursing Home	Available	✓		
If any of the above Facility is not available in village than approx. distance from village:kms.					
Suggestions if any:					
L.	Education Facilities:				
	Aaganwadi/ Play group	Yes	✓		
	Primary School	Yes	✓		
	Secondary school	Yes	✓		
	Higher sec. School	Yes	✓		
	ITI college/ vocational Training Center	No			
	Art, Commerce & Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	No			
If any of the above Facility is not available in village than approx. distance from village:kms.					
Suggestions if any:					
M.	Socio- Culture Facilities				
	Community Hall (With or without TV) Location:	No.			



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Condition:	Very good.			
Public Library (With daily newspaper supply: Y/N)	No Yes	✓		
Location:				
Condition:				
Public Garden	No			
Location:				
Condition:				
Village Pond	Yes			
Location:				
Condition:				
Recreation Center	Yes			
Location:				
Condition:				
Cinema/ Video Hall	No			
Location:				
Condition:				
Assembly Polling Station	Yes	✓		
Location:	Primary schools			
Condition:				
Birth & Death Registration Office	Yes	✓		
Location:	panchayat			
Condition:				
If any of the above Facility is not available in village than approx. distance from village:kms.				
Suggestions if any:				
N.	Other Facilities			
	Post-office	Yes	✓	
	Telecommunication Network/ STD booth	No		



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Techno Economic Survey

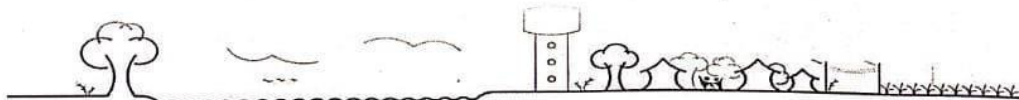
General Market	yes	✓		
Shops (Public Distribution System)	yes	✓		
Panchayat Building	yes	✓		
Pharmacy/Medical Shop	yes	✓		
Bank & ATM Facility	yes	✓		
Agriculture Co-operative Society	yes	✓		
Milk Co-operative Soc.	yes	✓		
Small Scale Industries	yes	✓		
Internet Cafes/ Common Service Center/Wi Fi	no			
Other Facility	-	-	-	-
Suggestions if any:				

6. Sustainable /Green Infrastructure Facilities:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
O.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	NO (own house used)	-	-	-
P.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	NO NO NO NO	-	-	-
Q.	Any Other	-	-	-	-

7. Data Collection From Village

Village Base Map	unavailable
Available: Hard Copy/Soft Copy	(soft available)



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1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	Yes. Good Condition. (Primary, Secondary & high secondary) Good Good Good	
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING FOGGING..... Drive was undertaken in the village?	4 times fogging - 4 times	

IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	—	

Note: Photographs/ Video/ Drawings of all existing Infrastructure facilities & conditions should be taken by students of respective villages for their record and information.

For Any Administration queries/ Difficulties:
GTU VY Section
Contact No – 079-23267588
Email ID: rurban@gtu.edu.in



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ગામ પંચાયત-શાપુર



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IDEAL VILLAGE SURVEYGujarat Technological University,
Ahmedabad, GujaratVishwakarma Yojana: Phase VIII
Techno Economic Survey**Techno Economic Survey**

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	ASAB
Name of Taluka:	KESHOD
Name of District:	JUNAGADH
Name of Institute:	NOBLE GROUP OF INSTITUTIONS
Nodal Officer Name & Contact Detail:	KISHAN VEKARIYA
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aanganwadi worker/Village dweller)	RANCHOD BHAI VILLAGERS
Date of Survey:	

1. Demographical Detail:

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	6802	3548	3245	1916
ii)	2011	8026	4105	6921	1898

2. Geographical Detail:

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hect.)	3238.08 Hectars
	Coordinates for Location:	
	Forest Area (In hect.)	0
	Agricultural Land Area (In hect.)	3.143 Hectars
	Residential Area (In hect.)	94.90 Hectars
	Other Area (In hect.)	
	Water bodies	
	Nearest Town with Distance:	KESHOD

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7.	Name of Nearest Town with Distance:	Tunagadh
8.	Distance to the nearest bus station (in kilometers):	Kalwa Chowk Busstop, Tunagadh (8.6 KM)
9.	Whether village is connected to all road for the any facility or town or City?	Yes.

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1. Farming - Agriculture
	2. Animal Husbandry
	3. Labour work

Major crops grown in the village:	1. Groundnut
	2. Cotton
	3. Banajal, mangoes

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	Main Source of Drinking water				
1.	PIPED WATER Piped Into Dwelling Piped To Yard/Plot Public Tap/Standpipe Tube Well Or Bore Well	Yes	✓		-
2.	DUG WELL Protected Well Un Protected Well	Yes	✓		-
3.	WATER FROM SPRING Protected Spring Unprotected Spring Rainwater	No	✓		-
4.	Tanker Truck Cart With Small Tank SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/ Irrigation Channel Bottled Water Hand Pump	R-o plant Not made canal,			-

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Suggestions if any:

B. Water Tank Facility

Overhead Tank	Capacity:	3 lac	1 lac	
Underground Sump	Capacity:	4 lac	1 lac	

Suggestions if any:

C. The Type of Drainage Facility

A. UNDERGROUND DRAINAGE	80% V/A			
1	close	✓		
2				
B. OPEN WITH OUTLET	✓			
C. OPEN WITHOUT OUTLET				

Suggestions if any:

D. Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM

Village approach road	RCC	✓		
Main road	CC/RCC	✓		
Internal streets	Blocks	✓		
Nearest NH/SH/MDR/ODR Dist. in kms.	16 KM	✓		

Suggestions if any:

E. Transport Facility

Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	N 13 KM.			
Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	YES available	✓		
Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	AUTO chakda	✓		

Suggestions if any:

F. Electricity Distribution

(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	YES pavcl	✓		
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Techno Economic Survey

	Power supply for Domestic Use	yes	✓		
	Power supply for Agricultural Use	yes	✓		
	Power supply for Commercial Use	yes	✓		
	Road/ Street Lights				
	Electrification in Government Buildings/ Schools/ Hospitals	yes	✓		
	Renewable Energy Source Facilities (Y/ N)	-	-		
	LED Facilities	-	-		
Suggestions if any:					
G.	Sanitation Facility				
	Public Latrine Blocks If available than Nos.	No			
	Location Condition	-			
	Community Toilet (With bath/ without bath facilities)	No			
	Solid & liquid waste Disposal system available	No			waste out village.
	Any facility for Waste collection from road	No			
Suggestions if any:					
H.	Main Source of Irrigation Facility:				
	TANK/POND	yes	✓		
	STREAM/RIVER	No	✓		
	CANAL	yes	✓		
	WELL	yes	✓		
	TUBE WELL	yes	✓		
	OTHER (SPECIFY)	pump	✓		
Suggestions if any:					
I.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)				

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Gujarat Technological University,
Ahmedabad, GujaratVishwakarma Yojana: Phase VIII
Techno Economic Survey**V. SOCIAL INFRASTRUCTURAL FACILITIES:**

Sr. No.	Descriptions	Information/Detail	Adequate	Inadequate	Remarks
J.	Health Facilities:				
	ICDS (Anganwadi)	yes	✓		3
	Sub-Centre	No			1
	PHC	yes	✓		
	BLOCK PHC	No			
	CHC/RH	yes	✓		2
	District/ Govt. Hospital	No			
	Govt. Dispensary	No			
	Private Clinic	No			
	Private Hospital/	No			
	Nursing Home	No			
	AYUSH Health Facility	No			
	sonography /ultrasound facility	No			
If any of the above Facility is not available in village than approx. distance from village: 3.5 kms. (Junagadh)					
Suggestions if any:					
K.	Education Facilities:				
	Aaganwadi/ Play group	yes	✓		
	Primary School	yes	✓		
	Secondary school	No			
	Higher sec. School	No			
	ITI college/ vocational Training Center	No			
	Art, Commerce & Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	No			

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Suggestions if any:

L.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)	-		No	
	Public Library (With daily newspaper supply: Y/N)	yes		✓	
	Public Garden	-		no	
	Village Pond	-		no	
	Recreation Center	Good		✓	
	Cinema/ Video Hall	yes		✓	
	Assembly Polling Station	yes		✓	
	Birth & Death Registration	yes		✓	

If any of the above Facility is not available in village than approx. distance from village:kms.

Suggestions if any:

M.	Other Facilities	Condition	Location	Available (YES)	Available (NO)
	Post-office	yes		yes	
	Telecommunication Network/ STD booth				No
	General Market	Good		yes	
	Shops (Public Distribution System)			yes	
	Panchayat Building			yes	
	Pharmacy/Medical Shop			yes	
	Bank & ATM Facility	Good		yes	
	Agriculture Co-operative Society	Good		yes	
	Milk Co-operative Soc.	Good		yes	
	Small Scale Industries	Average		yes	
	Internet Cafes/ Common Service Center/Wi Fi	Good		yes	
	Youth Club	-		yes	
	Mahila Mandal	-		yes	

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Credit Cooperative Society				
Agricultural Cooperative Society				
Milk Cooperative Society				
Fishermen's Cooperative Society				
Computer Kiosk/ e-chaupal / Mills / Small Scale Industries			YES	
Other Facility				
Suggestions if any:				

N.	Other Facilities	Condition	Available (YES)	Available (NO)
1.	Have these programme implemented the village?		YES	
2.	Are there any beneficiaries in the village from the following programme?		YES	
3.	Janani Suraksha Yojana		YES	
4.	Kishori Shakti Yojana		YES	
5.	Balika Samridhi Yojana		YES	
6.	Mid-day Meal Programme		YES	
7.	Integrated Child Development Scheme (ICDS)		YES	
8.	Mahila Mandal Protsahan Yojana (MMPY)			NO
9.	National Food for work Programme (NFFWP)			NO
10.	National Social Assistance Programme		YES	
11.	Sanitation Programme (SP)			NO
12.	Rajiv Gandhi National Drinking Water Mission			NO
13.	Swarnjayanti Gram Swarozgar Yojana			NO
14.	Minimum Needs Programme (MNP)			NO
15.	National Rural Employment Programme			NO
16.	Employee Guarantee Scheme (EGS)			NO
17.	Prime Minister Rojgar Yojana (PMRY)		YES	
18.	Jawahar Rozgar Yojana (JRY)			NO
19.	Indira Awas Yojana (IAY)			NO
20.	Samagra Awas Yojana (SAY)			NO
21.	Sanjay Gandhi Niradhar Yojana (SGNY)			NO
22.	Jawahar Gram Samridhi Yojana (JGSY)		YES	
23.	Other (SPECIFY)			NO

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VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources.	NO	-	-	-
2.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	NO NO NO	- - -	- - -	- - -
3.	Any Other				

VII. DATA COLLECTION FROM VILLAGE

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Village Base Map Available: Hard Copy/Soft Copy	Yes			
2.	Recent Projects going on for Development of Village				
3.	Any NGO working for village development				
4.	Any natural calamity in the village during the last one year: EARTHQUAKES FLOODS CYCLONE DROUGHT LANDSLIDES AVALANCHE OTHER (SPECIFY)	NO - - - - - - -			-

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Techno Economic Survey

1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	Public Toilets	
2.	Additional Information/ Requirement	—	
3.	During the last six months how many times CLEANING FOGGING..... Drive was undertaken in the village?	Many	

IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THERE ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	IoT	—

Note: Photographs/ Video/ Drawings of all existing Infrastructure facilities & conditions should be taken by students of respective villages for their record and information.

For Any Administration queries/ Difficulties:
Ms. Darshana Chauhan, Project Co-ordinator
Contact No – 079-23267588
Email ID: rurban@gtu.edu.in

4517211 8.2.12



Ashutosh V. Mehta

Project Co-ordinator
Vishwakarma Yojana
G.T.U.

(6.11.14)

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Allocated VillageGujarat Technological University,
Ahmedabad, GujaratVishwakarma Yojana: Phase VIII
Techno Economic Survey**Techno Economic Survey****Vishwakarma Yojana: Phase VIII****ALLOCATED VILLAGE SURVEY**

An approach towards "Rurbanisation for Village Development"

Name of District:	GIR SOMNATH
Name of Taluka:	TALALA
Name of Village:	BORVAV
Name of Institute:	NOBLE GROUP OF INSTITUTIONS
Nodal Officer Name & Contact Detail:	KISHAN VEKARIYA (Ret.) 88491 94271
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aanganwadi worker/Village dweller)	SARPANCH DESAI VIJYA
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	5247	2718	2529	972

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hectar)Coordinates for Location:	1663.37 Hectar
2.	Forest Area (In hect.)	-
3.	Agricultural Land Area (In hect.)	1986 Hectar
4.	Residential Area (In hect.)	523 Hectar
5.	Other Area (In hect.)	134 Hectar
6.	Distance to the nearest railway station (in kilometers):	BORVAV (2 Km)

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7.	Name of Nearest Town with Distance:	TAHALA (5 Km)
8.	Distance to the nearest bus station (in kilometers):	TAHALA (5.5 Km)
9.	Whether village is connected to all road for the any facility or town or City?	Yes

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1. FARMING
	2. ANIMAL HUSBANDRY
	3. POTTERY

Major crops grown in the village:	1. MANGO
	2. SUGARCANE
	3. WHEAT

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	Main Source of Drinking water				
1.	PIPED WATER Piped Into Dwelling Piped To Yard/Plot Public Tap/Standpipe Tube Well Or Bore Well	Yes	✓		-
2.	DUG WELL Protected Well Un Protected Well	Yes	✓		-
3.	WATER FROM SPRING Protected Spring Unprotected Spring Rainwater Tanker Truck Cart With Small Tank	No	✓		-
4.	SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/ Irrigation Channel Bottled Water Hand Pump	R-o Plant HIRAN RIVER			-

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Ahmedabad, Gujarat



Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Other(Specify)Lake/ Pond		Lake		✓	-
Suggestions if any:					
B.	Water Tank Facility				
	Overhead Tank	Capacity: 1 lakh	✓		1
	Underground Sump	Capacity: -	-		-
Suggestions if any:					
C.	The Type of Drainage Facility				
	A. UNDERGROUND DRAINAGE 1	65% underground	✓		Dumping area
Suggestions if any:					
D.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	WBM	✓		
	Main road	CC	✓		
	Internal streets	Blocks	✓		
	Nearest NH/SH/MDR/ODR Dist. in kms.	SH - 2.5 km	✓		
Suggestions if any:					
E.	Transport Facility				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No			Talala 5 km
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	No	✓		Talala 5 km
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Chhakda/ Auto	✓		-
Suggestions if any:					
F.	Electricity Distribution				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Govt 24 hrs	✓		Tyoti Power



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Power supply for Domestic Use	Yes	✓		
Power supply for Agricultural Use	Yes	✓		
Power supply for Commercial Use	Yes	✓		
Road/ Street Lights	Yes	✓		
Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
Renewable Energy Source Facilities (Y/ N)	-	-		
LED Facilities	-	-		

Suggestions if any:

G. Sanitation Facility

Public Latrine Blocks If available than Nos.	No			
Location Condition	-			
Community Toilet (With bath/ without bath facilities)	No			
Solid & liquid waste Disposal system available	No			
Any facility for Waste collection from road	No			

Suggestions if any:

H. Main Source of Irrigation Facility:

TANK/POND	Tank-Yes	✓		
STREAM/RIVER	River - Yes	✓		
CANAL	No	✓		
WELL	Yes	✓		
TUBE WELL	No	✓		
OTHER (SPECIFY)	Pumping	✓		

Suggestions if any:

I. Housing Condition:

Kutchha/Pucca (Approx. ratio)				
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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/Detail	Adequate	Inadequate	Remarks
J.	Health Facilities:				
	ICDS (Anganwadi)	yes	✓		3
	Sub-Centre	No			1
	PHC	yes	✓		
	BLOCK PHC	No			
	CHC/RH	yes	✓		2
	District/ Govt. Hospital	No			
	Govt. Dispensary	No			
	Private Clinic	No			
	Private Hospital/	No			
	Nursing Home	No			
	AYUSH Health Facility	No			
	sonography /ultrasound facility	No			
	If any of the above Facility is not available in village than approx. distance from village: 2.5...kms. (Junagadh)				
	Suggestions if any:				
K.	Education Facilities:				
	Aaganwadi/ Play group	yes	✓		
	Primary School	yes	✓		
	Secondary school	No			
	Higher sec. School	No			
	ITI college/ vocational Training Center	No			
	Art, Commerce & Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	No			

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Techno Economic Survey

If any of the above Facility is not available in village than approx. distance from village: ...9.9...kms.

Suggestions if any:

L.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)	-	-		No
	Public Library (With daily newspaper supply: Y/N)	-	-		No
	Public Garden	-			No.
	Village Pond	good	Village	yes.	
	Recreation Center	-			No
	Cinema/ Video Hall	-			No.
	Assembly Polling Station	good		yes	
	Birth & Death Registration Office	good		yes.	

If any of the above Facility is not available in village than approx. distance from village: ...9.9...kms.

Suggestions if any:

M.	Other Facilities	Condition	Location	Available (YES)	Available (NO)
	Post-office	good	dungarpur	yes	
	Telecommunication Network/ STD booth	-	-	-	No.
	General Market	medium	dungarpur	yes.	
	Shops (Public Distribution System)	good	dungarpur	yes.	
	Panchayat Building	Average	dungarpur	yes	
	Pharmacy/Medical Shop	-	-		No
	Bank & ATM Facility	-	-		No
	Agriculture Co-operative Society	-	-		No
	Milk Co-operative Soc.	-	-		No
	Small Scale Industries	-	-		No
	Internet Cafes/ Common Service Center/Wi Fi	-	-		No
	Youth Club	-	-		No
	Mahila Mandal	-	-		No.

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Techno Economic Survey

Credit Cooperative Society	No	-	-	-
Agricultural Cooperative Society				
Milk Cooperative Society				
Fishermen's Cooperative Society				
Computer Kiosk/ e-chaupal /				
Mills / Small Scale Industries				
Other Facility				
Suggestions if any:	ward, Regulation	dungan pur	yes	-

N.	Other Facilities	Condition	Available (YES)	Available (NO)
1.	Have these programme implemented the village?	-		No
2.	Are there any beneficiaries in the village from the following programme?	-		No
3.	Janani Suraksha Yojana	-	yes	No
4.	Kishori Shakti Yojana	-		No
5.	Balika Samridhi Yojana	-		No
6.	Mid-day Meal Programme	-		No
7.	Integrated Child Development Scheme (ICDS)	Average	yes	
8.	Mahila Mandal Protsahan Yojana (MMPY)	-		
9.	National Food for work Programme (NFFWP)	-	yes	
10.	National Social Assistance Programme	good	yes	
11.	Sanitation Programme (SP)			No
12.	Rajiv Gandhi National Drinking Water Mission			No
13.	Swarnjayanti Gram Swarozgar Yojana			No
14.	Minimum Needs Programme (MNP)			No
15.	National Rural Employment Programme			No
16.	Employee Guarantee Scheme (EGS)	Very good	yes	
17.	Prime Minister Rojgar Yojana (PMRY)			No
18.	Jawahar Rozgar Yojana (JRY)			No
19.	Indira Awas Yojana (IAY)			No
20.	Samagra Awas Yojana (SAY)			No
21.	Sanjay Gandhi Niradhar Yojana (SGNY)			No
22.	Jawahar Gram Samridhi Yojana (JGSY)	yes	yes	No
23.	Other (SPECIFY)			No



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Techno Economic Survey

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources.	NO	-	-	-
2.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	NO NO NO	- - -	- - -	- - -
3.	Any Other				

VII. DATA COLLECTION FROM VILLAGE

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Village Base Map Available: Hard Copy/Soft Copy	Yes			
2.	Recent Projects going on for Development of Village				
3.	Any NGO working for village development				
4.	Any natural calamity in the village during the last one year: EARTHQUAKES FLOODS CYCLONE DROUGHT LANDSLIDES AVALANCHE OTHER (SPECIFY)	NO - - - - - - -			-

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Techno Economic Survey

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	No	-
2.	Additional Information/ Requirement	No	-
3.	During the last six months how many times CLEANING FOGGING..... Drive was undertaken in the village?	Yes Yes	- -

IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	Solar LED Lights	-

Note: Photographs/ Video/ Drawings of all existing Infrastructure facilities & conditions should be taken by students of respective villages for their record and information.

For Any Administration queries/ Difficulties:
GTU VY Section
Contact No – 079-23267588
Email ID: rurban@gtu.edu.in



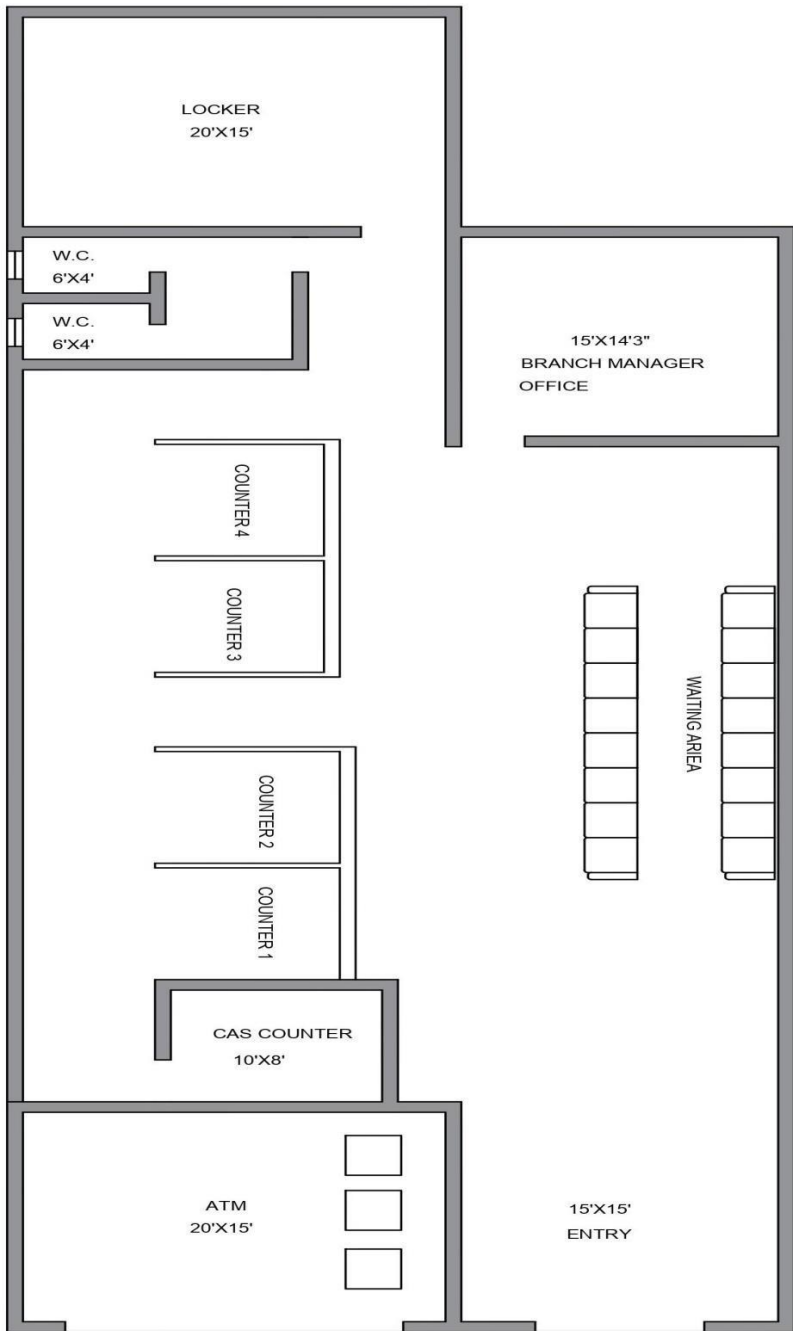
સરખ, (ગીર)
સરખ,
ગ્રામ પંચાયત-બોરવાવ(ગીર)

VILLAGE GAP Analysis

Village Facilities	Planning Commission/UDPFI Norms	Village Name:	BORVAV		
		Population		5039	
		Existing	Required as per Norms	Smart Village / Cities Design	Gap
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	6	1		5
Primary School	Each Per 2500 population	1	1		0
Secondary School	Per 7,500 population	1	2		1
Higher Secondary School	Per 15,000 Population	1	0		1
College	Per 125,000 Population	0	0		0
Tech. Training Institute	Per 100000 Population	0	0		0
Agriculture Research Centre	Per 100000 Population	0	0		0
Skill Development Centre	Per 100000 Population	0	0		0
Health Facility					
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	1	1		0
Primary Health & Child Health Centre	Per 20,000 population	0	0		0
Child Welfare and Maternity Home	Per 10,000 population	1	1		0
Multispeciality Hospital	Per 100000 Population	0	0		0
Public Latrines	1 for 50 families (if toilet is not there in home, specially for slum pockets & kutcha house)	4 5	50		5
Physical Infrastructure Facilities					
Transportation		Adeqt/ Inadet			
Pucca Village Approach Road	Each village	Adequate			
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)		Inadequat e	YE S	
Drinking Water (Minimum 70 lpcd)		Adeqt/ Inadet			
Over Head Tank	1/3 of Total Demand	Adequate			
U/G Sump	2/3 of Total Demand	Adequate			
Drainage Network - Open			Inadequat e		
Drainage Network - Cover			Inadequat e		
Waste Management System			Inadequat e		
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	1	1		0
community hall and Public Library	Per 15000 Population	0	1		1
Cremation Ground	Per 20,000 population	0	1		1
Post Office	Per 10,000 population	1	1		0
Gram Panchayat Building	Each individual/group panchayat	1	1	YE S	0
APMC	Per 100000 Population	0	0		0
Fire Station	Per 100000 Population	0	0		0
Public Garden	Per village	0	1	YE S	1
Police post	Per 40,000Population	0	0		0
Shopping Mall		0	0		0

Electrical Design					
Electricity Network		Adeqt/ Inadet			
		Adequate			
Any Smart Village Facility					
Technology		NO			
		ESR cap	0		
		Sump cap	50,000 Ltr.		

