DETAIL PROJECT REPORT

VISHWAKARMA YOJANA: VIII
AN APPROACH TOWARDS RURBANISATION

Bhujodi Village
Kachchh District

PREPARED BY

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
Gajjar Bijen J. (B.E)	Civil Engineering	180923106008
Chheda Dhaval H. (B.E)	Civil Engineering	180923106005
Jethi Sagar M. (B.E)	Electrical Engineering	180923109008

COLLEGE NAME:

Veerayatan
Institute of Engineering
(Approved by AICTE, Affiliated to GTU)

NODAL OFFICERS NAME
Mr. Nilesh J. Vadgama

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY

Chandkheda, Ahmedabad – 382424 Gujarat

DETAIL PROJECT REPORT

ON

Vishwakarma Yojana: Phase VIII

AN APPROACH TOWARDS RURBANISATION

Bhujodi Village

Kachchh District

PREPARED BY

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
Gajjar Bijen J. (B.E)	Civil Engineering	180923106008
Chheda Dhaval H. (B.E)	Civil Engineering	180923106005
Jethi Sagar M. (B.E)	Electrical Engineering	180923109008

COLLEGE NAME:

Veerayatan
Institute of Engineering
(Approved by AICTE, Affiliated to GTU)

NODAL OFFICERS NAME
Mr. Nilesh J. Vadgama.

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY

Chandkheda, Ahmedabad–382424 Gujarat

CERTIFICATE

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

Detail Project Report for,

VILLAGE BHUJODI
DISTRICT KACHCHH

Under

Vishwakarma Yojana: Phase-VIII

In partial fulfilment 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	ENROLLMENT NO
Gajjar Bijen J. (B.E)	**Civil Engineering**	**180923106008**
Chheda Dhaval H. (B.E)	**Civil Engineering**	**180923106005**
Jethi Sagar M. (B.E)	**Electrical Engineering**	**180923109008**

Dateof Report Submission:	
Principal Name and Signature:	**Prof.(Dr.) C.D. Sankhavara**
VY-Nodal Officer Name and Signature:	**Mr. Nilesh J. Vadgama**
Internal(Evaluator) Guide Name and Signature:	**Mr. Hardik Radia**
College Name:	**Veerayatan Institute of Engineering, Mandvi**
College Stamp:	

ABSTRACT

Vishwakarma Yojana is one of the initiatives towards rurbanization of villages by Government of Gujarat hand over to GTU. The vision of Vishwakarma Yojana is to reduce and remove the rural-urban divide through infusion of urban patterns and services in rural systems to ensure provision of quality lifestyles and livelihood options while keeping the basic rural soul intact. By studying the village life with respect to delivery of basic needs, the main aim is to reimaging, redesign, rejuvenate and strengthen the community life. The main objective of the project is to study the present status and to conduct techno- economic survey of all selected villages of the state. It ascertains the existing basic and public amenities, essential commodities & other infrastructural facilities.

As per the criteria given by VY-VIII, we have chosen the Bhujodi village of Kachchh district. Village is located at about 10 km away from Bhuj. There are 3483 population with the area of715.03 hectares. The vande Mataram memorial is a popular heritage tourist attraction of the village. Bhuj is nearest town to Bhujodi which is approximately 10 km away.

As per our actual visit of village we found the current scenario of village. Village is tourist place Village is connected with local public transport of Bhuj GSRTC. In the village gram panchayat, school, road, house condition are in good condition. Village is lacking for the proper solid waste management.

After analysing all the data, we found that village need some new facilities and some facilities need maintenance. We suggest six design for our village, A Public toilet, Hospital, Gymnasium building, Recreational park, Police station, Pond development to fulfil the requirement of existing population. Also village need initiative for the approach to various Govt. schemes by local bodies.

After providing the facilities suggested by us, we will try to approach towards smart village concept. With the help of this Yojana and Village governance we will try to make the Smart village by providing these facilities. Also it is important to maintain the existing facilities rather than new development. We always are looking in future forgetting the past which will keep us as it is in development point of view.

We tried to give design of basic facilities to fulfill their needs. By providing this basic facilities to village for reduce urban city pressure and decrease migration rate, which is ultimate aim of Vishwakarma Yojana.

Key Words: Rural development, Living standards, Modern technologies, Design Provision.

ACKNOWLEDGEMENT

We are highly indented to **Gujarat Technological University,** Ahmedabad 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.

We wish to express our deep sense of gratitude to **Prof. (Dr.) Navin Sheth, Hon'ble Vice Chancellor, Gujarat Technological University-Ahmedabad**, for his encouragement and giving us the wonderful project.

We also express our gratitude to **Dr. K. N. Kher, Registrar, and Gujarat Technological University-Ahmedabad** for giving us complete support.

We express our sincere thanks to **Commissionerate of Technical Education, Gujarat State** for appreciating and acknowledging our work.

We express our sincere thanks to **DDO, TDO, Sarpanch, Talati and staff members of Ahmadabad** District for providing us with requisite data whenever we approached them. Especially our thanks are to all villagers and stake holders for their support during Survey.

We are also thankful to our **Prof. (Dr.) C. D. Sankhavara, Principal**, faculties of our colleges for their encouragement and support to complete this project work.

An act of gratitude is expressed to our internal guide / Evaluator / Nodal Officer, **Mr. Nilesh J. Vadgama** from college **Veerayatan Institute of Engineering** for their invaluable guidance, constant inspiration and active involvement in our project work.

We are also thankful to all the experts who provided us their valuable guidance during the work. We express our sincere thanks to, **Dr. Jayesh Deshkar, Hon'ble Director of Vishwakarma Yojana project and Principal, V.V.P Engineering College and Core Committee member of Vishwakarma Yojana project Prof. (Dr.) Jigar Sevalia**, Professor, SCET, Surat, **Prof. K. L. Timani**, Associate Professor, VGEC**, Prof**. **Rena Shukla**, Associate Professor, LD Engineering College, **Prof. Y. B. Bhavsar**, Associate Professor, VGEC, **Prof**. **Jagruti Shah**, Assistant Professor, BVM Engineering College for providing us technical knowledge of this project work.

We are also thankful to **Ms. Darshana Chauhan, Vishwakarma** Yojana, for all support during our work. We therefore, take this opportunity for this Project work expressing our deep gratitude and sincere thanks for her cooperation to produce this project work in the present form.

Above all we would like to thank our Parents, family members and Friends for their encouragement and support rendered in completion of the present this work.

CONTENT

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
VY	Vishwakarma yojana
PHC	Primary health center
CHC	Community health center
URDPFI	Urban and Regional Development Plans Formulation and Implementation Guidelines
GDP	Gross Domestic Product
SAGY	Sansad Adarsh Gram Yojana
GHG	Green House Gas
NH	National Highway
NGO	Non-Governmental Organization
SWOT	Strength, Weakness, Opportunity, Threats

Chapter-1

Ideal village visit from District of Gujarat State (Civil Concept) :

1.1 Background & Study Area Location Kera Village :

The kera is a village in Bhuj Taluka of Kutch district of Gujarat state. The main occupation of the village dwellers is Farming, Employment and Milk sale. The kera is located at distance of about 22 km from Bhuj and takes about 45 minutes to reach by car. The telephone or STD code of the kera village is 02832. The pin code of kera is 370430. The Kera village comes under kera Panchyat. It is located at 365 km from gandhinagar. Kera is surrounded by Anjar Taluka towards east, Nakhtrana Taluka towards west, Mundra Taluka towards south, Adipur Taluka towards east. Mandvi, Bhuj, Adipur, Anjar, gandhidham, are the nearby cities to kera village. Generally, the Guajarati language is used by villagers in the kera. It is also known as “Kera baladiya”.

1.2 Concept: Ideal Village, Normal Village

The Ideal Village concept is community village with a self-sustaining income producing project, independent electrification system generated from non-fuel based device, clean water facility for drinking including water for irrigation, quality but affordable housings, school, medical facilities for human beings and animals, proper sanitation system, information centre, bank, police station, retail outlet for household and agriculture needs, phone facility, connecting roads to nearby villages and towns, legal councillor. Such community villages can contribute to the economic growth of a province and even at national level. A prosperous village can result in less political problems for governments and enhance the standard of living of the people.

A village is a clustered human settlement or community, larger than a hamlet but smaller than a town (although the word is often used to describe both hamlets and smaller towns), with a population typically ranging from a few hundred to a few thousand. Though villages are often located in rural areas, the term urban village is also applied to certain urban neighbourhoods. Villages are normally permanent, with fixed dwellings; however, transient villages can occur. Further, the dwellings of a village are fairly close to one another, not scattered broadly over the landscape, as a dispersed settlement. In many cultures, towns and cities were few, with only a small proportion of the population living in them.

1.2.1 Objectives

- To provide a local needs.
- Provide awareness about government schemes and policies to farmers
- Provide urban amenities to improve the quality of life in rural area.
- Provide advance equipment so economic conditions of the villagers satisfy very well.
- Create and sustain a culture of co-operative living.

- Contribution towards the social empowerment.
- Improving the economic condition of the semi-skilled, education person, and unskilled labors by publishing their availability near the working project as well as his status on the internet.
- Provide good infrastructure facilities.

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

Punsari Village, Gujarat:

Located in Gujarat's Sabarkantha district, Punsari village has emerged as a model village with modern urban amenities such as 24X7 power supply, Wi-Fi connectivity, CCTV cameras to ensure security, and pukka roads connecting the village with other villages and towns.
Other important features of the village include:

- A reverse osmosis plant which supplies 20 liters of water to each household at Rs 4.
- Use of solar power for agricultural purposes
- Accidental Insurance cover to one member of every household

Figure 1: Punsari Village, Gujarat

1. HIWARE BAZAAR, MAHASHTRA:

This is a village located in the rain shadow region of the Sahyadri mountain range in Maharashtra's Ahmednagar district. Till the 1980s, farming in the village was largely rain-fed, and farmers were forced to migrate seasonally to surrounding areas for work. From the 1990s onwards, things began to change.

The village Panchayat adopted a holistic focus on a variety of activities, with community groups responsible for various aspects of the village economy and social development. Women thrift groups, Milk Dairy Society and Youth Clubs are examples of such community-based organizations. The village Gram Sabha also launched a watershed development programs, and an annual water audit is being conducted in the village since 2004 for more efficient and equitable management of water resources. It has also contributed to greater agricultural productivity.

Today, the village is considered a model for community-led, multi-spectral growth of rural parts of the country

Figure 2: Success Path Of Hiware Bazaar Mahashtra

1.2.3 The Idea of model / Smart village

68.9% of our population lives in rural areas (Census 2011). Though number is expected to Fall in the coming years, it is still estimated that more than half of our population would be rural even in 2050.

We got a clear idea as to which amenities and infrastructures are require for betterment of life at rural area. We were also made aware about different scheme by government for rural development. So the lacking of the various infrasturecture facilities village cannot be like a urban and the villagers are facing problem of not having needful infrastructure facilities in their village.

1.2.4 Ancient History Civil concept about Indian Village / other Countries Perspective about village and its new Development :

India is a vast country with a majority of its total population living in the villages. The Indian society is predominantly divided into two divisions like the rural society and the urban society. Villages have always been an integral part of society in India. No specific timeframe can be mentioned about the conception of villages in India. However, the concept of village was not present there in the ancient period.

Traditionally rural development is centred on the misuse of land-intensive natural resources such as forestry and agriculture. But today, increasing urbanisation and change in global production, network have transformed the nature of rural areas.

1.3 Detail study (social economic, physical, demographical and infrastructure details) of Ideal village Kera with photograph

Physical, Socio economic and Demographical Details:

The kera is a village in Bhuj Taluka of Kutch district of Gujarat state. The main occupation of the village dwellers is Farming, Employment and Milk sale. The kera is located at distance of about 22 km from Bhuj and takes about 45 minutes to reach by car. The telephone or STD code of the kera village is 02832. The pin code of kera is 370430. The Kera village comes under kera Panchyat. It is located at 365 km from gandhinagar. Kera is surrounded by Anjar Taluka towards east, Nakhtrana Taluka towards west, Mundra Taluka towards south, Adipur Taluka towards east. Mandvi, Bhuj, Adipur, Anjar, gandhidham, are the nearby cities to kera village.

Population data of Kera village

Table-1. Population data of Kera village

Sr. No	Census	Population	Male	Female	House hold
1	2011	8063	3998	4065	1863

Geographical data of Kera village

Table-2. Geographical data of Kera village

Sr No.	Description	Information / Detail
1.	Area of Village(in Hector) Coordinate For location :	4055.84 23°5′0’’ North 69°36’0’’ East
2.	Forest Area (in Hector)	86.69
3.	Agriculture land area (in Hector)	2272.27
4.	Other area (in Hector)	371.60

Occupational Detail

Table-3. Occupational data of Kera village

Name of main occupation in	Agriculture
Kera village	Employment
	Milk sale

Physical Facilities

- The main sources of drinking water are rivers and wells.
- There are total 203 wells in the Kera village.

- The one river passing near the village.
- There is also provision of Overhead tank in adequate condition. There is also provision of drainage facility in adequate condition

Socio cultural Facilities

- The socio cultural facilities like Community hall, Public library, public gardens, Recreation centre, Assembly polling, etc are available with good and adequate condition. In the Kera village, there is also Birth & Death registration office available.

Infrastructure detail

Figure-3 Road Network, Post-Office &collage of Kera

1.4 SWOT analysis of ideal village

SWOT stands for Strengths, Weaknesses, Opportunities, and Threats, and so a SWOT Analysis is a technique for assessing these four aspects of your business. You can use SWOT Analysis to make the most of what you've got, to your organization's best advantage. And you can reduce the chances of failure, by understanding what you're lacking.

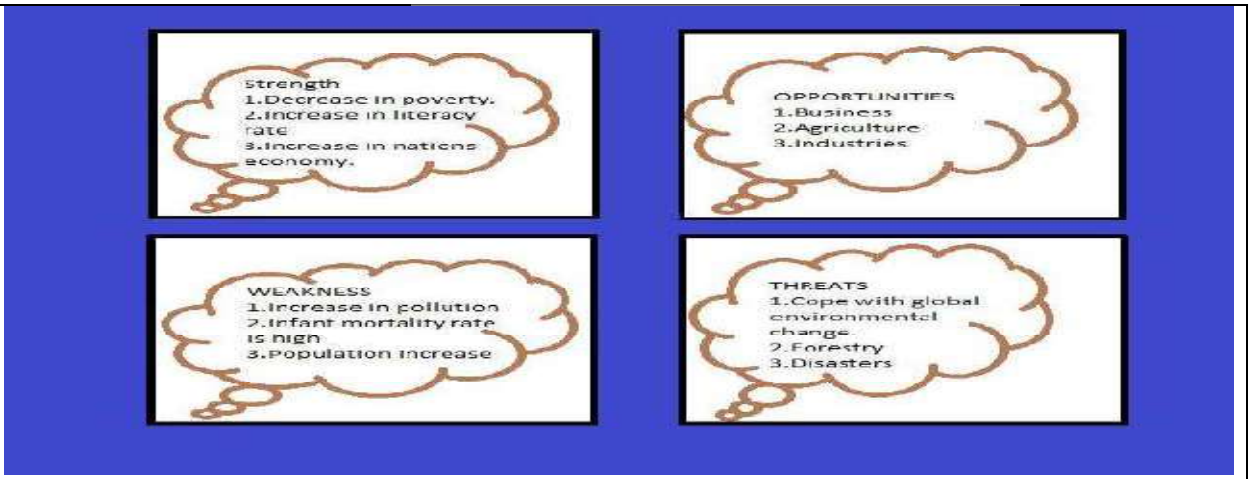


Figure 4: SWOT Analysis

1.5 Future prospects of Development of the Ideal village

The following should be the future prospects:

- Smart Security are developed in the village for the security of villlagers.
- Traffic control system should be adopt for prevent accidents in the village.
- Effective emergency services should be adopted.
- Smart police station.
- Advanced fire station for control hazard.
- CCTV camera should be installed.
- Smart traffic sensor for detecting speeding vehicles. .
- Smart Sewage treatment facilities.
- Maintain the existing facilities of village for batter use and long term advantage.

1.6 Benefits of the visits of Ideal village

- To know the strength and weakness of the village.
- To know the living standard of the people and requirements
- By visiting this village our communication skills and knowledge is increase.
- We know the how to interact with the peoples.

1.7 Electrical / Civil aspects required in Ideal village:

We have observed in the village but as per the interaction with the villagers some facilities are not available for villagers such as in civil aspects public toilet, fire station, police station, hospital, Biogas Plant, Rain Water Harvesting, Solar Street Lights, Public Wi-Fi Connection, Fire Station, etc. proper road inside the residential area in the village. If these facilities are provided to the villagers the village will well-develop and towards to improvement.

At the same time, focus should also be given to construction of toilets for each household under the MNREGA and the Nirmal Bharat Abhiyan. Schools and anganwadis in villages should be provided with toilets even as panchayats have to take steps towards solid waste management, the department said. Large tracks of roads (75,866 km) in the State are still mud tracks and they require development, the department said. This would help improve the economic activities of the region. Also, GPs are required to provide roads to farms under different schemes. Playgrounds and open-air theatres provide the much-needed avenues for physical activity and recreation of village people. There should be at least one playground and one open-air theatre in each village. The GPs should also provide animal shelters for cows and sheep. This would encourage dairy and sheep-rearing activities. These all are things are need to become village ideal i.e. 1.Smart security. 2. Efficient public transportation system. 3. Improving sanitation conditions 4. Solid and liquid waste management. 5. Rain harvesting /Rain water drainage system. 6. Safe drinking water facilities. 7. Use of renewable energy. The rain water harvesting are helpful in Monsoon runoff and water in swollen streams during the monsoon and storing it in underground tanks so the using this techniques we save the ground water in store the rainwater. In the ideal village the part of the renewable energy the Solar street lights harness energy from the sun to provide an alternative source of energy to conventional street lighting. In the ideal village the tree plantation are more beneficial to make the village ideal, the Tree plantation creates instant forests, we do this by growing tall tree seedlings in the shortest time possible .for this we provide fast growing trees fruit trees, nut trees etc.

Fig 5:cctv

Fig 6: Solar Street Light

Fig:7 Play ground

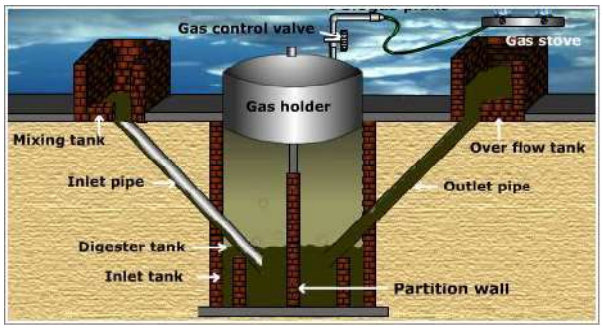


Fig: 8 Bio-gas plant

Chapter-2 Literature Review
Bhujodi Village Literature Review – (Civil Concept)

2.1 Introduction: Urban & Rural village concept:

2.1.1 Urban village concept:

- A place where all basic facilities are available and also luxurious lifestyle is available such a place could be defined as an urban place.
- An area with high population density and human settlement and infrastructure of built environment.
- A well planned and designed infrastructural city can also be termed as an urban area

2.1.2 Rural village concept:

- An area located at the outskirts of the town or t a distant place from town could be stated as a rural area.
- A place where the basic facilities of lively hood and infrastructure are not available can be stated as a rural area.
- A place where more than 75% of males are engaged with agriculture is also a rural area.
- The place which has 75% or more male population is engaged with agriculture such a place is known as a village.

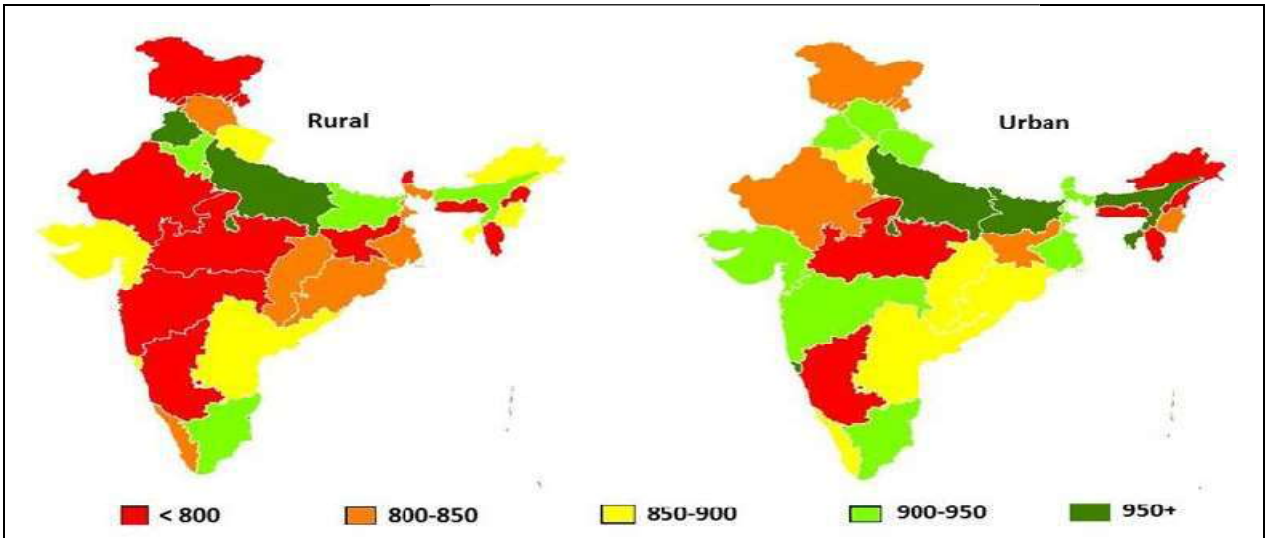


Figure 9: Urban & rural map of India

2.2 Importance of the Rural Development

India is a land of countless villages. More than eighty percent of the Indian population lives in villages. That's why it is said that Real India lives i villages So it is very important to give greater attention and concentration to them.