POST OFFICE DESIGN



TOP VIEW

All dimensions are in feet.
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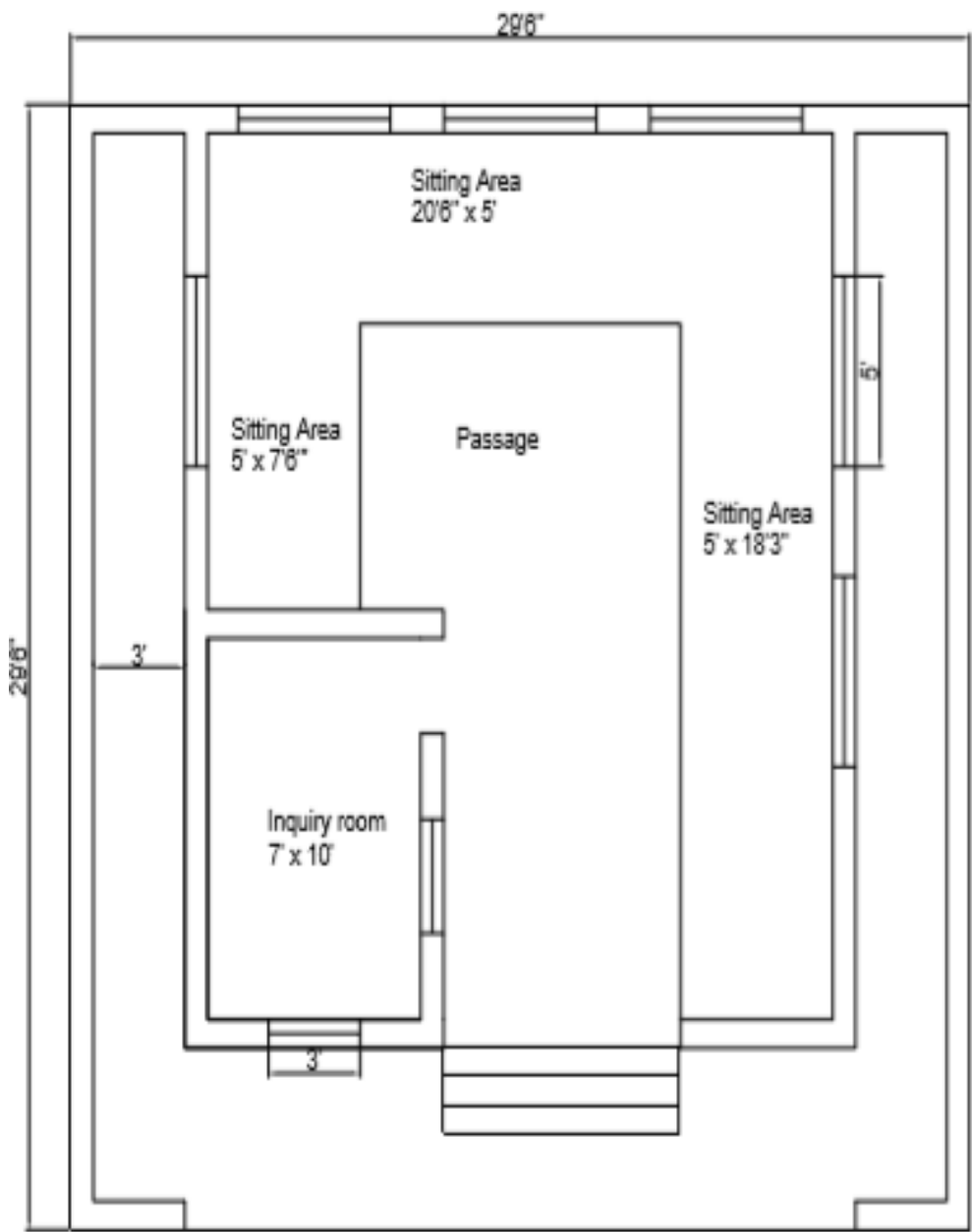


Design number: 1

POST OFFICE DESIGN



BUS STAND DESIGN

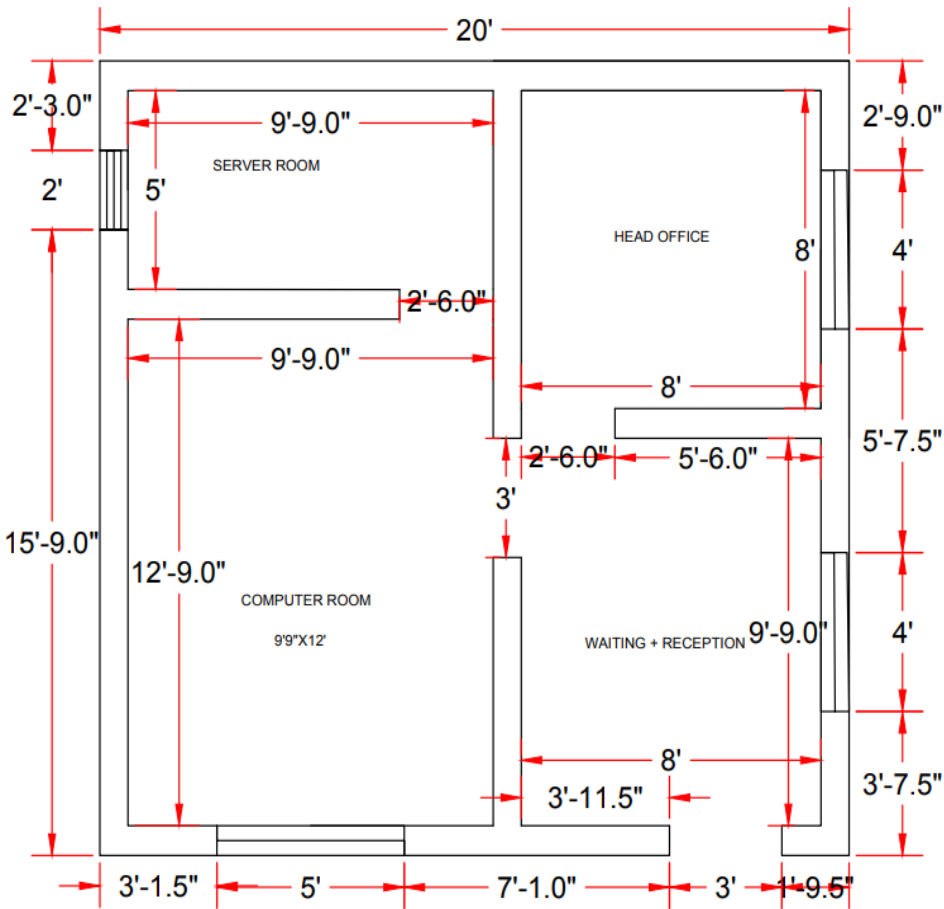


PLAN

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Design number: 2	
BUS STAND DESIGN	



COMMON SERVICE CENTRE



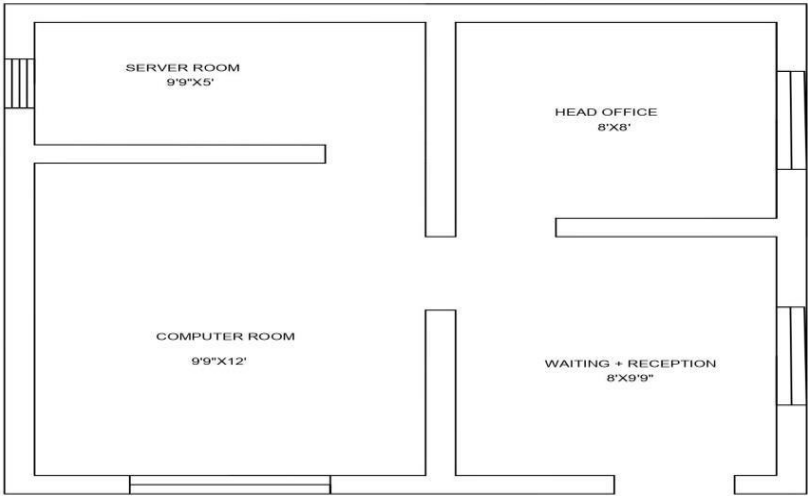
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Junagadh.**

Design number: 3

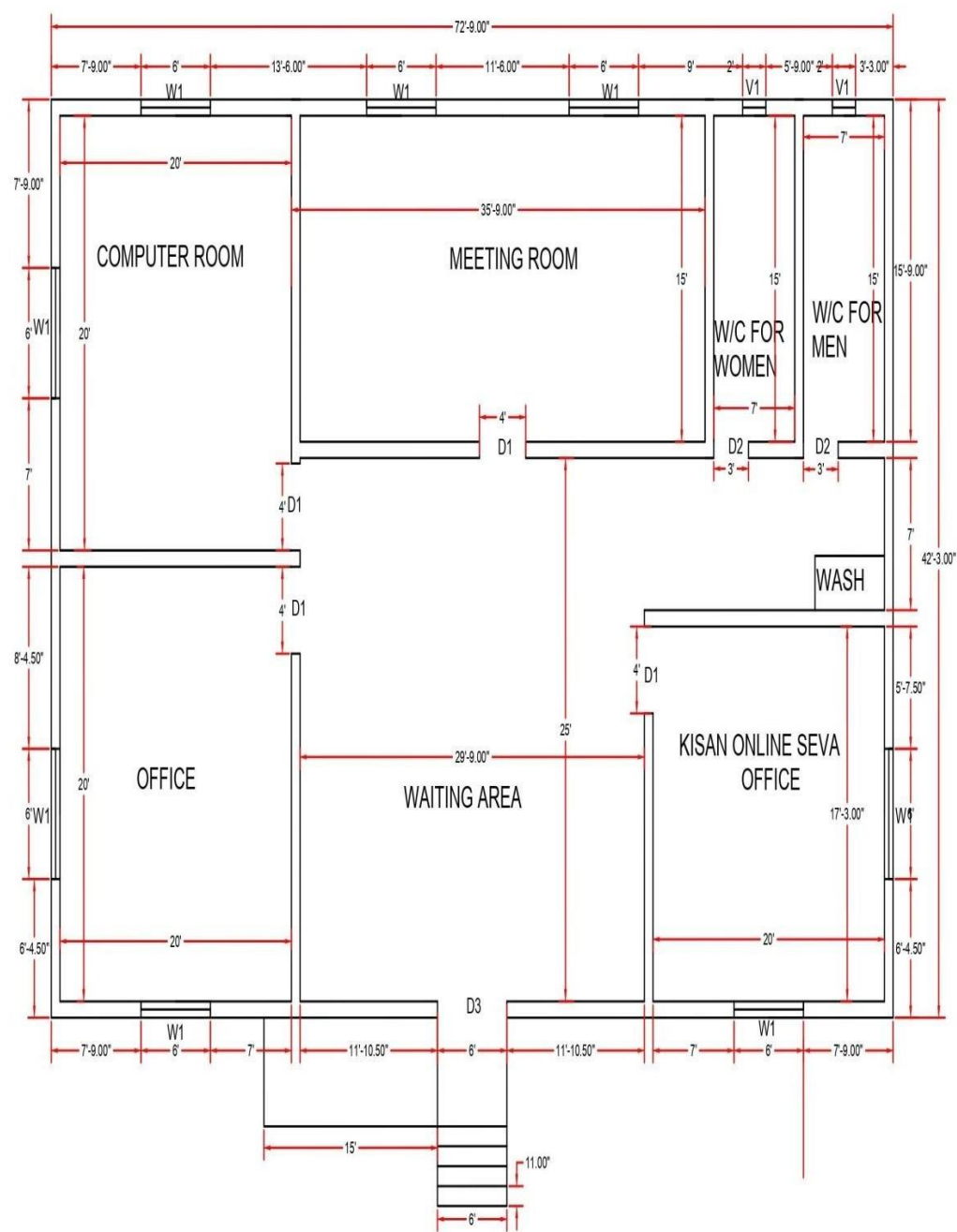
COMMON SERVICE CENTRE



TOP VIEW



KISHAN SEVA KENDRA



WORKING DRAWING

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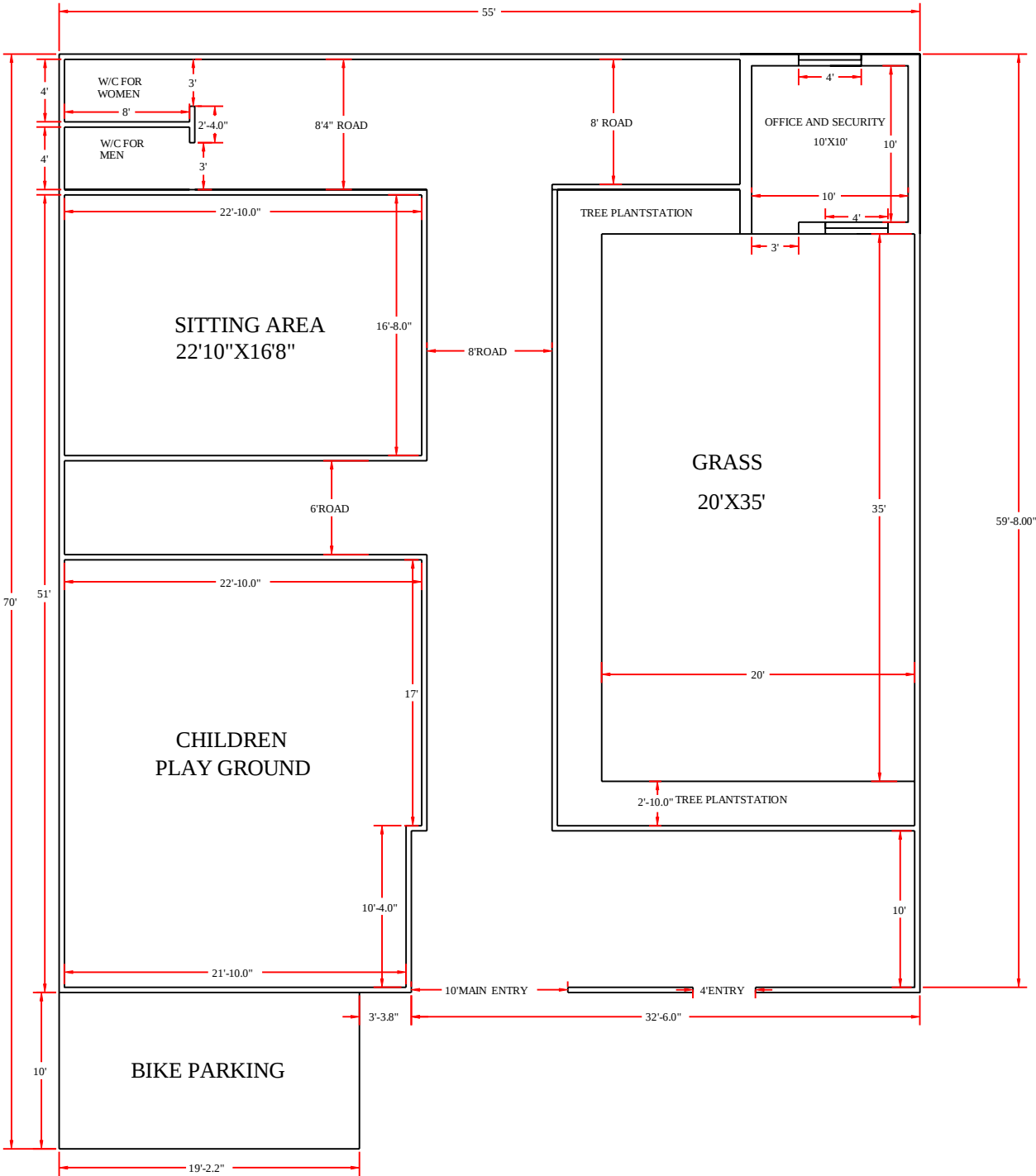
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Design number: 4

KISHAN SEVA KENDRA



PUBLIC GARDEN



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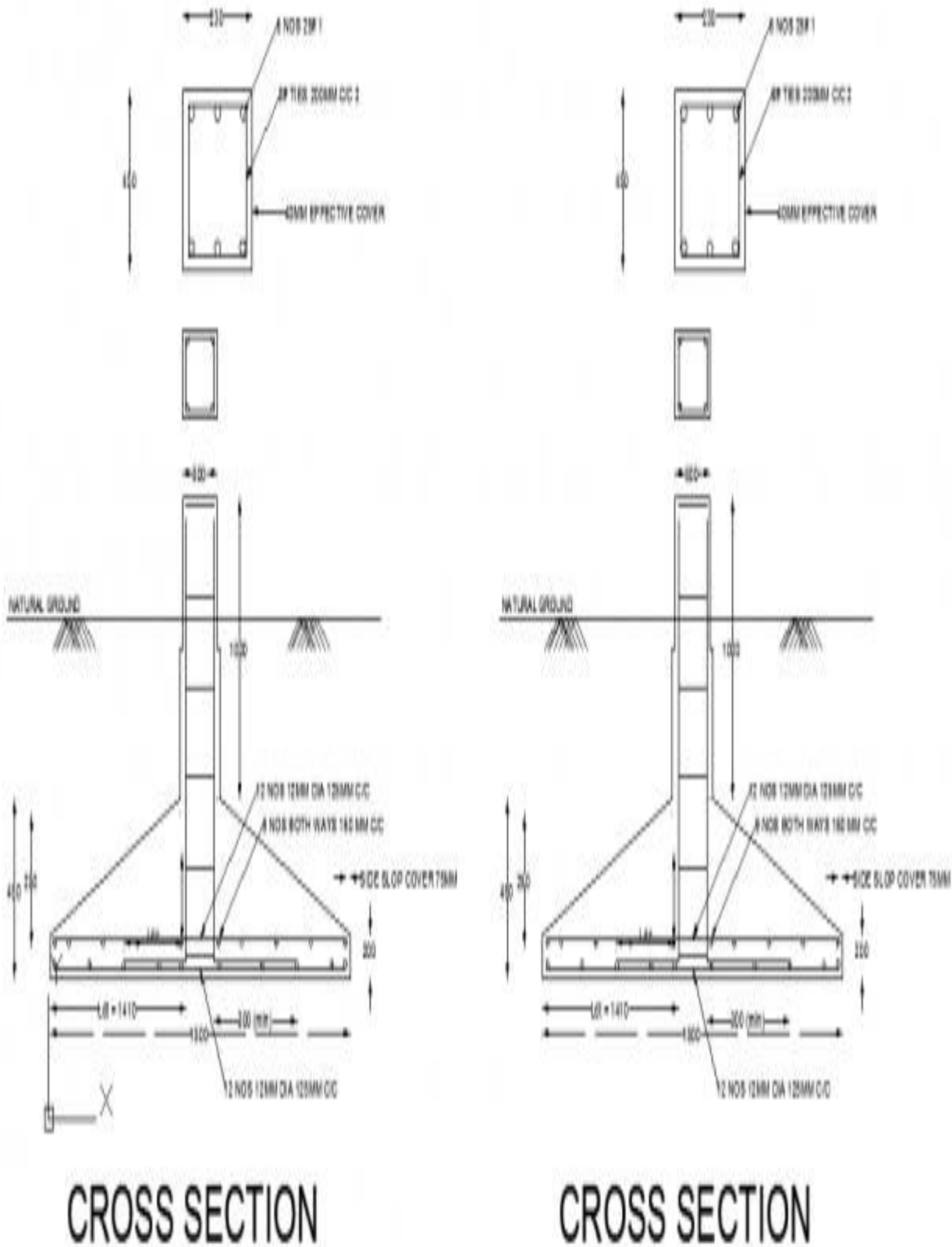


Design number: 5

PUBLIC GARDEN DESIGN



(SQUARE) COLUMN AND FOOTING



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Design number: 6

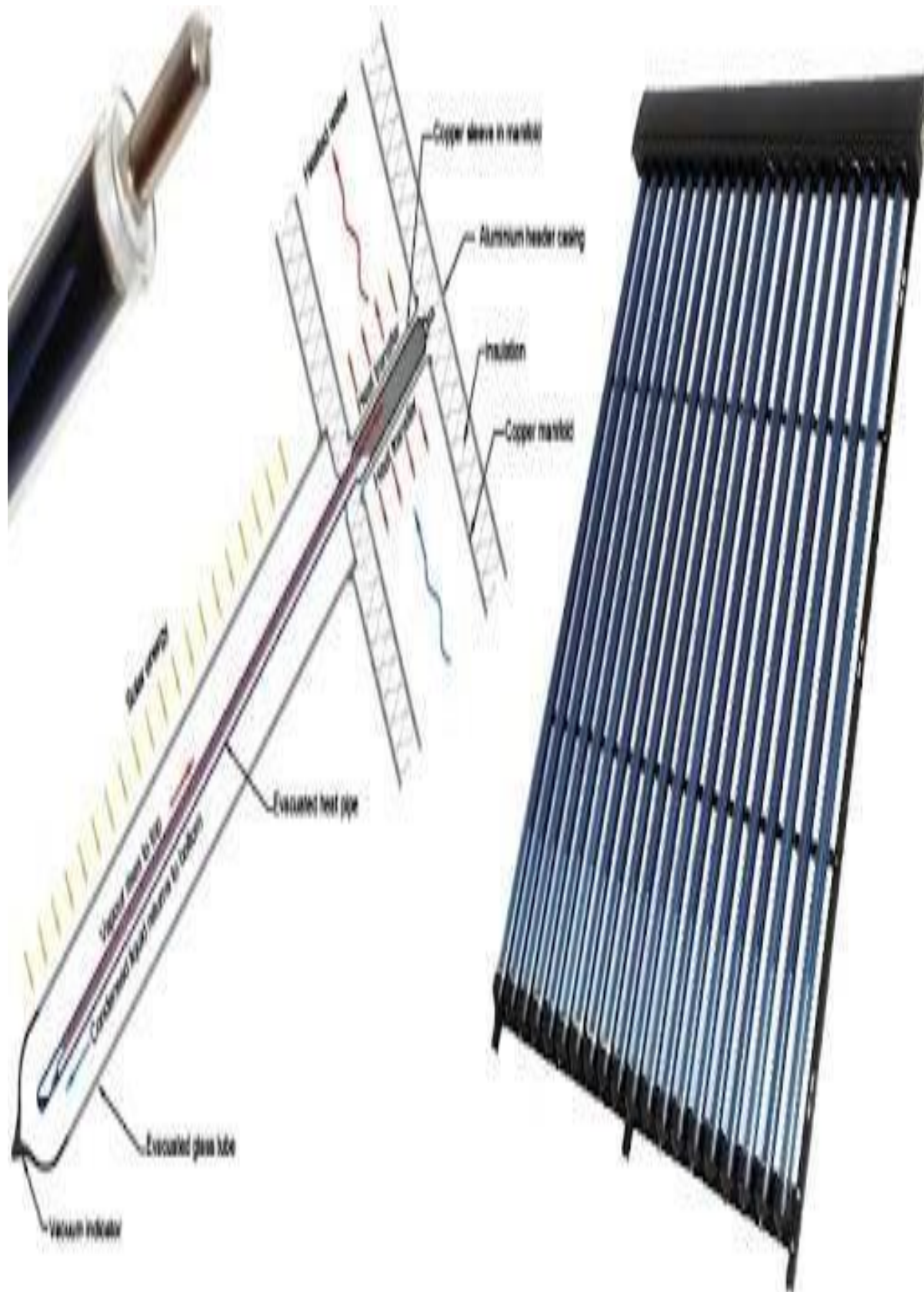
Design of column and footing



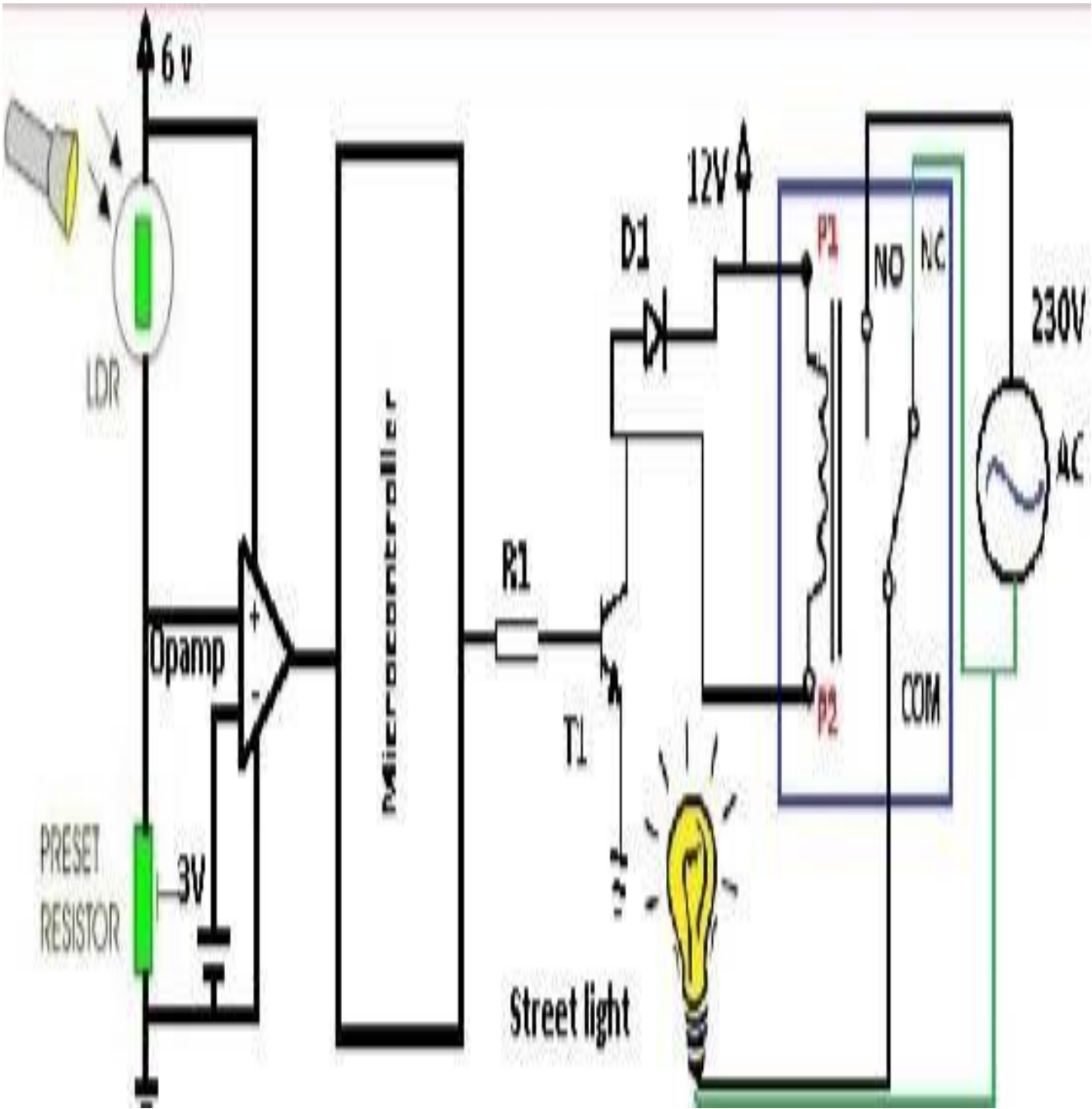
**All dimensions are in feet.
Drawing should be read not to scale.
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SOLAR THERMAL COLLECTOR



AUTOMATIC STREET LIGHT CONTROLLER



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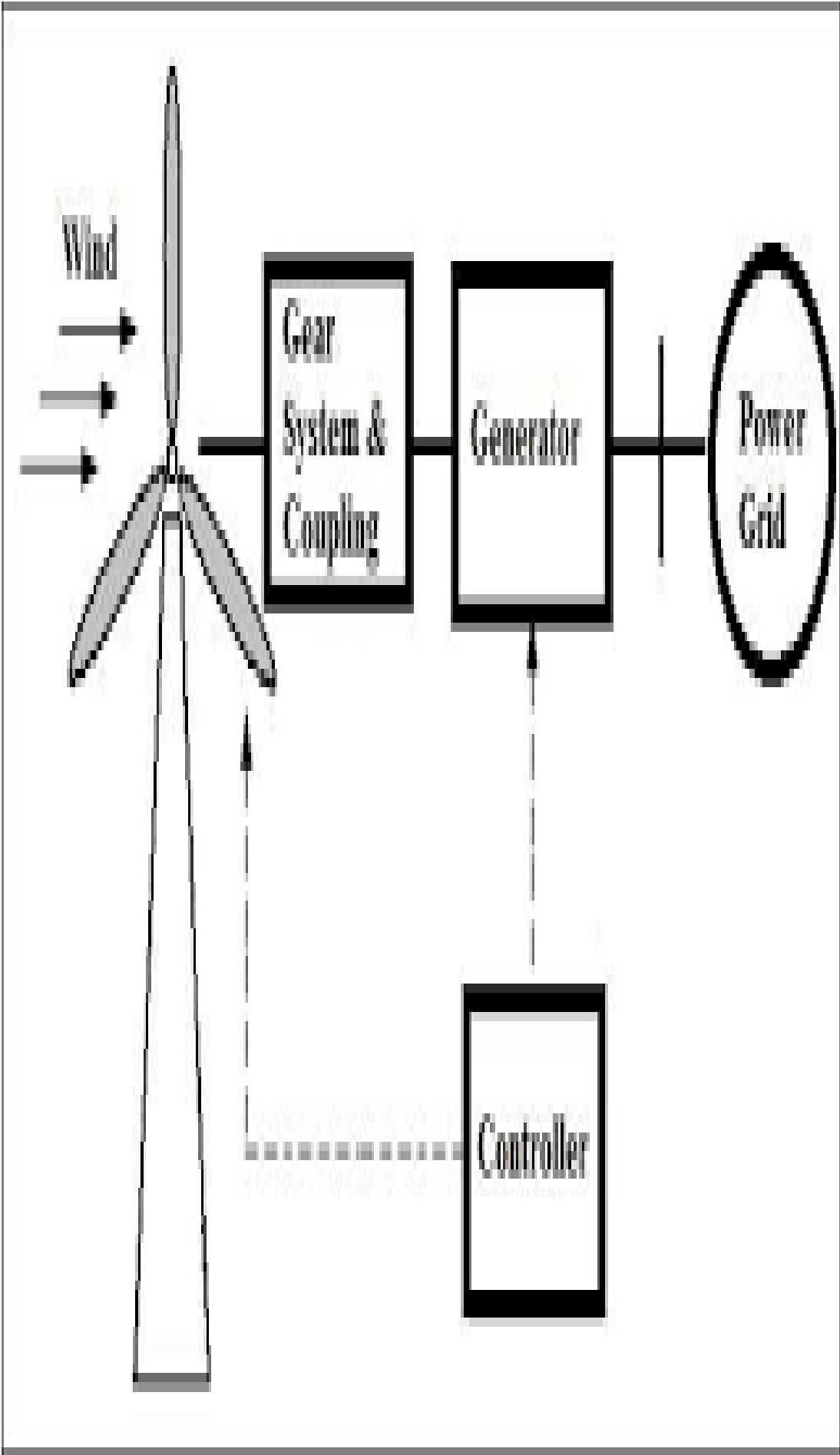


Design number: 8

AUTOMATIC STREET LIGHT
CONTROLLER



WIND ENERGY SYSTEM



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Design number: 9

WING ENERGY SYSTEM



PART - II

13. Chapter- 13

13.1 Future Development of the Village (from the PART-Ichapter-8) detail implementation of the future scope of work Sustainable Design Planning Proposal (Prototype

Design)-Part-II

Recommendation of the Design:-

- **Following are some facilities, which are not available in village, and these are important for the development of village:-**
- 1) Skill Development Centre
- 2) Community Hall
- 3) Library
- 4) Lake
- 5) Vegetable Market
- 6) ATM

Suggestions/ Benefit of the villagers:-

- Villagers need market for buy or sell the daily need of villagers like vegetable, etc.
- Maintain good Education village required the Library.
- As village has 2 public toilets but it needs more because the population of village is more so the community toilet will be beneficial for villagers.
- There is no playground nor are garden so providing it design villager refresh their self. Besides of all these, there is also need for the proper drainage system.
- For the cleaning purpose Villagers need solid waste Management system.

13.2 Designs of part II:

13.2.1 Physical design (Post office):-

- **Description:**

Post office is important for the village. For make village smart and digital the post office must be in village for communicant by post. For Rurbanization of village it needs to implementation of postoffice in village.

13.3 Present Condition

The scenario of the village development shows the requirement of the post office. There is no Post office in the village. Villagers need the post office for sharing the things to their relatives and family.

- **Existing Condition**

There is no facility of post office. Post office required in the village so, we give design of post office. We ask the people about the design of post office for social well fair of villagers.

- **Proposed:**

Figure 41 Plan for Skill Development Centre

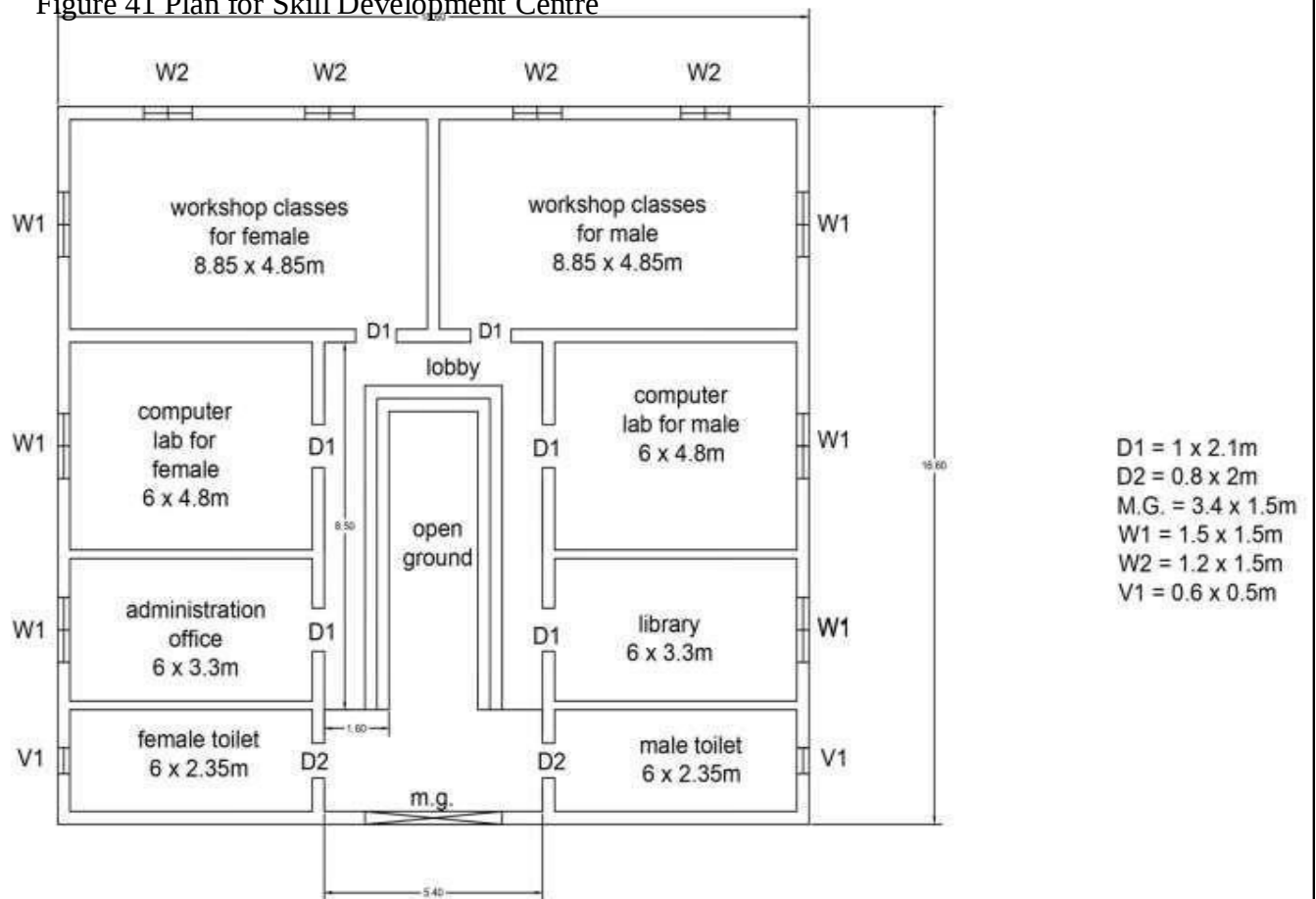


Fig 1 Plan for Skill Development centre

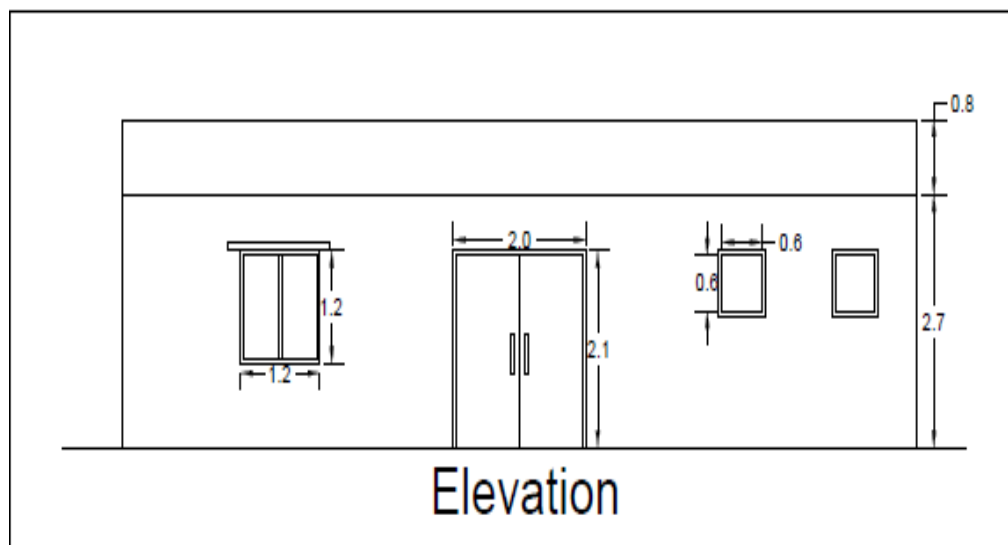
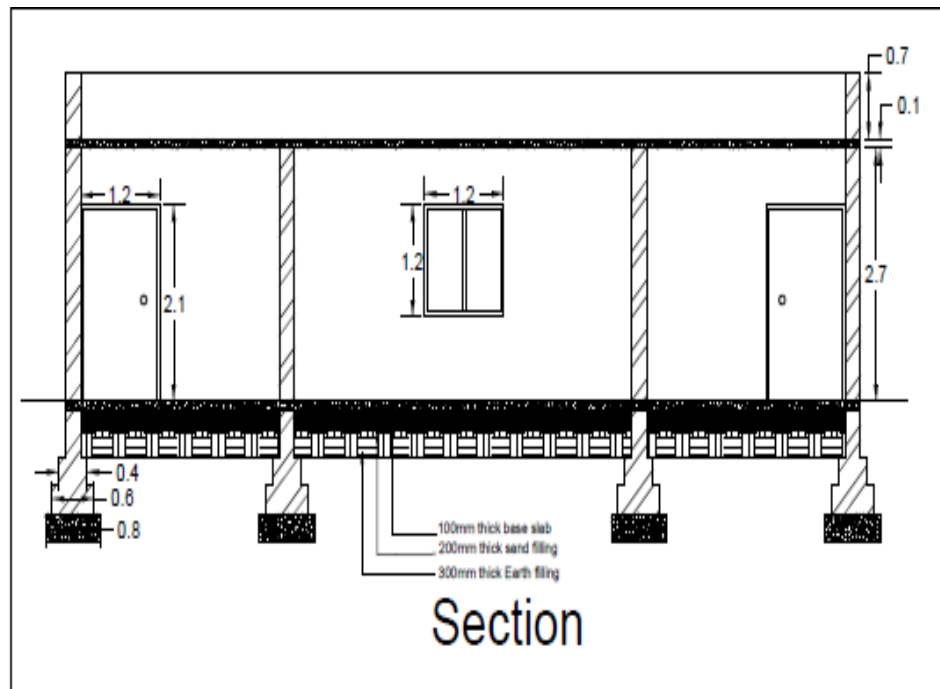


Fig 2 Section & Elevation SDC

Table 35

WORK TITLE: POST OFFICE@ BORVAV						
Sr.	Description of item	No's	L(m)	B(m)	H(m)	Q(m ² /m ³)
1.	EARTHWORK IN EXCAVATION FOR FOUNDATION IN ORDINARY SOIL					
	LW 1	2	12.8	0.8	0.9	18.432
	SW1	2	11.2	0.8	0.9	16.128
	ROOMS					
	LW2	2	4.8	0.8	0.9	6.912
	SW2	2	2.2	0.8	0.9	3.168
	WALLS IN W.C					
	LW3	2	3.3	0.8	0.9	4.752
	SW3	2	0.7	0.8	0.9	1.008
50.4						
	P.C.C.					
2.	LW 1	2	12.8	0.8	0.3	6.144
	SW1	2	11.2	0.8	0.3	5.376
	ROOMS					
	LW2	2	4.8	0.8	0.3	2.304
	SW2	2	2.2	0.8	0.3	1.056
	WALLS IN W.C					
	LW3	2	3.3	0.8	0.3	1.584
	SW3	2	0.7	0.8	0.3	0.336
16.8						
	2ND CLASS BRICKWORK IN FOUNDATION (CM 1:6) UP TO PLINTH					
3.	Step 1					
	LW 1	2	12.6	0.6	0.3	4.536
	SW1	2	11.4	0.6	0.3	4.104
	ROOMS					
	LW2	2	4.6	0.6	0.3	1.656
	SW2	2	2.4	0.6	0.3	0.864
	WALLS IN W.C					
	LW3	2	3.1	0.6	0.3	1.116
4	SW3	2	1.3	0.6	0.3	0.468
	Step 2					

	Long wall					
	LW 1	2	12.4	0.4	0.3	2.976
	SW1	2	11.6	0.4	0.3	2.784
	ROOMS					
	LW2	2	4.4	0.4	0.3	1.056
	SW2	2	2.6	0.4	0.3	0.624
	WALLS IN W.C					
	LW3	2	2.9	0.4	0.3	0.696
	SW3	2	1.5	0.4	0.3	0.36
21.24						
5.	1st CLASS BRICK WORK CM (1:6) IN SUPER-STRUCTURE					
	LW 1	2	12.8	0.2	3.4	17.408
	SW1	2	11.2	0.2	3.4	15.232
	ROOMS					
	LW2	2	4.8	0.2	3.4	6.528
	SW2	2	2.2	0.2	3.4	2.992
	WALLS IN W.C					
	LW3	2	3.3	0.2	3.4	4.488
	SW3	2	0.7	0.2	3.4	0.952
47.6						
	Deduction in main wall(0.23m thick)					
	W	3	1.2	1.2	1.4	6.048
	W1	5	1	1.2	1.4	8.4
	V	2	0.6	0.2	0.6	0.144
	MD	1	2	2.1	2.4	10.08
	D	2	1.2	2.1	2.1	10.584
	D1	2	1	2.1	2.1	8.82
44.076						
Net brickwork = $47.6 - 44.07 = 3.53 \text{ m}^3$						
6.	SLAB					
	Area of slab	1	12	12	-	144
Total = 144 m^3						
7.	PLASTER					

Outsideplaster(15mmthick)					
LW 1	3	12.8		3.4	130.56
SW1	2	11.2		3.4	76.16
ROOMS					
LW2	2	4.8		3.4	32.64
SW2	2	2.2		3.4	14.96
WALLS IN W.C					
LW3	2	3.3		3.4	22.44
SW3	2	0.7		3.4	4.76
W	3	1.2		1.4	5.04
W1	5	1		1.4	7
V	2	0.6		0.6	0.72
MD	1	2		2.4	4.8
D	2	1.2		2.1	5.04
D1	2	1		2.1	4.2

Abstract and item rate of SDC

Sr.	Item Description	Quantity	Unit	Unit Rate	Amount
1	Earthwork in Excavation in foundation in ordinary soil including lift up to 1.5 m and leap up to 3m including filling in trenches	50.4	m ³	89	4485.6
2	Plain Cement Concrete work in Foundation (1:5:10)	16.8	m ³	3000	50400
3	2st Class Brickwork in Foundation (CM 1:6) up to plinth	21.4	m ³	2700	57780
4	Sand Filling in plinth including supply and ramming	33.6	m ³	950	31920
5	1st Class Brick work CM (1:6) in Super-Structure with English bond	3.53	m ³	3500	12355
6	R.C.C. slab	144	m ³	450	64800

7	15 mm outer Cement Plastering 1:2 cement and fine sand passing 0.425 mm IS sieve	254.72	m ²	150	38208
8	12 mm inner Cement Plastering 1:2 cement and fine sand passing 0.425 mm IS sieve	254.72	m ²	150	38208
9	1.5 cm thick c.c. floor 1:2:4 cement, coarse sand and stone chips 20 mm gauge finished 3mm floating coat of neat cement and marble dust, and including 8cm thick base concrete	141 .6	m ³	11 0	15576
	1:4:8 cement, local sand and brickbats				0
11	plastic chair	10	-	300	3000
12	cup board	8	-	1200	9600
13	Table	3	-	1600	4800
14	Door	3	-	2000	6000
15	Window	8	-	500	4000
16	Ventilation	2	-	200	400
17	Toilet accessories	2	-	4500	9000
18	Sofa	3	-	15000	45000
19	Labor charges	4	-		
20	Contractor charges	1	-		
				Total	401900. 6

13.4 Socio-Cultural design (Community Hall):-

Community Hall:

It is very necessary for having community hall for taking any big step for village in earlier times they gather near a tree or chorahas (in Gujarat padar) but now they need a place to get together so the demand of community hall arises.

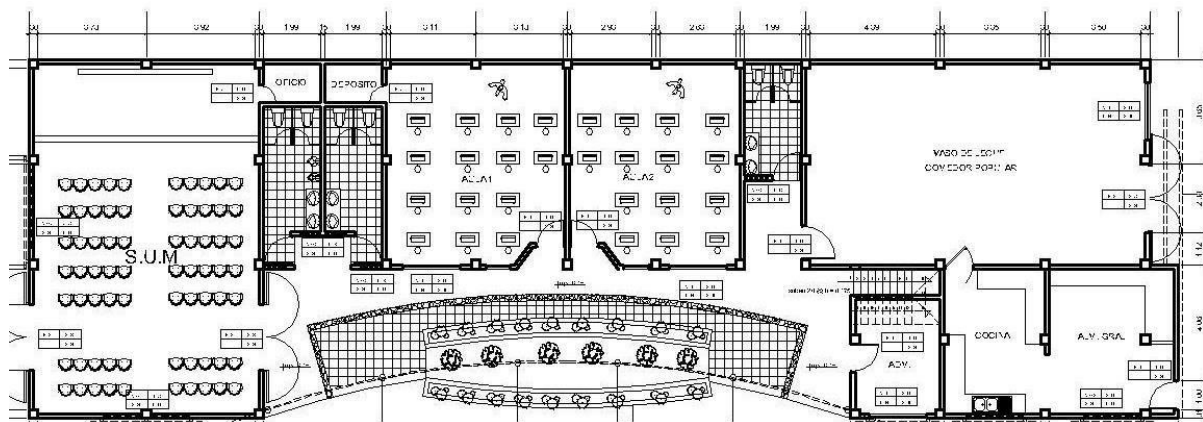


Fig 3 Section & Elevation of Community Hall



Fig 4 Section & Elevation of Community Hall

Table 37 Measurement sheet of Community Hall

QUANTITY SHEET						
Work title: Community Hall						
Sr.	Description of item	No's	L(m)	B(m)	H(m)	Q(m ² /m ³)
1.	<u>EARTHWORK IN EXCAVATION FOR FOUNDATION IN ORDINARY SOIL</u>					
	LW 1	2	40.6	0.6	0.5	24.36
	SW1	2	34.4	0.6	0.5	20.64
45						
2.	<u>P.C.C.</u>					
	LW 1	2	40.6	0.6	0.3	14.616
	SW1	2	34.4	0.6	0.3	12.384
27						
3.	<u>2ND CLASS BRICKWORK IN FOUNDATION (CM 1:6) UP TO PLINTH</u>					
	Step 1					
	LW 1	2	39.8	0.4	0.2	6.368
	SW1	2	35.2	0.4	0.2	5.632
12						
5.	<u>1ST CLASS BRICK WORK CM (1:6) IN SUPER-STRUCTURE</u>					
	LW 1	2	40.6	0.2	2.5	40.6
	SW1	2	34.4	0.2	2.5	34.4
75						
	Deduction in main wall(0.23m thick)					
	MD	1	5	2.5	4	50
50						
Net brickwork = 75 - 50 = 25 m ³						
7.	<u>PLASTER</u>					

	Outside plaster(15mm thick)					
	LW 1	2	40.6		2.5	203
	SW1	2	34.4		2.5	172
375						
	Deduction in outer plaster					
	MD	1	2.1	-	2.1	4.41
4.41						
Net outer plaster = $375 - 4.41 = 370.59 \text{ m}^2$						
Net inside plaster = $375 - 4.41 = 370.59 \text{ m}^2$						

Table 38: Estimation sheet of Community Hall

Abstract and item rate of library					
Sr.	Item Description	Quantity	Unit	Unit Rate	Amount
1	Earthwork in Excavation in foundation in ordinary soil including lift up to 1.5 m and leap up to 3m including filling in trenches	45	m ³	89	4005
2	Plain Cement Concrete work in Foundation (1:5:10)	27	m ³	3000	81000
3	2st Class Brickwork in Foundation (CM 1:6) upto plinth	12	m ³	2700	32400
4	Sand Filling in plinth including supply and ramming	18	m ³	950	17100
5	1st Class Brick work CM (1:6) in Super-Structure with English bond	25	m ³	3500	87500

6	15 mm outer Cement Plastering 1:2 cement and fine sand passing 0.425 mm IS sieve	307.59	m ²	150	46138.5
7	12 mm inner Cement Plastering 1:2 cement and fine sand passing 0.425 mm IS sieve	307.59	m ²	150	46138.5
9	Painting approved quality distemper colour two coats followed by white washing walls 2 covers	307.59	m ²	25	7689.75
10	Main Gate	1	-	2000	2000
11	Bench	9	-	1500	13500
12	Plantation	1400	-	42	58800
13	Playing Instruments	5	-	5500	27500
				Total	423772
Total cost = 4,23,772 Rs.					

13.4.1 Socio-Cultural-design Design of library:-

- **Description:**

A library can be considered a store – house of knowledge. In dictionaries, the word “library” has been defined as “a building or room containing a collection of books”. There is no facility of library. In addition, there is no such source for gaining knowledge.

- **Scenario:**

The village is not blessed with any type of library. There is no any source for knowledge. Library is used to gain additional knowledge in different things and is helpful in many other aspects. By introducing this people will be much beneficial.

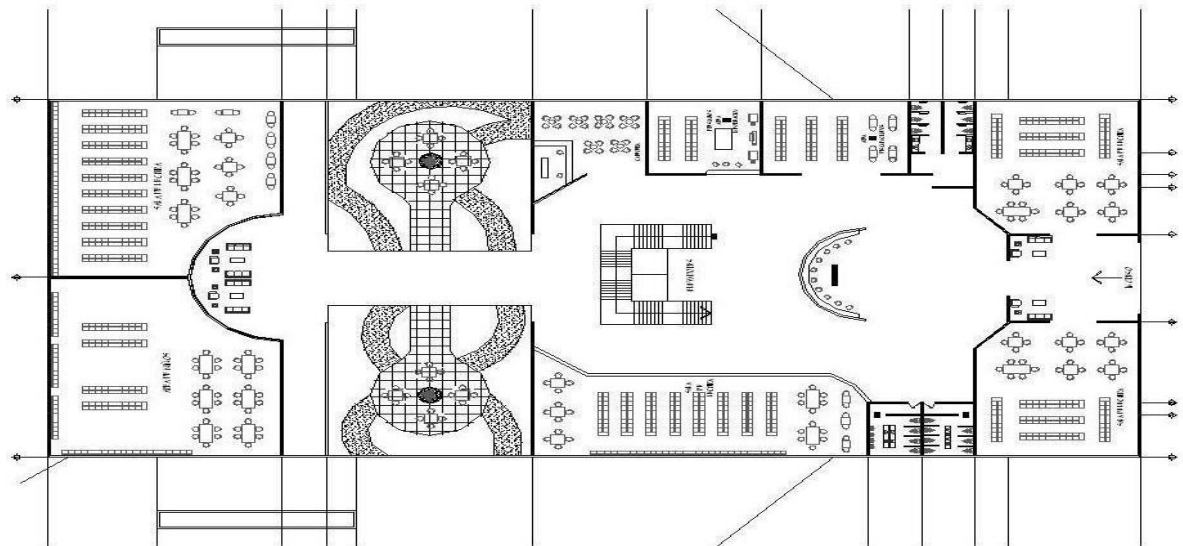


Fig no 5 Plan of library

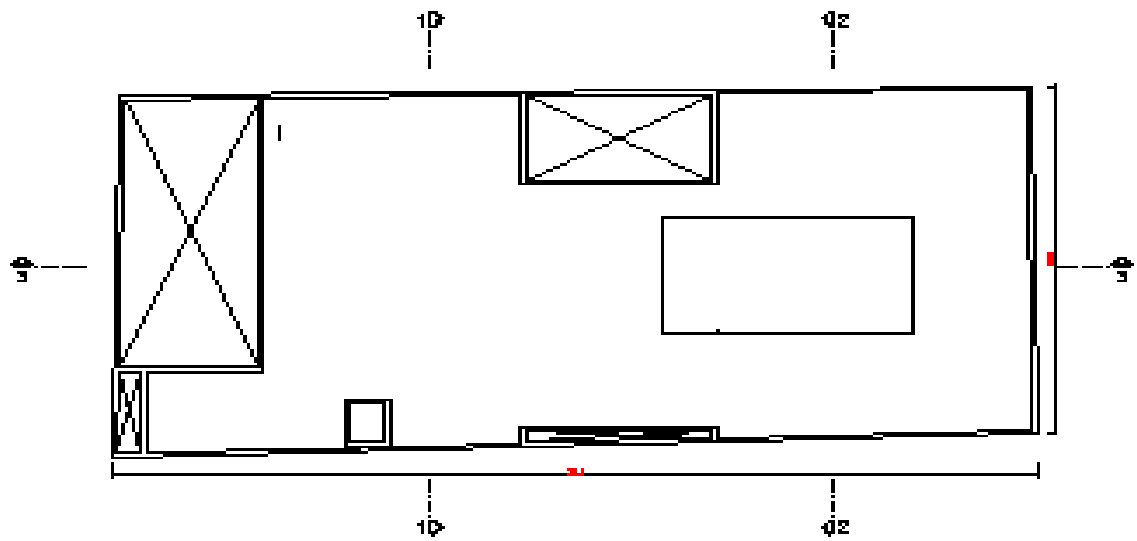


Fig 6 Top View of library

Table 39 Measurement sheet of library design

Item No.	Item Description	No.	Length	Width	Depth		Qty
1	Excavation for foundation upto 1.5 M.depth including sortingetc.						
	LW	2.00	19.00	0.70	1.55	=	41.23
	SW	2.00	9.60	0.70	1.55	=	20.83
	STEP	1.00	2.00	1.20	0.15	=	0.36
							62.42
2	Providing and laying cement concrete 1:4:8 etc.						
	LW	2.00	19.00	0.70	0.30	=	7.98
	SW	2.00	9.60	0.70	0.30	=	4.03
	STEP	1.00	2.00	0.75	0.15	=	0.23
							12.24
3	brick work below plinth leveletc.						
	for 0.60m width	width					
	LW	2.00	18.90	0.60	0.20		4.54
	SW	2.00	9.70	0.60	0.20		2.33
	for 0.40m width						
	LW	2.00	18.7	0.40	0.40		5.98
	SW	2.00	9.90	0.40	0.20		1.58
	for 0.30 m width						
	LW	2.00	18.60	0.30	0.80		8.93
	SW	2.00	10.80	0.30	0.80		5.18
							28.54
4	Filling in plinth with sand under floorsetc.						
	Excavation	-	Pcc	-	brick work below GL		
	62.42	-	12.24	-	28.54		21.64
5	Brick work(above G.L) using commonBrunt clay building bricks having crushing strength ..etc.						
	LW	2.00	18.60	0.30	4.50	=	50.22
	SW\	2.00	10.00	0.30	4.50	=	27.00
							72.59
	Deduction :-						

	Main Door	1.00	2.00	0.30	2.50	=	1.50
	W	8.00	2.00	0.30	1.80	=	8.64
	Lintel						
	LW	2	18.60	0.30	0.12	=	1.34
	SW\	2	10.00	0.30	0.12	=	0.72
	Slab						
	LW	2	18.60	0.30	0.12	=	1.34
	SW\	2	10	0.3	0.12	=	0.72
							14.26
	total brick work =		72.59	-	14.26	=	58.33
6	Providing & fixing steel door having 40 x 40 x 5mm angle....etc.						
	Main Door	2.00	0.90		2.50	=	4.5
	Window	2.00	0.30		1.85		1.11
							5.61
			5.61		28.00	=	157.08
			M ²	X	Kg/m ²		
7	Providing and fixing FRP frame size 125 x 65 mm.....etc.		steel	frame size (38m m x 63.5)			
	D	1.00	0.90		2.50	=	2.25
	W	8.00	2		1.8	=	28.8
							31.05
8	Providing and laying ordinary cement concrete 1:2:4.....etc.						
	(A) Lintel						
	LW	2.00	19.2	0.3	0.12	=	1.3824
	SW	2.00	10.6	0.3	0.12	=	0.7632
							2.15
	(B) Beam						
	LW	2.00	18.60	0.30	0.30	=	3.35
	SW	7.00	10.30	0.30	0.30	=	6.49
		2.00	10.00	0.30	0.30	=	1.80
							11.64
	(C) Chajja						
	W	8.00	2.10	0.45	0.10	=	0.76
	(D) Slab						
		1.00	18.60	10.06	0.12	=	22.45
					total occ	=	37.00

9	Providing steel reinforcement for RCCwork includingetc.						
	(A) Lintel						2.15
	(B) Beam						11.64
	(C)Chajja						0.00
	(D) Slab						22.45
							36.24
			36.24	X	100.00		3623.70
			Cm.		Kg./Cm.		
	Providing 15 mm. Thick cement plasterin singleetc.						
	Inside						
	LW	2.00	18.00		3.50	=	126.00
	SW	2.00	10.00		3.50	=	70.00
	Ceiling	1.00	18.00	10.00		=	180.00
	Parapet inside	2.00	18.00		0.90	=	32.40
	SW	2.00	10.00		0.90	=	18.00
	Outside LW	2.00	18.60		4.50	=	167.40
	SW	2.00	10.60		4.50	=	95.40
	Parapet Top	2.00	28.60	0.30		=	17.16
	Step	1.00	2.00	1.20		=	2.40
		1.00	2.00	0.90		=	1.80
		1.00	2.00	0.60		=	1.20
							711.76
	Deduction :-		Inner side				
11	Main Door	0.50	2.00		2.05	=	2.05
	W	4.00	2.00		1.80	=	14.40
							16.45
	Deduction :-		outer side				
	Main Door	0.50	2.00		2.05	=	2.05
	W	4.00	2.00		1.80	=	14.40
							16.45
			16.45	+	16.45	=	32.90
		total plaster - deduction =			711.76-32.90	=	678.86