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 for this reason there is a large variety of rural development approaches used globally. Rural development is a comprehensive term. It essentially focuses on action for the development of areas outside the main stream urban economic system.

Villages are the back bone of any nation. It is necessary that the villages should be uplifted to higher levels. Most of the raw materials and food stuffs are provided in villages. So by developing them, the overall development of the country can be achieved.

2.3 Ancient Villages / Different Definition of Rural Urban Villages:

We define the term 'rural' as a region located on the outskirts. It refers to a small settlement, which is outside the boundaries of a city, commercial or industrial area. It may include, countryside areas, villages or hamlets, where there are natural vegetation and open spaces. There is a low density of population in such area. The primary source of income of the residents is agriculture and animal husbandry. Cottage Industries also form a chief source of income here.

In India, a town whose population is below 15000 is considered as rural, as per the planning commission.

Gram Panchayat is responsible for looking after such areas. Further, there is no municipal board, in the villages and maximum percentage of the male population are engaged in agriculture and related activities.

2.4 Scenario: Rural / Urban village of India population Growth:

As according to Census of India, 2011, the rural area is defines as:

- A population of less than 5000persons.
- Density of population less than 400 per square kilometer.

More than 25% of the male working population is engaged in agricultural pursuits

Table-4. Urban & Rural area in India

Type of area	1991	2001	2011
Urban	3351	5161	7935
Rural	634321	638588	640867

2.5 Scenario: Rural / Urban village of Gujarat as per Census 2011

Table-5 Population growth from year to year in India

	2001	2011	Difference
India	102.9	121.0	18.1
Urban	28.6	37.7	9.1
Rural	74.3	83.3	9.0

2.6 Rural Development Issues – Concerns – Measures

- **Rural issues & Concerns**

Major problems consist of the agriculture, the ownership of the land, the lack of cottage industries, lack of education social evils, death of animal, wealth, bad wealth and so on. These problems are the result of traditionalism and conservatism of the Rural Society. The problems of the villages may be studied under the following heads:

- The problems concerning agriculture
- The problems of cottage industries
- The problems of population and the family planning animal wealth and animal
- husbandry; The problems of rural health and education
- The problem of the status of women
- The problem of child marriage
- Problem of housing
- Apart from it there are also the problems of untouchability and caste is Problem of Illiteracy

Various Measures for Rural development

- Increase Welfare of the rural masses
- In rural employment
- Minimum wages to landless labourers
- Uplift of the SC and ST people
- Growth of housing facilities
- New programmers of family planning

2.7 Various infrastructure guidelines with the Norms for Villages for the Provisions of different infrastructure facilities.

- Electricity: - The electricity should be supplied 24 hours. It should be good because most of the work is depend on the electricity.
- Road facilities: - The village should have good road facilities so peoples move easily from one place to another.
- Drinking water: - The water supplied to the village should have good quality.
- Sanitation facilities
- Educational facilities
- Hospital
- Agricultural
- Primary school
- Socio – cultural facilities

2.8 Existing Electrical concept study as a literature Review for village development

Following are some electrical issues of village rural electrification before development. transportation is much costly for installation of power supply system

- Distorted supply to consumer because of transmission losses
- No electricity means no communication system
- Also, information system is disabling. Due to this low literacy rate
- Installation of cctv network is higher in cost in village.

2.9 Other Projects / Schemes of Gujarat / Indian Government:

- Schemes by govt. sector
- Schemes by Private sector
- Schemes by Other sector

Table 6: Schemes of Gujarat

Sr No	Name of Government scheme	Year
1	Aam Aadmibima Yojana	2007
2	Atal Pension Yojana	9 May, 2015
3	Bachat lamp Yojana	2009
4	Central government health scheme	1954
5	Deendayal Disabled Rehabilitation scheme	2003
6	Deendayal Upadhyay gram jyoti yojana	2015
7	Gramin Bhandaran Yojana	31 march, 2007

8	Indira Awash Yojana	1985
9	Indira Gandhi matritva sahyog yojana	2010
10	Integrated chilled Development services	2 octo, 1975
11	Integrated Rural development program	1978
12	Janani surakshaYojana	2005
13	Jawaharlal Nehru National Urban Renewal mission	Dec.3, 2005
14	Kasturba Gandhi Balika Vidhyalay	July 2004
15	Kishore Vaigyanik ProtsahanYojana	1999
16	Mahatma Gandhi National Rural Employment guarantee Act	6 February, 2006
17	Member of Parliament local Area development scheme	23 December, 1993
18	RNTCP	1997
19	Midday Meal Scheme	August 15, 1995
20	National Literacy Mission Programme	May 5, 1988

Table: 7 Privet Schemes

Serial No	Name of Private Project And Scheme
1	Dairy Udhyog
2	Mava Udhyog
3	Fertilizer production plant
4	Biogas plant
5	Tourism Department
6	Solar Plants
7	Electricity By wind mill
8	PURA Group

Table 8: Other Schemes

Serial No	Other Projects / Schemes	Set up in – Year
1	Community Development Programme	1952
2	Drought Prone Areas Programme	1973-74
3	Twenty Point Programme	1975
4	Desert Development Programme	1977-78
5	National Fund For Rural Development	1984

Chapter 3.

Smart (Cities / Village) Concept Idea and its Visit (Civil Concept):

3.1 Introduction: Concepts, Definitions and Practices

The development of smart village is not just to improve the efficiency of the bureaucracy by utilizing information and communication technology, but also how to develop the community by making ITC infrastructure and facility as supporting factors or enablers.

Smart city is provided with all types of facilities like educational, sanitation facilities, recreation area, solid waste management, land, water, health, energy, proper road and streets etc.

Smart village is defined as an innovative city on the use of information and commutation technology and other means to improve its quality of life. Efficiency of urban services and competitiveness, as well as sustainability.

Figure: 10 Smart village idea

3.2 Vision Goals, Standards and Performance Measurement Indicators:

Table: 9 Vision Goals, Standards

Parameters	Benchmarks
Solid waste management.	100% household are covered by daily door- to-door step Collection system.
Storm water drainage.	100% coverage of road network with storm water drainage network.
Electricity.	100% house hold has electricity connection. 27X7 supply of electricity.
Telephone connection.	100% house hold have a telephone connection including mobile.
WI-FI connectivity	100% of the city has Wi-Fi connectivity. 100 Mbps internet speed

3.3 Technological Options

- Smart buildings: - Automated Intelligent Buildings, Advanced Heating Ventilation and Air conditioning systems (HVAC), Lighting Equipment.
- Smart mobility: - Intelligent mobility; Advanced traffic management system (ATMS), Parking management, ITS-enabled transportation pricing system.
- Smart governance and smart education: - Government on the Go, e-Government, education, Disaster management solutions.

3.4 Road Map and Safe Guards

- Globally the concept of 'Smart City' is a significant initiative that seeks to improve the quality of life of urban citizens. In India to the new central government's stated priority of building 'Smart Cities' has found a relatively modest budgetary allocation of Rs. 7,060 cr. for FY 2014-15, though its significance for the long term can be much larger. Be it the push of the 'Smart City' concept from solution providers, real estate developers or the government itself, the concept finds wide appeal. The Government of India's stated plan to set up 100 Smart Cities across the country has the potential to be a game- changer in the country's urban landscape and the lives of ordinary citizens.

3.5 Issues & Challenges

Smart city council of is facing many issues and challenges in the smart city project. Some of the issues are shown below,

- Retrofitting existing legacy city infrastructure to make it smart
- Financing smart cities
- Availability of master plan or city development plan
- Three-tier governance

3.6 Smart Infrastructure - Intelligent Traffic Management :

Siemens Mobility is committed to finding solutions that meet these challenges and deliver the required outcomes. Solutions that balance innovation with quality, intelligence with usability and accessibility with security. Our intelligent infrastructure and traffic management solutions are designed with our customers, and their customers, the travelling public, in mind, helping make towns and cities more efficient, safer, more attractive and healthier places to be. Intelligent traffic systems play a critical role in enabling people and goods to move efficiently and safely in, around and between our towns, cities and communities. Managing our transport networks is an ever-changing, non-stop challenge

3.7 Cyber Security

Challenges specific to the Indian context weaken the efforts towards cyber security implementation in smart cities. The major challenges have been 1) cyber security not figuring amongst top priorities and 2) limited stakeholder awareness on cyber security. While security should be a prerequisite, in the Indian context, it is often an afterthought. As cities throw their weight behind timelines to implement services, security takes a backseat. Based on our analysis and on-ground assessments, the smart cities today face multiple challenges in implementing cyber security.

It covers multiple aspects security governance, implementation, and operation of security products and services, and security assurance.

- Design and implement smart city security architecture leveraging COTS/Make in India/open source security products based on risk assessment, security budget, and MoHUA guidelines.
- Implement the security products across different layers: sensor layer, communication layer, data layer and application layer.
- Ensure that all the systems, network and edge devices are configured as per the minimum baseline security guidelines.

3.8 Retrofitting- Redevelopment- Greenfield Development District Cooling:

Retrofitting:

The retrofit process is a general term that may consist of a variety of treatments, including: preservation, rehabilitation, restoration and reconstruction. Preservation is defined as the process of applying measures to sustain the existing form, integrity, and materials of a historic property. Large number of cracks of various sizes is generated in the concrete structures due to earthquake. There are three basic methods of crack repair: to ‘glue’ the cracked concrete back together by epoxy injection or grouting, to ‘stitch’ the cracked concrete with dowels or to enlarge the crack and ‘caulk’ it with a flexible or semi rigid sealant. Jacketing, pinning, stitching, strapping etc. are some of the methods of retrofitting distressed structural elements.

Redevelopment:

Housing redevelopment refers to the process of reconstruction of a residential premise by demolition of the existing structure and construction of a new one as per approvals. It ideally works best when a society is in dire need of extensive repairs but is starved of the necessary funds for it.

Green field development

As the name suggests, the prospect of developing a Greenfield land or land that has not been used before for various different types of projects is called Greenfield development. As cities and towns grow and the population of human beings grows all over the world, more and more Greenfield land is being used for development. A good example of Greenfield development

is cities expanding. As the population of a city grows, new suburbs of the city emerge. These suburbs are established, as the periphery of the city limits is expanded.

3.9 Strategic Options for Fast Development:

Choosing the right strategic options for your charity or non-profit organization, following your analysis. A vital step in strategy development is about taking all of the ideas emerging from the analysis, weighing them up, and making some decisions about your course of action to achieve the vision and mission. Whilst there are some tools to help, some of this activity is about using your experience, taking a 'punt', having the strength of mind to go for it. Safely!

- **The strategic plan**

Your non-profit organization's strategic plan shows you know the direction in which you are heading and how to get there.

- **SWOT analysis**

A really useful tool to help collect together all of your thinking from your external analysis of opportunities and threats and your internal analysis of strengths and weaknesses.

- **SWOT'ing a PEST**

Using a combination of these two useful strategy tools to develop some strategic options.

- **Decision-making matrix**

Sometimes deciding between strategic options is really tough. This matrix can help you weigh up different strategic options to make an informed, objective decision.

- **Cost benefit analysis**

Considering both elements is an important part of decision making.

- **Mission/money matrix**

This is a useful management tool for helping an organisation decide on priorities, whether to bid for a contract, or take on a piece of work.

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

The available water sources throughout the world are becoming depleted and this problem is aggravated by the rate at which populations are increasing, especially in developing countries. Currently, some 30 countries are considered to be water stressed, of which 20 are absolutely water scarce. It is predicted that by 2020, the number of water scarce countries will likely approach 35. It has been estimated that, one-third of the population of the developing world will face severe water shortages by 2025.

Unsafe water and poor sanitation are the primary causes for the vast majority of water borne and primarily diarrhoeal diseases. Every year, unsafe water coupled, with a lack of basic sanitation,

kills at least 1.6 million children under the age of five years – more than eight times the number of peoples who died in the Asian tsunami of 2004. Waterborne diseases also inflict significant economic burden through the loss of productivity in the workforce and through increasing national health care costs. As consequences of these pit falls, a billion of people locked in a cycle of poverty and disease.

3.11 Initiatives in village development by local self-government:

There is sufficient evidence to establish the fact that the institution of local self-government is almost pre-historic, and the conception of local self-government is indigenous to the Indian soil. Municipal governments have flourished in India since times immemorial.

While empires rose and fell, village Panchyat which formed an integral part of the national life, helped to preserve democratic traditions in social, cultural, economic and political life, survived the onslaughts of centuries of political upheavals and saved Indian society from disintegration. The existence of local bodies in ancient India is a positive proof of the inherent genius of our people to manage local affairs efficiently and on a decentralized basis.

3.12 Smart Initiatives by District Municipal Corporation:

In the district Kachchh in Bhuj municipal corporation is now in the process of preparing the Smart City Proposal of citizen needs in various sectors under retrofitting, redevelopment and Greenfield development including PAN city development of the city for better and comfortable service & rejuvenation of the city as a "Smart City Bhuj under the Smart City Mission of Government of India. Citizens are requested to post their views and suggestions on how to make Bhuj a Smart City and are requested to suggest the priority sectors which need to be addressed along with the SMART solutions regarding services. The below are the sectors. Citizens are also requested to provide vision for making Bhuj Smart city.

- Water supply
- Recreational facilities
- Sewerage
- Transport & mobility
- Storm water drainage
- Parks and open spaces
- Electricity/Solar Lighting
- Slum Improvement including housing

3.13 Any Projects contributed working by Government / NGO / Other Digital Country concept:

The authorities said that because of the all-inclusive lockdown, the state government has

dispatched an official site for 'Coronavirus ePass' 'Coronavirus Essential Services Pass' for various urban communities in Gujarat.

- **Digi Locker:** The service was launched as an important facility to store crucial documents like Voter ID Card, Pan Card, BPL Card, Driving License, education certificates, etc. in the cloud.
- **National Scholarship Portal**: This activity targets making the grant cycle simple. From presenting the application, confirmation, approval and disbursal to end recipient, everything identified with government grants should be possible on this single gateway on the web.

3.14 How to implement other Countries smart village projects in Indian village context (Regarding Environment, Employment) :

Smart village projects in Indian village environment

Integrated biomass solar town concept is a concept which encourages local community to utilize biomass waste comprehensively with strong ties between community and local stakeholders. This paper discusses about an Integrated Biomass Solar Town for eco village with and without load shifting (LS). On the other hand, the energy storage (ES) is also incorporated which could help cut electricity demand during peak periods and smoothing variations in power generation by variable solar power. Village-level solar power supply represents a promising potential for access to electricity services.

Smart village projects in Indian village Employment

To achieve growth with equity and social justice, the government of India has been implementing specific poverty removal plans since the Fifth five-year plan (1974 – 1979). The most recent initiative under the wage employment programmes is the launch of the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) in 2006. Initially implemented in 200 districts, during the financial year 2006-2007, it was extended to 330 districts and finally to 615 districts during the financial year 2007- 2008. Some other Government schemes to eradicate rural unemployment include:National Rural Employment Programme (NREP) (1980): Launched to use the unemployed and the underemployed workers to build community.

- Jawahar Gram Samridhi Yojana (JGSY)(1999) : Launched to create demand-driven community village infrastructure including durable assets at the village level and skills to enable the rural poor to increase the opportunities for sustained employment.
- Swarna Jyanti Gram Swarojgar Yojana (1999): This Yojana is a holistic package covering all aspects of self-employment such as organization of poor into self-help groups, training, credit, infrastructure and marketing. A credit-cum-subsidy programme, the beneficiaries under this scheme are called swarojgaris. This scheme is being implemented by the central and the state government on a 3:1 cost ratio.

- Sampoorna Gramin Rozgar Yojana (SGRY, 2001) : Launched merging JGSY and EAS, this programme aims at providing wage employment.
- National Food for Work Programme (NFWP, 2004) : Launched with the exclusive focus on the 150 identifed backward districts. The aim was to generate additional supplementary wage employment and create assets.
- National Rural Employment Guarantee Scheme (NREGS, 2006) : Launched to provide 100 days of guaranteed employment to one member from each rural household and create community assets.
- of new self-employment ventures/projects/micro enterprises.

- Rural Self Employment training Institutes (RSETI's): These institutes are being established in most districts of the state for imparting training to rural BPL youth in collaboration with the leading district banks. The state government will provide land free of cost for these institutions to the concerned leading banks.

It is imperative to generate employment in agriculture and industry in this country to feed the hungry poor of the rural areas. Agriculture is the lifeline of rural India and the need to make it more viable and profitable is undeniable

3.15 Electrical concept

Nowadays, electrical energy is considered as the most convenient for modern life, especially for a Smart City, as it is clean in its nature, and may be converted in anyother type of energy with high and without any greenhouse gasses (GHG) emission or leftovers and may provide power for a wide variety of machines, devices and equipments. Furthermore, it is easily available from renewable energy sources making it very attractive for fighting the climate changes and contributing to decrease of green-house gasses emission in large populated areas and cities. In that sense, modern power system is gradually transforming according to the Smart Grids concept using deregulation, organization in micro grids, distributed generation.

The aim of the discuss clean energy supply as a part of Smart Energy concept for the new, upcoming electric transportation sector in the Smart City environment (Fig. 1), but taking into account existing electric distribution network, major transportation routes within the city, available parking spaces and other factors which may have effects in this concept.

Smart Lighting

Increased environmental and regulatory pressures toward energy efficiency increase the cost of energy.

Many villages are trying to improve their street lighting operations and infrastructure. Street lighting consumes as much as 40 percent of energy consumption.

High Pressure Sodium (HPS) lights and their supporting infrastructure are particularly inefficient and often operate for up to 12 hours a day at full intensity. With HPS, streetlights often having a short life span— around five years, so it's not uncommon for operators to replace approximately 20 percent of these lights each year.

This leads to unpredictable services and maintenance costs. To address these issues, many operators are moving to new, energy-efficient LED-based streetlights which enable lower energy use coupled with providing IP connectivity and IoT sensors into the lighting infrastructure to provide remote management and monitoring. Smart street lighting requires new, smart/connected luminaries and power units (ballasts) to be fitted.

Smart street lighting requires new, smart/connected luminaries and power units (ballasts) to be fitted. In collaboration with our partners, the HPE Universal IoT Platform is capable of managing a smart lighting solution that leverages both HPS lights and new LED-based lights.

Smart energy

Provision of clean and sustainable, energy is central to almost all other dimensions of rural development. Energy security is the secret mantra, which enables development in agriculture, health-care, education and skilling of rural communities. With a wide variety of solar, wind, biomass and biogas technologies now available at competitive costs, we are at the cusp of witnessing energy disruption and creating an abundant energy economy.

For rural energy supply and management, the element of ‘smart’ refers to creation and management of mini, micro and nano grids within the energy eco-system of a village or a group of villages. It is particularly relevant to rural areas with no or unreliable grid connectivity.

These micro / nano grids bring in the element of self reliance in energy for rural community and create a possibility of giving back the surplus to the grid. Developing a village with this approach can usher in a new developmental model. The vision for a smart village revolves around energy security.

Smart Connectivity

Smart connectivity has two distinct connotations for smart village concept. One is to provide reliable and high quality broadband and voice communications. And the second, probably more importantly, through a range of Information and Communication Technology (ICT) solutions, applications and services, be an integral part of smart technology solutions for all other domains like smart agriculture, smart water management, smart education, smart health-care and so on.

Rural communities tend to be politically disenfranchised due to their relative remoteness. Consequently, they lack information on societal issues and have difficulty becoming actively involved in debates about how to address them. Smart villages, through ICT, can allow rural communities to become more aware of their social, economic and political rights, engage in governance processes at all levels to the collective benefit and empowerment of all.

Chapter 4.
About Bhujodi Village

4.1 Introduction:

4.1.1 Introduction about Bhujodi Village Details

Gujarat Technological University is allotted important and prestigious project of Vishwakarma Yojana by the Government of Gujarat for the year 2020-21. The area for which the project has to be carried by us is Bhujodi. In the Bhujodi village, there are many facilities which are not adequate such as Repair or maintenance of the Existing public building i.e. Bus station, solid waste management, planning of new public toilet blocks, planning of community hall with Library and planning of maternity home is required in the village. In the previous semester, we suggest that the planning of new public toilet. We also prepare the Quantity sheet and Abstract sheet for the new public toilet. For the solid waste management we suggest that the Land filling method is used. So New public toilet and solid waste management are useful for the village dwellers of the Bhujodi village. In this semester, we are planning for the new public toilet blocks, in the Bhujodi village. This proposals are necessary for the village dwellers of the Bhujodi village which is find by the Gap analysis procedure, so we planning for that proposals.