13	Passage						
		1.00	18.00	10.00		=	180.00
							180.00
14	double shutter flush door						
		1.00	2.00		2.50		4.5
15	Windows						
		8.00	2.00		1.80	=	28.8
							33.3
16	Distempering (two coats) with oil bound distemper.....etc.						
	As Per Qty. Item No.10 (15mm thick Plaster).....					=	678.86

Table 40 Abstract sheet of library design

Item No.	Items Description	Qty.	Rate	Unit	Amount
1	2	3	4	5	6
1	Excavation for foundation upto 1.5 M. depth including sorting out and stacking of useful materials and disposing of excavated stuff up to 50M. Lead.				
	(b) Dense or hard soil				
	(S.O.R. P.No.54,I.No.5.4.1	62.42	106.00	Cu.m	6616.52
2	Filling available excavated earth (excluding rock) in trenches. Plinth, sides of foundations etc. in layers not exceeding 20 cm. in depth consolidating each deposited layer by ramming and watering.				
	(a) Foundation and plinth				
	(S.O.R. P.No.46,I.No.26.4.12)	21.64	76.50	Cmt.	1655.46
3	Brick work using common burnt clay building bricks having crushing strength not less than 35 kg./Sq.Cm. in foundation and plinth in Cement Mortar 1:6 (1- Cement : 6 -fine sand)(B) Conventional Below GL				
	(b) Conventional				
	(S.O.R. P.No.78,I.No.5.6.13	26.41	2879.00	Cmt.	76034.39
4	Brick work using common burnt clay building bricks having crushing strength not less than 35 kg./Sq.Cm. in foundation and plinth in Cement Mortar 1:6 (1- Cement : 6 -fine sand)(B)				

	Conventional (up to 10 ton)Below GL		2879.00		
	(S.O.R. P.No78.,I.No.5.6.13		161.00		
		58.33	3040.00	Cmt.	177323.20
5	Fixing standard steel Doors, windows and ventilators in walls with 16 x 3.15 mm longs 10 cm. long embedded in Cement Concrete block 15 x 10 x 10 of 1:3:6 (1- Cement : 3-coarse sand : 6-graded stone aggregate of 20mm size) cost for supply of door/ window/ ventilators shall be paid separately.				
	(S.O.R. P.No.124,I.No.14.11.14	33.60	146.00	Smt.	4905.60
6	Providing and fixing in position collapsible steel shutters with vertical channels 20 x 10 x 2 mm braced with flat iron diagonals 20 x 5 mm size with top and bottom rails of T Iron 40x 40 x 6 mmwith 38mm dia, steel pulleys complete with bolts, nuts, locking arrangements, stoppers handles including applying a priming coat of read lead paint. (unto 10ton)				
	(S.O.R. P.No.122, I.No5.11.60)	31.50	3664.00	Smt.	115416.00
7	Providing and laying cement concrete work 1:2:4 (1- Cement : 2- Coarse sand : 4- graded stone aggregates 20 mm nominal size) and curing complete excluding cost of formwork and reinforcement for reinforced concrete work in (B) Slabs, landing, shelves, Balconies , Lintels, Beams, Girders and Cantilever upto floor two level.				
	(A) lintel				
		2.15	3360.00	Cmt.	7224.00
	(B) Beam				
		11.64	3360.00	Cmt.	39110.40
	(C) Chajja				
		0.76	3360.00	Cmt.	2553.60
	(D) Slab				
		22.45	3360.00	Cmt.	75432.00
8	Providing steel reinforcement for RCC work including cutting bending binding & placing in position complete up to floor two levels. TMT Bars				
	(S.O.R. P.No.30,I.No.14B.5.4.11)	3623.70	36.00	Kg.	130453.20
	Providing 10mm thick cement plaster in single				

9	coat on brick/concrete walls for interior plastering up to floor two level and finished even and smooth in (i) Cement mortar 1:3 (1-cement : 3-sand)				
	(I) Cement mortar 1:3 (1 cement : 3 sand)				
	(S.O.R. P.No.153,I.No.1.17.58)	678.86	83.00	Smt.	56345.38
10	Providing and laying Vitrified granite tiles 8mm to 10 mm thick 24" X 24" SIZE in flooring treads of steps and landings laid on a bed of 12 mm. thick cement mortar 1:3 (1 cement : 3 coarse sand) pointing in white cement and jointed with white Cement slurry.				
	(S.O.R. P.No.139.I.NO.28.14.29)	180.00	776.00	Smt.	139680.00
11	Distempering with dry distemper of approved brand and manufacture (two coats) and of required shade on wall surfaces of given an even shade, over and including a priming coat of whiting after thoroughly booming the surface free from mortar dropping and other foreign matter				
	(S.O.R. P.No.157,I.No.16.18.38)	678.86	29.90	Smt.	20297.91
	Total estimate cost =				853047.66

13.4.2 Sustainable design/ Repair & Maintenance of existing Infrastructures (Civil)-LAKE DEVELOPMENT

- **Description:-**
- **Lake Development:-**

There is barren land surround the lake with perimeter of 450m, so we are planning to make the walk way around the periphery of the lake. It will surround whole lake area covering the garden and temple as shown in the figure below. It is very simple and economical design as per the population and needs of the village. Changes may be carried out in further planning according to the current situation. By providing walk way it will give good aesthetic view, path way for walking and jogging, sitting under trees and lakeside, morning exercises etc. Necessary schematic drawing and costing is described below.

- **Purpose:-**

There is no such public gathering place in village, so construct such places for the villagers and to attract more tourists and nearby residents.

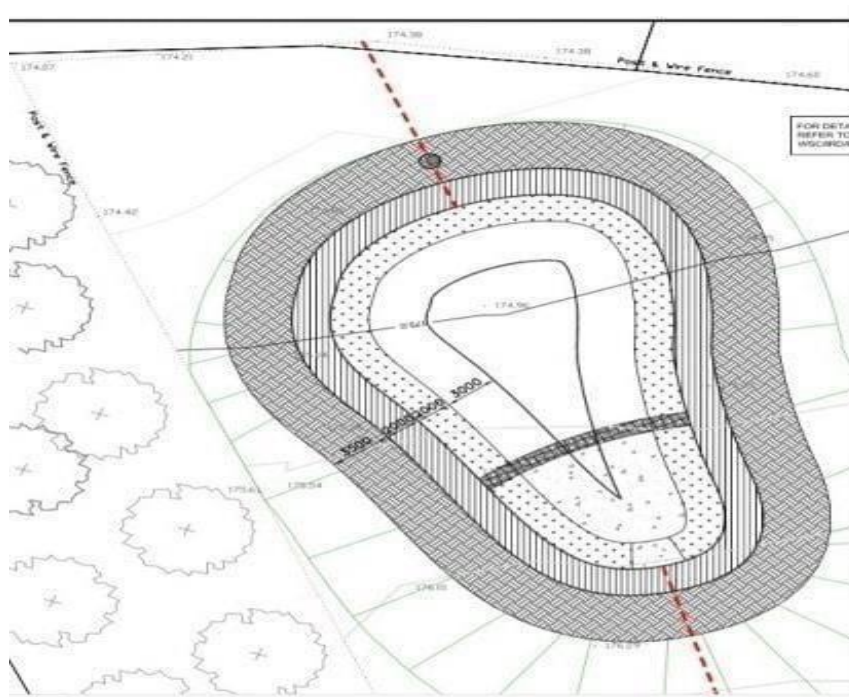


Fig 7 Section of lake



Fig 8 Existing situation of the lake

- **Cost and Estimation:**

Table 41 Measurement sheet of lake

Measurement sheet							
Sr. No	Items	No.	L	B	D	Qty	Unit
1	Clearing and grubbing road land including uprooting rank vegetation grass bushes, shrubs, sapling and trees girth up to 300 mm removal of stumps of trees cut earlier and disposal of unserviceable materials,(A) By mechanical means in area of light jungle.(SOR P No.199, It. No.1(26117B/0)	1	450	2.00	-	900.00	m ²
					Total	900.00	m ²
					Say	900.00	m ²
2	Excavation for foundation up to 1.5 M. depth including sorting out and stack- in go useful material sand disposing of the excavated stud upto 50M.lead.(B) Loose or soft soil						
	Excavation for toe wall	0.5	450.0	1.05	1.00	236.25	m ³
					Total	236.25	m ³
3	Dewatering by pumping set: Dewatering by pumping set of required capacity including temporary platform carting pumping at site and fixing the same in position including all accessories, fuel and labor etc. complete.						
		1				480.00	Hp/hr
					Tota	480.00	Hp/hr
4	Filling in plinth with sand under floors including watering ramming, consolidating and dressing etc. complete.(SOR P No. 5 It No. 4007/4.24)						

	Slope,(Below Rubble)	1	450	2.00	0.10	90.00	m ³
	For toe wall	1	450	1.05	0.15	70.88	m ³
	For top wall	1	450	0.50	0.15	33.75	m ³
					Total	194.63	m ³
					Say	194.63	m ³
5	Filling available excavated earth (excluding rock) in trenches. plinth, sides of foundations etc. in layers not exceeding 20cm. in depth consolidating each deposited layer by ramming and watering.(SOR P No. 5, It No.4006/4.12)						m ³
	Slope,(Below Rubble)	As per Qty 3No.				236.25	
					Total	236.25	m ³
					Say	236.00	m ³
6	P.C.C.:- Providing and laying cement concrete 1:3:6(1- Cement : 3- Coarse sand : 6-Crushed stone aggregates 20 mm nominal size) and curing complete excluding cost of formwork in (Sor pg. no 10 it no 05005A/5.3.14)						
	Slope,(Below Rubble)	1	450	2.00	0.10	90.00	m ³
	Toe wall	1	450	1.05	0.15	70.88	m ³
		1	450	0.23	0.15	15.53	m ³
					Total	210.15	m ³
					Say	210.15	m ³

7	Brick work:- Above Ground Level upto Plinth Level(Super Structure):- Brickwork using common burnt clay building bricks having crushing strength not less than 35 kg./Sq.Cm. in foundation and plinth in Cement Mortar 1:6. (1-Cement : 6 -fine sand) Conventional Bricks(B) Conventional.(SOR P.30,It.No. 06002B/6.13B						
		1	450	0.23	0.45	46.58	m ³
					Total	46.58	m ³
					Say	46.58	m ³
8	<u>Uncoursed Rubble Masonry:-</u> Uncoursed Rubble Masonry with hard stone of approved quality in foundations and plinth in Cement Mortar 1:5 (1-cement : 5-coarse sand) including levelling up etc.complete.(SOR P No. 40, It No.07001BA/7.6)						m ³
	Panel 4 X 4m.	1	450	2.00	0.23	207.0	m ³
	at toe wall	1	450	0.50	1.00	225.0	m ³
					Total	432.0	m ³
					Say	432.0	m ³
9	Pointing on uncoursed stone masonry with Cement Mortar 1:3 (1-Cement: 3- sand)(A) Flush pointing.	1	450	2.00	-	900.0	m ²
		1	450	1.00	-	450.0	m ²
					Total	1350	m ²
					Say	1350.00	m ²
10	Providing and laying weep hole in Abutments, and returns by using A.C. pipe of 100mm including laying in proper grade and jointing the completed as per detailed specification. @ 2 mt. c/c (SOR P No. 142, ItNo.50(A))=227/-	1	337.5	-	-	337.5	Nos
					Total	337.5	Nos
					Say	337.5	Nos

	14.3=149						
	Top wall	2	450	0.45	-	405.0	m ²
					Total	405.0	m ²
					Say	405.0	m ²
11	G.I. Pipe Railing:- Providing and fixing 25 mm dia. G.I. pipes railing with three horizontal rows of pipes and posts of angle iron of size 65 mm x65 mm x 8 mm RCC 150 mm and 1.15-meter height and placed at 1.85 M/CC including painting Two coats and anchorage in C.C. etc. complete.(GWSSB Sec.D,SOR P.99,It. No.23)=Rs.1040/- Rmt.)	1	450	-	-	450.00	Rmt
					Total	450.0	Rmt.
					Say	450.0	Rmt

Table42 Estimate sheet

Estimate						
Sr. No.	Description	Qty.	Rate	Add. 1% L.S.	Per	Amount (Rs. PS.)
1	Clearing and grubbing road land including uprooting rank vegetation grass bushes, shrubs, sapling and trees girth up to 300 mm removal of stumps of trees cut earlier and disposal of unserviceable materials,(A) By mechanical means in area of light jungle.	0.09	31702.00	32019.02	m ²	2881.71
2	Excavation for foundation upto 1.5 M. depth including sorting out and stacking of useful materials and disposing of the excavated stud upto 50 M. lead.(B) Loose or soft soil	236.25	67.20	67.87	m ³	16034.76
3	Dewatering by pumping set: Dewatering by pumping set of required capacity including temporary platform carting pumping at site and fixing the same in position including all accessories, fuel and labor etc. complete.	480.00	16.30	16.46	Hp/hr.	7902.24
4	Filling in plinth with sand under floors including watering ramming, consolidating and dressing etc. complete.(SOR P No. 5 It No. 4007/4.24)	194.63	416.00	420.16	m ³	81773.64

5	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm. in depth consolidating each deposited layer by ramming and watering.	236.00	76.50	77.27	m ³	18234.54
6	<u>P.C.C.:-</u> Providing and laying cement concrete 1:3:6 (1- Cement: 3- Coarse sand : 6-Crushedstone aggregates 20 mm nominal size) and curing complete excluding cost of formwork.	210.15	3082.0	3112.82	m ³	654159.12
7	Brick work:- Above Ground Level upto Plinth Level(Super Structure):- Brickwork using common burnt clay building bricks having crushing strength notlessthan35kg./Sq.Cm.in foundation and plinth in Cement Mortar 1:6. (1- Cement : 6 -fine sand) Conventional Bricks(B)Conventional.	46.58	3473.0	3507.73	m ³	163372.52
8	<u>Uncoursed Rubble Masonry:-</u> Uncoursed Rubble Masonry with hard stone of approved quality in foundations and plinth in Cement Mortar 1:5 (1- cement : 5-coarse sand) including levelling up etc. complete.	432.00	1999.0	2018.99	m ³	872203.68
9	Pointing on uncoursed stone masonry with Cement Mortar 1:3 (1-Cement: 3-sand)(A) Flush pointing.	1350.00	65.00	65.65	m ²	88627.50
10	Providing and laying weep hole in Abutments, and returns by using A.C. pipe of 100mm including laying in proper grade and jointing the completed as per detailed specification. @ 2 mt. c/c (SOR P No. 142, It No.50(A))=227/- No.	337.50	227.00	229.27	Nos	77378.63
11	In side Plaster :- Providing 15mm thick cement plaster in single coat on fair side brick / concrete walls for interior plastering upto floor two level and finished even and smooth in (i) Cement mortar 1:4 (1 Cement:4 Sand) (SOR P. 79+80,It.No. 17002B/17.60+17004/17.69+17007/17.94=105+30. 3+14.3=149.6/- sft.	405.00	149.60	151.10	m ²	61193.88

12	G.I. Pipe Railing:- Providing and fixing 25 mm dia. G.I. pipes railing with three horizontal rows of pipes and posts of angle iron of size 65 mm x65 mm x 8 mm RCC 150 mm and 1.15 meter height and placed at 1.85 M/CC including painting two coats and anchorage in C.C. etc. complete.(GWSSB Sec.D,SORP.99,It. No.23)=Rs.1040/- Rmt.)	450.00	1040.0	1050.40	Rmt .	472680.00
Total of Part-A, Rs.						2516442.22
Add 3% Contingency Rs.						75,493.27
Add 1% Q.A. Rs.						<u>25,164.42</u>
Total Rs.						2617099.91

Sustainable Design: Drawings of Vegetable market:-

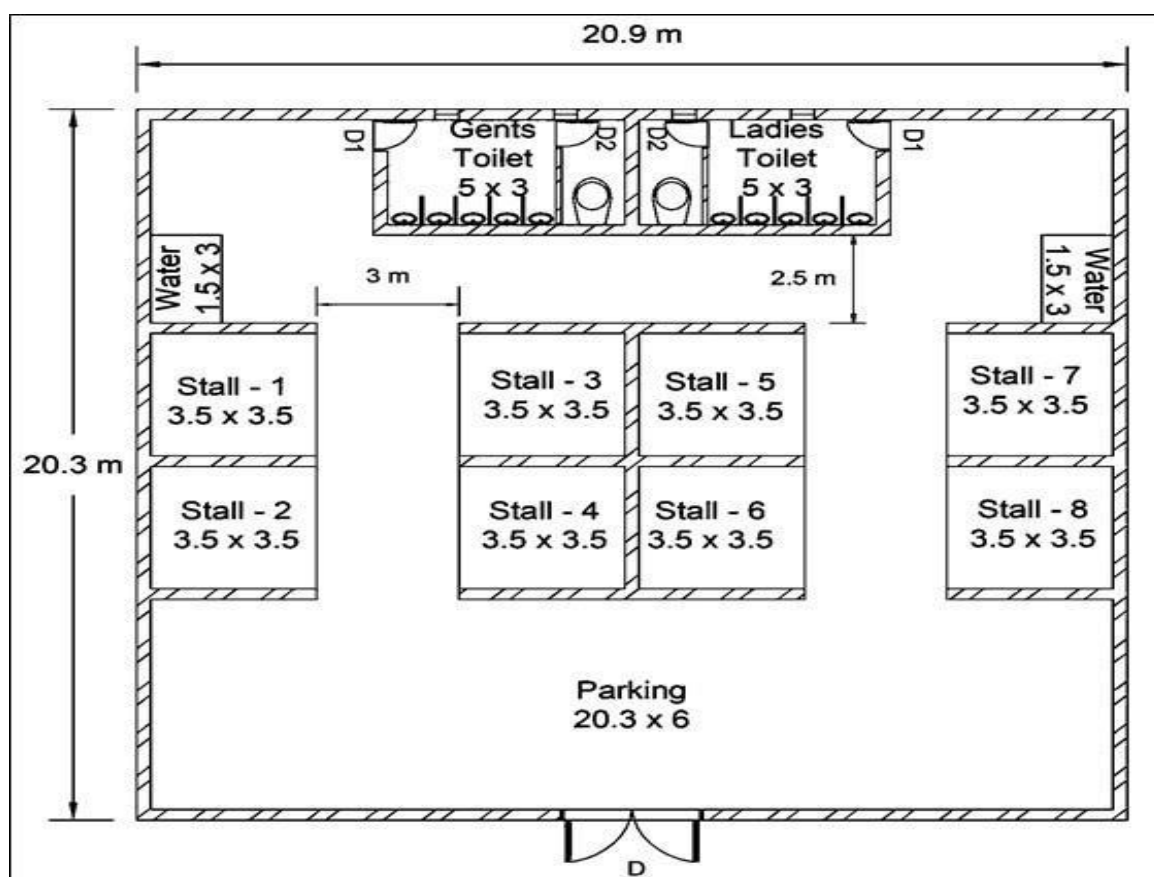


Fig 9 Vegetable market

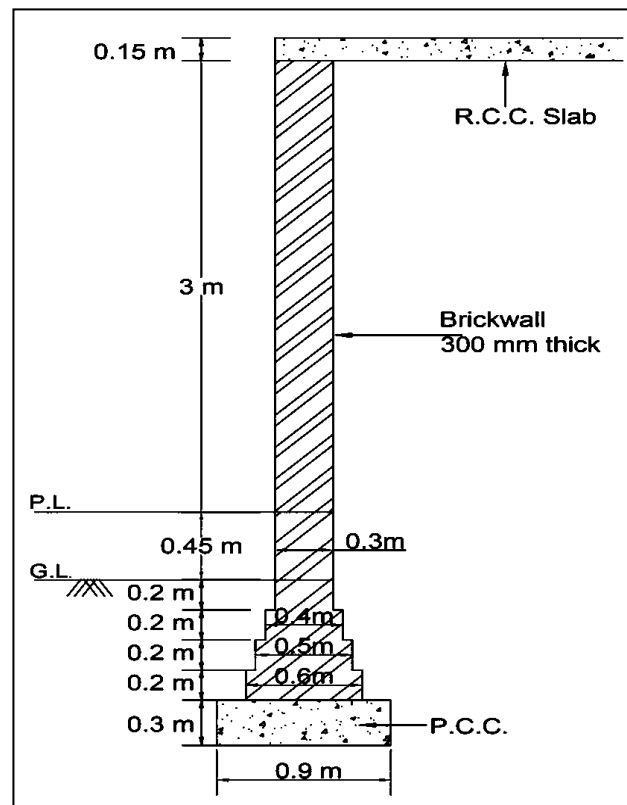


Fig 10 Section of Vegetable Market

Table No 43 Schedule of Door & Window

TYPE	SIZE
D	3 m x 2.1 m
D1	0.8 m x 2.1 m
D2	0.7 m x 2.1 m

Table No. 44Measurement sheet for Vegetable market

Sr. No.	Description Of Item	Nos.	Length (m)	Breadth (m)	Height (m)	Quantity
1	Excavation for foundation Net center line =153.1 – () = 146.8 Number of junction = 14	1	146.8	0.9	1.1	145.33 m ³
2	PCC for foundation	1	146.8	0.9	0.3	39.64m ³
3	Brick Masonry upto Plinth					

	Step 1 (Width 0.6 m) L = 153.1 - () = 148.9	1	148.9	0.6	0.2	17.87 m ³
	Step 2 (Width 0.5 m) L = 153.1 - () = 149.6	1	149.6	0.5	0.2	14.96 m ³
	Step 3 (Width 0.4 m) L = 153.1 - () = 150.3	1	150.3	0.4	0.2	12.02 m ³
	Step 4 (Width 0.3 m) L = 153.1 - () = 151	1	151	0.3	0.2	9.06 m ³
	Step 5 (Width 0.3 m) L = 153.1 - () = 151	1	151	0.3	0.45	20.38 m ³
				Total Brickwork		74.29 m³
4	Sand filling up to G.L.					
	Quantity = (Excavation – PCC-Brick work upto GL) = (145.33 – 39.64 – 53.91) = 51.78	-	-	-	-	51.78 m ³
5	Brick Masonry above plinth up to slab level					
	Compound wall L = 54.5 m	1	54.5	0.3	2	32.7 m ³
	Stall wall L = 102.5 m	1	102.5	0.3	3	92.25 m ³
	Deduction for ventilation	4	0.4	0.3	0.4	-0.192 m ³
	Deduction for main gate	1	3	0.3	2.1	-1.89 m ³
				Total		122.87 m³
6	Sand filling for Plinth level					
	Total area	1	20.3	19.7	0.35-	139.97 m ³
	Deduction of wall L = 69.8 m	1	69.8	0.3	0.35	-7.33 m ³
				Total		132.64 m³
7	PCC above sand filling					
	Total area	1	20.3	19.7	0.1	39.99 m ³
	Deduction of wall L = 69.8 m	1	69.8	0.3	0.1	-2.09 m ³
				Total		37.9 m³

8	Concreting for slab above toilet	1	10.9	3.6	0.15	5.89 m³
9	Formwork for slab	2	5.9	-	0.17	2 m ²
		2	3.6	-	0.17	1.22 m ²
				Total		3.22 m²
10	Inside plaster					
	Stall	8	10.5	-	3	252
	Toilet	2	16	-	3	96
	Open Space	1	99.4	-	3	298.2
	Deduction for main gate	—	3	-	3	-4.5
				Total		641.7 m²
11	Outside plaster	1	82.4	-	3	247.2
	Deduction for main gate	—	3	-	3	-4.5
				Total		242.7 m²
12	Roof of Stall	8	4.3	3.8	-	130.72 m²

Table No. 45 Abstract sheet of vegetable market

Sr. No.	Description Of Item	Quantities	Rate	Per	Amount
1	Excavation	145.33 m ³	110	m ³	15987
2	PCC	77.54 m ³	965	m ³	74836
3	Sand Filling	184.42 m ³	90	m ³	16598
4	R.C.C. Work	5.89 m ³	12000	L.S.	12000
5	Brick Work	208.11 m ³	1250	m ³	260137
6	Inside Plaster	641.7 m ²	150	m ²	96255
7	Outside Plaster	242.7 m ²	250	m ²	60675
8	Roof	150 m ²	250	m ²	37500
9	Cement	682 bags	280	Bag	190960
10	Sand	108.36 m ³	900	m ³	97524
11	Aggregate	77.41 m ³	1000	m ³	77410
12	Brick	98579 nos.	4	Brick	394316

13	Steel	463 kg	5	Kg	25465
14	Binding Wire	5 kg	60	Kg	300
				TOTAL	13,59,963
Add 1.5% water charge Rs.					20,400
Add 10% contractor profits Rs.					1,36,000
Total cost					15,16,400Rs.