4.1.2 Justification/ need of the study:

- Need of development of village have been arisen due to following reasons
- The main of this study is to prevent the Migration of people from villages and provide all Infrastructure facility to village dwellers.
- Due to lack of physical & social infrastructural facilities, employment needs, people used to carry outmigration.
- To Provide Education facility.
- To promote Small scale industries i.e. Milk sale, use of cow dung as fertilizer etc.

4.1.3 Study area (Broadly define):

Kutch is situated on the north western border of the state bordering Pakistan with a maximum altitude of 300 meters and almost desert-like topography. The Bhujodi Village is situated in Kutch Taluka - Bhuj, Kutch District. The Distance from Bhuj Taluka is 10 km distance. Distance between Capital Gandhinagar & Hajapar is 343 km (approx.).The Pin Code of village is 370020. It is known as The Hub Of Kutchi Craft. For those who want a craft flavor of the entire region, Hiralaxmi Craft Park is an ideal option. In This Village there is no Nagarpalika. There is only Panchyat office i.e. Bhujodi Gram Panchayat. The Gram Panchayat is allotted for village Bhujodi. According to Census 2011 information the location code or village code of Bhujodi village is 506854. Bhujodi village is located in Bhuj Taluka of Kutch district in Gujarat, India. It is situated 10 km away from Bhuj, which is both district & sub-district headquarter of Bhujodi village. The

total geographical area of village is 715.03 hectares. Bhujodi has a total population of 3,484 peoples. There are about 789 houses in Bhujodi village. Bhuj is nearest town to Bhujodi which is approximately 10 km away.

4.1.4 Objectives of the study

The Main objectives of the Study are as below:

- To provide a clean water
- To provide a health facility, public toilet
- Reduce a migration rate.
- To find out the problems of Bhujodi village
- To development the village such that it can be called a smart village.

4.1.5 Scope of the study

The scope of rural sociology is wide and one could list down the following themes as areas of study.

- Rural sociology is concerned with rural communities and their problems. It takes into account the whole set of rural problems.
- It studies rural social organizations and their aspects.
- It studies social institutions and their structure.
- The study of rural sociology shall not be complete unless the difference that exists between rural society and urban society is studied in a scientific way.
- The study focused on the villages having population is not more than 10,000 and having no Nagarpalika as specified rules by Authority of vishwakarma Yojana. The study is carried out on allotted village Bhujodi.

4.1.6 Methodology/ Study Frame Work

1. First of all we studied what are the various goals and different objectives and aspect of Vishwakarma Yojana and also studied various basic definitions related to the project like rural area, urban area, urbanization etc.
2. After this we contacted our village (Bhujodi) sarpanch, talati mantri and different Gram Panchyat members.
3. Then after we frequently visited the Bhujodi village for the purpose of collecting various data related to various facilities and amenities and survey of different aspects related to physical,we observed all present facilities and its condition.
4. We conducted smart village survey and techno economic survey also.
5. We observed that good condition of water distribution system and waterfacilities.
6. We observed that there are no facilities of public toilet block.
7. Poor condition of road.
8. No proper management of solid waste.
9. We observed that there not children hospital & women hospital.
10. Need to construction of sump & water tank to efficient water distribution system.

4.1.7Available Methodology for development of related civil/ electrical

There are civil and electrical material are available for work in the bhujodi for their development in it, for civil related work such as building material and bricks, sand, aggregate's, cement, steel and etc. item were easily available near the bhujodi in some of also in the bhujodi village. For the electrical work there are also available of electrical material such as wire, mcb, switches, switchbox, motor, and some of hardware related items are available in bhujodi and there near villages so there is no problem in construction related work and electrical work in the bhujodi village.

4.2 Bhujodi Village Study Area Profile

According to Census 2011 information the location code or village code of Bhujodi village is 506854. Bhujodi village is located in Bhuj Taluka of Kutch district in Gujarat, India. It is situated 10 km away from Bhuj, which is both district & sub-district headquarter of Bhujodi village. The total geographical area of village is 715.03 hectares. Bhujodi has a total population of 3,484 peoples. There are about 789 houses in Bhujodi village. Bhuj is nearest town to Bhujodi which is approximately 10 km away.

4.2.1 Study Area Location with brief History land use details

The Bhujodi Village is situated at Bhuj Taluka, Kutch District. The Distance from Bhuj is 10 km. Distance between Capital Gandhinagar is 343 km (approx.).Village is tourist place Village is connected with local public transport of Bhuj GSRTC. The Pin Code of village is 370020. The village is near the Bhuj. There is one Vande mataram memorial which gives us the history of the out india and our brave people and there is also lighting show, fountain, food gallery, showpieces of old indian times which gives the knowledge of indian places and famous activity of india.

Figure-11. Location of Bhujodi village

Brief History

Bhujodi is a small Village/hamlet in Bhuj Taluka in Kachchh District of Gujarat State, India. It comes under Bhujodi Panchayat. It is located 8 KM towards East from District headquarters Bhuj. 7 KM from.348 KM from State capital Gandhinagar.Bhujodi Pincode is 370020 and postal head office is Madhapar .Rto Relocation Site (6 KM) , Anjani Nagar (7KM), Gujarat Housing Board (7 KM) , Reha Mota (7 KM) , Purasar (8 KM) are the nearby Villages to Bhujodi. Bhujodi is surrounded by Anjar Taluka towards East, Mundra Taluka towards South, Adipur Taluka towards East, and Gandhidham Taluka towards East Bhuj, Adipur, Gandhidham, Mandvi are the nearby Cities to Bhujodi.

Table-10. Study Area Land use detail of Bhujodi Village

Sr No.	Description	Information / Detail
1.	Area of Village(in Hector)	705.65
2.	Forest Area (in Hector)	14.70
3.	Agriculture land area (in Hector)	417.16
4.	Other area (in Hector)	103.32 (Approx.)
5.	Residential Area (in Hector)	108 (Approx.)

4.2.2 Base Location Map, Land Map of the Village

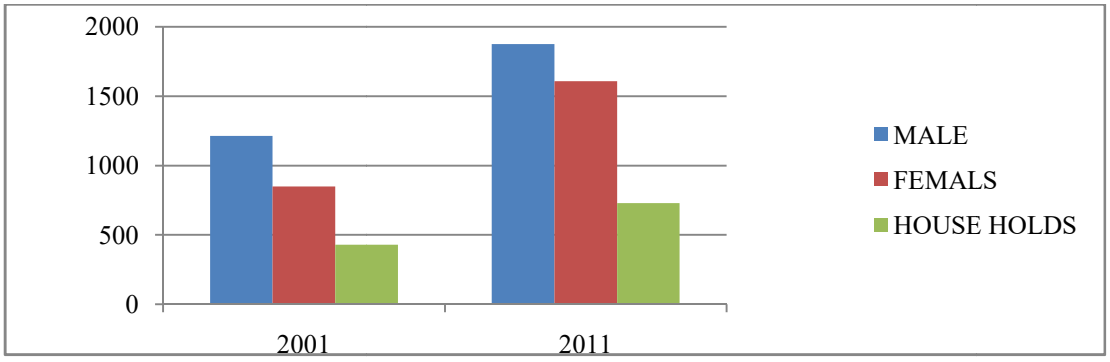
Figure-12. Base Location Map, Land Map of the Village

4.2.3 Physical & Demographical growth:

The Various Physical & Demographical Data are collected by the help of villegers and Sarpanch. According to Census 2001 And 2011 the Population of the village With Male Female ratio is shown below the table-1. From the below table we can analyze the population of 2021 with reference to the below table and also helpful to know the future development resources.

Table –11.Population Data of Bhujodi Village

Sr. no.	Census	Population	Male	Female	House hold
1.	2001	2075	1213	875	450
2.	2011	3586	1895	1695	735



Graph-1.Population Graph of Bhujodi Village

Table-12. Urban & Rural area in India

	1991	2001	2011
Urban	3451	5261	8935
Rural	634561	635888	685867

Table-13. Population growth from year to year in India

Type of Village	Increase in Population Year to Year In Villages (IN %)						
	1951	1961	1971	1981	1991	2001	2011
Megacities (>10m)	1	1	3	1	3	4	4
Large Metropolitan cities (5-10m)	1	1	3	4	2	2	3
Million-cities (1- 5m)	3	3	3	3	4	5	6

Other Class I Cities (0.1 to 1m)	1	2	4	6	7	8	9
Class II (50-100000), Class III(20-50000) & Class IV(10-20000)	7	8	8	8	8	8	9
Class V & Class VI (<5-10000)	3	2	0	0	2	1	0
Very Large Villages(>10000)	5	8	10	12	14	16	17
Medium Sized Villages(2-5000)	17	18	20	21	22	23	24
Small Villages (1-2000)	20	21	21	20	19	18	17
Hamlets (500-1000)	21	19	18	15	12	10	8
Small Hamlets (<500)	22	17	13	10	7	5	3

4.2.4 Economic generation profile:

The economic development of the village is by collecting taxes from the residents of the village on various facilities like water supply scheme, drainage facility, use of ground water or irrigating canal water, electricity revenue, road tax, payable sanitation at side of road and many more at nominal rate. The main Occupation of the village Dwellers is agricultural Work and Contract based Work. The occupation of the other village dwellers is as Labour, Masons, Gate keepers, Drivers, Managers, etc. in nearest company's & industries. The small Market is available for occupation in village. The uneducated People of the village work as labour. The Main Three occupation of village is Agricultural, labour work & construction work

4.2.5 Actual Problem faced by Villagers and Smart solution

- We frequently visited the Bhujodi village for the purpose of collecting various data related to various facilities and amenities and survey of different aspects related to physical,we observed all present facilities and its condition.
- We conducted smart village survey and techno economic survey also.
- We observed that good condition of water distribution system and water facilities.
- We observed that there are no facilities of public toilet block.
- No proper management of solid waste.
- We observed that there not children hospital & women hospital.
- Need to construction of sump & water tank to efficient water distribution system.

Smart solution of these problems is that we planning to give the solution of problems in part-II.

4.2.6 Social Scenario – Preservation of traditions, Festivals, Cuisine

Bhujodi is a major centre for woven cotton and woolen textiles, a 500 year old village and 8 kms from Bhuj. A friend told me to visit Shamji Bhai Vankar shop.

- "The craft is said to have evolved as a need to cover against weather. At that time barter system was practiced. Rabaris being the original nomads and cattle rearers provided wool, milk products and grains to the village. Vankars took to weaving of cloth. With an indigenous technique in hand they had one success after another."
- Cotton saris. A couple from a leading store from Kolkata was buying these saris in large numbers. The shop attracts buyers from far and wide.
- It was just like another Indian village - rustic, unpretentious, with narrow lanes leading to a cluster of houses with mud walls, and freshly painted, vibrant doors. But behind these colourful frames were stories of hands crafting magic. Some with nimble fingers and some aged with wrinkles, but all excelling in the art passed on by their forefathers to them over centuries.

Figure 13 :Heeralaxmi Park, Bhujodi

Hiralaxmi Craft Park, Bhujodi

For those who want a craft flavour of the entire region, Hiralaxmi Craft Park is an ideal option.

- There are well-defined shops in a traditional, rustic setting, where locals from nearby villages sell their wares on fixed rates, on a monthly rotational basis.There aren't any demonstrations here, but ample variety to choose from: leather ware of Hodko, Ajrakh prints of Khavda, Bandhni work of Mandvi, Kharad weaving of Kukma and many more.

Figure 14: Heeralaxmi Craft Centre, Bhujodi

Craft trails are one of the key highlights of Kutch. Bhujodi are important pit stops, there are many other

Small villages that are home to unmatchable creativity in handicraft

4.2.7 Migration Reasons / Trends

Bhujodi Migrations Reasons are by a variety of factors including economic, social and political factors. They are briefly described as under.

Marriage:

Marriage is a very important social factor of migration. Every girl has to migrate to her in-law's place of residence after marriage. Thus, the entire female population of India has to migrate over short or long distance.

Employment:

People migrate in large number from rural to urban areas in search of employment. The agricultural base of rural areas does not provide employment to all the people living there. Even the small-scale and cottage industries of the villages fail to provide employment to the entire rural folk.

Education

Rural areas, by and large, lack educational facilities, especially those of higher education and rural people have to migrate to the urban centers for this purpose. Many of them settle down in the cities for earning a livelihood after completing their education.

Lack of Security:

Political disturbances and interethnic conflicts drive people away from their homes. Large number of people has migrated out of Jammu and Kashmir and Assam during the last few years due to disturbed conditions there. People also migrates for security purposes.

4.3 Data Collection

4.3.1 Methods for data collection

There are basically different types of data collection methods for collection of data from village or city or any of the town is as follows:-

- Road Side Interview
- Home Interview Survey
- Return Post Card
- Available directly from local municipal authority

Road Side Interview: -

The employee of the local government or private company collects data on the road side during passage of the interviewer or at the stoppage at the signal at the traffic signal station.

Merits:-

- Easy data available
- Less time consumption
- Fast survey

Demerits:-

- Lack of interaction between people.
- Sometimes data available are insufficient.
- Traffic jam problem, etc.

Home Interview Survey: -

The survey is done going from home to home of selected study area such that we can get exact data of the survey with getting minimum chances of error.

De merits:-

- Time consuming process
- Need lot of expenditure for the survey.
- Lack of data may be available if there may be less people in the study area.

Return postcard method: -

In this method a printed feedback kind of postcard form is given to the interviewer due to overload of traffic jam during peak hour.

Demerits:-

- Less chances of getting feedback
- Lack of data when available.

Available directly from municipal authority: -

Contacting to the local corporation of the town, village or city past data can be easily available such that we can get an idea for the de-signing or improving the current facilities based on that data.

Merits:-

- There are less chances of error.
- The data available is easy in format.

- Language used is easy

Demerits:-

- No data will be available without permission of government employee.

4.3.2 Primary details survey

The Bhujodi village is approximately 9.3 km from Bhuj. You can hire a cab or private vehicle and reach the crafts village in about 15 to 20 minutes by traveling through RTO Ring Road and Bhachau Highway.Village showcases development of rural area with vision and mission of gram panchayat. Total population of village is 3483 with farming and animal husbandry as main occupations.

Facility of use and pay toilet is not available for the people. Solid waste is collected on daily basis along with street sweeping, but there is need to development of the solid waste management efficiently for the Villagers. Village is provided with clean water but the need to construction of new underground sump for proper distribution of water for villagers, along with electricity for 24 hour. There are need to construct a RO water Plant for drinking and supply to village. Village also includes one lake behind temple and garden where people gather here for recreational purpose. In the village need street lighting facilities for villagers. The whole village is not covered with CCTV cameras.

4.3.3 Average size of the House - Geo-Tagging of House:

In the Bhujodi: Average size of the house in the village is 8m X 10m
Geo-Tagging: Geo Tagging is not available in Bhujodi village

4.3.4 No of Human being in One House:

In the village there are average 2 to 3 parsons per household.

4.3.5 Material available locally in the village:

Major economic passion of villagers is agricultural so there are no more locally manufacturer material available like blocks, bricks, aggregate, concrete, cement and reinforcement. So this local material is brought from nearest town or village for construction of houses.

4.3.6 Geographical Detail

The total geographical area of village is 715.03 hectares. Bhujodi has a total population of 3,484 peoples. There are about 789 houses in Bhujodi village. Bhuj is nearest town to Bhujodi which is approximately 10 km away.

Sr No.	Description	Information / Detail
1.	Area of Village(in Hector)	715.03
2.	Forest Area (in Hector)	14.70
3.	Agriculture land area (in Hector)	417.16

4.	Other area (in Hector)	103.32 (Approx.)
5.	Residential Area (in Hector)	108 (Approx.)

Table: 14 Geographical Details

4.3.7 Demographical Detail

No.	Census	Population	Male	Female	House hold
1.	2001	2063	1214	849	430
2.	2011	3483	1876	1608	728

Table: 15Demographical Details

4.3.8 Occupational Detail

The major occupancies groups of the village are mainly dependent on Agriculture, arts and crafts, Animal husbandry and schemes of the Panchayat for the development of the village.

4.3.9 Agricultural Details:

In the Bhujodi village most of the population is in farming. The main crops grown in the village are cotton, aranda, etc.

4.3.10 Physical Infrastructure Facilities:

In the Bhujodi village local transportations are easily available such as auto rickshaw, chhakda, and government authority facilities such as Gsrtc buses are available to Bhujodi village. Village has Cc roads but the internal streets required to develop better road for villagres. For the facilitie of water there are one overhead (Esr) tank is available. There are panchay buiding, Cc roads leads to entire village, primary school,e.t.c Physical Infrastructure Facilities available in the Bhujodi village.

4.3.11 Tourism development available in the village for attracting the tourist.

In the Bhujodi village is the most attracting place for the tourism. There are Hiralaxmi craft Memorial park which is the best tourism place for the visitors of the Bhujodi Village. Bhujodi Village is known for the art and craft, sari, sal and many more with includes clothes variety.

4.4 Infrastructure Details (With Existing Village Photograph)

4.4.1 Drinking water / water Management Facilities

In our village there is one Elevated Storage Reservoir.from the Elevated Storage Reservoirthe drinking water to be distributed in the village houses

Figure: 15 Drinking water facilities

4.4.2 Drainage Network/ Sanitation facilities

In the bhujodi village there is some places in village there are not available good facilities of sanitation which photograph are below.

Figure: 16 Drainage and Sanitation facilities

4.4.3 Transportation & Road Network

There are facilities available of Transportation is chakdas, Auto rickshaw and buses. Villagers are used this facilities to reach their destination places. There are good Bituminous road facilities for villagers.

Figure: 17 Transportation & Road Network

4.4.4 Housing Condition

Village house are made of basic component like brick, cement, sand etc. Condition of house is well maintained and property construed in line.

Figure 18:- Housing Condition of Bhujodi village

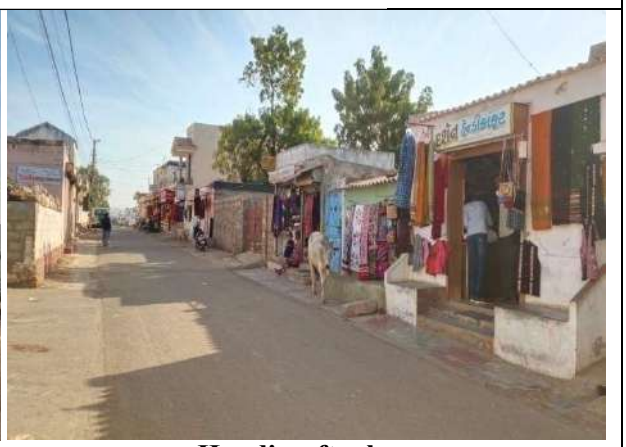
4.4.5 Social Infrastructure Facilities

Fig 19. Social Infrastructure Facilities

Community Hall

Primary School

Panchayat Building



Handicrafts shop

4.4.6 Existing Condition of public building & maintenance of existing hall, library

In the Bhujodi village as per our survey there are some facilities which need to maintenance such as hall, some houses and drainage system. There are such facilities that good in condition are panchayat building, school.

4.4.7 Technology Mobile/ Wifi/ Internet usage details

There is only panchayat building have the wifi connection and other big services infrastructure have. In the most of houses there available android phones which are also connected to internet.

4.4.8 Sports Activity gram panchayat

There are only one sports ground are available in bhujodi which in school so there people cannot play activity about the sports so there is need one big sports ground.

4.4.9 Socio-cultural facilities, public garden/ park/ playground / pond/ other recreational facilities

In the Bhujodi village there are sports ground bt it is in school ground, there are public garden bt it's in privet authority which taken charges for entry in park so there are must one have a public garden under the authority of government so there peoples can enjoy a peace of mind.

4.4.10 other Facilities (e.g like foot path development-smart toilets-coin operated entry, self-cleaning, waterless, public building)

There is no any smart facilities are available such as coin operated entry, self-cleaning, waterless, so there are these types of facilities are need to be develop in the bhujodi village.

4.4.11 Any other details

There are one dairy available which is co-operatively worked in the bhujodi village, one vandematram memorial place available, aashapura industries available, 2 tube wells available the water pumping station are near to the bhujodi village.

There are CCTV cameras in some parts of village

- 24 hours electricity is available in village
- The villager use electronics devise
- The supply is taken from the ler feeder

4.5 Electrical Concept

4.5.1 Renewable energy source planning particularly for village

Solar energy

Solar energy will help for village panchayat and as well in irrigation facility by using of solar energy we are trying to use renewable source and also it will help for farmer for irrigation for pumping of water by using solar energy in the village of Bhujodi.

Today, Nourishing the Planet introduces sources of renewable energy that are meeting the demands of poor farmers and allowing them to improve their harvest and their lives.

Solar energy is widely harvested in two basic ways. The first is the use of solar panels, which use photovoltaic cells to convert solar radiation directly into electrical current. Such installations are efficient and versatile but have high start-up costs. The second is solar heating, which harnesses the heat of direct sunlight to boil water and cook food, activities which often constitute more than 25percent of a households energy use.