13.4.4 Sustainable Design: Design of ATM

- **Description:-**
- In Borvav, one of the main occupations of the villagers is cattle farming.
- And the existing not any one animal first aid center is inefficient to provide a better treatment to the cattle as and when required due to insufficient facilities and accommodations.
- This will help in improving the health of the cattle and result in more productive cattle farming.
- **Dimensions:**
 1. Partition wall thickness = 10cm
 2. W/c bath = 1.5×2.4m
 3. Door size = 0.8×0.2 m
- **Proposed:-**

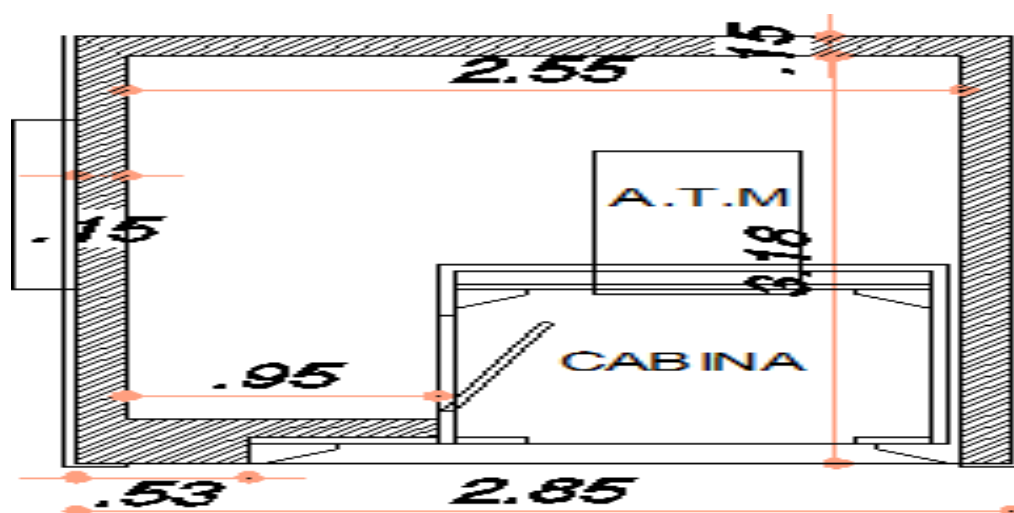


Fig 11 Plan of ATM

Table 46: Measurement sheet for ATM

Sr. No.	Description of item	No	Length (L)	Breadth (B)	Height (H)	Quantity	Net Quantity
1.	R.C.C work for footing in foundation(M20)						
	For column no.1,2,7 For columnno.3,4,5,6,8	3 5	0.75 1.1	0.75 1.0	0.23 0.3	0.388 1.65	
							2.038m ³
2.	R.C.C. Work for column in foundation up to groundlevel (M:20)						
	For column no.1,2,7 For column no.3,4,5,6,8	3 5	0.23 0.23	0.23 0.3	1.07 1.2	0.17 0.414	
							0.584m ³
3.	R.C.C. work for groundbeam (M:20)						
	GB-1 GB-2 PB-3 GB-4	1	2.14	0.23	0.375	0.185	
	GB-5 GB-6 GB-7 GB-8	1	4.0	0.23	0.375	0.345	
	GB-9 PB-10 PB-11	1	4.14	0.23	0.375	0.357	
		1	4.07	0.23	0.375	0.351	
		1	1.94	0.23	0.375	0.167	
		1	3.9	0.23	0.375	0.336	
		1	1.37	0.23	0.375	0.236	
		1	3.44	0.23	0.375	0.296	
		1	2.47	0.23	0.375	0.213	
		1	1.245	0.15	0.375	0.07	
		1	3.935	0.15	0.375	0.221	
							2.77m ³
4.	R.C.C. for building columnup to plinth level (M:20)						
	For column no. 1,2,7 For column no. 3,4,5,6,8	3 5	0.23 0.23	0.23 0.3	0.6 0.6	0.095 0.207	
							0.302m ³
5.	R.C.C. work for column from P.L. to parapet						
	For column no. 1,2,7 For column no. 3,4,5,6,8	3 5	0.23 0.23	0.23 0.3	4.245 4.245	0.67 1.464	
							2.13m ³
6.	R.C.C. work for beams						
	Beam-1Beam-2Beam-3	1	2.14	0.23	0.375	0.184	
	Beam-4Beam-5	1	4.0	0.23	0.375	0.345	
		1	4.14	0.23	0.375	0.357	
		1	4.07	0.23	0.375	0.151	
		1	1.94	0.23	0.375	0.367	

	Beam-6Beam-7Beam-8 Beam-9	1 2 1 1	3.9 1.37 3.44 2.47	0.23 0.23 0.23 0.23	0.375 0.375 0.375 0.375	0.336 0.236 0.296 0.213	
							2.485m3
7.	P.C.C. work for footing						
	For column no.1,2,7 For columnno.3,4,5,6,8	3 5	1.05 1.40	1.05 1.40	0.10 0.10	0.330 0.98	
							1.31m3
8.	Excavation for footing						
	For column no.1,2,7 For column no.3,4,5,6,8	3 5	1.05 1.40	1.05 1.40	1.5 1.5	4.961 14.7	
							19.661m3
9.	Backfilling in footing						
	=total excavation-P.C.C.- R.C.C. work in footing =19.661 -1.31-2.622 =15.729						
							15.729m3
10.	Sand filling						
	W/C-bath	1	2.14	1.370	0.500	1.464	
	Doctor cabin cum Bed room	1	1.94	4.14	0.500	4.015	
	Animal room	1	3.90	4.14	0.500	8.073	
							13.553m3
11.	P.C.C. in plinth						
	W/C-bath	1	2.14	1.370	0.075	0.219	
	Doctor cabin cum bed room	1	1.940	4.14	0.075	0.602	
	Animal room	1	3.90	4.14	0.075	1.211	
							2.032m2
	Brickwork up to plinth						

12.	GB1 GB2 GB3 GB4 GB5	1	2.14	0.23	0.225	0.110	
	GB6 GB7 GB8 GB9 GB10	1	4.0	0.23	0.225	0.207	
	GB11	1	4.14	0.23	0.225	0.214	
		1	4.07	0.23	0.225	0.210	
		1	1.94	0.23	0.225	0.100	
		1	3.90	0.23	0.225	0.201	
		2	1.37	0.23	0.225	0.141	
		1	3.44	0.23	0.225	0.178	
		1	2.47	0.23	0.225	0.127	
		1	1.247	0.15	0.225	0.042	
		1	3.935	0.15	0.225	0.132	
							1.662m3
13.	Brickwork for superStructure						
	W/C-bath						
	Long wall Short wall Doctor	1	2.14	0.23	2.74	1.348	
	cabin cum bed roomLong	2	1.37	0.23	2.74	1.726	
	wall						
	Short wall Long wall Short	1	4.14	0.23	2.74	2.609	
	wall	2	1.94	0.23	2.74	2.445	
		1	4.07	0.23	2.74	2.574	
		2	3.9	0.23	2.74	4.933	
							15.635m3
	DeductionD1						
	W2V	2	1.2	2.1	0.23	1.159	
		4	2.0	1.2	0.23	2.208	
15.		2	0.6	0.6	0.23	0.165	
							12.045m3
	Partition wall						
	Wall-1 (0.1m width)						
	Deduction for	1	4.14		2.74	11.34	
	D1 D2	1	1.2		2.1	2.52	
		1	1.0		2.1	2.1	
							6.76m ²
16.	Brick work for parapet wall						
	W/C bath Long wall Short	1	2.6	0.23	0.9	0.538	
	wall	2	1.6	0.23	0.9	0.662	
	Doctor cabin cum bed room						
	Long wall	1	2.15	0.23	0.9	0.445	
	Short wall Animal roomLong	2	4.14	0.23	0.9	1.713	
	wall Short wall						
		2	4.43	0.23	0.9	1.834	
		1	4.14	0.23	0.9	0.856	
							6.048m2
	D.P.C for						
	wall						

17.	W/C bath Long wall Short wall	1	2.14	0.23		0.492	
	Doctor cabin cum bedLong wall	2	1.37	0.23		0.630	
	Short wall roomLong wall	1	4.14	0.23		0.952	
	Short wall	2	1.94	0.23		0.892	
		1	4.04	0.23		0.936	
		2	3.90	0.23		1.794	
							5.696 m2
18.	Lintel						
	D1 D1(IN PARTITONWALL) W1	2	1.5	0.23	0.1	0.069	
		1	1.5	0.1	0.1	0.015	
		4	2.3	2.3	0.1	0.220	
							0.304 m2
	CHAJJA						
19.	W	4	2.3	0.6	0.15	0.828	
							0.828 m2
20.	skirting						

Table 47 Abstract Sheet for ATM

Sr. No.	Item	Unit	Rate per unit	Quantity	Amount
1.	R.C.C work for footing (M20)	m ³	4522	2.038	9215.84
2.	R.C.C work for column	m ³	4660	0.584	2721.44
3.	R.C.C work for ground beam(M20)	m ³	4617	2.777	12821.41
4.	R.C.C work for building column up to plinth level	m ³	4617	0.302	1394.334
5.	R.C.C work for column from plinth level to parapet	m ³	4617	2.130	9834.21
6.	R.C.C work for beam	m ³	4617	2.485	11473.245
7.	P.C.C work for footing	m ³	2674	1.310	3502.94
8.	Excavation for footing	m ³	83	19.661	1631.863
9.	Backfilling in footing	m ³	53	15.729	833.637
10.	Sand filling	m ³	672	13.553	9107.616
11.	P.C.C in plinth	m ³	2674	2.032	5433.568
12.	Brickwork up to plinth	m ³	3420	1.662	5684.04
13.	Brickwork for superstructure	m ³	3473	12.045	41832.28
14.	Partition wall	m ²	464	6.76	3136.64
15.	Brickwork for parapet wall	m ³	464	6.048	2806.272

16.	D.P.C for wall	m ²	210	5.696	1196.16
17.	Lintel	m ³	3862	0.304	1174.048
18.	Chajja	m ³	4617	0.828	3822.876
19.	Skirting	m	134.39	23.41	3146.06
20.	Flooring	m ²	531	27.392	14545.152
Total Add 3% for ContingenciesAdd 2% of work changed establishment Grand					160961.25
Total Estimated cost					4828.8375
					3219.225
					169009.32
					169010

Thus, the cost of providing an Animal Hospital in the village Borvav can be estimated to be

Rs.1, 69,010.

14. Chapter: 14

14.1 Proposed design improved with small changes, Period, Amount Expenditure and Benefit - a) Immediately, b) Within 1 year and,

c) Long term (3-5 years) along with cost estimation.

- Our proposed design with approximate cost:-

Table: 48 proposed design with approximate cost

Sr. No.	Proposed design	App. Cost
1	Biogas plant	8,26,701/-
2	Public toilet	220000/-
3	Overhead water tank	225000/-
4	Community hall	255,442.8
5	Rain water harvesting	38184/-
6	Road pavement	45,15000/-
7	Post office	401900.6/-
8	Garden cum play ground	42,3772/-
9	Library	85,3047.66/-
10	Lake development	26,17100/-
11	Vegetable market	15,16,400/-
12	Animal hospital	16,9010/-

14.1.1 Implementation:-**Category – I (Immediately)**

1. Overhead water tank
2. Public toilet

Category – II (Within 1 year)

1. Biogas plant
2. Animal hospital
3. Road pavement

Category – III (Long term 3 to 5 year)

1. Community hall
2. Garden
3. Post office
4. Design of Lake
5. Library
6. Design of Vegetable Market

• Benefits of proposed design:-

- Biogas is the solution for providing people in rural areas with reliable, clean and cheap energy.
- It could provide various benefits beyond clean fuel as well, including improved sanitation, health and environmental sustainability.
- Eliminates the spread of diseases by treating excreta and other waste, converting this waste into a valuable resource; and avoiding contamination of water and food.
- Avoids Contamination of scarce water resources.
- The public garden can be beneficial to the environment and atmosphere of village.
- Reduce the carbon content in air and increase oxygen.
- To reduce environment pollution and make rural areas clean.
- The library can be beneficial to the study development of villagers.
- Animal hospital can be beneficial to the Injured Animal of village.

15. Chapter: 15

Most important / crucial items from the techno-economy survey/ Ideal Village Survey/ Smart Village Survey to reflect in our village development for the villager's happiness / comfortable and enhancement of the village

- **Best think and design idea in ideal village:-**
 - In this village all the drinking water sources are available like tap water, well, hand pumps, borehole etc.
 - In this village drainage facility is good, here closed type drainage facility available.
 - In this village good connectivity of road, Main road and internal street made from cementconcrete.
 - Here transportation facility is good all type of transportation is available like auto, jeep, chhakda, Bus, etc.
 - 24X7 electricity is available from government.
 - Here solid waste disposal system is available.
 - Available education facility.
 1. Anganwadi
 2. Primary school
 3. Secondary school
 4. R.K. University within 7km.
 - In this village most of the basic facility of village is available.
- **Best think and design idea in Smart village:-**
 - Her overhead water tank is available with 50000 lit. Capacity.
 - Drainage facility condition is good.
 - Rajkot urban development authority taken solid waste at every 3days.
 - This village is 6km away from Rajkot city. It is good point for village because hospital, PHC etc.all facility available nearby.
 - All the physical facility in good condition.
 - Sub post office is available in village.

16. Chapter: 16

Items from smart cities with the village concept as per your idea and its visit, modern technology with innovation can be used in your village

16.1 Solar irrigation:-

- In recent days, agriculture field farmers are facing many problems in watering their plants to keep their crops green in summer season.
- It's because they don't have correct idea about the availability of the power. Even if the power is available, they have to wait until the pitch is properly watered.
- Thus, this process restricts them to stop doing other deeds. But there is a solution, i.e., automatic solar submersible pump control panel for irrigation.

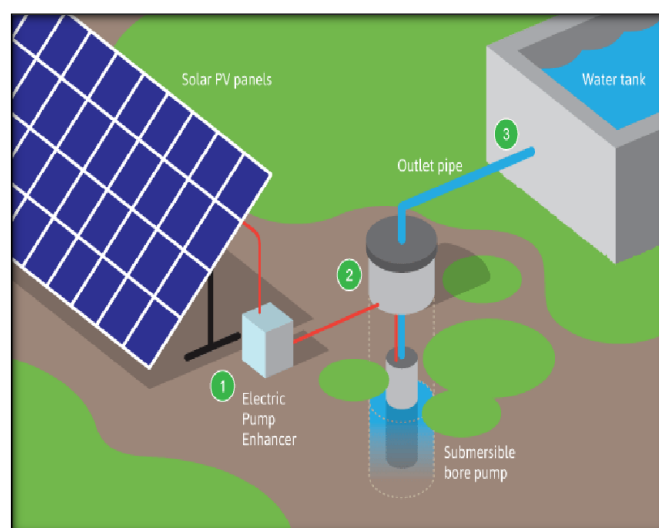


Fig 12 Solar irrigation system

- In the trial of solar based plant irrigation using submersible pumps, PV cells are used to generate electricity, which is stored in rechargeable batteries.
- These batteries produce power for the system operation.
- A submersible pump controller is used to pump water from a bore well to a storage water tank. Then, the water is drawn by a submersible pump at the slope's toe, where the installed sprinklers water the crops or plants.

16.2 Online Library and E-Education:-

- One of the natural responses to the challenges of e-learning environment is the introduction of the digital library to support e-learning with resources network, designed to meet the needs of the learners, in both individual and collaborative settings, constructed to enable the dynamic use of a broad array of materials for learning primarily in digital format, and managed actively to promote the reliable access anytime and anywhere to quality collections and services, available both within and outside the network.
- The introduction of digital libraries into the education process was made easier by distance education, which has developed over the years.
- With the Internet and the World Wide Web, distance education programs can mount sets of materials on web servers to support online courses

- One of the basic ideas is to aggregate the learning materials on various topics, written by many educators, in a digital library of courseware.
- Digital libraries have the potential to significantly change the fundamental aspects of the classroom in ways that could have an enormous impact on teaching and learning.



16.3 CCTV camera:-

- There are undoubtedly huge advantages to the deployment of CCTV camera systems.
- Their use in deterring crime is hard to prove but is thought to be extremely effective.
- Customers entering a shop who know they are being filmed are significantly less likely to steal. Loosed- circuit television (CCTV), also known as video surveillance, is the use of video cameras to transmit a signal to a specific place, on a limited set of monitors
- It differs from broadcast television in that the signal is not openly transmitted, though it may
- Though Video telephony is seldom called "CCTV" one exception is the use of video in distance education, where it is an important tool.

16.4 Wind Turbine:-

- Wind can be considered a form of kinetic energy and in order to take advantage of the energy carried by the wind, some form of energy conversion must be employed.
- The wind turbine is a device designed to capture the wind movement and turn the energy into



Fig 13 Wind Turbine Technology

- In rural areas, large-scale wind energy production is impractical. Therefore, a small wind turbine is usually used.

16.5 Latest and Affordable Medical Facilities:-

- After fulfilling basic needs like food and drinking water, affordable medical facilities are equally important for common man.
- Many rural residents are not able to take treatment for basic ailments either due to the non-presence of health care services in the vicinity or due to lack of funds to access the same. Lack of public sector infrastructure and latest technology is one major obstacle in providing good healthcare to village.



16.7 ELECTRICAL DESIGNS

16.7.1 Sun Tracking Solar Panel

In this project, we will see a simple Sun Tracking Solar Panel circuit which will track the Sun and position the solar panels accordingly.

16.7.1.1 Introduction

As the non renewable energy resources are decreasing, use of renewable resources for producing electricity is increasing. Solar panels are becoming more popular day by day. We have already read a post about how to install solar panel for home. Solar panel absorbs the energy from the Sun, converts it into electrical energy and stores the energy in a battery.

This energy can be utilized when required or can be used as a direct alternative to the grid supply. Utilization of the energy stored in batteries is mentioned in below given applications.

The position of the Sun with respect to the solar panel is not fixed due to the rotation of the Earth. For an efficient usage of the solar energy, the Solar panels should absorb energy to a maximum extent.

This can be done only if the panels are continuously placed towards the direction of the Sun. So, solar panel should continuously rotate in the direction of Sun. This article describes about circuit that rotates solar panel.

16.7.1.2 Principle of Sun Tracking Solar Panel

The Sun tracking solar panel consists of two LDRs, solar panel and a servo motor and an ATmega 328 Micro controller.

Two light dependent resistors are arranged on the edges of the solar panel. Light dependent resistors produce low resistance when light falls on them. The servo motor connected to the panel rotates the panel in the direction of Sun. Panel is arranged in such a way that light on two LDRs is compared and panel is rotated towards LDR which have high intensity i.e. low resistance compared to other. Servo motor rotates the panel at certain angle.

When the intensity of the light falling on right LDR is more, panel slowly moves towards right and if intensity on the left LDR is more, panel slowly moves towards left. In the noon time, Sun is ahead and intensity of light on both the panels is same. In such cases, panel is constant and there is no rotation.

16.7.1.3 Sun Tracking Solar Panel Circuit Diagram

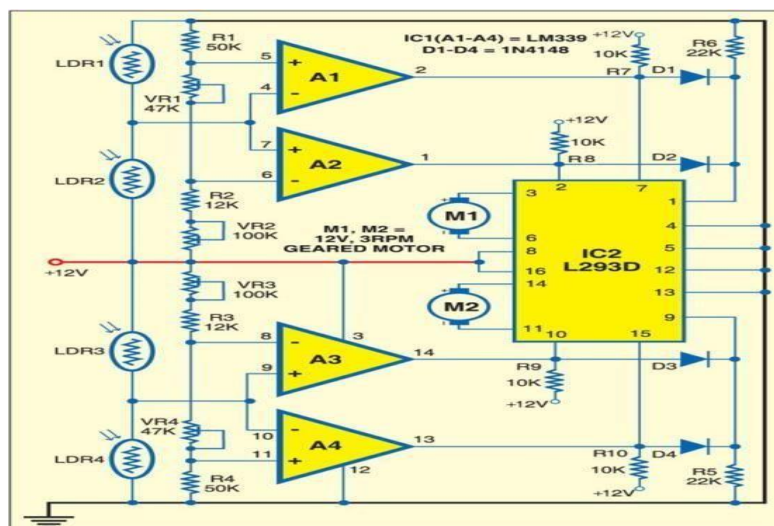


Fig 15 Circuit of solar tracking system

Fig. 1 shows the circuit of the solar tracking system. The solar tracker comprises comparator IC [LM339](#), H-bridge motor driver IC [L293D](#) (IC2) and a few discrete components. Light- dependent resistors LDR1 through LDR4 are used as sensors to detect the panel's position relative to the sun. These provide the signal to motor driver IC2 to move the solar panel in the sun's direction. LDR1 and LDR2 are fixed at the edges of the solar panel along the X axis, and connected to comparators A1 and A2, respectively. Presets VR1 and VR2 are set to get low comparator output at pins 2 and 1 of comparators A1 and A2, respectively, so as to stop motor M1 when the sun's rays are perpendicular to the solar panel.

16.7.1.4 Circuit operation

When LDR2 receives more light than LDR1, it offers lower resistance than LDR1, providing a high input to comparators A1 and A2 at pins 4 and 7, respectively. As a result, output pin 1 of comparator A2 goes high to rotate motor M1 in one direction (say, anti-clockwise) and turn the solar panel.

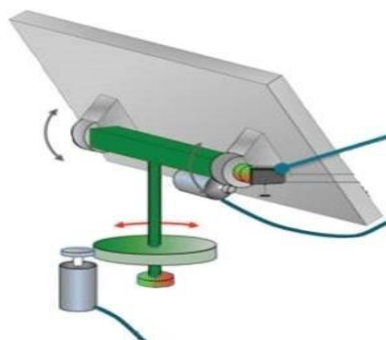


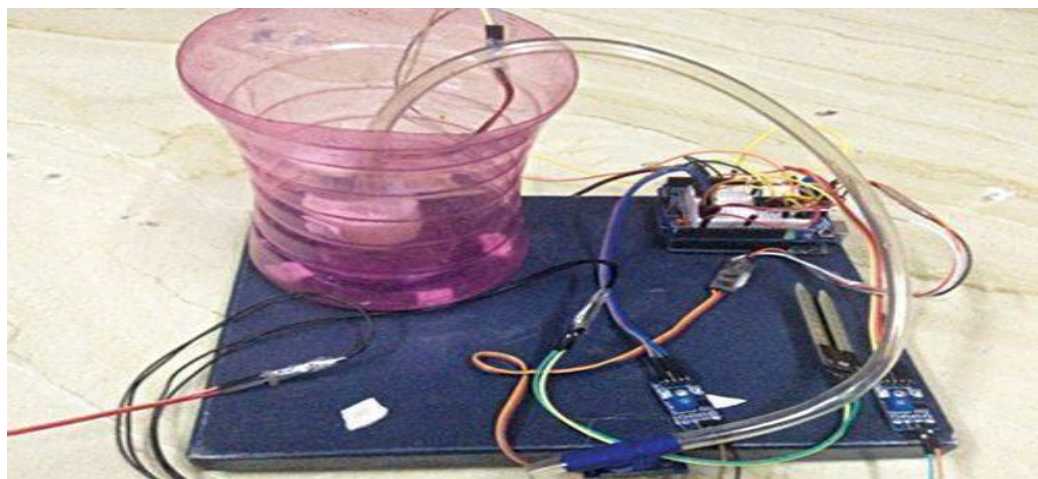
Fig 16 Proposed assembly for the solar tracking system

Similarly, LDR3 and LDR4 track the sun along Y axis. Fig. 2 shows the proposed assembly for the solar tracking system.

16.7.1.5 How Sun Tracking Solar Panel Works?

- Assemble the circuit as described and upload the code to ATmega328 Microcontroller.
- Power on the circuit and place the set up directly under the Sun (on the rooftop).
- Based on the light falling on the two LDRs, the ATmega328 Microcontroller changes the position of the Servo Motor which in turn moves in the panel.

16.7.2 Automated Plant Watering System



During summers, most people are too lazy to water the potted plants on their rooftop garden every day. Explained in this section is a simple and exciting automatic plant watering system that you can build yourself in just a few hours. It is an Arduino based automatic plant watering system that uses a soil moisture sensor. The author's prototype is shown in Fig. 1.

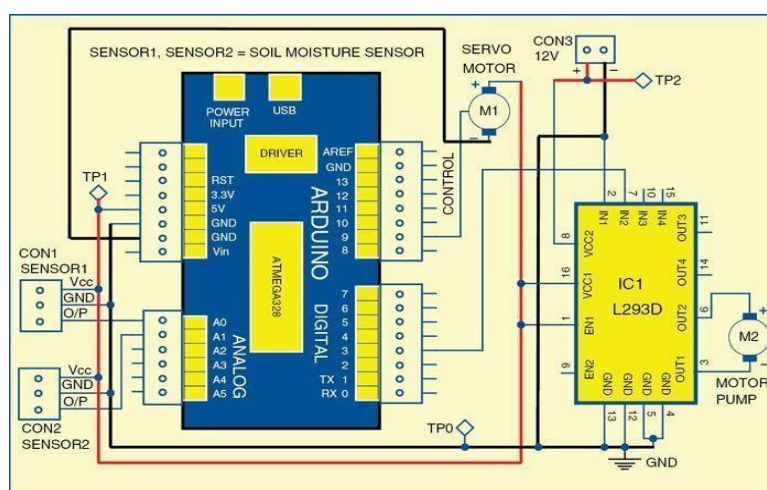
16.7.2.1 Automatic plant watering system circuit and working

The circuit diagram of the automatic plant watering system is shown in Fig. 2. The circuit comprises an Arduino UNO board, a soil moisture sensor, a servo motor, a 12V water pump and an L293D (IC1) motor driver IC to run the water pump.

You can power the Arduino board using a 7V to 12V wall wart or plug-in adaptor or solar panel. You need a separate 12V battery or power supply or solar panel for the pump motor.

16.7.2.2 Soil moisture sensor

Two types of soil moisture sensors are available in the market—contact and non-contact sensors. A contact soil sensor is used in this project because it has to check soil moisture to measure the electrical conductivity. The moisture sensor provides an analogue output, which can easily be interfaced with Arduino. In this project, two sensors can be connected to analogue pins, A0 and A1, of the Arduino board. Each sensor has four pins (Vcc, Gnd, Ao and Do) available for interfacing with the Arduino board. Here, digital output pin (Do) is not used. The water pump and servo motor are controlled by Arduino connected to digital pins 3 and 9, respectively. That is, the servo motor signal control pin is connected to pin 9 of the Arduino board.



The program in the Arduino reads the moisture value from the sensor every 20 seconds. If the value reaches the threshold value, the program does the following three things:

- 1 It moves the servo motor horn, along with the water pipe fixed on it, toward potted plant, whose moisture level is less than the predetermined/ threshold level.
- 2 It starts the motor pump to supply water to the plant for a fixed period of time and then stops the water pump.
- 3 It brings back the servo motor horn to its initial position software program.

The program is written in Arduino programming language. The code is well commented and is easy to understand. Compile the autowatering.ino code and upload it to the microcontroller, using Arduino IDE version 1.

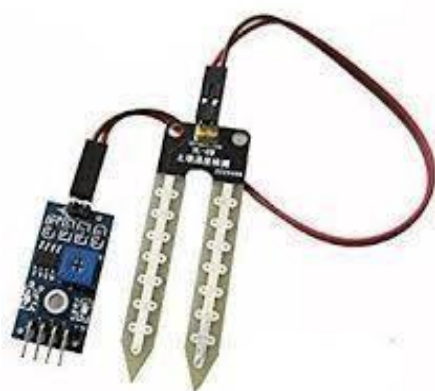


Fig 17 Soil moisture sensor (contact type)



Fig 18 Motor pump

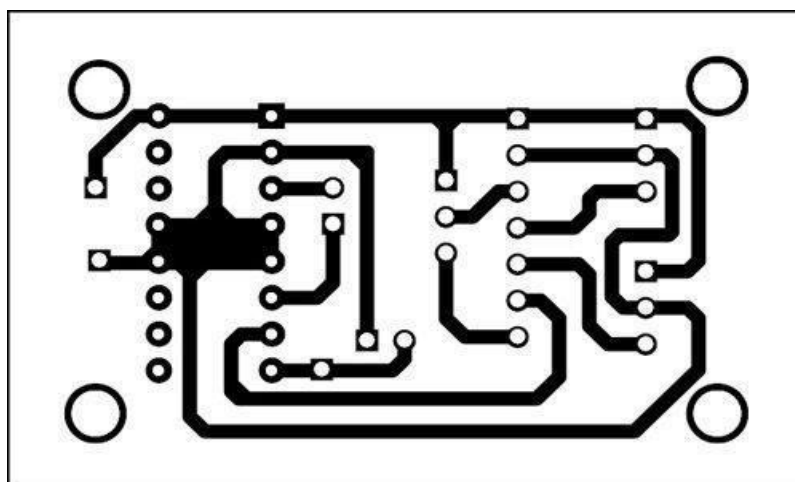


Fig 19 Actual-size PCB layout of the circuit

The sensor will calibrate by itself once it is kept in the soil and the threshold value will be shown on the serial monitor in Arduino. Serial debugging is available in this program. Comment out if you do not wish to use the serial monitor.

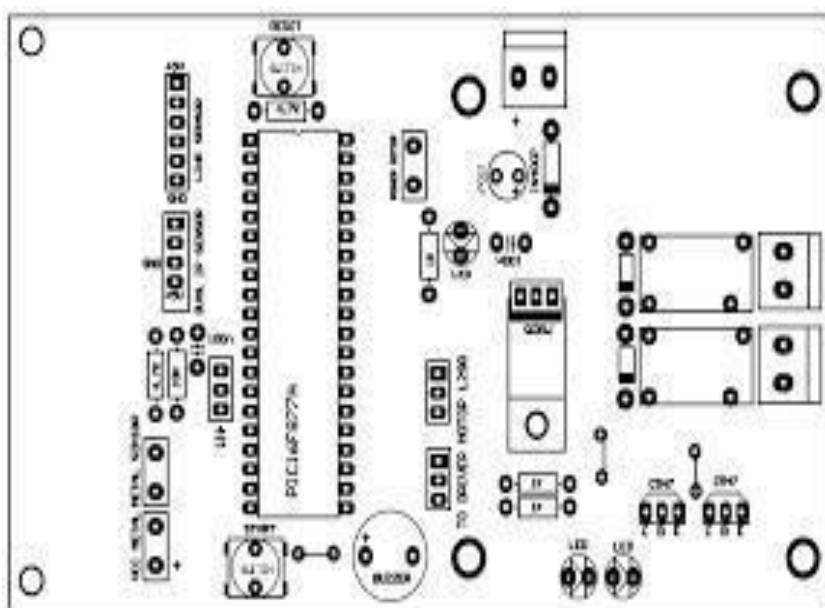


Fig 20 Component layout of the PCB



Fig 21 Installing water pump in the container



Fig 22 attaching the pipe on the servo horn

16.7.3 Induction Motor Protection System

The electric motor is the most crucial drive in the modern era of automation. These motors are used in various industrial applications. But these motors can be protected from the different mechanical and electrical faults for helping their purposes. This article discusses a protection system for induction motor from emerging faults using embedded microcontrollers. The induction motor experiences various kinds of electrical faults such as overvoltage or under voltage, unbalanced voltage, overload, earth fault, phase reversing and single phasing. Due to these faults, the windings in the motor get heated which leads to reducing the life of the motor. The faults in the motor may occur due to faults in the motor or the driven plant, conditions executed by the external power supply n/w. The degree of the induction motor depends on the applications and costs of the motor.

16.7.3.1 What is an Induction Motor?

An induction motor or asynchronous motor is the most commonly used motor in various applications. Because these motors always run at a slower speed than synchronous speed. Synchronous speed can be defined as, the speed of the magnetic field which is rotating in the stator. Induction motors are classified into two types based on the sort of input supply such as single-phase induction motor and three-phase induction motors. Induction motors are classified into four types namely; split-phase induction motor, capacitor start induction motor, capacitor start capacitor run induction motor and shaded pole induction motor. And also based on the type of rotor three-phase induction motors are classified into two types such as wound type, slip ring motor squirrel cage motor.

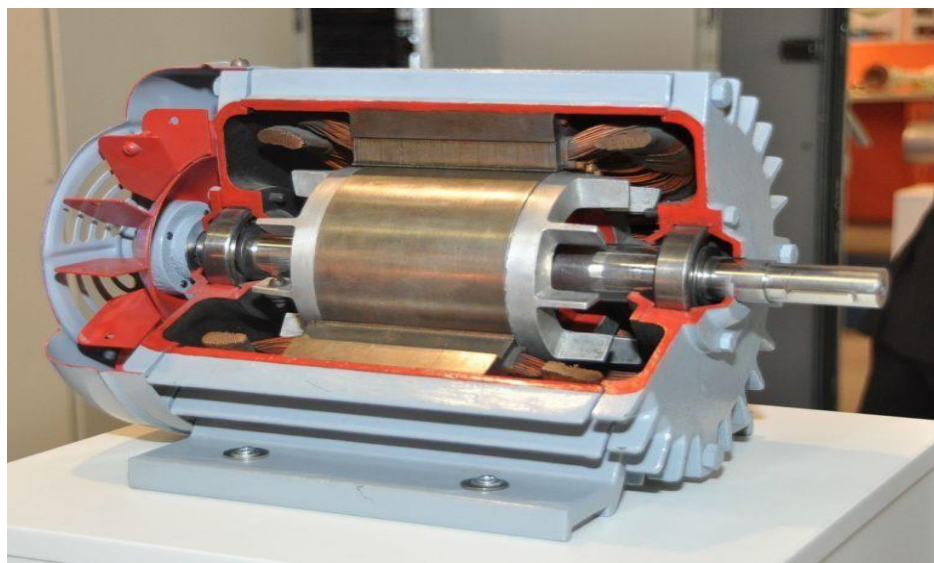


Fig 23 Induction Motor

16.7.3.2 Working Principal of Single Phase Induction motor

The Induction motor which works on single-phase AC power is called **Single Phase Induction Motor**.

The power line available for us at homes is 240V/50Hz AC single-phase power line and the Inductions motors which we use in our day to day life in our homes are called Single Phase Induction Motors.

For better understanding the working principle of single phase induction motor, let us look into the construction of Single Phase Induction Motor.

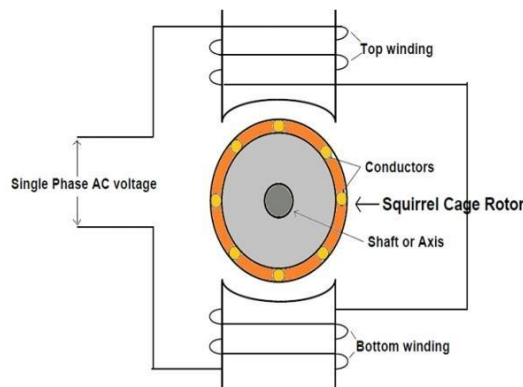


Fig 24 Single phase induction motor working principal

Here,

- We will take multiple conductors and mounted them on the freely rotating shaft as shown in the figure.
- Also, we will short the ends of all conductors with a metal ring thereby creating multiple conductors loops which we have studied earlier.
- This rotor setup looks like a squirrel cage at a closer look and hence it is called a squirrel cage Induction Motor. Here let's have a look at the 3D structure of squirrel cage rotor.

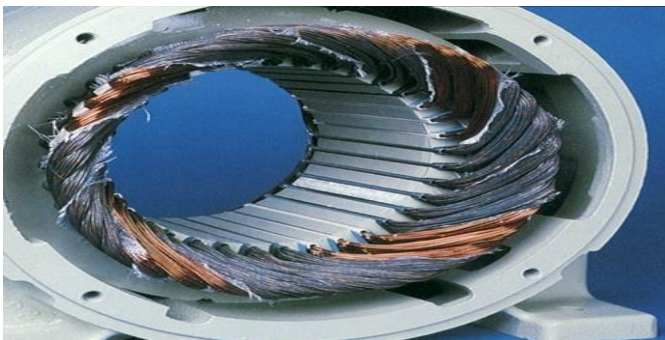


Fig 25 Squirrel cage rotor.

The stator which was considered to be a complete iron piece is actually a group of thin iron sheets stacked together. They are so closely pressed together there will literally no air between them. We use a stack of iron sheets instead of a single iron piece for the same reason we use rolled iron sheets in the case of a power transformer that is to reduce iron losses

The working of this setup is similar to the setup used in explaining **the working principle of the induction motor.**

- First, we will provide the AC voltage and because of this voltage, current flows through stator winding wound on both top and bottom segments.
- Because of the current, a magnetic field gets generated on both top and bottom windings.
- The bulk of iron sheets acts as a core medium for carrying the magnetic field generated by the coils.
- This alternating magnetic field carried by the iron core gets concentrated at the central air gap because of the intentional structural design.
- Now since the rotor is placed in this air gap the shorted conductors fixated on the rotor also experience this alternating field.
- Because of the field, a current gets induced in the conductors of the rotor.
- Since the current is passing through the rotor conductors a magnetic field will also get generated around the rotor.
- Upon the interaction between the generated rotor magnetic field and stator magnetic field, a force gets experienced by the rotor.
- This force moves the rotor along the axis and thereby we will have rotational motion.
- Since the voltage is continuously changing sinusoidal voltage the rotor also keeps rotating continuously along its axis. Thereby we will have a continuous mechanical output for given single phase input voltage.

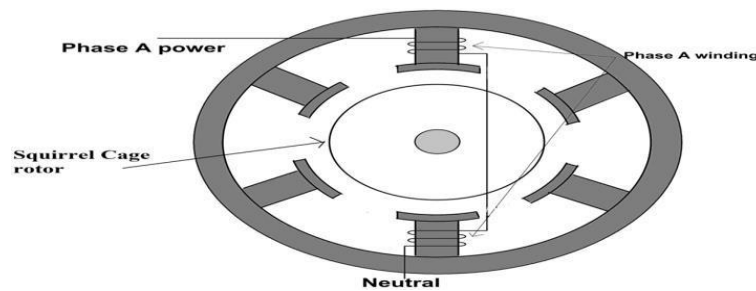
Although we have assumed the rotor will rotate automatically after the power is given to the single-phase motor that is not the case. Since the field generated by a single-phase induction motor is an alternating magnetic field and not a rotating magnetic field. So at the start of the motor, the rotor gets locked on its position because the force experienced by it because of the bottom coil and the top coil will be of the same magnitude and opposite in direction. So at the start, the net force experienced by the rotor is zero. To avoid this we will use auxiliary winding for the induction motor to make it a self-starting motor. This auxiliary winding will provide the necessary field to make the rotor move at the start. The example for this case is the electric fan we see in our daily life, which is a capacitor start and runs an induction motor with auxiliary winding connected in series with the capacitor.

16.7.3.3 Working Principal of Three Phase Induction Motor

The Induction motor which works on three-phase AC electric power is called Three Phase Induction Motor. Usually, Three Phase Induction Motors are used in industries and are not suitable for home applications.

The power line available for industries is 400V/50Hz Three phase four line AC power and the Inductions motors which work on this supply in industries are called Three Phase Induction Motors.

For better understanding the working principle of three-phase induction motor let us look into the construction



Here,

- Phase a winding starts from the top segment followed by the bottom segment as shown in the figure.
- As for the two ends of Phase, A winding one is connected to Phase A power line of three-phase power supply while the other end is connected to the neutral of the same three phases four-line power supply. This is possible because in a three-phase four-line power supply we have first three lines carrying three line voltages while the fourth line is neutral.
- The other two-phase windings follow the same pattern as Phase A. In the two ends of Phase B winding one is connected to the Phase B power line of three-phase power supply while the other end is connected to the neutral of same three phases four-line power supply.
- The structure of the rotor is similar to a squirrel cage and is the same type of rotor which is used in a single-phase induction motor.

Now if we provide the electric power to the three-phase windings of the stator then the current starts flowing in all three windings. Because of this current flow, a magnetic field will be generated by the coils and this field will flow through less magnetic resistivity path provided by the laminated core. Here the structure of the motor is so designed that the magnetic field carried by core gets concentrated on the air gap at the center where the rotor is placed. So the magnetic field concentrated by core at the center gap influences the conductors in the rotor thereby inducing a current in them.

In the presence of conductor current, the rotor also generates a magnetic field that interacts with the stator field at any given time. And due to this interaction the rotor experiences a force which leads to rotation of the motor.

Here the magnetic field generated by the stator is of rotating type because of three-phase power, unlike the alternating type we discussed in a single-phase motor. And because of this rotating magnetic field, the rotor starts rotating by itself even in the absence of an initial push. This makes the Three Phase motor a self-starting type and we do not need any auxiliary winding for this type of motor.

16.7.3.4 Induction Motor Protection System Circuit and It's Working

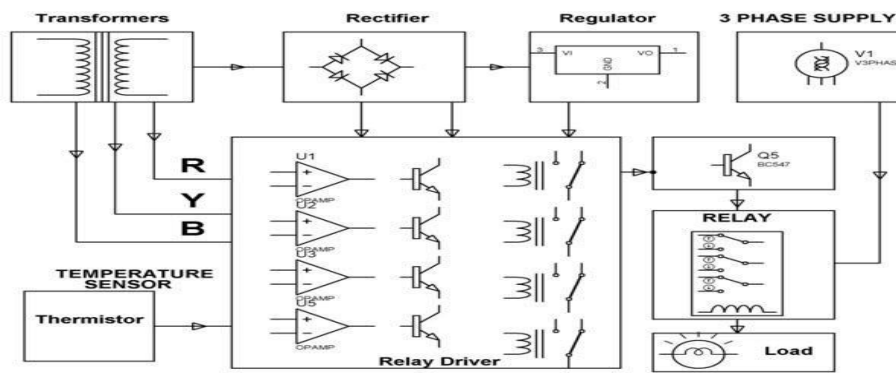


Fig 26: Induction Motor Protection System Circuit

The induction motor is an essential device in various industrial applications. These motors work on 3-phase supply and a standard temperature to keep the loads at preferred conditions. But; if any phase goes lost or there is a growth in the temperature of the windings it harms the motor.

The proposed system uses a 3-phase power supply, where 3 single-phase transformers are allied to it. The project has a set of the operational amplifier which is used as comparators for relating input voltages. A thermistor is used to sense the temperature of the induction motor by connecting with the body of the induction motor. This motor is functioned by switching the main relay, which is worked by another set of relays by detecting single phasing & over-temperature conditions.

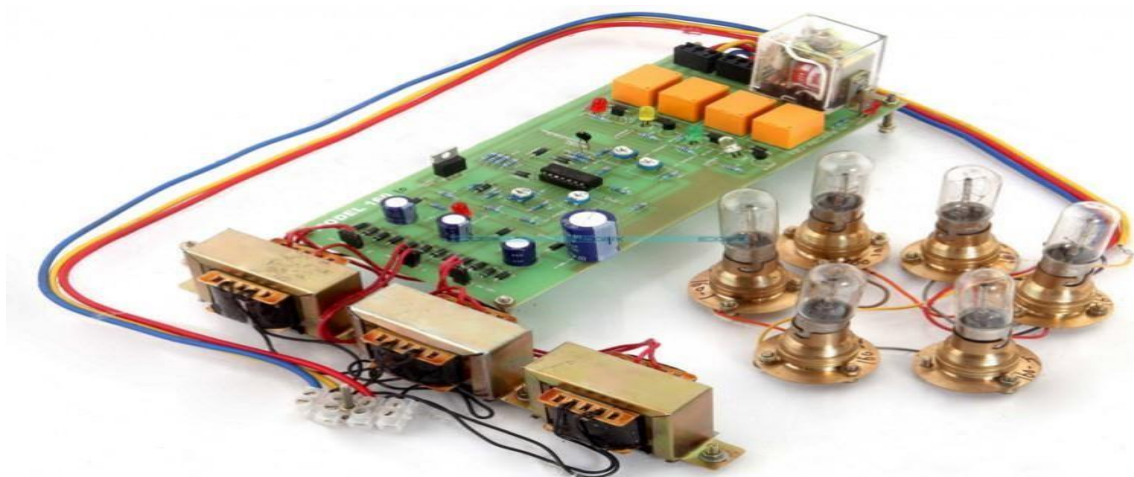


Fig 27: Induction Motor protection system project kit

In the future, this project can be developed by using current sensors and a phase-sequence sensor for protecting the overloads and also the motor from applying the wrong phase sequence.

Induction motor Protection system from single phasing, over-voltage, under-voltage, overheating and phase reversal provides the smooth running of the induction motor expands its lifetime and also efficiency. Generally, these faults occur when the supply system is violating its rating. When the motor is running at rated current, load and voltage then these faults will not be generated. Generally, the smooth running of the motor can depend on the supply voltage under the set limit & load which is determined by the motor should also be under the stated limit.

17. Chapter: 17

17.1 Village all infrastructure like schools, community halls, hospitals and drainage system etc. with the name of the persons present working there.

Table no. 49 Scenario of Borvav village with man power and condition

Sr. no.	Infrastructure	Position	Name or No. of Staff	Adequate Yes/No
1.	Gram Panchayat	Sarpanch	Vijaya ben	Yes
		Deputy Sarpanch	Vimal Bhai Khichadiya	
		Member	Ajit sinh jadeja	
		Member	Rashilaben	
		Member	Nagjibhaidevadiya	
		Member	Ramesh bhai chudasama	
2.	Primary school	Principal	Dilipbhai thummar	Yes
		Teacher	Geetaben vaghasiya	
3.	Anganwadi	Worker	Muktabenchudashma	Yes
		Helper	Sonalben bhimani	
4.	Health center	Lilaben parmar		Yes

18. Chapter: 18

18.1 Feedback of the local people in local language/ or in English randomly.

Interaction-1:

Manjuben (house wife) say that Aganvadi are not proper

Interaction-2

Gayatri (student) say that want to learn computer but do not have any place in village for that.

Interaction-3

Bhavanaben (housewife) say that they do not have any place where they can celebrate function.

Interaction-4

Hareshbhai say that there is a frequent power cut of electricity in village.

Interaction-5

Kishor kaka say that street of village are not good enough.

Interaction - 6

Amrutbhai say that there is no any hospital or small clinic are there in village.

19. Chapter: 19**19.1 Social Scenario in village of the family****Table no. 50 Social scenario in the Borvav village**

Sr. No	Questions	No. of Family	Remark
1	Debt any family presently being faced?	5	
2	Any serious starvation by any family that may lead to death...?	NA	
3	How to solve such an issue?	NA	
4	What are the incidents in the past?	4	
5	Village developed for the Rehabilitation & Redevelopment of Slum area?	NA	
6	How many families facing water scarcity?	0	
7	How many children have not taken the vaccination?	NA	
8	How many children not going to school?	0	
9	How many women are facing health related issue?	9	
10	How many is not having/facing the earning sources?	0	
11	Social justice happening?	NA	
12	Nurturing local self-governance?	NA	
13	Skilling local youth to improve employability?	NA	
14	In this village "Beti Padhao Beti Bachao" is getting encouragement?	NA	
15	In Village Women Helpline available?	NA	
16	Is any technological usage happening in the village?	3	

20. Chapter: 20

20.1 CIVIL / ELECTRICAL – TECHNICAL DOMAIN POINTFOR CASE STUDY

20.1.1 Case study on Construction safety Management:-

- Construction safety management is not implemented systematically in most construction companies.
- Due to that, accidents in the construction site always been highlighted. In addition to that, statistics from the Social Security Organization (SOCO) reported that, construction industry has been the fourth highest ranking in the year 2004 in terms of number of fatality cases.
- This study is the first step in reducing the percentages of accidents in construction site.
- In addition, this study will lead the reader to know how far the implementation of the Construction Safety Management in Malaysia is being done.
- Besides that, it also gives an overview about current situation in construction site. Thus, this will reduce the bad impression many people that construction site is a danger workplace.
- The scope of this study is on safety management in the construction site.
- This study will try to put the safety management in construction project as one of the important elements to project performance and success.
- The study will focus on construction project in Malaysia and a case study will be done at Proposed 40 units 3-Storey Shop Office.
- The study will also emphasize on awareness and importance of safety management in construction project.
- ‘Safety First’ is a very common scenery that we can see at most construction sites in our country.
- However, is safety really being put under ‘first priority’ as stated on the poster Thus, safety management highlight how important it is to ensure that the implementation and compliance of safety aspects at construction site are carried out with serious efforts by all the construction stakeholders involved so that it will not be merely a sloganonly.
- The construction industry has long been considered to have high injury and fatality rates.
- 2007a). Although the accident rate in the construction industry of Hong Kong is argued to decline in recent years due to improved safety measures, it still remains higherthan that of other developed countries

21. Chapter: 21

21.1 SAGY Questionnaire with the Sarpanch Signature

Gujarat Technological University,
Ahmedabad, Gujarat



Vishwakarma Yojana: Phase VIII
Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

An approach towards “Rurbanisation for Village Development”

CHAPTER- 16

Sr.	Questions	Yes/No	Remarks
1	What are the sources of income in village?	Yes	
2	What are the chances of employment in village?	Yes	
3	What are the special technical facilities in village?	Yes	
4	Is any debt on village dwellers?	No	
5	Are village people getting agricultural help?	Yes	
6	Is women health awareness Program organized in village?	Yes	
7	Are women having opportunity to work and income?	Yes	
8	Child girl education is appreciated in village?	Yes	
9	Facility of vaccination to child is available in village?	Yes	
10	Are village people aware about child vaccination and done to each and every child as per norms?	Yes	
11	Women help line number information is provided to village people?	Yes	
12	Is water scarcity in village? How many days per year?	No	
13	Is village under any debt?	No	
14	Is any serious issue due to debt from bank or any person happened in village?	No	
15	Is any suicide like incident observed in village due to government policy, debt or threatening?	No	
16	Is any death of patient occurred due to unavailability of medical facility in village?	No	
17	How many disabled (physically challenged) is observed in village? Provide list with Male/female/girl/boy with age and type of disability and reason of disability.	No	
18	Is village improvement is observed in comparative scenario from past to present?	Yes	
19	Is any unavoidable difficulty village people are facing? Any natural calamity is there?	No	
20	Life Living standard of girls and women is appreciated and uplifted in village?	Yes	
Nodal officer and students can add more questions. This is a sample. Having Minimum requirement.			

Administration queries/ Difficulties:
GTU VY Section
Contact No – 079-23267588
Email ID: rurban@gtu.edu.in

11



SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Borvav Gram Panchayat: Borvav Ward No. _____
 Block: Borvav District: Gir Somnath
 State: Gujarat L S Constituency: Gir Somnath

1. Family Identity and Size

Name of Head of Household	<u>Mansukhbhai Desai</u>					Male/Female	
SECC Survey ID:		Family Size	<u>4</u>	Over 18	<u>4</u>	6 to 18	Under 6

2. Category & Entitlement Details (Tick as appropriate)

Social Category ¹	<u>2</u>	Life Insurance	1. All Adults 2. Some Adults 3. None	AABY	1. Yes 2. No	Kisan Credit Card	Yes / No <u>Yes</u>
Poverty Status Year ²	1. BPL 2. ☒ APL	Health Insurance	1. All Adults 2. Some Adults 3. ☒ None	RSBY	1. Yes 2. No	MGNREGS Job Card Number	
PDS (If NFSA is not implemented)	Annapurna	Antyodaya	BPL	APL	Is any woman in the family member of an SHG? Yes / No		
PDS (If NFSA is implemented)	Annapurna	Antyodaya	Priority	Other			

2. Adults (above 18 years)

Name	Age	Sex M/F/O	Disability Status Y/N	Marital Status ³	Education Status ⁴	Adhaar Card (Y/N)	Bank A/C (Y/N)	Social Security Pension ⁵
<u>Mansukhbhai Desai</u>	<u>61</u>	<u>M</u>	<u>N</u>	<u>1</u>	<u>4</u>	<u>Y</u>	<u>Y</u>	<u>0</u>
<u>Vijayaben Desai</u>	<u>58</u>	<u>F</u>	<u>N</u>	<u>1</u>	<u>6</u>	<u>Y</u>	<u>Y</u>	<u>0</u>
<u>Ajaybhai Desai</u>	<u>29</u>	<u>M</u>	<u>N</u>	<u>0</u>	<u>9</u>	<u>Y</u>	<u>Y</u>	<u>0</u>
<u>Yashshyamkhai Desai</u>	<u>25</u>	<u>M</u>	<u>N</u>	<u>0</u>	<u>10</u>	<u>Y</u>	<u>Y</u>	<u>0</u>

3. Children from 6 years and up to 18 years

Name	Age	Sex M/F/O	Disability Y/N	Marital Code*	Level of Education: Code#	Going to School /College (Y/N)	Current Class	Computer Literate Y/N

4. Children below 6 years

Name	Age	Sex M/F/O	Disability Yes/No	Going to School (Y/N)	Going to AWC Y/N	De-worming Done	Fully Immunised Y/N	Mother's Age at the time of Child's Birth

¹ Scheduled Caste 1, Scheduled Tribe 2, Other Backward Castes 3, Other 4

² Enter the BPL Survey round being used in the Gram Panchayat for identification of BPL Families (e.g. 1997/2002/2011)

³ Marital Status: Not Married - 1, Married - 2, Widowed - 3, Divorced/Separated - 4

⁴ Level of Education: Not Literate - 01, Literate - 02, Completed Class 5 - 03, Class 8th - 04, Class 10th - 05, Class 12th - 06, ITI Diploma - 07, Graduate - 08, Post Graduate/Professional - 09 (write the highest level applicable)

⁵ No Pension - 0, Old Age Pension - 1, Widow Pension - 2, Disability Pension - 3, Other Pension - 4 (mention)

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

5. Hand washing

	Always		Sometimes		Never
After use of Toilet	Soap	Other	Soap	Other	
Before Eating	Soap	Other	Soap	Other	

6. Use of Mosquito Net

Children: Yes / No ☒ Adults: Yes / No ☒

7. Do members take Regular Physical Exercise

	Yoga	Games	Other Exercises
Adults	Yes / No ☒	Yes / No ☒	Yes / No ☒
Children	Yes / No ☒	Yes / No ☒	Yes / No ☒

8. Consumption of Tobacco

	Smoking	Chewing
Adults	☒	☒
Children	☒	☒

9. House & Homestead Data

Own House: Yes / No ☒	No. of Rooms: 4
Type: Kutcha / Semi Pucca / Pucca ☒	
Toilet: Private / Community / Open Defecation	
Drainage linked to House: Covered / Open / None	
Waste Collection System: Door Step / Common Point / No Collection System	
Homestead Land: Yes / No ☒	Kitchen Garden: Yes / No ☒
Compost Pit: Individual / Group / None ☒	Biogas Plant: Individual / Group / None ☒

10. Source of Water (Distance from source in KMs)

Source of Water	Distance
Piped Water at Home	Yes / No ☒
Community Water Tap	Yes / No ☒
Hand Pump (Public / Private)	Yes / No ☒
Open Well (Public / Private)	Yes / No ☒
Other (mention):	

11. Source of Lighting and Power

Electricity Connection to Household: Yes / No ☒
Lighting: Electricity / Kerosene / Solar Power ☒
Mention if Any Other:
Cooking: LPG / Biogas / Kerosene / Wood / Electricity ☒
Mention if Any Other:
If cooking in Chullah: Normal / Smokeless ☒

12. Landholding (Acres)

1. Total	2. Cultivable Area
3. Irrigated Area	4. Uncultivable Area

13. Principal Occupations in the Household

Livelihood	Tick if applicable
Farming on own Land	☒
Sharecropping / Farming Leased Land	
Animal Husbandry	☒
Pisciculture	
Fishing	
Skilled Wage Worker	☒
Unskilled Wage Worker	
Salaried Employment in Government	
Salaried Employment - Private Sector	
Weaving	☒
Other Artisan (mention)	
Other Trade & Business (mention)	

14. Migration Status

Does any member of the household migrate for Work: Yes / No ☒ If Yes Entire Year / Seasonal
Does anyone below 18 years migrate for work: Y/N

15. Agriculture Inputs

Do you use Chemical Fertilisers	Yes / No ☒
Do you use Chemical Insecticides	Yes / No ☒
Do you use Chemical Weedicide	Yes / No ☒
Do you have Soil Health Card	Yes / No ☒
Irrigation: None / Canal / Tank / Borewell / Other	
Drip or Sprinkler Irrigation: Drip / Sprinkler / None	☒

16. Agricultural Produce in a normal year (Top 3)

Name	Unit	Quantity
93	kg	1
201801	kg	1
201802	kg	1

17. Livestock Numbers

Cows: 0	Bullocks: 1	Calves: 1
Female Buffalo: 3	Male Buffalo: 1	Buffalo Calves: 1
Goats/Sheep: 1	Poultry/Ducks: 1	Pigs: 1
Any other: Type _____ No. _____		
Shelter for Livestock: Pucca / Kutcha / None ☒		
Average Daily Production of Milk (Litres): 15		

18. What games do Children Play

19. Do children play musical instrument (mention)

Schedule Filled By:
Principal Respondent:
Date of Survey:

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

(Note: Please aggregate information from village level questionnaires wherever relevant)

I. Basic Information

- a. Gram Panchayat: Borvav
 b. Block: Borvav
 c. District: Gir Somnath
 d. State: Gujarat
 e. Lok Sabha Constituency: Gir Somnath
 f. Number of Wards in the Gram Panchayat: -
 g. Number of Villages in the Gram Panchayat: -

h. Names of Villages:

Demographic Information

Number of Households 972 Total Population 5247 Male 2964 Female 2717
 SC HHs 200 ST HHs 45 OBC HHs 2718 Other HHs -

I. Access to Infrastructure / Facilities / Services

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
a.	ANM/ Health Sub Centre	N	
b.	Nearest Primary Health Centre (PHC)	Y	
c.	Nearest Community Health Centre (CHC)	N	
d.	Nearest Post Office	Y	
e.	Nearest Bank Branch (Any)	Y	
f.	Nearest Bank with CBS Facility	N	
g.	Nearest ATM	Y	
h.	Nearest Primary School	Y	
i.	Nearest Middle School	Y	
j.	Nearest Secondary School	Y	
k.	Nearest Higher Secondary School / +2 College	N	
l.	Nearest Graduate College	N	
m.	Nearest ITI / Polytechnic Centre	N	
n.	Kisan Seva Kendra	Y	

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

(Note: Please aggregate information from village level questionnaires wherever relevant)

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
o	Agriculture Credit Cooperative Society	✓	
p	Nearest Agro Service Centre	✓	
p	MSP based Government Procurement Centre	✓	
q	Milk Cooperative /Collection Centre	✓	
r	Veterinary Care Centre	✓	
s	Ayurveda Centre	✓	
t	E – Seva Kendra	✓	
u	Bus Stop	✓	
v	Railway Station	✓	
w	Library	✓	
x	Common Service Centre	✓	

IV. Sports Facilities in the Gram Panchayat

- a. Number of Play Grounds in the GP: Total No Public — Private —
- b. Mini Stadium : ✓ Yes(Y) /No (N) (Playground with equipment and sitting arrangement)

V. Education, ICDS

- a. Number of Angan Wadi Centres: 3
- b. Number of villages without Angan Wadi Centres —
Names of such villages: —
- c. Schools (Number)
Primary Private: — Primary Govt.: 1
Middle Private: — Middle Govt.: 1
Secondary Private: — Secondary Govt.: —
Higher Secondary Private: — Higher Secondary Govt.: —

VI. Public Distribution System

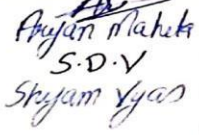
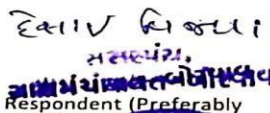
	Item	Private Contractor	Women's SHG	Gram Panchayat	Cooperative	Other (Mention)	Location in GP (mention Location)	If outside GP, Location & distance from GP HQrs)
a.	Cereal (Rice/ Wheat/ Millets)				Yes			
b.	Kerosene				Yes			
c.	Other (mention)				Yes			

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire
(Note: Please aggregate information from village level questionnaires wherever relevant)