4.5.2 Irrigation Facilities

Irrigation in India includes a network of major and minor canals from Indian rivers; groundwater well based systems, tanks, and other rainwater harvesting projects for agricultural activities. Of this groundwater system is the largest. In 2013-14, only about 36.7% of total agricultural land in India was reliably irrigated, and remaining 2/3rd cultivated land in India is dependent on monsoons. 65% of the irrigation in India is from groundwater.

Currently about 51% of the agricultural area cultivating food grains is covered by irrigation. The rest of the area is dependent on rainfall which is most of the times unreliable and unpredictable.

- Nearly 80% of the villages have electricity which is used for irrigation facilities, machines in small businesses and other household activities.
- Automatic control of bore well motor by use of modern technologies.

Fig: 20 Irrigation Facilities

4.5.3 Electricity Facilities with Area

Electrical Services is composed of three units: Electrical, Electronic Low Voltage, and High Voltage. The Electrical Unit maintains secondary voltage power distribution systems, performing such utility functions as: installation of new electrical circuits; maintenance and repair of building switchboards; repair of indoor and outdoor lighting systems; general troubleshooting and repair of electrical distribution systems. The Electronics and Low Voltage Unit installs and maintains permanent systems such as fire alarms, clocks, and bell systems. The High Voltage Unit operates and maintains extensive high voltage power distribution systems.

- Village has street light in every street.
- The electricity is available for 24 hours in the village

4.6 Existing Institution like – Village Administration – Detail Profile

4.6.1 Bhachat Mandali

In the Bhujodi Village there is no facilities of Bhachat Mandali

4.6.2 Dudh Mandali

There are no facilities of Dudh Mandali in Village But they are work together in Maahi Dudh Dairy.

4.6.3 Mahila forum:

There is no any mahila forum in the Bhujodi village.

4.6.4 Plantation for the Air Pollution

In Bhujodi Village There are many trees that decrease the air pollution in the village.

4.6.4 Plantation for the Air Pollution:

There is no any activity for the tree plantation for the air pollution in the Bhujodi village.

4.6.5 Rain Water Harvesting - Waste Water Recycling:

In the Bhujodi village there is no any system like rain water harvesting and there is no any type of rain water harvesting system storage.

4.6.6 Agricultural Development:

There is agricultural co-operative group of peoples in the Bhujodi village, so there is any problem occurs regarding to the agricultural the co-operative group of peoples are take the decision on it and give the right solution of that problem.

4.6.7 Any Other:

There is no any type of police station, fire station, hospital, proper road network in internal area in the Bhujodi village.

Chapter 5.

Technical Options with Case Studies : (FOR ANY ONE TOPIC, Take a new concept design , prototype model with actual costing) :

5.1 Concept (Civil):

5.1.1 Advance Sustainable construction techniques / Practices and Quantity Surveying:

India's construction sector is assessed at Rs.4000 billion or $100 billion. As a result of government spending, private investments as well as foreign direct investment, has made India number one of the top ten spending nations on construction in the world. We manufacture more than 250 million tons of cement and are second only to China. A recent report "Global Construction 2020", estimates that India will be the third largest global construction market after China and USA. In order to improve the standard of living of her population, one of the key hurdles that faces today's India is to overcome the challenge of infrastructure bottlenecks. Consequently the federal government has announced our 11th five years plan which allocates 9% of the GDP to infrastructure projects.

Drivers for Sustainability:

While India is preparing to tackle these growth plans with enthusiasm, it is imperative that the country should analysis and takes into account the price that the future populations of the world and here will have to pay and the world in turn will have to pay, should this unprecedented growth take place without adequate thought to sustainability.

Recommendations:

In mapping out sustainable practices that India must adopt a "cradle to grave" analysis is required. And for this we need to have a total approach than a patch work point system or a grade based certification system.

Planning, design and specifications based on performance and service life

- Construction Practices
- Material Conservation and Selection
- Demolition and recycling
- Energy Conservation

1. Planning, Design and Specifications:

Structures in India are designed well however so far in most specifications, there is no reference to any service life or calculations thereof.

2. Construction Practices:

It is acknowledged that wastage in the construction industry is as high as 30%. That means at current valuation, we are talking about wastage to the tune of Rs.1200 billion or $27 billion in

India. This is in itself a large, yet relatively simple and straight forward challenge to tackle. These wastages are activities that absorb resources, man hours and materials but create no value

3. Conservation and Selection:

Concrete is the largest synthesized material which has a per capita consumption of 1.5 tons per annum in India. Presence of concrete is all pervading simply because it has the capacity to utilize locally available ingredients, develop adequate engineering properties for a variety of applications, easily adapt to any shape and size and has comparatively low initial and maintenance costs

4. Demolition and Recycling:

In India, the use of recycled aggregates has not been adequately explored. Reportedly, the construction and demolition waste has substantially increased as new super structures are being built on land after tearing down the smaller structures that previously existed.

5. Conclusion:

- India is an outstandingly growing economy and hence the pressure on the use of natural resources is very heavy.
- There is an awakening about the words durability and then sustainability.
- Though the durability is understood to appoint there aliening and importance of sustainability is not fully comprehended by engineering fraternity as well as planners.
- Somes poradic efforts are carried out in the form of very repetitive academic experimentation; however, these efforts are in extreme primitive conditions.

5.1.2 Soil Liquefaction

Soil liquefaction occurs when a saturated or partially saturated soil substantially loses strength and stiffness in response to an applied stress such as shaking during an earthquake or other sudden change in stress condition, in which material that is ordinarily a solid behaves like a liquid.

The phenomenon is most often observed in saturated,loose (low density or uncompacted), sandy soils. This is because a loose sand has a tendency to compress when a load is applied. Dense sands, by contrast, tend to expand in volume or 'dilate'. If the soil is saturated by water, a condition that often exists when the soil is below the water table or sea level, then water fills the gaps between soil grains ('pore spaces').

In response to soil compressing, the pore water pressure increases and the water attempts to flow out from the soil to zones of low pressure (usually upward towards the ground surface). However, if the loading is rapidly applied and large enough, or is repeated many times (e.g. earthquake shaking, storm wave loading) such that the water does not flow out. Liquefaction is a phenomenon in which the strength and stiffness of a soil is reduced by earthquake shaking or other rapid loading.

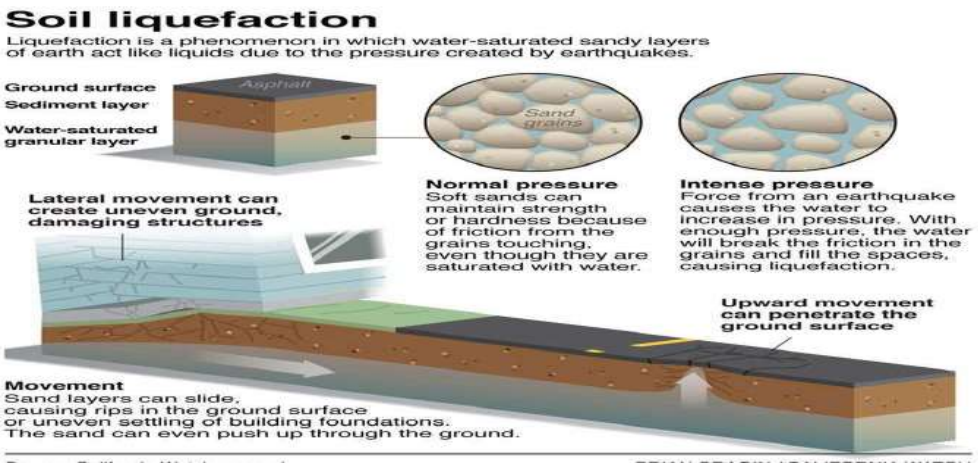


Fig. 21- Soil Liquefaction

- Prior to an earthquake, the water pressure is relatively low. However, earthquake shaking can cause the water pressure to increase to the point where the soil particles can readily move with respect to each other.

5.1.3 Sustainable Sanitation:

Sustainable sanitation is a sanitation system designed to meet certain criteria and to work well over the long-term. Sustainable sanitation systems consider the entire "sanitation value chain", from the experience of the user, excreta and wastewater collection methods, transportation or conveyance of waste, treatment, and reuse or disposal. The Sustainable Sanitation Alliance (SuSanA) includes five features (or criteria) in its definition of "sustainable sanitation": Systems need to be economically and socially acceptable, technically and institutionally appropriate and protect the environment and natural resources.

In some circumstances "improved" sanitation facilities can be regarded as not sustainable, whereas in other circumstances "unimproved" sanitation facilities can be regarded as sustainable. This is because it depends on the sanitation system, of which the toilet is only one part. For example, a pit latrine with a slab can become unsustainable sanitation if it is polluting the groundwater or if the waste sludge that is removed from the pit latrine is dumped into the environment. A bucket toilet can become sustainable if the collection, treatment and reuse or disposal of waste is taken care of in a safe manner, for example with the urine-diverting dry toilets that SOIL is employing in Haiti.

The purpose of sustainable sanitation is the same as sanitation in general: to protect human health. However, "sustainable sanitation" attends to all processes of the system:

- The main objective of a sanitation system is to protect and promote human health by providing a clean environment and breaking the cycle of disease.
- Most sanitation systems have been designed with the five aspects in mind, but in practice they are failing far too often because some of the criteria are not met.

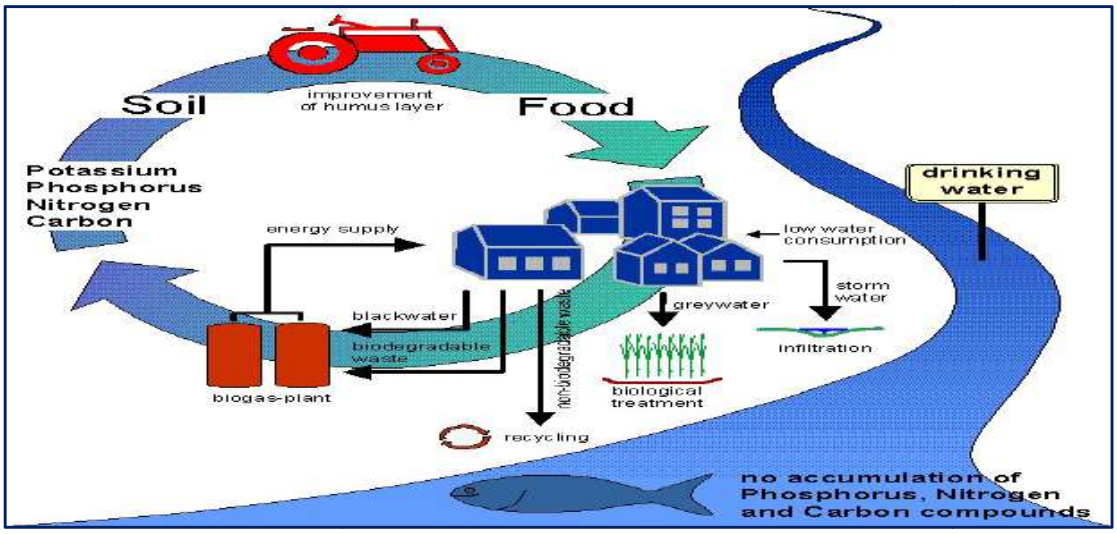


Fig. 22- Sustainable Sanitation

5.1.4 Transport Infrastructure/system:

Transport infrastructures represent the fixed component of the transport system (Button, 1982) and determine a wide range of scale and scope economies; therefore, as underlined by Riveted (1994), they are usually supplied as a collective input into production. It is quite common that transport infrastructures serve a multiplicity of users in Riveted and Bruinsma (1998) this same characteristic of infrastructures is referred to as polyvalence.

Transport infrastructure in the Mediterranean region lacks integrated planning at the municipal level and between public bodies. This makes the provision of a reliable service difficult to develop.

- Mediterranean cities should develop adequate public transport infrastructure (such as dedicated bus lanes and bus stations) to meet transport demand and ensure a reliable service.
- Developing dedicated pedestrian prioritization and bike routes will help promote walking and cycling.

5.1.5 Vertical Farming:

In vertical farming, crops are grown indoors, under artificial conditions of light and temperature. Crops are grown indoors, under artificial conditions of light and temperature. It aims at higher productivity in smaller spaces. It uses soil-less methods such as hydroponics, aquaponics and aeroponics. Vertical farming uses significantly less water and pesticides than traditional agricultural methods. In the day by day the lack of the farming space all are toward to adopt the vertical farming in india country also and it is a low maintenance techniques to grow the health plant in the shady atmosphere in small places so it's the effective way to grow the plants.

Fig. 23 -Vertical Farming

5.1.6 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure:

Corrosion Mechanism:-

Corrosion of steel in concrete is an electrochemical process. The electrochemical potentials to form the corrosion cells may be generated in two ways: Composition cells may be formed when two dissimilar metals are embedded in concrete, such as steel rebar's and aluminium conduit pipes, or when significant variations exist in surface characteristics of the steel.

Prevention:

Improving the Quality of Concrete

- By Adopting the Rich Mix Higher cement content and lower w/c ratio give stronger and impermeable concrete.

Increasing Depth of Concrete Cover to Reinforcement

Extra cover depth lengthens the time for ingress of corrodents. Such a remedy increases weight due to additional concrete requiring changes in structural design. Increased cover thickness should be provided when surfaces of concrete members are exposed to the action of harmful chemicals, acids, vapours, saline atmosphere, sulphurous smoke, etc.

Concrete Coating and Sealers

When untreated reinforcing bar is used, the best method is to apply protective coatings to concrete surface to seal entry of moisture, carbon dioxide and chlorides.

The dry concrete surface should be roughened by chiseling, and a workable mixture of 1:3 cement sand mortar should be applied on the concrete surface after watering over the surface properly by trowelling to a thickness of 6 mm.

5.1.7 Sewage treatment plant:

In a sewage treatment plant, sewage water is first allowed to pass through screens or grit

chamber where large solids are removed. This step is followed by aeration/mixing in a tank and then primary sedimentation where suspended solids settle down. Primary treatment involves addition of a coagulant and aims at removing grits, coarse solids, oil and grease if any present. Preliminary treatment results in sedimentation of solids (sludge) and formation of an effluent that the treatment of wastewater is part of the overarching field of sanitation. Sanitation also includes the management of human waste and solid waste as well as storm water (drainage) management.

We consider wastewater treatment as a water use because it is so interconnected with the other uses of water. Much of the water used by homes, industries, and businesses must be treated before it is released back to the environment.

If the term "wastewater treatment" is confusing to you, you might think of it as "sewage treatment." Nature has an amazing ability to cope with small amounts of water wastes and pollution, but it would be overwhelmed if we didn't treat the billions of gallons of wastewater and sewage produced every day before releasing it back to the environment. Treatment plants reduce pollutants in wastewater to a level nature can handle.

Fig. 24 Sewage Treatment Plant Process

Case Study on Bio Gas Plant

We observed that there is a many problems due to the solid waste in the village are as below:

- There is required more number of dustbin in villages for the purpose of collection of solid waste.
- The waste is normally thrown in nearby vacant areas, government vacant land, drains, streets, etc. So when the wind blows the heap of the waste get carried away by wind and spread in large areas.

In village no facilities for garbage, one of that reason for many diseases. It has only the solution of Bio gas plant. The primary goal of solid waste management is reducing and eliminating adverse impacts of waste materials on human health and the environment to support economic development and superior quality of life.

This is to be done in the most efficient manner possible, to keep costs low and prevent waste build up.

PLAN OF BIO-GAS PLANT:

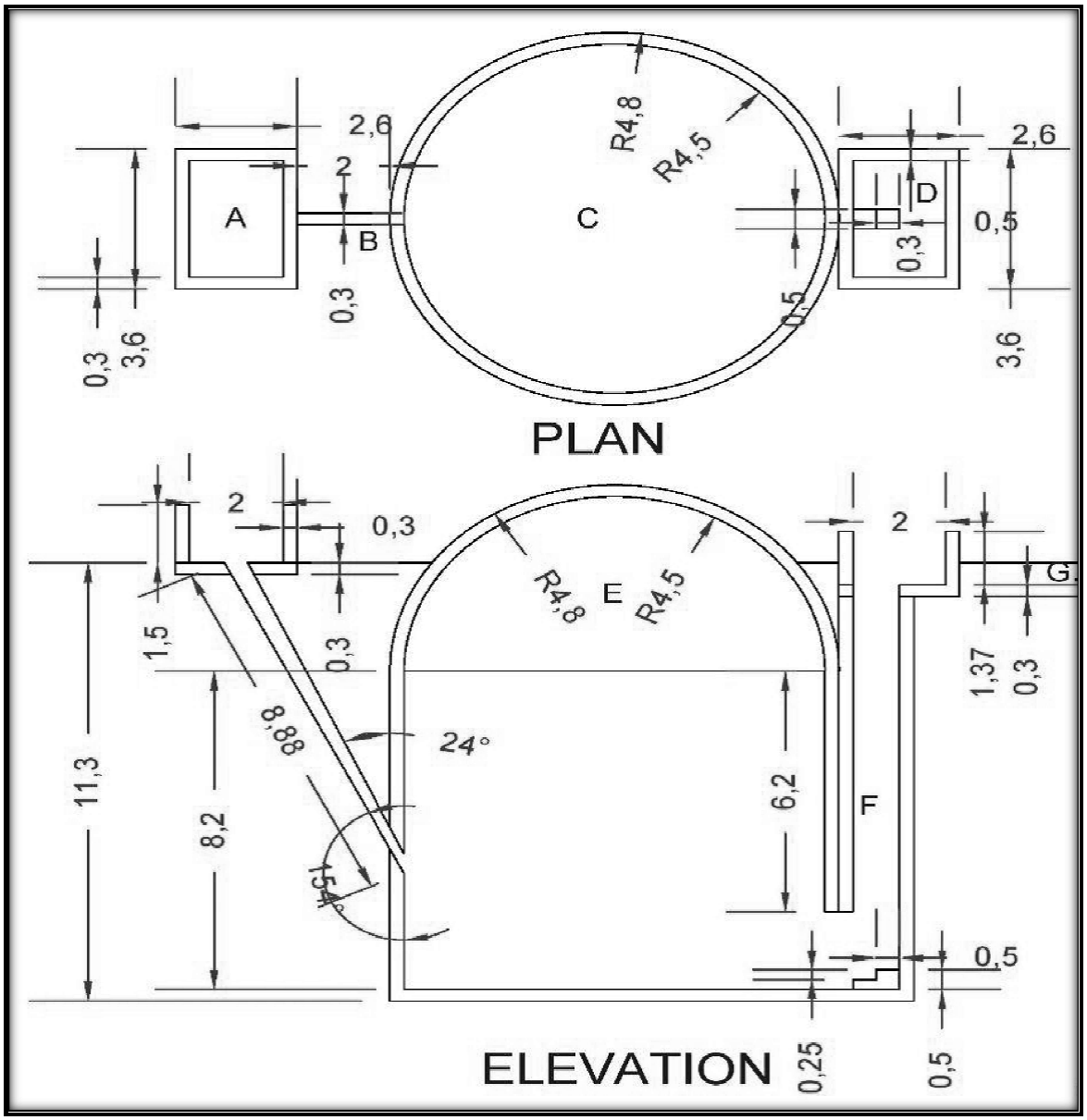


Fig. 25 Plan & Elevation of Bio-gas plant

MEASUREMENT SHEET OF BIOGAS PLANT:

Table 16: -Measurement sheet of biogas plant

NAME OF WORK: BIO-GAS PLANT						PAGE NO. 1	
Item no.	Description	No.	Dimension			Quantity (m2) / (m3)	Total (m3)/(m2)
			Length (m)	Breadth (m)	Depth (m)		
1	Excavation for work						
	i) for digester & gas chember						
	Total volume of tank =						
	V = ∏×r²×h (r=4.8m)						
	V = 622.48m³	1				622.48	
	ii) for outlet tank						
	Total volume of tank =	1	2.6	3.6	2.1	19.656	
	iii) for inlet tank	1	2.6	3.6	0.3	2.808	
	iv) for inlet pipe	1	2	1	7	14	
		Total Excavation work					658.944
2	P.C.C. work (1:4:8)						
	i) for inlet tank	1	3.2	3.6	0.3	3.456	
	Deduction area of pipe=1.13m²	1	1.13	0.3		0.339	
							3.117
	ii) for outlet tank	1	3.2	3.6	0.3	3.456	
							3.456

	iii) for digester tank						
	Area of tank						
	A = ∏×r² (r=4.8m)						
	A = 72.38 m²	1	72.38		0.3	21.714	21.714
					Total P.C.C. work		28.287
3	Brick work C.M. 1:6, 300mm thick wall						
	i) for inlet tank						
	Total length of cenreline of wall =						
	L = 2 × (3.3 + 2.3)						
	L = 11.2m	1	11.2	0.3	1.5	5.04	
	ii) for outlet tank						
	Total length of cenreline of wall =						
	L = 2 × (3.3 + 2.3)						
	L = 11.2m	1	11.2	0.3	1.8	6.048	
					Total Brick work		11.088

NAME OF WORK: BIO-GAS PLANT							**PAGE NO. 2**
Item no.	**Description**	**No.**	**Dimension**			**Quantity (m2) / (m3)**	**Total (m3)/(m2)**
			Length (m)	**Breadth (m)**	**Depth (m)**		
4	R.C.C. work						
	i) R.C.C. work for Digester tank						
	Area of circular part =						
	= 2×∏× r × h						

	= 127.23 m²	1	127.23	0.3		38.169	38.169
	Deduction						
	i) outlet pipe	1	0.5	0.5	2	0.5	
	ii) inlet pipe (r= 600mm)						
	area of pipe						
	= 2×∏× r²						
	= 2.261 m²	1	2.261	0.3		0.6783	
							1.1783
		Total R.C.C. work for digester tank					36.9907
	ii) for gas chember						
	Area of gas chember (hemi sphere)						
	A = 2×∏× r²						
	A = 127.23 m²	1	127.23	0.3		38.169	38.169
	iii) for manhole						
	L = 6+0.3						
	L = 6.3m	1	0.5	0.5	6.3	1.575	1.575
	iv) for tank slab						
	i) inlet tank slab	1	3.6	2.6	0.1	0.936	
	ii) outlet tank slab	1	3.6	2.6	0.1	0.936	
		Total R.C.C. work for slab					1.872
		Total R.C.C. work					78.6067

5	Plaster work C.M. = 1:4 12mm						
	i) for inlet tank						
	inner wall						
	L = 3m	2	3		1.5	9	
	B = 2m	2		2	1.5	6	
	outer wall						
	L = 3.6m	2	3.6		1.5	10.8	
	B = 2.6m	2		2.6	1.5	7.8	
		Total plaster work for inlet tank					33.6

NAME OF WORK: BIO-GAS PLANT							PAGE NO.3
Item no.	Description	No.	Dimension			Quantity (m2) / (m3)	Total (m3)/(m2)
			Length (m)	Breadth (m)	Depth (m)		
	ii) for outlet tank						
	inner wall						
	L = 3m	2	3		1.8	10.8	
	B = 2m	2		2	1.8	7.2	
	outer wall						
	L = 3.6m	2	3.6		1.8	12.96	
	B = 2.6m	2		2.6	1.8	9.36	
		Total plaster work for outlet tank					40.32
		Total plaster work					73.92

6	Earth filling work (approx.)						
	i) Earth filling for bio-gas plant						
	= Volume of cylinder - Volume of spherical segment						
	= 253.33 - 198.59						
	= 54.74 m³						54.74
	ii) Earth filling for inlet pipe line work						
	= Total exacavation for pipe line - pipe line volume						
	= 14 - 8.59						
	= 5.40 m³						5.4
		Total Earth filling work					60.14
7	Inlet pipe line work						
	600mm diameter R.C.C. pipe						
	(Class-100-D)						
	L = 7.2m	1	7.2			7.2	
		Total inlet pipe line length					7.2m

ABSTRACT SHEET OF BIOGAS PLANT:

Table17: - Abstract sheet of biogas plant

NAME OF WORK: BIO-GAS PLANT							PAGE NO.1
Item no.	**Quantity (m2)/(m3)**	**Description**	**Rate**		**Per**	**Amount**	
			Rs.	**Ps.**		**Rs.**	**Ps.**
1	658.95	Excavation work with biogas plant	427		m³	281371.65	

		Depth = 10m including throwing					
		excavated material					
2	28.28	P.C.C. in foundation (1 : 4 : 8)	3000		m^3	84840	
		including compaction & curing					
		D = 0.2m					
3	11.08	Brick masonary in C.M. 1:6 in tank	3500		m^3	38780	
		including curing , etc.					
4	38.56	R.C.C. work for Digester tank	13000		m^3	501280	
		1 : 1 : 2 including reinforcement steel,					
		centering , finishing , curing, etc.					
5	38.17	R.C.C. work for for gas chember	10000		m^3	381700	
		1:1.5:3 including reinforcement steel,					
		centering, finishing, curing, etc.					
6	1.87	R.C.C. work for inlet & outlet tank	7000		m^3	13090	
		Slab 1:2:4 including reinforcement					
		steel, centering ,finishing, curing, etc.					
7	73.92	Cement plaster 15mm thick in C.M.	150		m^2	11088	
		1:4 including scaffolding, racking of					
		masonry joints, curing, etc.					
8	60.14	Earthwork in filling plant with 15 thick	100		m^3	6014	
		layers including sprinkling of					

		water & compaction					
9	7.2	Inlet pipe work with all fitting & earth	3200		m	23040	
		Filling.					
	TOTAL COST OF PUBLIC TOILET BUILDING					1341203.65	
	ADD 5% CONTINGENCIES					67060.1825	
FINALCOSTOFBIO-GASPLANT=					**14,08,263.83 Rs.**		

TOTAL MATERIAL USE IN BIO-GAS PLANT:

Table 18: - Total materials used in biogas plant

MATERIAL	REQUIRED (FOR)	QUNTITY
Brick (19cm × 9cm × 9cm)	11.08 m³	5540 Nos.
Cement	849.69 Bags	850 Bags
Aggregate	88.62 m³	89 m³
R.C.C. pipes 600mm	72 m	8 m
Sand	48.8 m³	50 m³
Reinforcement	13397.36 kg	13.5 tones
Gas supply pipe	as per requirement	as per requirement

Operation Cost:

As per our design and detail, 2 no of labour required or transfer the slurry into inlet tank. One labour cost is 7,000 Rs per month so total cost for two labours is 14,000 Rs per month.

Maintenance Cost:

As per plant details & design there is no major maintenance cost, because of structure is new & up to 10 years structure increasing strength so, over all maintenance cost is less so, we can ignore it.

Gas supply Cost:

One person needs 0.5 m3 gas per day. Total gas production is 182.68 m3. So,
= 183/0.5
= 366 persons

We can supply 366 persons per day. If 5 persons live in one house hold, then we can supply gas to the 73-house hold.

We decide to take charge 500 rs per house hold per month so, that panchayat can earn 36,500 per month.

Net panchayat's profit= 36,500 –14,000= 22,500 rs

Gram panchayat Inspire the people to collect the cow dung & panchayat also pay for is that is 3 per kg.

5.2 Concept (Electrical)

5.2.1 Programmable Load Shedding

The venture is a programmed load activity framework that controls load activity, various quantities of times as per modified guidance. The undertaking disposes of the manual ON/OFF exchanging of burden. An ongoing clock (RTC) is utilized to follow the time and consequently switch ON/OFF the heap.

This venture is needed for load shedding time the board which is utilized when the power request surpasses the gracefully and there comes a requirement for physically turning ON/OFF the electrical gadgets as expected. Subsequently this framework disposes of the manual activity via consequently turning the heap ON/OFF.

A grid keypad is interfaced with the microcontroller from where the predetermined time is contribution to the microcontroller.

- **Hardware Specification**
  - Load
  - IC socket
  - IC
  - Switch
  - Push button
  - Transformer/adapter
  - PCB
  - Led
  - Diodes
  - Cables and connectors
  - Transistor
  - Capacitor
  - Resistor
  - 7 segment display
  - 808 microcontroller

- **Software specification**

- Keil µVision IDE
- MC programming language: Embedded

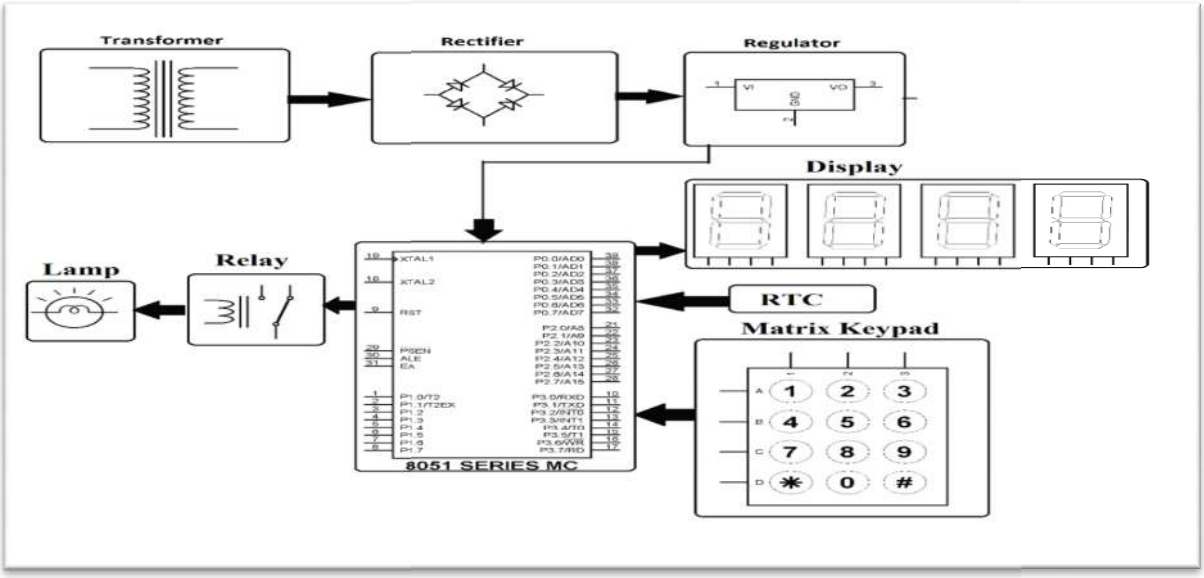


Fig. 26 Block Diagram of Programmable Load Shedding

5.2.2 Railway Security System using IOT

The objective of this project is to create a Security System for the goods that are carried in open top freight trains.

The most proficient approach to get anything from criminals is to have a ceaseless perception. So for constant perception of the open top cargo train, camera has been utilized. Detached Infrared Sensor (PIR) 1 has been utilized to distinguish the movement or to detect development of individuals, creatures, or any item. so at whatever point a motion is recognized by the PIR sensor, the Camera snaps a photo of that specific occurrence. That image will be ship off the Raspberry PI which skins Detection Algorithm and determines if that movement was made by a human or not. On the off chance that a human makes it, that image will ship off the drop box. Any Official can view the equivalent. The current framework has a CCTV introduced at different basic areas like scaffolds, rail route stations and so forth however they does not give a persistent perception. This paper portrays about the Security System that gives consistent perception for open top cargo prepares with the goal that merchandise can be conveyed securely to its objective

The proposed model has a motion detection sensor which detects the motion of the object which performs skin detection and then sends the image to the railway server using IoT. So that immediately an action can be taken to avoid coal thief.

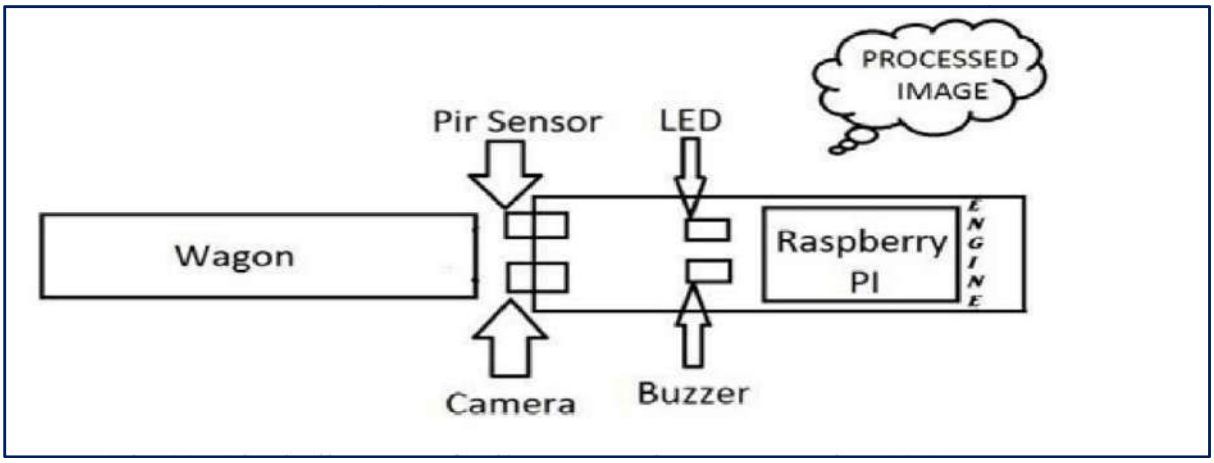


Fig . 27 Block diagram of railway security system using IOT

5.2.3 Management through Energy Harvesting Concept

The objective of the Power Management through Energy Harvesting Concept project work has been designed and implemented in the power management through energy harvesting concept which deals with the power saving and optimization.

Interaction The general control depends on sensors of light and temperature. Subsequent to introducing the parts the gets programmed.

In the event that a heap at a specific zone is expanded, the control will trip. To conquer these down sides we have planned and executed the circuit.

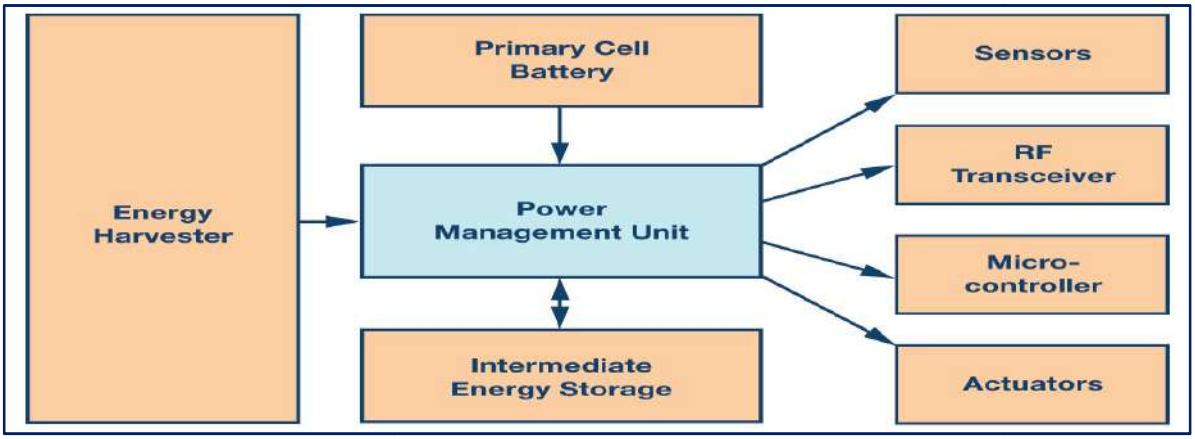


Fig.28 Block diagram of energy harvesting

5.2.4 Moisture Monitoring System

Planting a tree in a climate where the seed or the plant would not get water enough through regular sources like downpour or ground water in its underlying stages has been consistently a matter of worry for tree grower. This is the place where a self-governing dampness screen for plants framework can help.

The framework opportune screens the dampness level of the dirt. On the off chance that at the hour of checking it comes to realize that the dampness level of the dirt is lower than suggested then it will raise a general media alert. This alarm is then gotten by the guardian of the plant. At the point when the guardian waters the plant the caution goes off and the checking cycle proceeds.

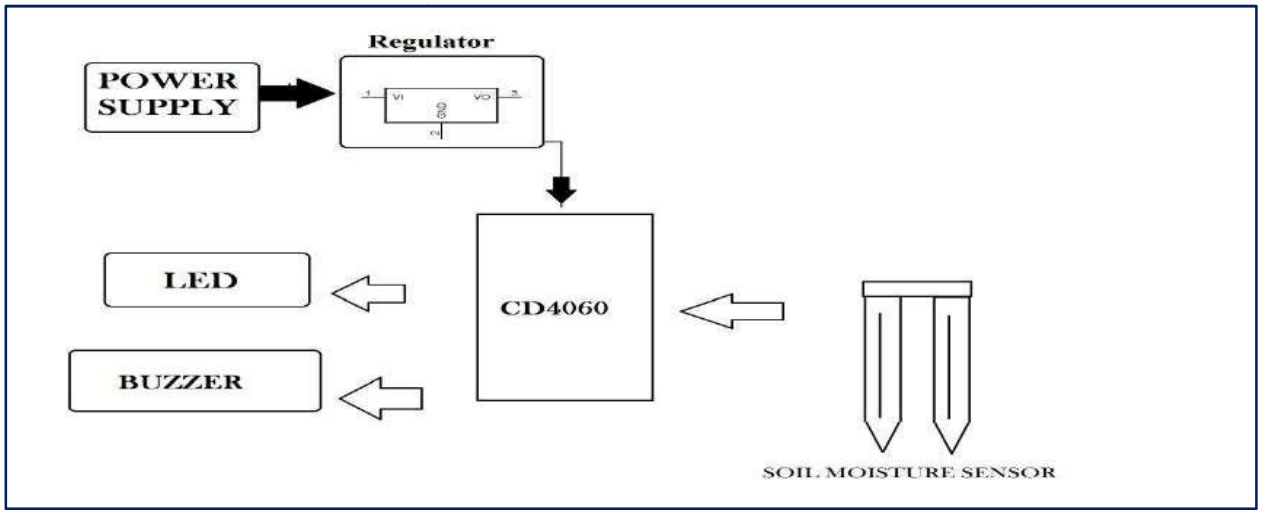


Fig. 29 Block Diagram of Moisture monitoring system

TOPIC TAKEN FOR ELECTRICAL CONCEPT

5.2.5 Home Automation using IoT

Smart Home and IoT

With the help of IoT devices, home automation has become very easy, and this has helped the IoT companies to flourish well. In the home automation, you can control various IoT devices just with a single click and that too without troubling yourself.

Applications of IoT in Smart Homes

IoT has showcased its brilliant features with the help of IoT devices to serve the needs of your house. Some of the most innovative applications are:

- **Lighting**

With the help of IoT technologies, you can avail of the benefits of smart lighting that turns off/on themselves without any human intervention. It will not only save your time but will also help you save the electricity that is a non-renewable resource for our planet.

You can control the intensity of the bulb with the help of your smartphones and even the amount of natural light entering your room.

- **Bathrooms**

Brilliant Bathrooms are a way that transforms your fantasies into the real world. You will be stunned to realize that you can handle the temperature of your water, measure of water you are

utilizing, and even think about the variety of temperature by shifted colors just with the assistance of your sound order.

- **Temperature Control**

When we introduce a shrewd indoor regulator in your home, at that point you need not stress over the temperature control of your home since it naturally changes the house temperature as indicated by the external temperature. It is the second to none of IoT innovations.

- **Security Systems**

On the off chance that somebody attempts to make a constrained passage, cautions begin ringing, and you can even have doorbells with video observation to realize who is outside. Furthermore, we can deal with this fair by sitting on our cell phone.

- **Safety Sensors**

IOT assume a huge part as sensors to identify against different misfortunes that can happen in our home.

Required Components & Materials

The essential components and materials for home automation using IOT project can be listed as a

- module
- Opto-coupler
- TRIAC
- resistors
- capacitors
- diode
- regulator
- loads (home appliances)

Home automation has three major parts

- Hardware.
- Software/App.
- Communication protocols.

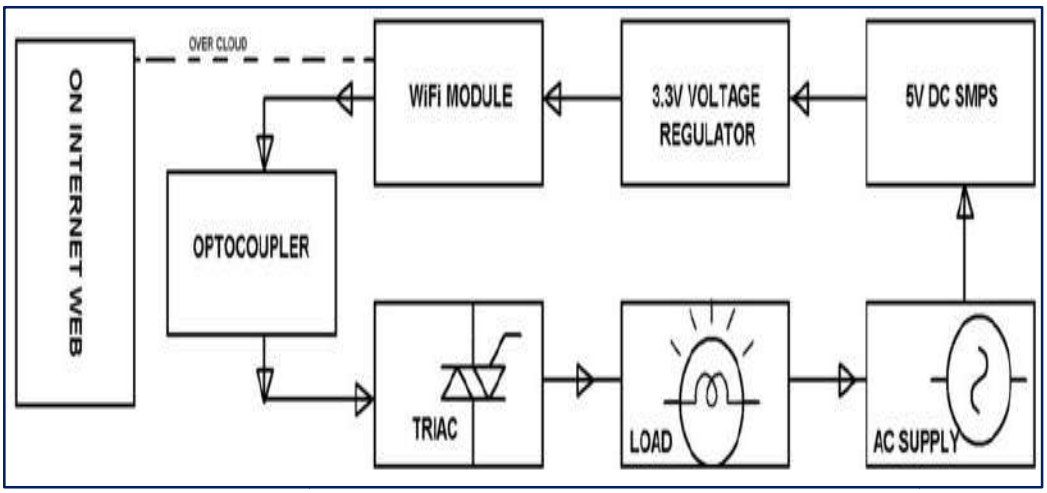


Fig.30 Block diagram of home automation using IOT

These parts cooperating make a consistent seamless asynchronous framework for brilliant home IoT. In the prior rendition of Home Assistant centre, the centre regularly needed to stop while searching for new gadget data.