IX. Parameters relating to Households & Institutions

	Number
a) Number of eligible Households for pension (old age, widow, disability)	-
b) Number of Households receiving pension (old age, widow, disability)	12
c) Number of eligible Households who are not receiving pension	-
d) Number of Households eligible for Ration Card	972
e) Number of eligible HHs having ration cards	392
f) Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	652
g) Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	-
h) Number of active Job Card holders under MGNREGA	391
i) Number of Job Card holders who completed 100 days of work during 2013-14	390
j) Number of shops selling alcohol	-
k) Number of BPL families	400
l) Number of landless households	62
m) Number of IAY beneficiaries	-
n) Number of FRA ² beneficiaries	-
o) Number of Community Sanitary Complexes	-
p) Number of Households headed by single women	8
q) Number of Households headed by physically handicapped persons	42
r) Total number of Persons with Disability in the village	18
s) Number of SHGs	-
t) Number of active SHGs	-
u) Number of SHG Federations	-
v) Number of Youth Clubs	-
w) Number of Bharat Nirman Volunteers	-

Name and Signature of Surveyor and Respondent¹

 Surveyor	 PRI Respondent (Preferably Gram Panchayat Chairperson)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey
---	---	---	----------------

² The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

This questionnaire should be filled for each of the villages in the selected Gram Panchayat¹

I. Basic Information

- a. Village: Barnav
 b. Ward Number: -
 c. Gram Panchayat: Barnav
 d. Block: -
 e. District: Gir Somnath
 f. State: Gujarat
 g. Lok Sabha Constituency: Gir Somnath
 h. Number of Habitations / Hamlets in the Gram Panchayat: -

i. Names of Habitations / Hamlets:

Demographic Information

Number of Households 972 Total Population 5247 Male 2964 Female 2277
 SC HHs 200 ST HHs 45 OBC HHs 2778 Other HHs -

II. Access to Infrastructure/Amenities etc.

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
a.	Nearest Primary School	Y	
b.	Nearest Middle School	Y	
c.	Nearest Secondary School	Y	
d.	Kisan Seva Kendra	Y	
e.	Milk Cooperative /Collection Centre	N	
g.	Health Sub Centre	N	
h.	Bank	Y	
i.	ATM	Y	
j.	Bus Stop	Y	
k.	Railway Station	N	

¹ While filling this the surveyor must collect the information from the Ward Member/s and relevant government officials

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire
 (Note: Please aggregate information from village level questionnaires wherever relevant)

VII. Coverage of Villages under different Facilities & Services

	Parameter	Villages Status ¹	Names of Villages Covered	Names of Villages not Covered
a.	Piped Water Supply Coverage to Villages	Covered ☒ Not Covered	Barnor	
b.	Hand Pump Coverage in Villages:	Covered ☒ Not Covered	Barnar	
c.	Coverage under Covered Drains:	Covered ☒ Not Covered	Barnar	
d.	Coverage under Open Drains:	Covered ☒ Not Covered	Barnar	
e.	Villages with Household Electricity Connection (Numbers)	Connected ☒ Not Connected	Barnar	

VIII. Land and Irrigation

VIII. Land and Irrigation								
	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	1986	d.	Pasture / Grazing Land	—	g.	Check Dam	—
b.	Irrigated Land	1986	e.	Forests/ Plantations	—	h.	Wells/Bore Wells	13
c.	Un-irrigated Land	—	f.	Other Common Land	—	i.	Tanks/Ponds	1

¹ Mention the number of Villages Covered and Not Covered

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

i. Access to Infrastructure / Facilities / Services		Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
l	Library	N	7 km
m	Common Service Centre	Y	
n	Veterinary Care Centre	N	8 km

ii. Road Connectivity

a. Habitations connected by All-weather Roads

If 3 mention the name of the habitations where not available: Same (1-All 2-None 3-Some)

iii. Drinking Water Facilities

a. Piped Water Supply Coverage to Habitations: all (1-All 2-None 3-Some)

If 3 mention the name of the habitations not covered: _____

b. Hand Pump Coverage in Habitations: None (1-All 2-None 3-Some)

If 3 mention the name of the habitations not covered: _____

iv. Coverage of Habitations under Waste Management System

a. Coverage under Covered Drains: Same (1-All 2-None 3-Some)

If 3 mention the name of the habitations not covered: _____

b. Coverage under Open Drains: Same (1-All 2-None 3-Some)

If 3 mention the name of the habitations not covered: _____

c. Coverage under Doorstep Waste Collection: all (1-All 2-None 3-Some)

If 3 mention the name of the habitations not covered: _____

v. Coverage of Habitations under Electrification

a. Coverage under Household Connections: all (1-All 2-None 3-Some)

If 3 mention the name of the habitations not covered: _____

b. Coverage under Street Lighting: Same (1-All 2-None 3-Some)

If 3 mention the name of the habitations not covered: _____

vi. Sports Facilities in the Village

a. Number of Play Grounds in the Village (minimum size 200 square meters): Nob. Mini Stadium : No Yes(Y) /No (N)

vii. Education, ICDS

a. Number of Anganwadi Centres: 3

c. Schools (Number)

Primary Private: - Primary Govt.: 1Middle Private: - Middle Govt.: 1Secondary Private: - Secondary Govt.: -Higher Secondary Private: - Higher Secondary Govt.: -

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

i. Access to Infrastructure / Facilities / Services		Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
l	Library	N	8 km
m	Common Service Centre	Y	
n	Veterinary Care Centre	N	8 km

ii. Road Connectivity

a. Habitations connected by All-weather Roads

(1-All 2-None 3-Some)

If 3 mention the name of the habitations where not available: Same

iii. Drinking Water Facilities

a. Piped Water Supply Coverage to Habitations: all (1-All 2-None 3-Some)

If 3 mention the name of the habitations not covered: _____

b. Hand Pump Coverage in Habitations: None (1-All 2-None 3-Some)

If 3 mention the name of the habitations not covered: _____

iv. Coverage of Habitations under Waste Management System

a. Coverage under Covered Drains: Same (1-All 2-None 3-Some)

If 3 mention the name of the habitations not covered: _____

b. Coverage under Open Drains: Same (1-All 2-None 3-Some)

If 3 mention the name of the habitations not covered: _____

c. Coverage under Doorstep Waste Collection: (1-All 2-None 3-Some)

If 3 mention the name of the habitations not covered: all

v. Coverage of Habitations under Electrification

a. Coverage under Household Connections: (1-All 2-None 3-Some)

If 3 mention the name of the habitations not covered: all

b. Coverage under Street Lighting: All (1-All 2-None 3-Some)

If 3 mention the name of the habitations not covered: Same

vi. Sports Facilities in the Village

a. Number of Play Grounds in the Village (minimum size 200 square meters): Nob. Mini Stadium : No Yes(Y) /No (N)

vii. Education, ICDS

a. Number of Anganwadi Centres: 3

c. Schools (Number)

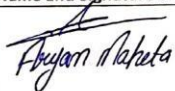
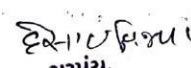
Primary Private: - Primary Govt.: 1Middle Private: - Middle Govt.: 1Secondary Private: - Secondary Govt.: -Higher Secondary Private: - Higher Secondary Govt.: -

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

viii. Land Category	Area in Acres	Land Category	Area in Acres	Irrigation Structure	No.
a. Cultivable Land	1986	d. Pasture / Grazing Land	-	g. Check Dam	-
b. Irrigated Land	1986	e. Forests/ Plantations	-	h. Wells/Bore Wells	13
c. Un-irrigated Land	-	f. Other Common Land	-	i. Tanks /Ponds	1

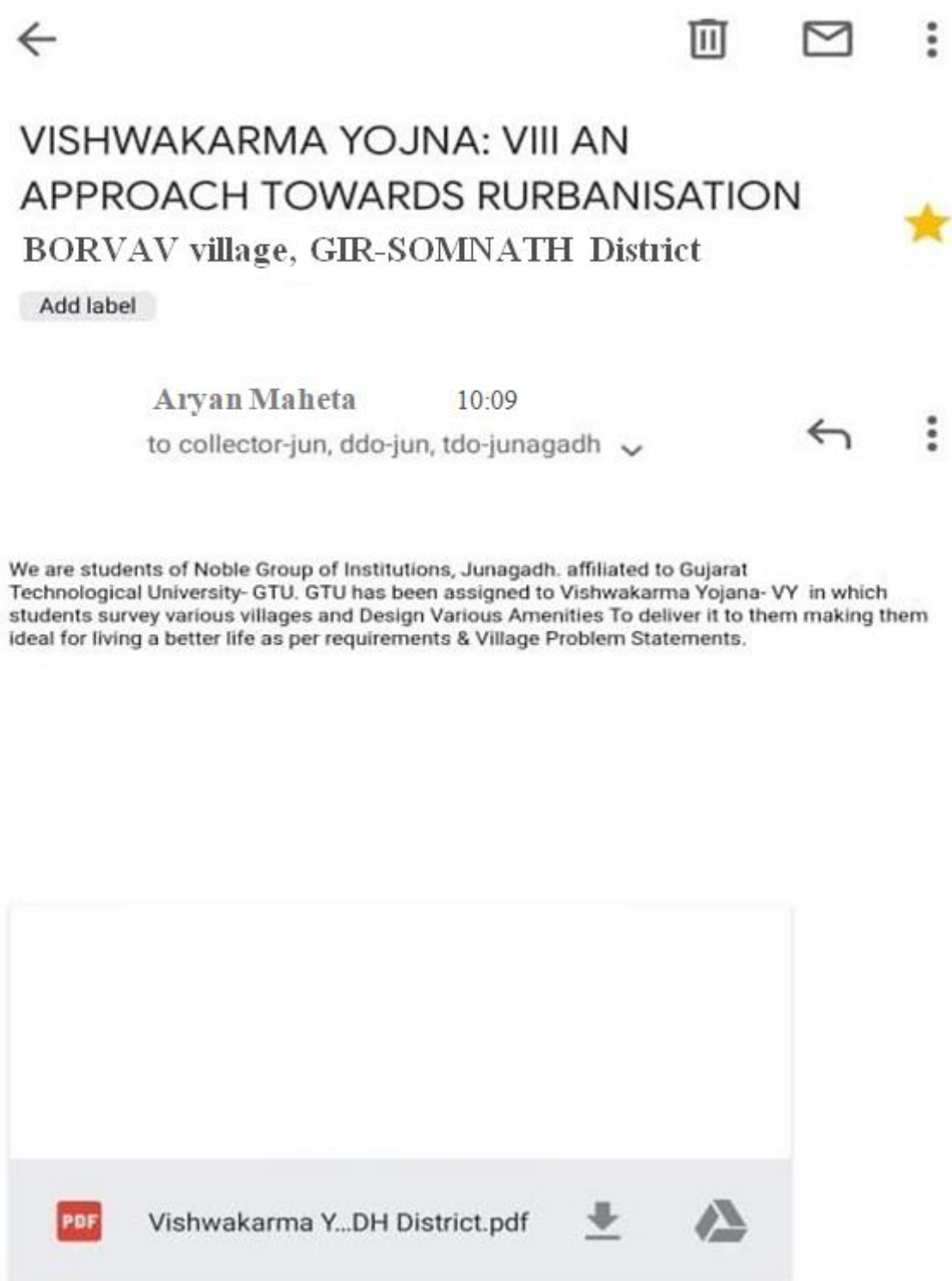
ix. Entitlement Related Parameters		
1	Number of active Job Card holders under MGNREGA	392
2	Number of active Job Card holders who have completed 100 days of work	390
3	Number of shops selling alcohol	-
4	Number of BPL families	400
5	Number of landless households	-
6	Number of IAY beneficiaries	-
7	Number of FRA beneficiaries	-
8	Number of common sanitation complexes	-
9	Number of SHGs	-
10	Number of active SHGs	-
11	Existence of SHG Federation in the Village (Yes / No)	-
12	Number of Youth Clubs	-
13	Number of Bharat Nirman Volunteers	-

Name and Signature of Surveyor and Respondent

 S.D.V. Shyam Vyas Surveyor	 સરપંચ, ગ્રામ પંચાયત-બોરવાવ  PRI Respondent (Preferably a ward member or a person that is still a part of the covered under the village)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey
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22. Chapter 22

22.1 TDO-DDO-Collector email sending Soft copy attachment in the report



23. Chapter 23

23.1 Comprehensive report for the entire village

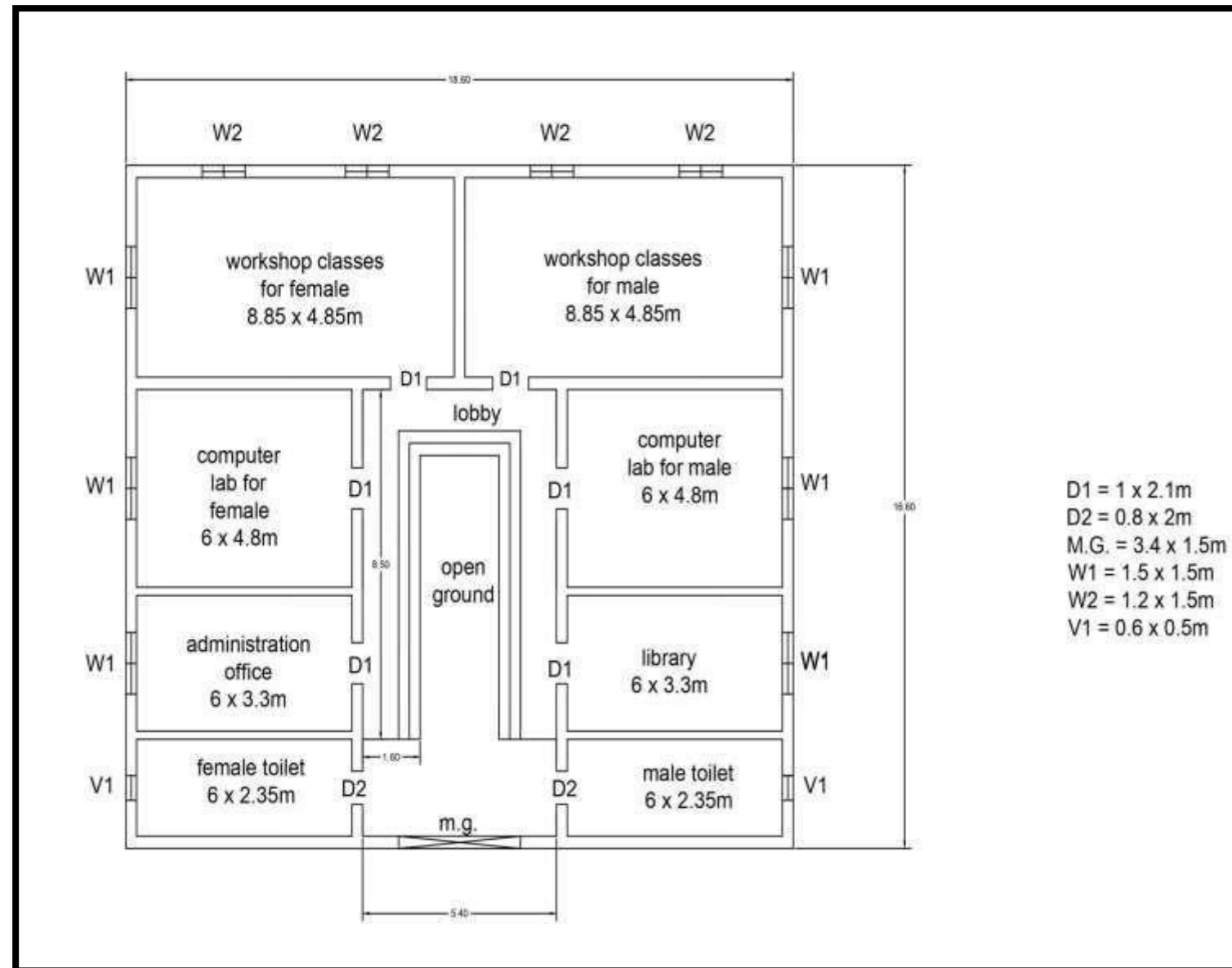
Our aim was to give Knowledge and perspective of the Vishwakarma Yojana (phase - VIII) to the villagers and sarpanch of the village. By presenting that how the Vishwakarma Yojana works and our recommendation which follows Vishwakarma Yojana and Ideas for Development of village by gathering peoples of Individual Village and their sarpanch.

As per the Vishwakarma Yojana requirements, we collect the required data by the visiting the village and meeting with the sarpanch and some educated villagers of the village. By which we can decide the problems of villagers and discuss about their solution at efficient and economical way. After the meetings and visiting the village we can find out some Problems which require such development.

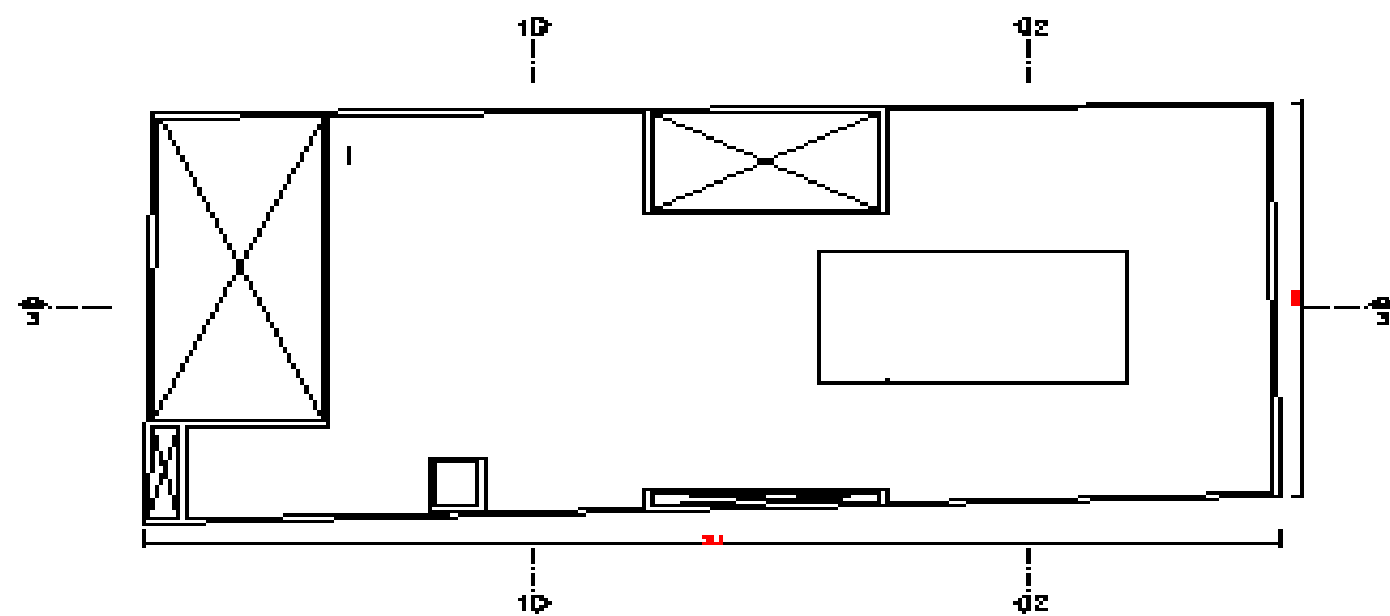
Borvav village is located at GirSomnath district in Gujarat, India. It is situated 20km away from GirSomnath, which is both district & sub-district headquarters of Borvav village. The area of village is 1774.45 hectare. The natural language is Gujarati. Total Population of village is 4960 as per census 2011. Total households in Borvav are 1057 as per census 2011. In Borvav village out of total population, 2302 were engaged in work activities. 76.46 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 23.54 % were involved in Marginal activity providing livelihood for less than 6 months. Of 2302 workers engaged in Main Work, 557 were cultivators (owner or co-owner) while 584 was Agricultural Laborer. Borvav village has lower literacy rate compared to Gujarat. In 2011, literacy rate of Borvav village was 71.51 % compared to 78.03 % of Gujarat.

The Village has Primary schools, Underground drainage system, Gram Panchayat building. There is 24*7 electricity supply for residential use and 8 hours for agricultural use.

We select stable designs which can help the village to develop in future with low budget with more facilities. We design and providing all these amenities as village required. Our design will be helpful in development. The purpose behind our design is to manufacture and develop highly qualified and highly developed infra structure which will help to Borvav in future.

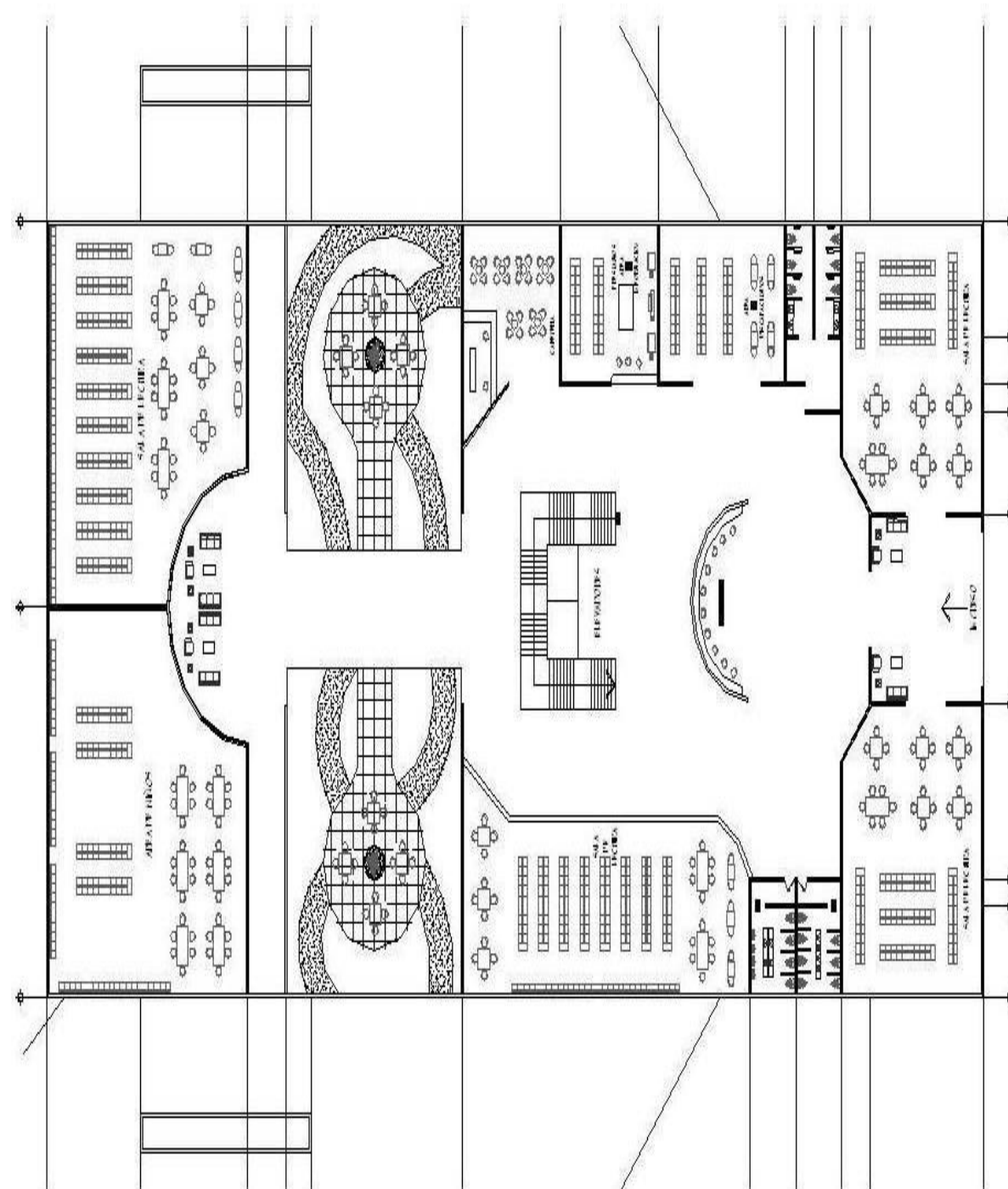


DESIGN NO: 1	Plan For Skill Development Centre
PROJECT NAME:	Vishwakarma Yojana Phase- VIII Khadiya, Junagadh
INSTITUTE NAME:	Noble Group of Institutions, Junagadh 
UNIVERSITY NAME:	Gujarat Technological University 

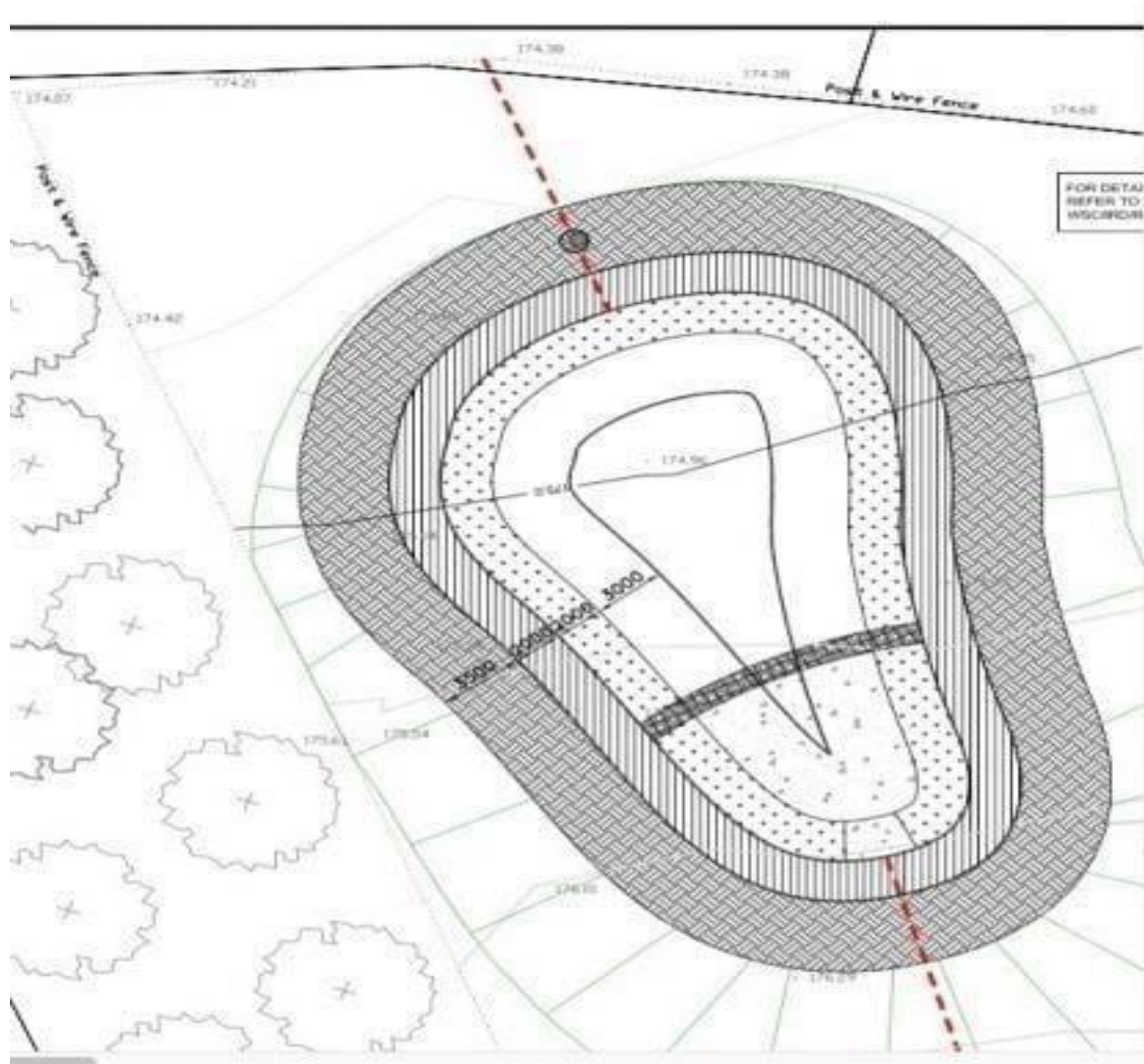


DESIGN NO: 2	Elevations For Community Hall
PROJECT NAME:	Vishwakarma Yojana Phase- VIII Khadiya, Junagadh
INSTITUTE NAME:	Noble Group of Institutions, Junagadh 
UNIVERSITY NAME:	Gujarat Technological University 