Table 19.Cost estimation of home automation

SR no.	Name of components	quantity	Cost/Qty (RS)	Total
1	Opto-coupler	1 Nos	450	450
2	WIFI module	1 Nos	300	300
3	Voltage regular	1 Nos	45	45
4	5V DC SMPS	1 Nos	210	210
5	TRAIC	1 Nos	32	32
6	Intensity sensor	1 Nos	229	229
7	Temperature sensor	1 Nos	170	170
8	Moisture sensor	1 Nos	178	178
9	Relays	5 Nos	97	485
10	Electronics components	Nos	150	150
11	Mise items	NOs	100	100
TOTAL				**2,349**

5.2.6 PC Based Electrical Load Control

The framework targets controlling electrical burdens through a focal Pc. Considering a pc can be utilized to control the lights and enthusiasts of an amphitheatre or school from a solitary spot.

Right now, somebody needs to physically switch of the lights on each floor and room. This framework permits a solitary client to work every one of those light fans, or different burdens from a solitary PC

Hardware Specification

- Crystal Oscillator
- Resistors
- Capacitors
- Transistor
- Cables and Connectors
- Diodes • PCB and Breadboards
- LED
- Transformer/Adapter
- Push Buttons
- Switch
- IC
- IC Socket
- Lamps

- **Software Specifications**
  - Keil µVision IDE
  - MC Programming Language: Embedded C

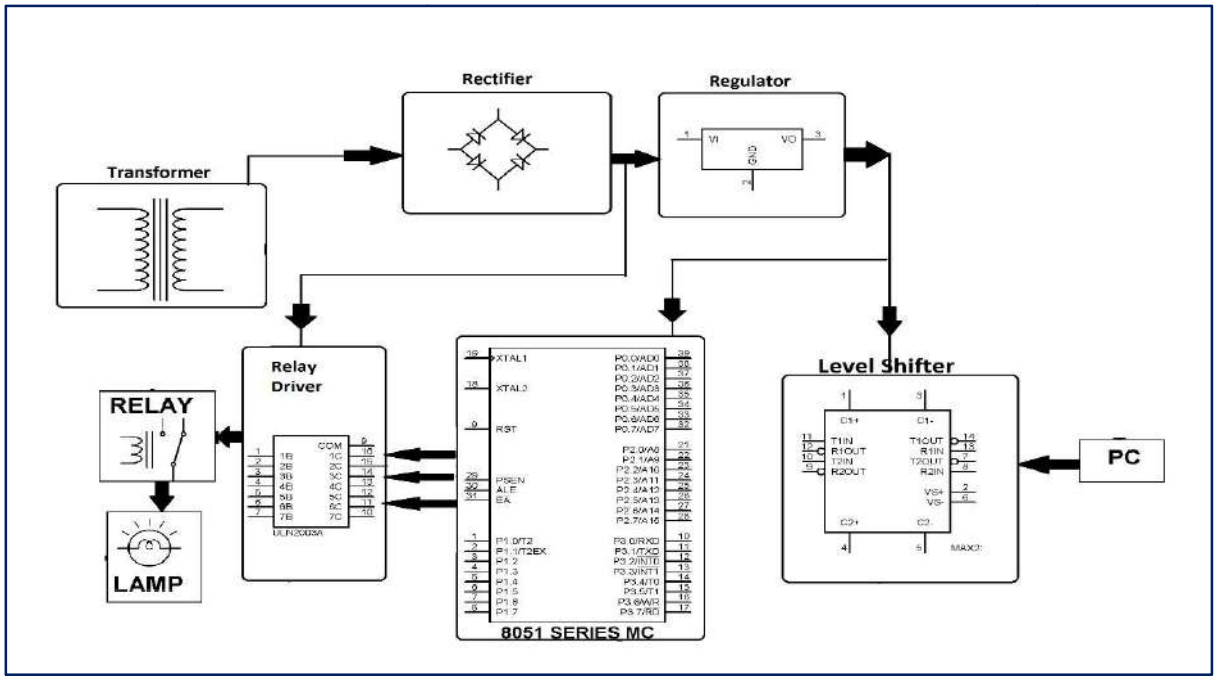


Fig.31 Block Diagram of PC Based Electrical Load Control

5.2.7 Electrical Parameters Measurements

Electrical parameter are the techniques, gadgets and computations used to quantify electrical amounts. Estimation of electrical amounts might be done to quantify electrical boundaries of a framework. Utilizing transducers, actual properties like temperature, pressure, stream, power, and numerous others can be changed over into electrical signs, which would then be able to be advantageously estimated and recorded. High-accuracy research facility parameter of electrical amounts are utilized in examinations to decide crucial actual properties like the charge of the electron or the speed of light, and in the meaning of the units for electrical parameter, with exactness sometimes on the request for a couple of parts for each million. Less exact estimations are required each day in modern practice. Electrical parameters are a part of the study of metrology. Measurable independent and semi-independent electrical quantities comprise:

- Electrical reactance and susceptance
- Magnetic flux
- Electrical charge by the means of electrometer
- Partial discharge measurement
- Magnetic field by the means of Hall sensor
- Electric field
- Electrical power by the means of electricity meter
- Measurable dependent electrical quantities comprise:
- Inductance
- Capacitance
- Electrical impedance defined as vector sum of electrical resistance and electrical reactance
- Electrical admittance, the reciprocal of electrical impedance
- Phase between current and voltage and related power factor
- Electrical spectral density
- Electrical phase noise
- Electrical amplitude noise
- Transconductance
- Transimpedance
- Electrical power gain
- Voltage gain

Chapter 6.

Swatchh Bharat Abhiyan (Clean India)

6.1 Swatchhta needed in allocated Village – Existing Situation with Photograph

According to a recent report by UNICEF, more than half of India's population defecates in the open, and the situation is worse in the acutely impoverished rural areas. Prime Minister Narendra Modi launched Swachh Bharat Abhiyan on October 2, 2014 with the aim of making India open defecation free (ODF) by 2019. The objective is to provide every village and every person in India, toilet and sanitation facilities, including solid and liquid waste disposal systems, safe and adequate drinking water supply and cleanliness of villages, towns and cities.

The major objective of the Swachh Bharat Abhiyan is to spread the awareness of cleanliness and the importance of it. The Rural mission, known as Swachh Bharat Gramin, aims to make Village Panchayats open defecation free by October 2, 2019.

Every year, cities and towns across India are awarded the title of 'Swachh Cities' based on their cleanliness and sanitation drive as a part of the Swachh Bharat Abhiyan that was launched in 2014.

SBM is definitely with great goals and objectives, the issues associated with finance, implementation & awareness needs to be tackled in the right manner, every citizen of India should involve themselves and inculcate the behavioral changes to the literates and illiterates towards cleanliness respectively. The mission emphasizes on ushering in a behavioral change among people, for healthy sanitation practices, by educating them about the damaging effects of open defecation, the environmental dangers spreading from strewn garbage, and so on.

The concept of Swachh Bharat Abhiyan is to provide basic sanitation facilities like toilets, solid and liquid waste disposal systems, village cleanliness, and safe and adequate drinking water supply to every person.

The action plan for the Swachh Bharat Abhiyan is laid by the Ministry of Drinking Water and Sanitation. The vision is to triple the facility of sanitation by 2019. The major change to be implemented is in the Making of an Open Defecation Free(ODF) India

The Swachh Bharat Abhiyan is the most critical neatness crusade by the Government of India. Shri Narendra Modi drove a tidiness vow at India Gate, which around thirty lakh government representatives the nation over joined. He likewise hailed off a walkathon at Rajpath and astounded individuals by joining in for a symbolic hardly any means, however walking with the members for far.

The 150th anniversary of birth of Mahatma Gandhi by constructing 12 million toilet in rural india at a projected cost of 1.96 lakh crore.

In a Bhujodi village need of swatchta is little required because unavailability of solid waste management like a management of that waste due to this village people throws all waste around the village border and river.

In the Bhujodi Village there are clean road and most of the places we can see clean.

Figure 32:- Swatchh Bharat Abhiyan - Existing Situation with Photograph

- As the work of cleaning new dustbins for dry and wet waste should be provided separately and it should be maintained properly and regularly. The design of Public sanitary blocks would be given by us, so they should be constructed by the government if designed properly.
- Facilities for solid and liquid waste management.
- Hygiene education.
- Choose appropriate irrigation option.
- Modern agricultural techniques used to conserve water.
- Avoid use of plastic bag.
- Avoid chewing gutka, sopari, vimal, pan masala and tobacco.
- All people outside the house cleaning itself.
- Use of recycle bag for daily market purpose.
- Waste throws in dustbin.
- Wet waste use a food of own animals.
- Already waste is collected thrice in the week by panchayat tractor street to street.

So doing this activity we keep our village clean.

Chapter 7.

Village condition due to Covid-19

7.1 Taken steps in allocated village – Existing Situation with photograph

The village Bhujodi has larger land area & sarpanchji and talatiji is an aware citizen in this village. All people are followed rules and regulations & guidelines of government. When we go first to meet talatiji & sarpanchji, we & they also told us to wear a mask and maintain a social distancing Panchayat sanitizing a village 1 or 2 times in week. Sarpanchji is highly aware in this situation. They always told to wear mask and sanitize hand frequently.

- Villagers wear mask whenever they go outside from their house and maintain social distancing. This is followed not more than 2 or 2.5 months.
- After 2 to 3 months of lockdown they did not take seriously the current situation of Covid-19 Pandemic when the unlock is announced. Because there is no case of corona virus in the hole village.
- People returning home from abroad or from other state are being screened and quarantined in schools and other facilities are provided.

In the bhujodi village sanitation are done in the panchayat building to prevent from the covid-19 pandemic situation.

Figure:-33 Sanitization in Village

7.2 Activities done by students for allocated village with photograph

In the bhujodi there is need to sanitization the entire village for the prevention against the covid-19 pandemic in the bhujodi village. We planned to do the sanitization in the bhujodi so we request

to the fire authority they agreed with us and they came to bhujodi and did the entire bhujodi village sanitized so these are the activity which is done by the students in bhujodi village.

Fig: 34 Sanitization in School and entire village

7.3 Any other steps taken by the students / villagers

When corona spread at everywhere that time we taking most powerfull steps for safety all of people who is staying in our village.

- When people came from another city that time we quarantine them in their home or if they have not own homes for quarantine we provide them allocated area for quarantine i.e. School building, Community halls, Temple area that give them for quarantine and doctors team Check them and they do necessary test against covid-19.
- We spread little bit awareness among the peoples who live in slum areas about Covid-19.
- Villagers are already little bit aware and they can understand the pandemic situation.
- We haveintroduced the villagers about the AarogyaSetu mobile application to educate citizens about novel coronavirus and help them make informed decisions amid the crisis.
- The first step is taken for preparedness at different levels of healthcare facilities: it must include adequate physical infrastructure and health workforce, training of workforce, information sharing, and grievance redressed mechanism for participants in the vaccination rollout.
- We give accurate information about the vaccines to the villagers.
- We give the information to the villagers about the Covid-19 vaccines Operational Guidelines issued by the ministry of health indicate that the Co-WIN app would be used for registration of individual beneficiaries, and recording the successful vaccination at the time of conducting the session.
- Restriction on public gatherings, suspension of schools for the couple of weeks, and travel restrictions in Bhujodi village. All of those are try and minimize covid-19.

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 / Any other software):

8.1 Design Proposals: Observation and brief write up about each design

8.1.1 Sustainable Design (Civil): Public toilet

Here we have designed the Public toilet for our Bhujodi village. It is required to have one Public toilet in the village. The villagers have to go in open for toilet so that we have decided and finalized the design of Public toilet.

Physical design: Hospital

In the Bhujodi village there is no any Hospital or private clinic or pharmacy store. So according to the feedback given by the villagers, one Hospital should be there in thevillage.ThevillagershavetogoinBhujforanykindofhealthormedicalfacility.Sothatwehave designed one Hospital for the urgent requirement of medicines for the villagers.

Social Design: Gym

Gym is a public location where peoples group do the yoga and weight lifting and made their health fit and fine for using this facilities.

Socio-Cultural Design: Recreational park

Recreational park is a that place where the people are doing walk and think some peaceful thoughts in the park so the people of village they will be fill fresh at the park. So that we have designed one Recreational park for the villagers.

Smart Village Design: Police Station

A Police station is a type of Smart village which serve the safety to the all villagers at any time so we have designed Police station in the village.

Heritage Village Design: Pond development

The Bhujodi Village has Pond at the village. So that we have designed the Pond for village as heritage village design.

8.1.1 Sustainable Design (Civil) :Public Toilet

Scenario:

The residents of rural areas are currently facing the problem due to lack of facilities of public toilet in the village so they are have to go in open and that's why the atmosphere of the village turned dirty and it is very dangerous for the resident of the villagers so we decided to available public toilet facilities for villagers so the atmosphere will be fresh and clean in the village.

Existing Situation in Bhujodi:

Here we have designed the Public toilet for our Bhujodi village. So it is required to have one Public toilet in the village. The villagers have to go open in the village for toilet so that we have decided and finalized the design of Public toilet.

Sustainability of the design:

Public toiletas important facilities:
Design Utilized by,

People living in village area; etc.

Needs:

For making the village clean and fresh, a suitable and simple design etc.

Design brief:

Public toilet design to making the atmosphere clean and fresh and no need to go for toilet in open for villagers.etc.
Public Toilet Design:

Length:9.9m;Width:5.4m:Height: 4.4

Proposed Design in Autocad:

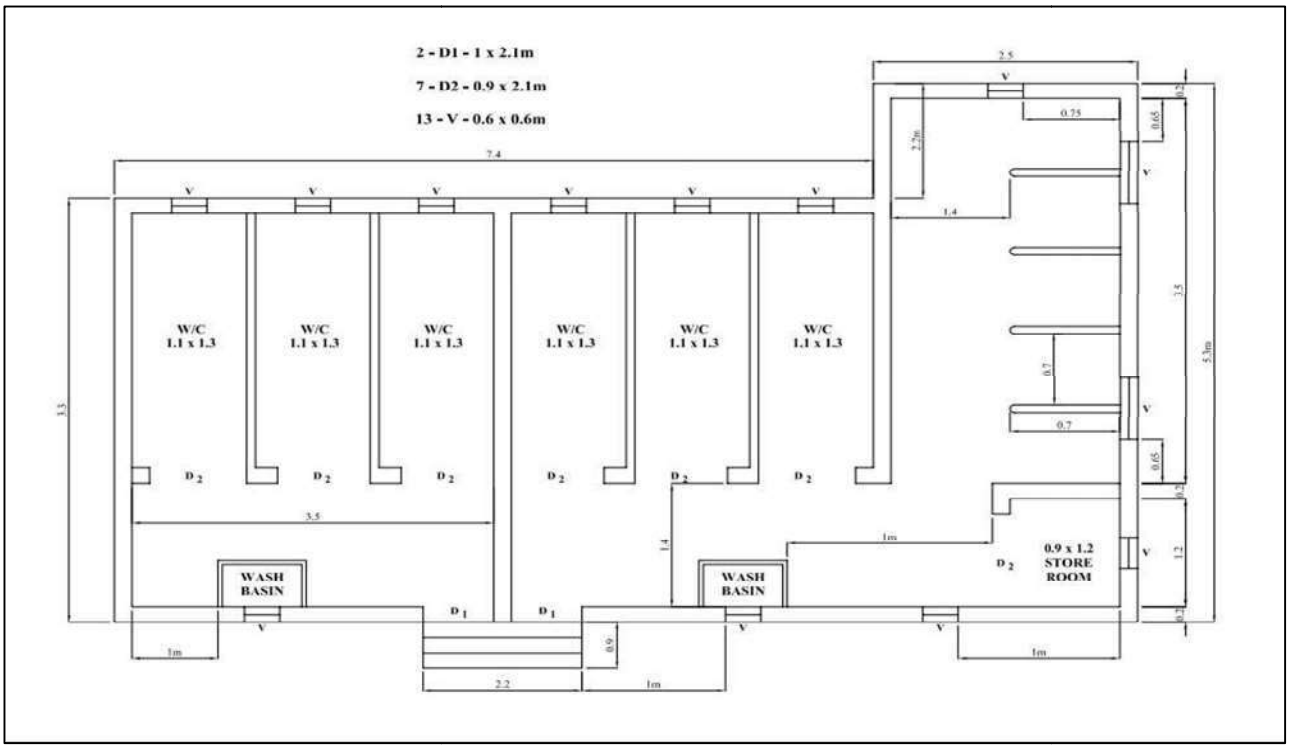


Fig 35:-Public Toilet plan

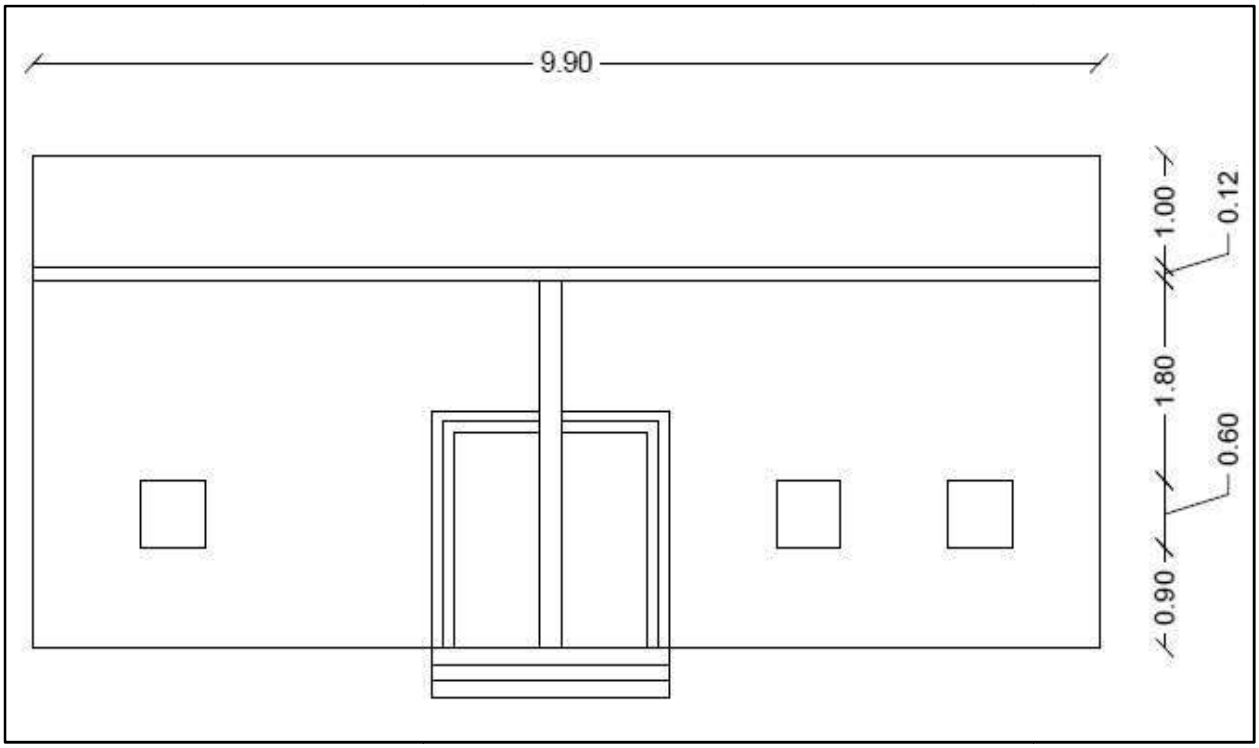


Fig 36:-Public Toilet Elevation

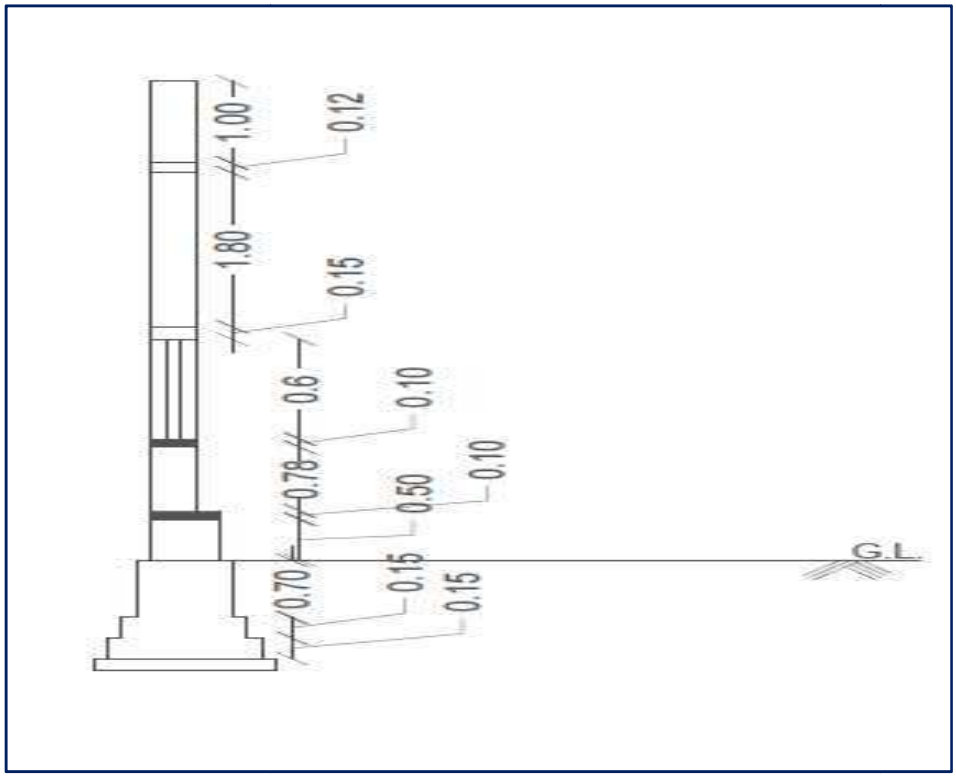


Fig 37:-Public Toilet Section

Measurement Sheet of Public Toilet

Table 20: Measurement Sheet of Public Toilet

PUBLIC TOILET IN BHUJODI VILLAGE						
ITEM NO	ITEM DESCRIPTION	NO	L	B	H	QUANTITY
1	Earthwork in excavation up to 1.5m in foundation					
		1	37.7	0.9	1.1	37.32
		2	1.2	0.9	1.1	0.22
					TOTAL	37.54
2	BBCC	1	37.7	0.9	0.2	6.79
		2	1.2	0.9	0.1	0.22

					TOTAL	7.09M3
3	brick masonry up to plinth CM 1:6					
	first step	1	39.3	0.5	0.3	5.9
	second step	1	39.7	0.4	0.3	4.76
	third step	1	40.1	0.3	0.85	10.22
					TOTAL	20.88
4	brick masonry above plinth to slab	1	40.5	0.2	3	24.3M3
	deduction for					
	D1	2	1	0.2	2.1	0.84
	D2	7	0.9	0.2	2.1	2.65
	V	12	0.6	0.2	0.6	0.9
						4.39M3
	Lintel					
	D1	2	1.3	0.2	0.15	0.08
	D2	7	1.2	0.2	0.15	0.25
	V	12	0.9	0.2	0.15	0.33
						0.66
					NET	19.25M3
5	DPC	1	40.1	0.3		12.03M2
6	backfilling in foundation					16.26M3
7	earth filling on ground level					13.55M3
8	5cm thick tile					1.43M2
9	12cm thick smooth plaster					
	inside wall WC	12	1.1		3	39.6

		12	1.3		3	46.8
	open spacing	4	3.5		3	3.43
		4	1.4		3	16.8
	store room	2	0.9		3	5.4
		2	1.2		3	7.2
		1	1.1		3	3.3
	Toilet	2	2.1		3	12.6
		2	3.7		3	22.2
	ceiling plaster					
	WC	6	1.1		1.3	8.58
	open spacing	1	3.5		1.4	4.9
		1	4.7		1.4	6.58
	Storage	1	0.9		1.2	1.08
	Toilet	1	3.5		2.1	7.35
	outside					
	front wall	2	9.3		3.72	69.2
	side wall 1	1	5.3		3.72	19.72
	side wall 2	1	3.9		3.72	14.51
					TOTAL	289.25
	deduction for					
	D1	2	1		2.1	4.1
	D2	7	0.9		2.1	13.23
	V	12	0.6		0.6	4.32
					NET	267.9M2

10	white washing as per plaster					267.9M2
11	RCC					
	slab	1	3.3	3.9	0.12	1.54
		1	3.5	3.3	0.12	1.4
		1	5.3	2.5	0.12	1.6
	chajja	2	1.2	0.6	0.1	0.144
					TOTAL	4.7M3
12	15 cm thick rcc lintel					
	D1	2	1.3	0.2	0.15	0.078
	D2	7	1.2	0.2	0.15	0.252
	V	12	0.9	0.2	0.15	0.324
					TOTAL	0.654M3
13	no of tiles					480NOS
14	skirting 15 cm height					115NOS
15	dado for WC	12	1.1		1.2	15.84
		12	1.3		1.2	18.72
	Toilet	1	2.1		1.2	2.52
		1	1.1		1.2	1.32
		1	3.7		1.2	4.44
		1	3.5		1.2	4.2
						47.04M2
	deductions for					

	D2	6	0.9		1.2	6.48
					NET	40.56M2
16	wood work					
	D1	2	1		2.1	4.2
	D2	7	0.9		2.1	13.23
						17.43M3
17	1% steel assuming in slab					370KG

Abstract Sheet of Public Toilet

Table: 21 Abstract Sheet of Public Toilet

ITEM NO	ITEM DESCRIPTION	Q.	PER	RATE	AMOUNT
1	earthwork in excavation up to 1.5m	37.54	M3	50	1877
2	BBCC 1:4:8	7.01	M3	1899	13312
3	brick masonry up to plinth CM 1:6	20.88	M3	2500	52200
4	brick masonry above plinth up to slab	19.25	M3	2500	48125
5	DPC	9.52	M2	40	380.8
6	backfilling in foundation	16.25	M3	39	633.75
7	earth filling on Ground level	13.55	M3	39	528.45
8	5cm thick tile bedding	1.43	M3	1000	1430
9	12cm thick plaster	267.9	M2	45	12055.5
10	3coat whitewash/ color wash	267.9	M2	5	1339.5
11	RCC work	4.7	M3	5400	25380
12	15cm thick rcc lintel	0.654	M3	5400	3531.6
13	no of tiles	480	NOS	25	12000
14	skirting 10cm height	115	NOS	10	1150
15	dado for WC	40.56	M2	75	3042
16	wood work	17.43	M3	3870	67454.1
17	Steel	370	KG	45.3	16761
					261201
			3% CONTINGENCY		7836
			10% CONTACTOR PROFIT		33950.7

			5% WATER CHARGES	15149.39
			TOTAL COST	3,18,140

The rates of their respective works provided in the abstract sheet along with quantities are inclusive of Water charges, contractor's profit, contingencies, utilities and labor charges.

Total cost = Rs.3,18,140/

8.1.2 Physical design (Civil): Hospital

Scenario:

In this village there is no any Hospital. So every people can't get the treatment. We have decided to available very good and multispecialty hospital. This can help every health issues of people. We have decided to make laboratory toilet room different type of word room etc. A Hospital is a facility where the treatment is available for sick peoples .Services in rural areas where hospital are not available so they have gone for treatment in Bhuj which is far from Bhujodi village.

Existing Situation in Bhujodi:

In the Bhujodi village there is no any Hospital. So according to the feedback given by the villagers, one Hospital should be there in the village. The villagers have to go in Bhuj for any kind of health or medical facility. So that we've designed one Hospital for the urgent requirement of treatment for the sick peoples in villager.

Sustainability of the design:

Hospital as an important tool:

Design Utilized by,

All the people living in the village of even out siders from nearby villages can utilize Hospital.

Needs:

Easier access to a patient; when emergency occurs in village related to health they easily access hospital facilities; etc.

Design brief:

A Hospital is a facility for sick people which need a treatment for better health. So the treatment is easily available for the villager's.

Pharmacy Store Design:

Length: 13.2; Width: 10.2m: Height: 3.3

Proposed Design in Autocad:

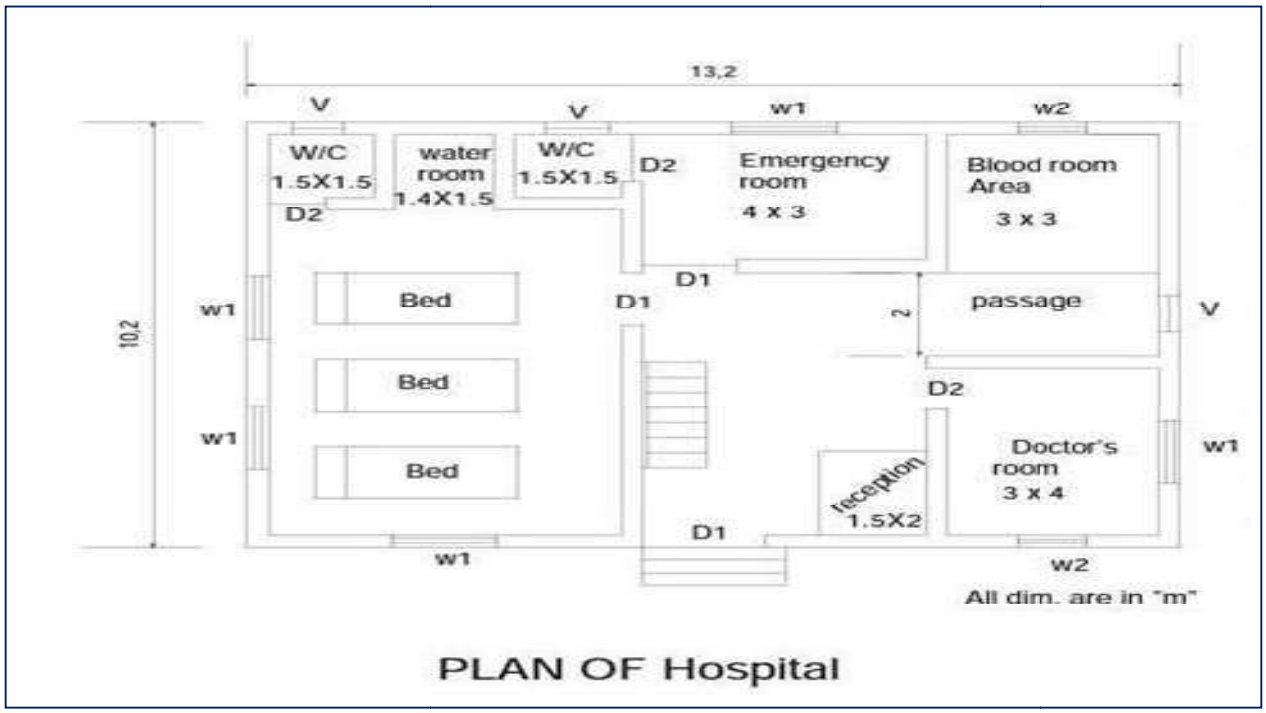


Fig 38:- Plan of Hospital

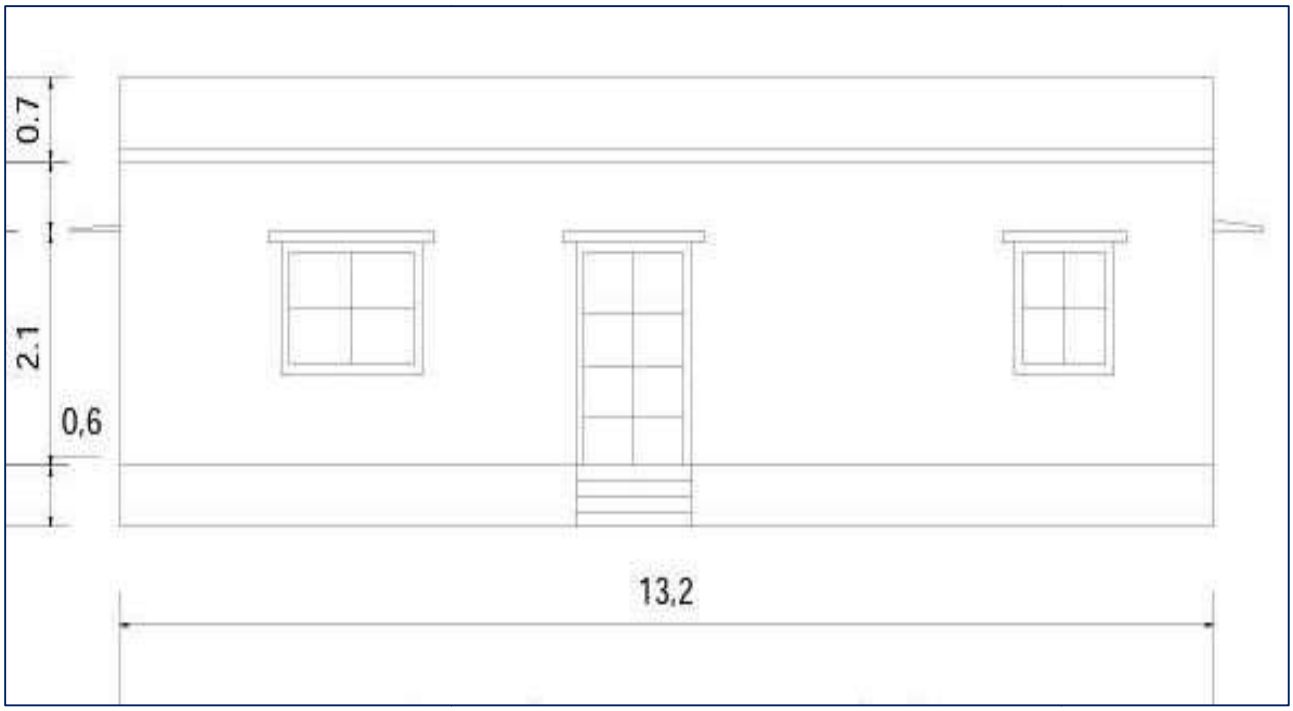


Fig 39: - Elevation of Hospital

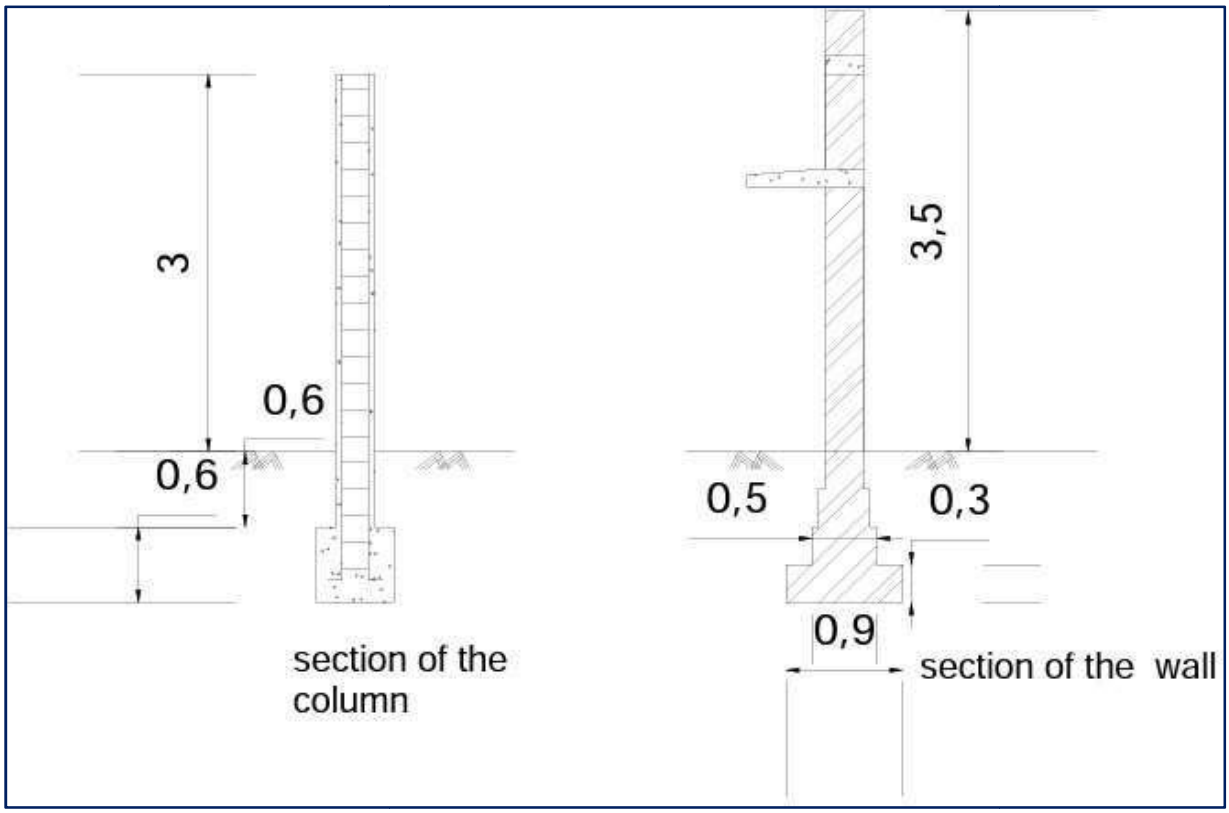


Fig 40: - Section of Hospital

Measurement Sheet of Hospital

Table 22: Measurement Sheet of Hospital

MEASUREMENT SHEET OF HOSPITAL						
Number of junction = 10						
Total center line = 2(12.9)+3(9.9)+(3.6+3.6+4.3+3.3+4.3+3.3)=77.9 M						
SR No.	Item Description	No	L	B	H	Quantity
1	Earthwork in excavation for foundation	1	73.4	0.9	1.4	92.48
2	PCC (1:4:8) for foundation	1	73.4	0.9	0.2	13.21
3	Brick masonary upto Plinth level in c.m. (1:6)					
	1st step	1	74.9	0.6	0.3	13.48
	2nd step	1	75.4	0.5	0.3	11.31
	3rd step	1	75.9	0.4	0.3	9.1
	4th step	1	76.4	0.3	0.85	19.48
	Total					53.37
	Masonry for step					

	1st step	1	2	0.9	0.15	0.27
	2nd step	1	2	0.6	0.15	0.18
	3rd step	1	2	0.3	0.15	0.09
	Total					53.91
4	Brick masonry above plinth up to slab level	1	76.4	0.3	3	68.76
	Deduction for door, window and Ventilation					
	D0	3	1.8	0.3	2.1	3.4
	D1	1	1.2	0.3	2.1	0.76
	D2	2	1	0.3	2.1	1.26
	W1	5	1.5	0.3	1.4	3.15
	W2	3	1	0.3	1.4	1.26
	V	2	0.6	0.3	0.3	0.22
	Deduction for Lintels					
	D0	3	2.1	0.3	0.15	0.28
	D1	1	1.5	0.3	0.15	0.07
	D2	2	1.3	0.3	0.15	0.12
	W1	5	1.8	0.3	0.15	0.4
	W2	3	1.9	0.3	0.15	0.18
	V	2	0.9	0.3	0.15	0.08
	Net Quantity					57.7
5	Brick masonry for parapet wall					
	Front wall	2	13.2	0.2	0.7	3.7
	Side wall	2	9.8	0.2	0.7	2.74
	Total					6.44
6	Back filling in Foundation		92.48 - 13.21 - 40.77			38.5
7	Earth filling in plinth					
	Bed room	1	5	7.8	0.45	17.55
	Doctor room	1	3	4	0.45	5.4
	Blood room	1	3	5.2	0.45	7.02
	WC	2	1.5	1.5	0.45	2.02
	Water Room	1	1.4	1.5	0.45	0.94
	Emergency Treatment room	1	4	3	0.45	5.4
	Space	1	4	6.3	0.45	11.34
	Total					49.67
	BBCC 10cm above earth filling					
	Bed room	1	5	7.8	0.1	3.9
	Doctor room	1	3	4	0.1	1.2
	Blood room	1	3	5.2	0.1	1.56
	WC	2	1.5	1.5	0.1	0.45

8	Water Room	1	1.4	1.5	0.1	0.21
	Emergency Treatment room	1	4	3	0.1	1.2
	Space	1	4	6.3	0.1	2.52
	Total					11.04
9	5cm thick tile bledding					
	Bed room	1	5	7.8	0.05	1.95
	Doctor room	1	3	4	0.05	0.6
	Blood room	1	3	5.2	0.05	0.78
	WC	2	1.5	1.5	0.05	0.225
	Water Room	1	1.4	1.5	0.05	0.105
	Emergency Treatment room	1	4	3	0.05	0.6
	Space	1	4	6.3	0.05	1.26
	Total					5.52
10	DPC 5cm thick (1:2:4)	1	76.4	0.3		22.92
11	12mm thick smooth plaster					
	Bed room	2	5		3	30
		2	7.8		3	46.8
	Doctor room	2	3		3	18
		2	4		3	24
	Blood room	2	3		3	18
		2	5.2		3	31.2
	WC	8	1.5		3	36
	Water Room	1	1.4		3	42
		2	1.8		3	10.8
	Emergency Treatment room	2	4		3	24
		2	3		3	18
	Space	2	4		3	24
		2	4.3		3	25.8
	Total					310.8
	For Ceiling					
	Bed room	1	5	7.8		3.9
	Doctor room	1	3	4		12
	Blood room	1	3	3		9
	WC	2	1.5	1.5		4.5
	Water Room	1	1.4	1.5		2.1
	Emergency Treatment room	1	4	3		12
	Space	1	4	6.3		25.2
		1	3.2	2		6.4
	Total					75.1
	For Outside Wall					
	Front wall	1	13.2		4.42	58.34

	Side wall	1	9.8		4.42	43.31
	Total					101.65
	Net Quantity		310.8 + 75.1 + 10165			487.56
	Deduction for door, window and Ventilation					
	D0	3	1.8		2.1	11.34
	D1	1	1.2		2.1	2.52
	D2	2	1		2.1	4.2
	W1	5	1.5		1.4	10.2
	W2	3	1		1.4	4.2
	V	2	0.6		0.6	0.72
	Total					33.18
	Net Quantity		487.56 - 33.18			454.37
12	Color / White wash					454.37
13	RCC Slab(1:1.5:2)	1	13.2	10.2	0.12	16.16
	RCC Chajja for door and window					
	D0	1	2.1	0.6	0.1	0.13
	W1	5	1.8	0.6	0.1	0.54
	W2	3	1.3	0.6	0.1	0.23
	Total					17.06
14	Steel in RCC		17.06*0.01*7850			1340 Kg
15	15cm RCC lintel above door and window					
	D0	3	2.1	0.3	0.15	0.28
	D1	1	1.5	0.3	0.15	0.07
	W1	5	1.8	0.3	0.15	7.25
	W2	3	1.3	0.3	0.15	4.75
	V	2	0.9	0.3	0.15	3.35
	Total					19.45
16	Numbers of tiles					
	Bed room	1	5	7.8		39
	Doctor room	1	3	4		12
	Blood room	1	3	5.3		15.9
	WC	2	1.5	1.5		4.5
	Water Room	1	1.4	1.5		2.1
	Emergency Treatment room	1	4	3		12
	Space	1	4	6.3		25.3
	Size of Tiles = 0.25*0.25=0.0625					
	Number of tiles		110.8/0.0625			1775