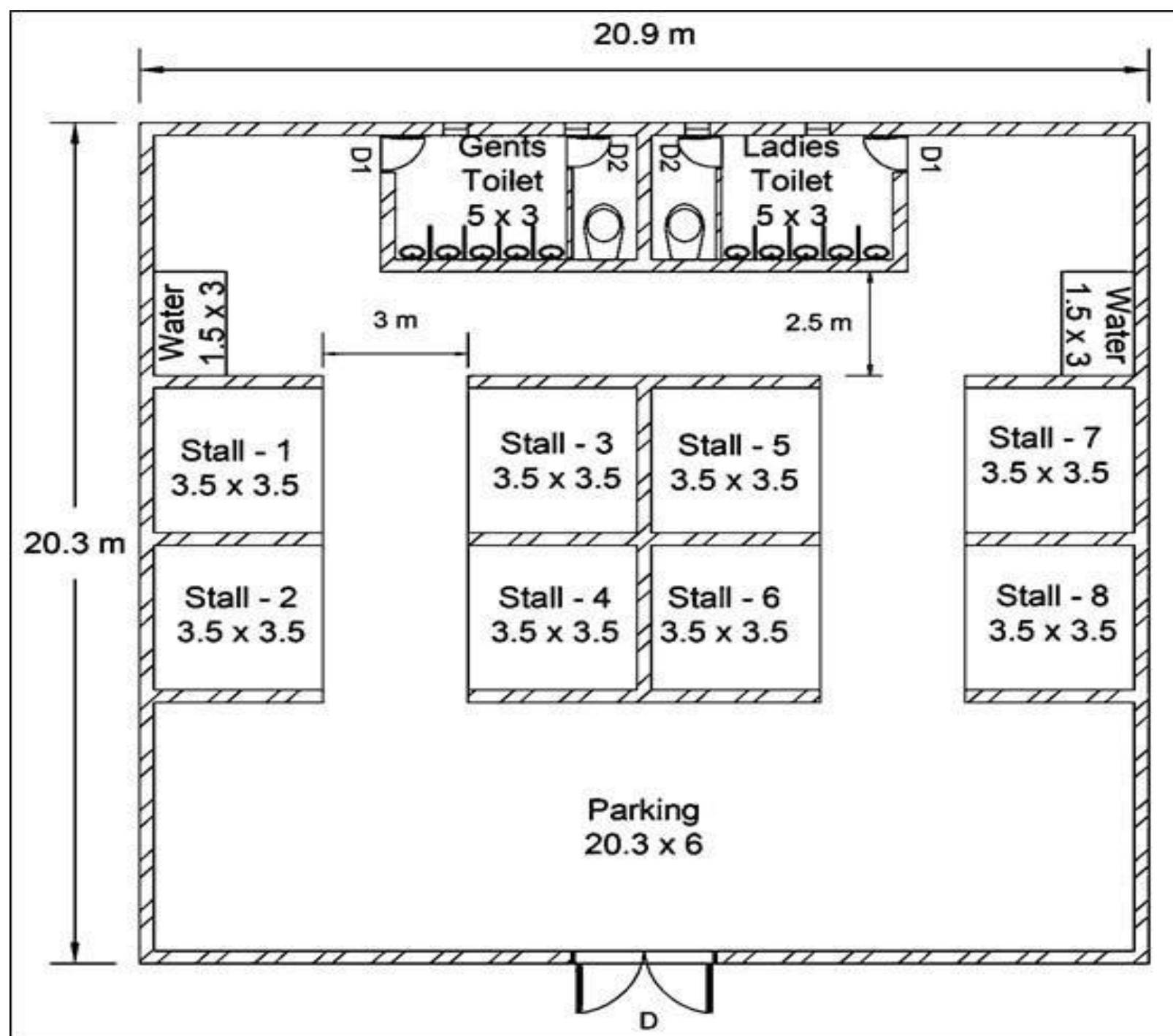


DESIGN NO: 3	Elevations For Library
PROJECT NAME:	Vishwakarma Yojana Phase- VIII Khadiya, Junagadh
INSTITUTE NAME:	Noble Group of Institutions, Junagadh 
UNIVERSITY NAME:	Gujarat Technological University 

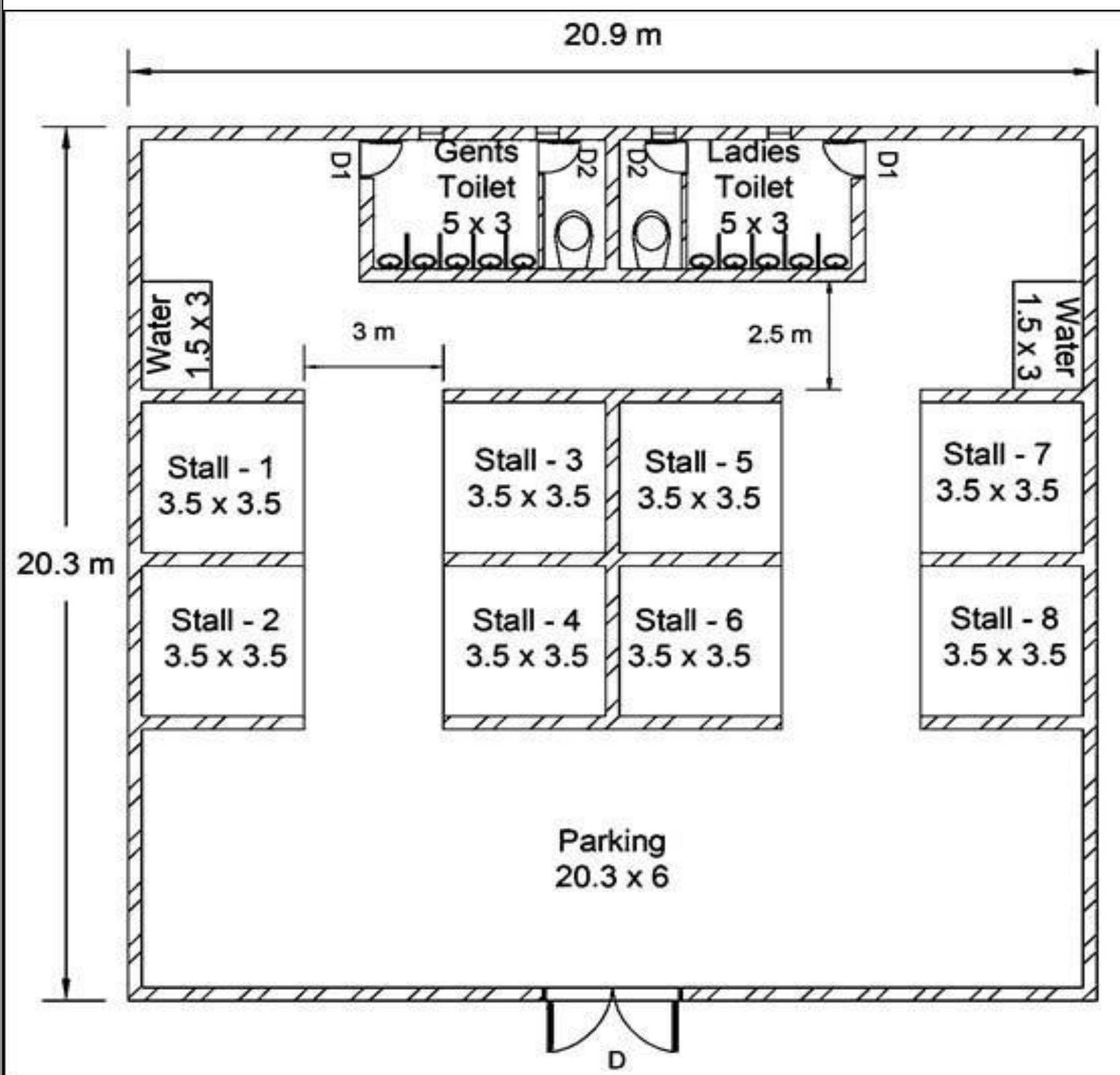


Design no: 4	Top View Of Lake
PROJECT NAME:	Vishwakarma Yojana Phase- VIII Khadiya, Junagadh
INSTITUTE NAME:	Noble Group of Institutions, Junagadh
UNIVERSITY NAME:	Gujarat Technological University

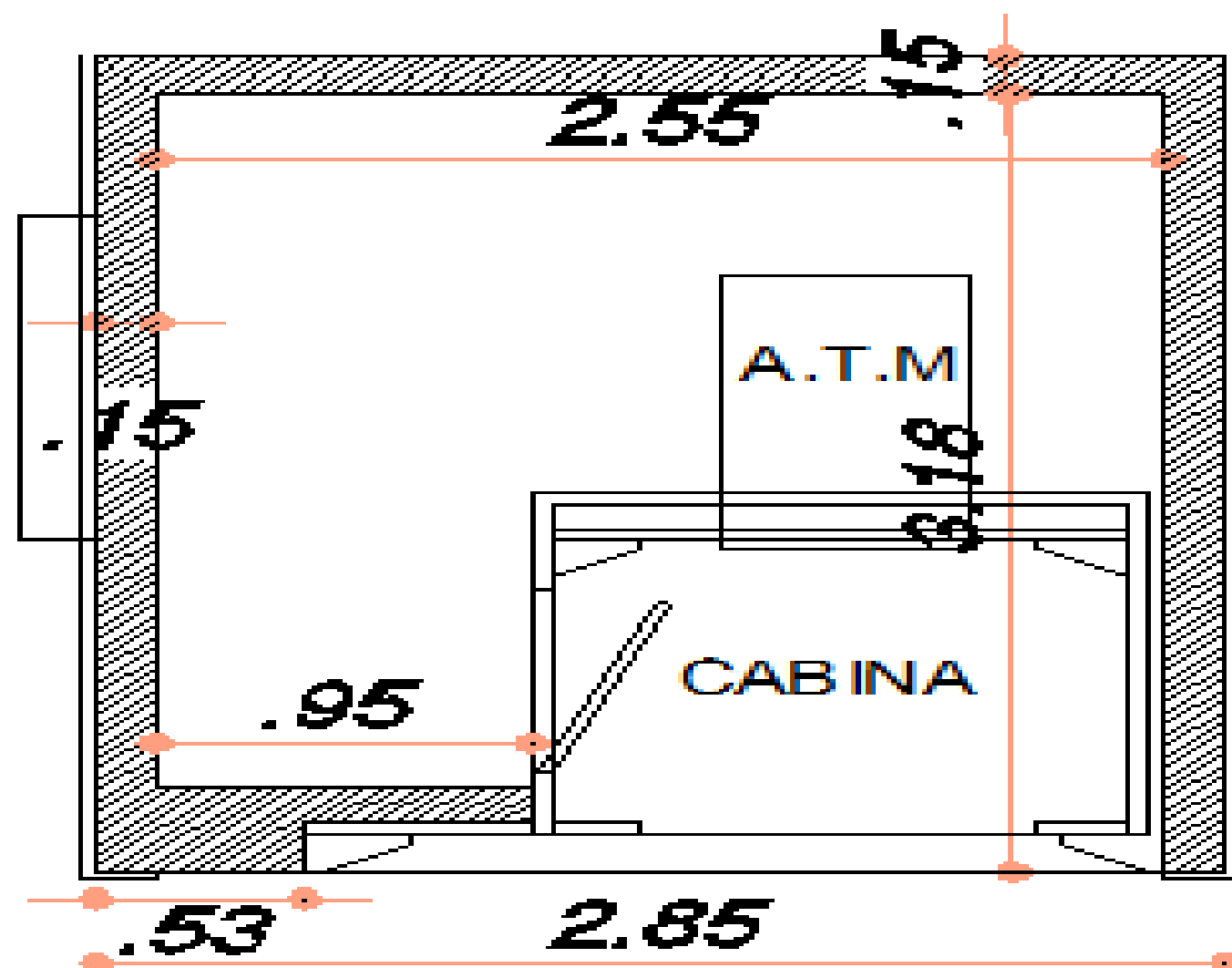




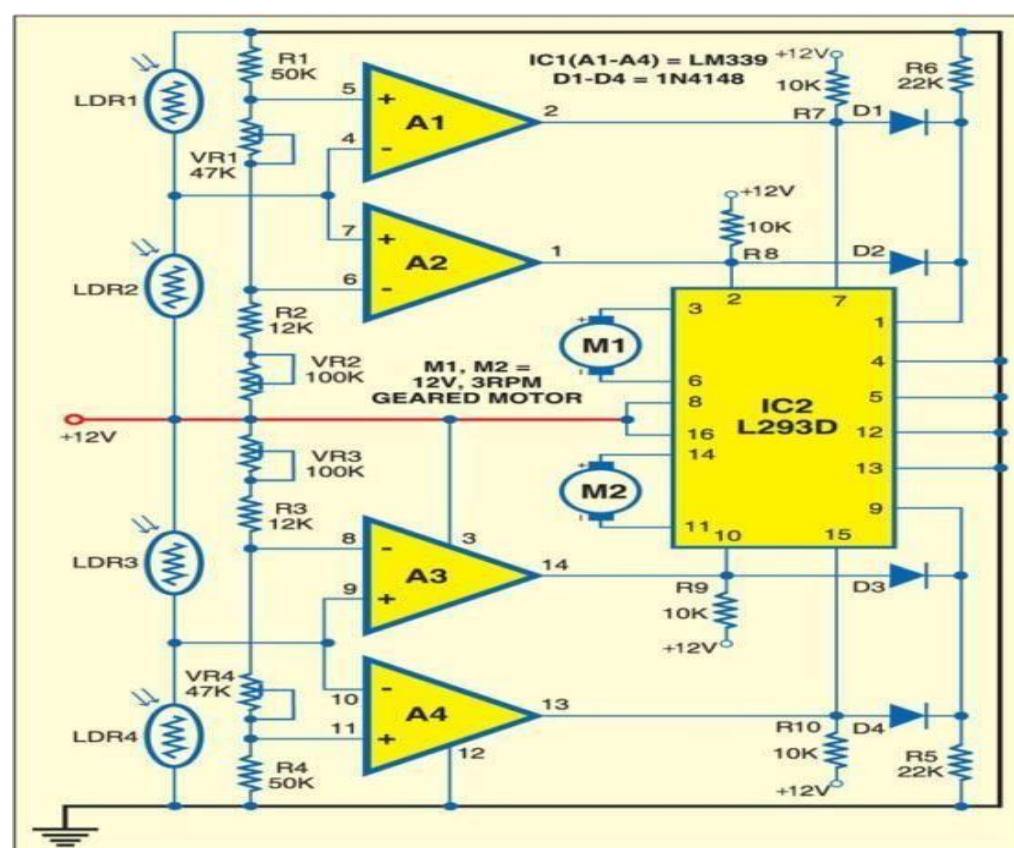
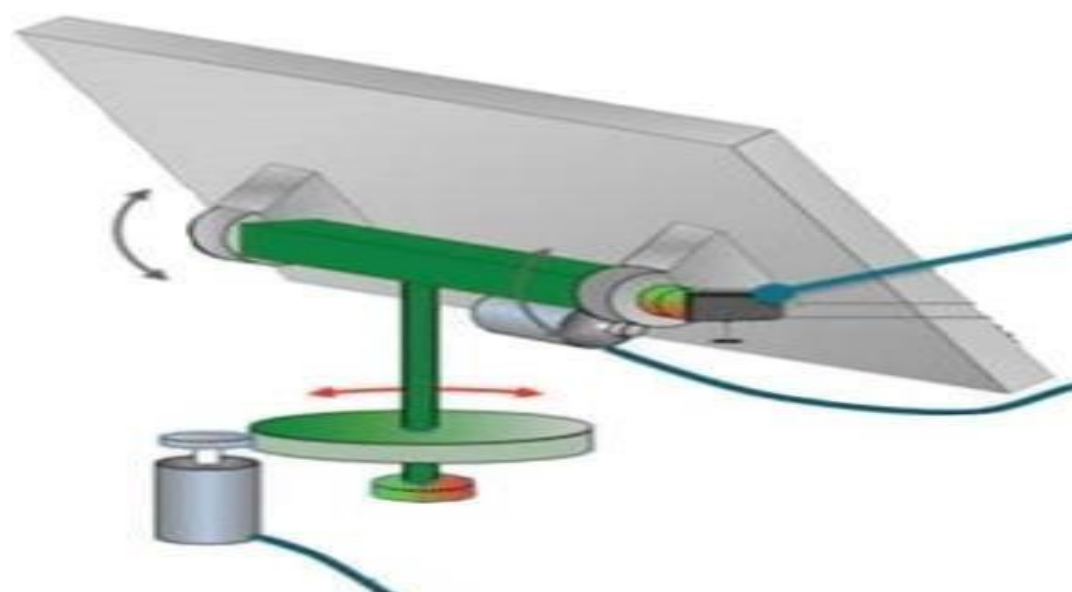
PROJECT NAME:	Vishwakarma Yojana Phase- VIII Khadiya, Junagadh
INSTITUTE NAME:	Noble Group of Institutions, Junagadh 
UNIVERSITY NAME:	Gujarat Technological University 



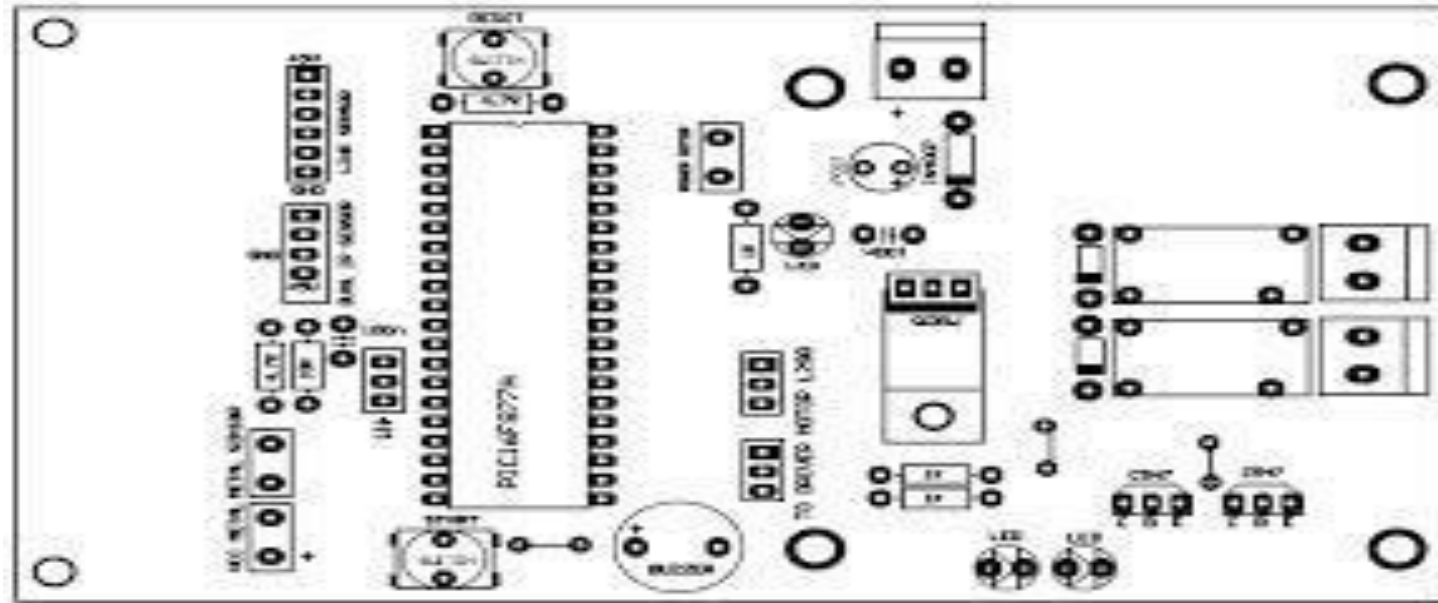
Design no: 4	Top View Of Lake
PROJECT NAME:	Vishwakarma Yojana Phase- VIII Khadiya, Junagadh
INSTITUTE NAME:	Noble Group of Institutions, Junagadh 
UNIVERSITY NAME:	Gujarat Technological University 



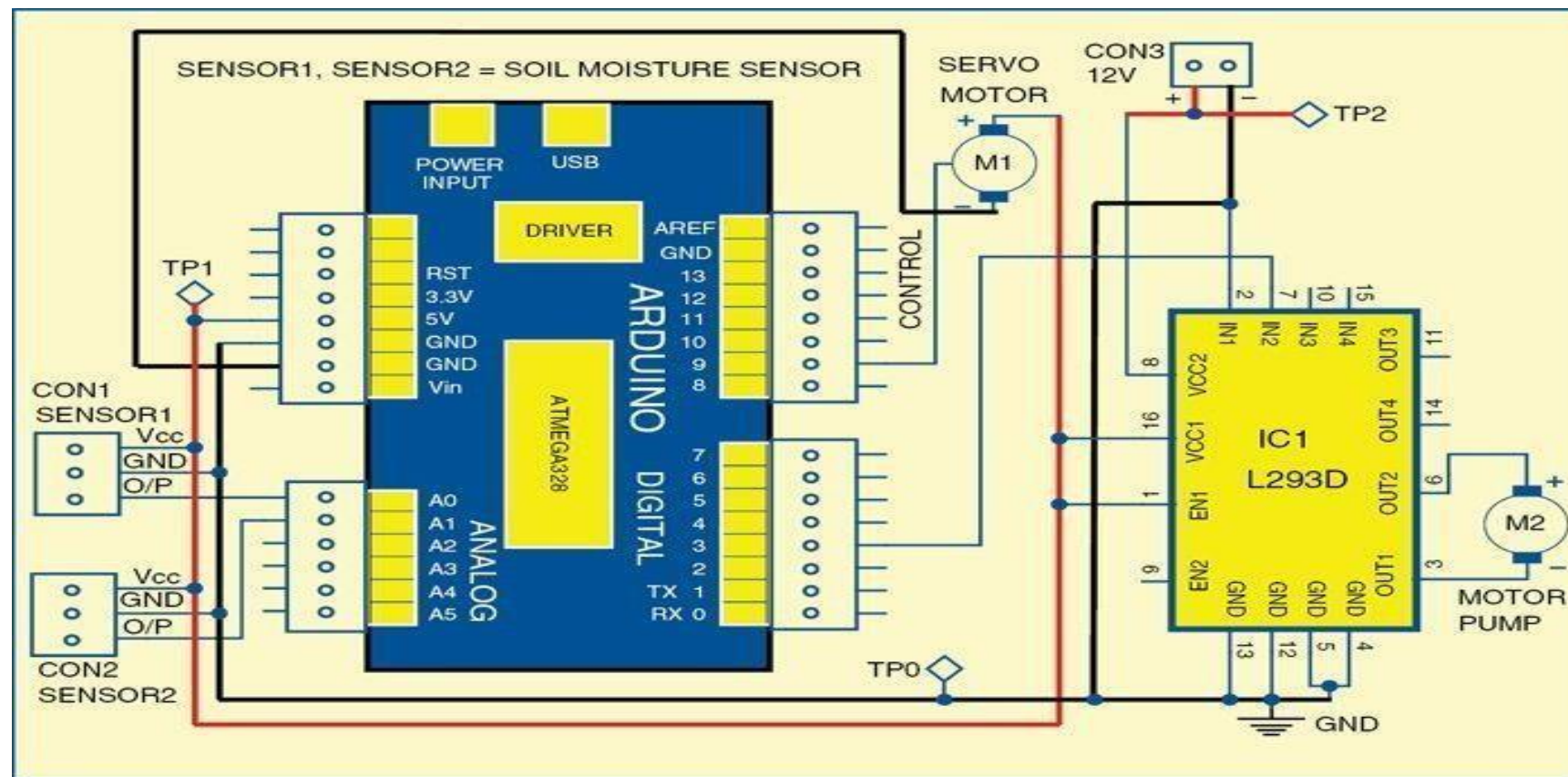
Design no: 4	Top View Of Lake
PROJECT NAME:	Vishwakarma Yojana Phase- VIII Khadiya, Junagadh
INSTITUTE NAME:	Noble Group of Institutions, Junagadh 
UNIVERSITY NAME:	Gujarat Technological University 

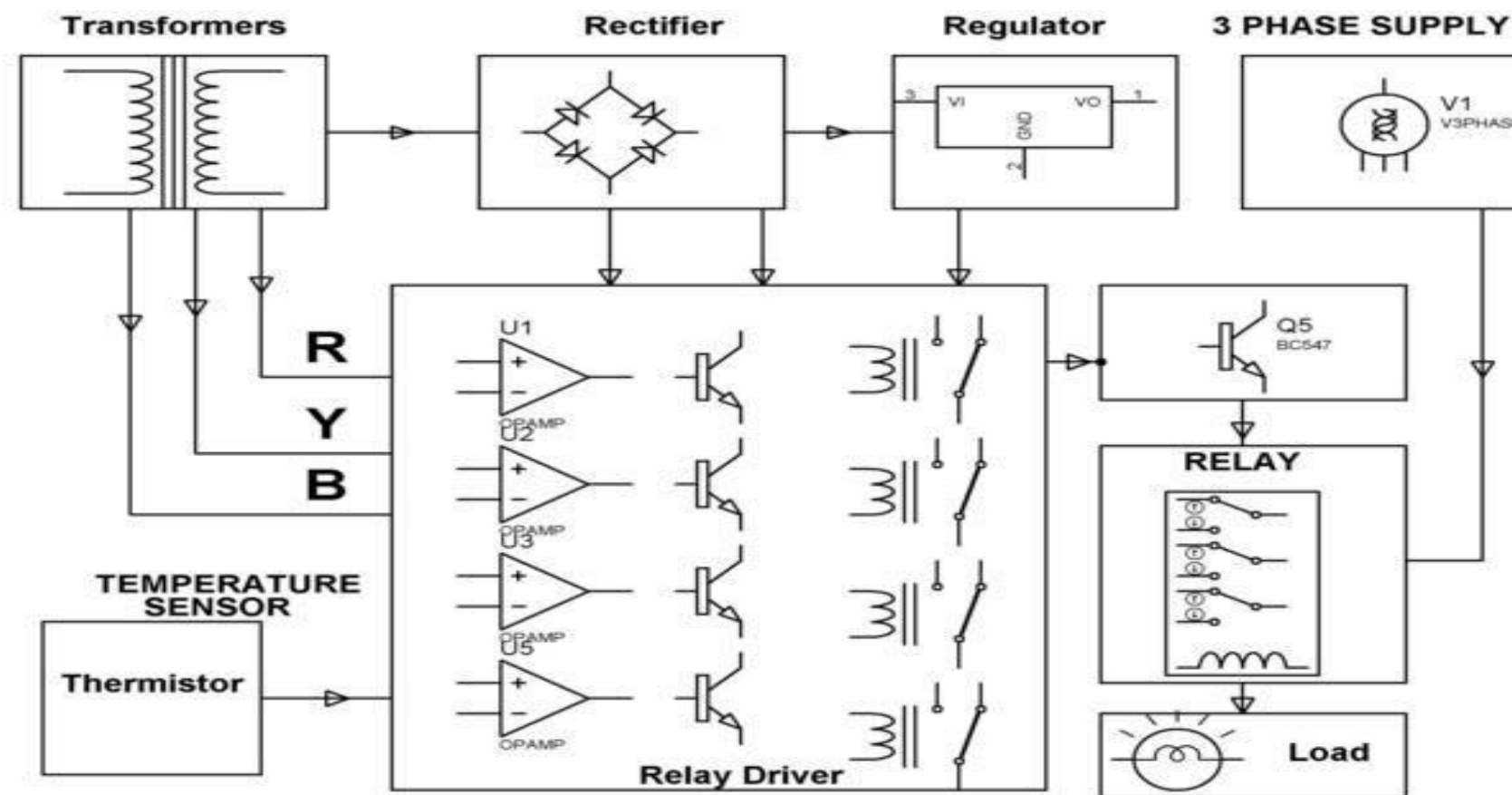


DESIGN NO: 7	Elevations For Library
PROJECT NAME:	Vishwakarma Yojana Phase- VIII Khadiya, Junagadh
INSTITUTE NAME:	Noble Group of Institutions, Junagadh 
UNIVERSITY NAME:	Gujarat Technological University 



DESIGN NO: 8	Elevations For Library
PROJECT NAME:	Vishwakarma Yojana Phase- VIII Khadiya, Junagadh
INSTITUTE NAME:	Noble Group of Institutions, Junagadh 
UNIVERSITY NAME:	Gujarat Technological University 





DESIGN NO: 9

Elevations For Library

PROJECT NAME:

Vishwakarma Yojana Phase- VIII Khadiya,
Junagadh

INSTITUTE NAME:

Noble Group of Institutions,
JunagadhUNIVERSITY
NAME:

Gujarat Technological University