	Skirting					
	Bed room	2	5			10
		2	7.8			15.6
	Doctor room	2	3			6
		2	4			8
	Blood room	2	3			6
		2	5.3			10.6
	WC	8	1.5			12
	Water Room	1	1.4			2.8
		2	1.8			3.6
17	Emergency Treatment room	2	4			8
		2	3			6
	Space	2	4			8
		2	4.3			8.6
	Total					105.2
	Deduction for door					
	D0	5	1.8			9
	D1	2	1.2			2.4
	D2	4	1			4
	Total					15.4
	Net Quantity					90
	Dado for WC	8	1.5		1.2	14.4
18	Deduciton for door					
	D2	2	1		1.2	2.4
	Net Total					12
	Wood Work					
	D0	3	1.8		2.1	11.34
	D1	1	1.2		2.1	2.52
19	D2	2	1		2.1	4.2
	W1	5	1.5		1.4	10.5
	W2	3	1		1.4	4.2
	Total					32.76

Abstract Sheet of Hospital

Table: 23 Abstract Sheet of Hospital

ABSTRACT SHEET HOSPITAL					
SR. NO.	Item Description	Quantity	Per	Rate	Amount
1	Earthwork in excavation for Foundation	92.48	Cubic Meter	50	4624
2	PCC (1:4:8) for foundation	13.21	Cubic Meter	1899	25085
3	Brick masonary upto plinth level	53.37	Cubic Meter	2500	133425
4	Brick masonary above plinth upto slab	57.7	Cubic Meter	2500	144250
5	Brick masonary for parapet wall	6.44	Cubic Meter	2500	16025
6	Back filling for foundation	38.5	Cubic Meter	39	1502
7	Earth filling for foundation	49.67	Cubic Meter	39	1938
8	BBCC 10cm above earth filling	11.04	Cubic Meter	1000	11040
9	5cm thick tile bleeding	5.52	Cubic Meter	1000	5520
10	DPC 5cm thick (1:2:4)	22.92	Square meter	40	918
11	12mm thick smooth plaster	454.37	Square meter	45	20447
12	White colour/washing	454.37	Square meter	5	2272
13	RCC slab(1:1.5:2)	17.06	Cubic Meter	5400	92124
14	Steel	1340	Kg	45.3	6071
15	15cm thick RCC lintel above door window	19.45	Cubic Meter	5400	105030
16	Number of tiles	1775	Nos	25	44375
17	Skirting	90	Meter	10	900
18	Dedo For WC	12	Square meter	75	900
19	Wood work	32.76	Square meter	3870	126781
	Add 3% Contingencies’				22296
	Add 2% Work charges				14865
	Add 10% Contractors Profit				74323
	Add 8% Electricity Supply				59459
	Grand Total				914170

The rates of their respective works provided in the abstract sheet along with quantities are inclusive of

Water charges, contractor's profit, contingencies, utilities and labor charges.

Total cost = Rs. 914170/-

8.1.3 Social design (Civil) : Gymnasium Building

Scenario:

Gymnasium Building is a public location where people are gather for physical exercise and health related activities, such as bodybuilding, yoga and etc., so the villagers are keep their health fit and fine.

Existing Situation in Bhujodi:

In the Bhujodi village there is no any Gymnasium building so that according to interaction with the villagers there should be one Gymnasium building in village. During the interaction with villagers they have also suggested that there should be a Gymnasium building in Bhujodi village.

Sustainability of the design:

Gymnasium Building as an important tool:

Design Utilized by,

All the people living in the village of even outsiders from nearby villages and relatives of the villagers can use or utilize a Gymnasium building for their different uses with the permission of Sarpanch, Talati and some authorized people of the village.

Needs:

For physical exercise and health related activities

Design brief:

The Gymnasium buildingis an important public building in a prominent location. A public location where people are gather for physical exercise and health related activities, such as bodybuilding, yoga and etc., So the villagers are keep their health fit and fine.

Gymnasium building Design:

Length: 14.4, Width: 11.6m, Height: 3.4

Proposed Design in Autocad

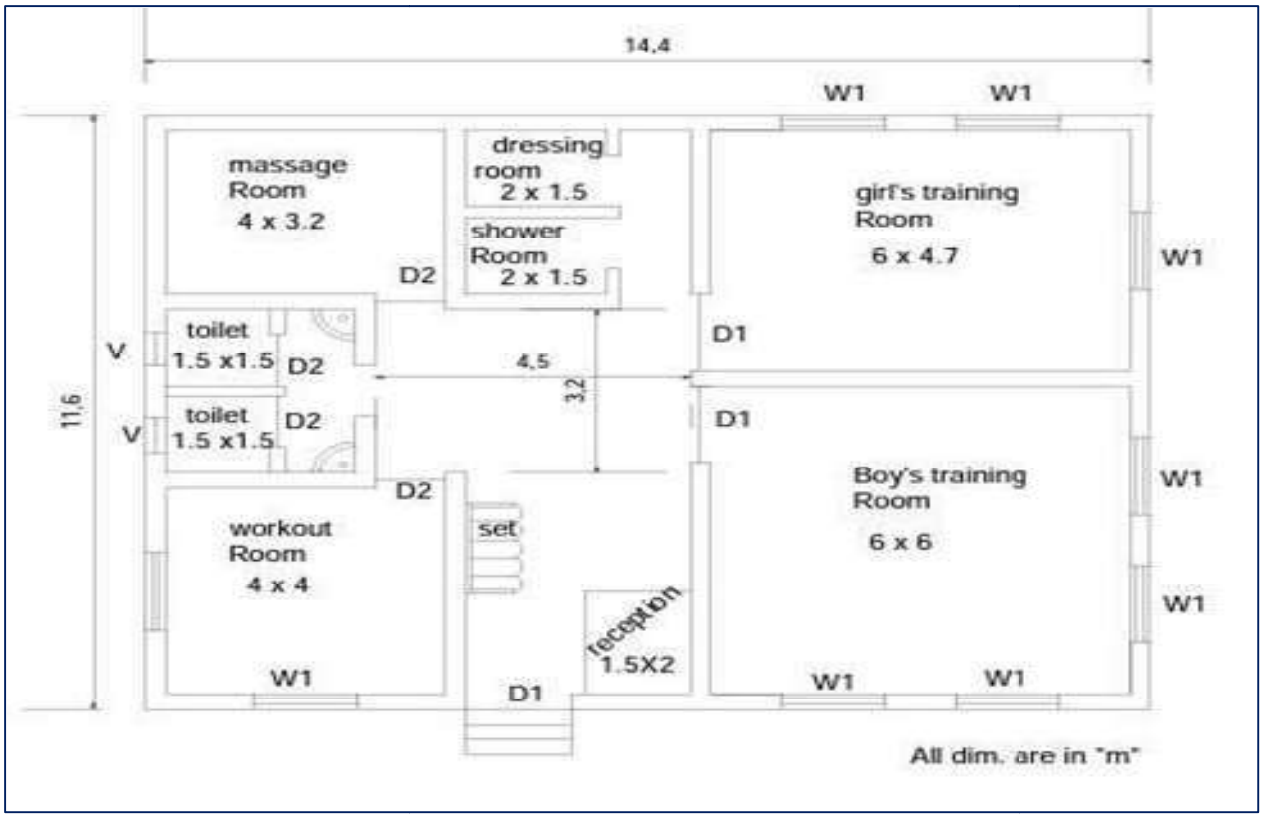


Fig 41: - Plan of Gymnasium Building

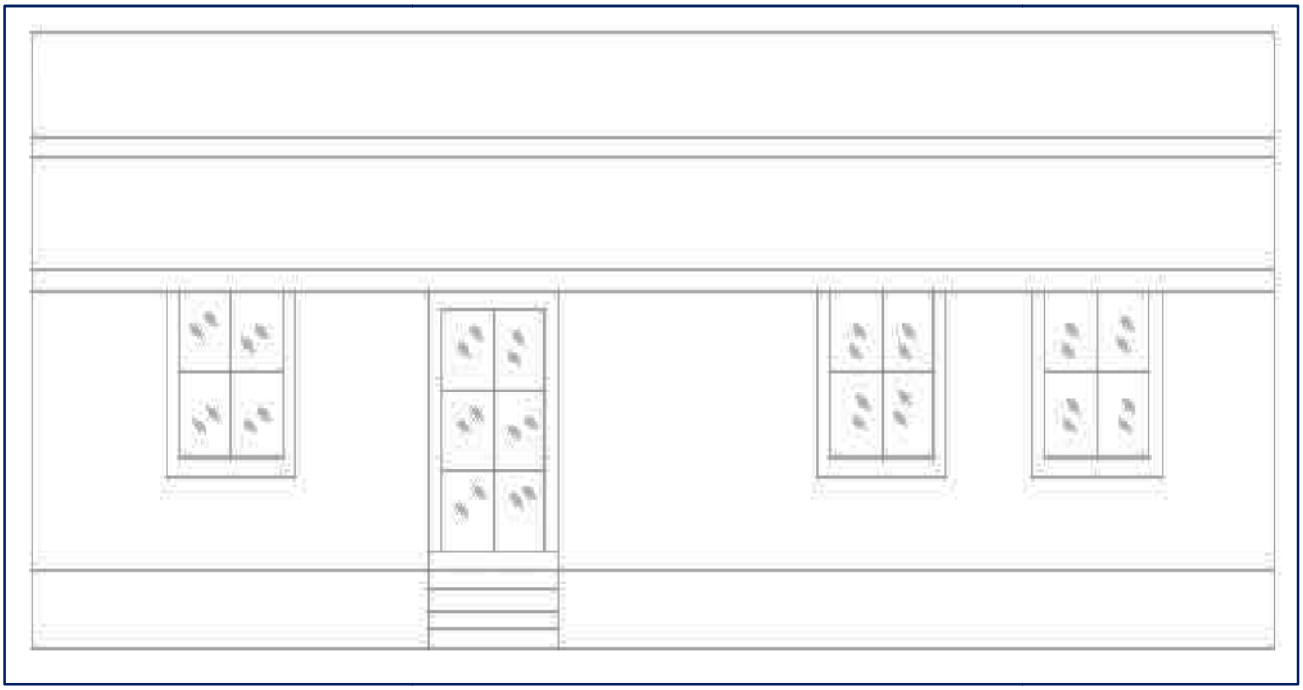


Fig 42: - Elevation of Gymnasium Building

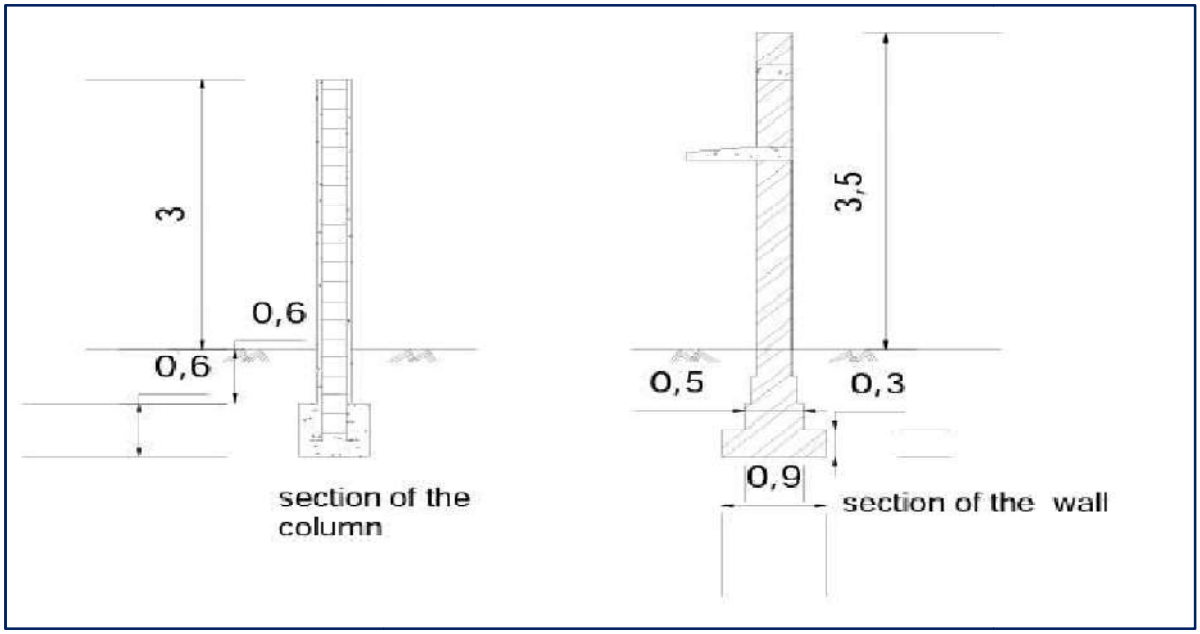


Fig 43: - Section of Gymnasium Building

Measurement Sheet of Gymnasium Building

Table 24: Measurement Sheet of Gymnasium building

MEASUREMENT SHEET GYMNASIUM BUILDING						
Number of Junction = 18						
Total center line length = 2(14.1)+3(11.3)+[6.30+2(4.3)+4.30+(3.5*3)+1.8+(2*2.3)+(2*1.8)]=101.8 M						
Sr. no.	Item Description	No	L	B	H	Quantity
1	Earthwork in excavation for Foundation	1	93.7	0.9	1.4	118.06
2	PCC (1:4:8) for foundation	1	93.7	0.9	0.2	16.9
3	Brick masonary upto plinth level					
	1St step	1	96.4	0.6	0.3	17.35
	2nd step	1	97.3	0.5	0.3	14.6
	3rd Step	1	98.3	0.4	0.3	11.78
	4th step	1	99.1	0.3	0.85	25.27
	Masonary for Step					
	1St step	1	1.7	0.9	0.15	0.23
	2nd step	1	1.7	0.6	0.15	0.15

	3rd Step	1	1.7	0.3	0.15	0.08
	Total					69.46
4	Brick masonary above plinth upto Slab	1	99.1	0.3	3	89.19
	Deduction for doors, windows and Ventilation					
	D0	3	1.5	0.3	2.1	2.83
	D1	7	1	0.3	2.1	4.41
	W1	9	1.5	0.3	1.4	5.67
	V	2	0.6	0.3	0.6	0.22
	Deduction for Lintel					
	D0	3	1.8	0.3	0.15	0.24
	D1	7	1.3	0.3	0.15	0.41
	W1	9	1.8	0.3	0.15	0.73
	V	2	0.9	0.3	0.15	0.08
	Total Deduciton					14.59
	Net Quantity					74.6
5	Brick masonary for parapet wall					
	Front wall	1	14.4	0.2	0.7	2.01
	Side Wall	1	11.2	0.2	0.7	1.55
	Total					3.56
6	Back filling in Foundation = 118.06-16.9-52.65					48.51
7	Earthfilling in Plinth					
	Boys training room	1	6	6	0.45	16.2
	Girls training room	1	6	4.7	0.45	12.7
	Work out Room	1	4	4	0.45	7.2
	Massage room	1	4	3.2	0.45	5.76
	Dressing room	1	2	1.5	0.45	1.35
	Shower room	1	2	1.5	0.45	1.35
	Toilet	2	1.5	1.5	0.45	2.02
	Space	1	1	3.5	0.45	1.6
		1	3.2	7.5	0.45	10.8
		1	2.3	3.2	0.45	3.31
	Toal					62.3
8	BBCC 10CM above Earth filling					
	Boys training room	1	6	6	0.1	3.6
	Girls training room	1	6	4.7	0.1	2.82
	Work out Room	1	4	4	0.1	1.6

	Massage room	1	4	3.2	0.1	1.28
	Dressing room	1	2	1.5	0.1	0.3
	Shower room	1	2	1.5	0.1	0.3
	Toilet	2	1.5	1.5	0.1	0.45
	Space	1	1	3.5	0.1	0.35
		1	3.2	7.5	0.1	2.4
		1	2.3	3.2	0.1	0.74
	Total					13.84
9	5CM thick Tile Bledding					
	Boys training room	1	6	6	0.05	1.8
	Girls training room	1	6	4.7	0.05	1.41
	Work out Room	1	4	4	0.05	0.8
	Massage room	1	2	1.5	0.05	0.15
	Shower room	1	2	1.5	0.05	0.15
	Toilet	2	1.5	1.5	0.05	0.225
	Space	1	1	3.5	0.05	0.175
		1	3.2	7.5	0.05	1.2
		1	2.3	3.2	0.05	0.37
	Total					6.28
10	D.P.C 5Cm Thick (1:2:4)	1	99.1	0.3	-	29.73
11	12mm Thick Smooth Plaster					
	Boys training room	2	6		3	36
		2	6		3	36
	Girls training room	2	6		3	36
		2	4.75		3	28.5
	Work out Room	4	4		3	48
	Massage room	2	4		3	24
		2	3.2		3	19.2
	Dressing room	2	2		3	12
		2	1.5		3	9
	Shower room	1	2		3	6
		1	1.5		3	4.5
	Toilet	8	1.5		3	36
	Space	1	1		3	3
		2	3.5		3	21
		3	3.2		3	28.8
		1	4.3		3	12.9
		1	7.8		3	23.4
		1	4.9		3	14.7

	Total					399
	For Ceiling					
	Boys training room	1	6	6		36
	Girls training room	1	6	4.7		28.2
	Workout Room	1	4	4		16
	Massage room	1	4	3.2		12.8
	Dressing room	1	2	1.5		3
	Shower room	1	2	1.5		3
	Toilet	2	1.5	1.5		4.5
	Space	1	1	3.5		3.5
		1	3.2	4.5		14.4
		1	3.2	4.3		13.76
	Total					135.16
	For Out Side wall					
	Front wall	2	14.4		4.42	127.3
	Side Wall	2	11.6		4.42	102.54
	Total Plaster in Structure		399 + 135.16 + 230			765
	Deduction for doors, windows and Ventilation					
	D0	3	1.5		2.1	9.45
	D1	7	1		2.1	14.7
	W1	9	1.5		1.4	18.9
	V	2	0.6		0.6	0.72
	Total					44
	Net Quantity = 765 - 44					721
12	Colour / White wash					721
13	RCC Slab (1:1.5:3)	1	14.4	11.6	0.12	20
	RCC Chajja for door and Window					
	D0	1	1.8	0.6	0.1	0.11
	W1	9	1.8	0.6	0.1	0.97
	Total					21.08
14	Steel in RCC					
	21.08*.01*7850					1655 Kg
15	15cm RCC lintel above door and window					
	D0	3	1.8	0.3	0.15	0.25
	D1	7	1.3	0.3	0.15	0.41
	W1	9	1.8	0.3	0.15	0.73
	V	2	0.9	0.3	0.15	0.1

	Total					1.5
16	Number of Tiles					
	Boys training room	1	6	6		36
	Girls training room	1	6	4.7		28.2
	Work out Room	1	4	4		16
	Massage room	1	4	3.2		12.8
	Dressing room	1	2	1.5		3
	Shower room	1	2	1.5		3
	Toilet	2	1.5	1.5		4.5
	Space	1	1	3.5		3.5
		1	1	3.2		3.2
		1	4.5	3.2		14.4
		1	3.2	4.3		13.8
	Total					138.4
	Size of Tiles = 0.25*0.25=.0625					
	Number of Tiles		138.4/.0625			2220 nos.
17	Skirting					
	Boys training room	1	6			6
		1	6			6
	Girls training room	1	6			6
		1	4.7			4.7
	Work out Room	1	4			4
		1	4			4
	Massage room	1	4			4
		1	3.2			3.2
	Dressing room	1	2			2
		1	1.5			1.5
	Shower room	1	2			2
		1	1.5			1.5
	Toilet	8	1.5			12
	Space	3	3.2			9.6
		1	11.3			11.3
		1	3.5			3.5
		1	4.8			4.8
		1	4.3			4.3
		1	3.2			3.2
	Total					
18	Dedo for WC	8	1.5		1.2	14.4

		2	3.2		1.2	7.7
	Total					22.1
19	Wood Work					
	D0	3	1.5		2.1	9.45
	D1	7	1		2.1	14.7
	W1	9	1.5		1.4	18.7
	Total					43.1

Abstract Sheet of Gymnasium Building

Table: 25 Abstract Sheet of Gymnasium Building

ABSTRACT SHEET GYMNASIUM BUILDING					
NO	Item description	Quantity	Rate	Per	Amount
1	Earthwork in excavation for Foundation	118.06	50	Cubic Meter	5930
2	PCC (1:4:8) for foundation	16.9	1899	Cubic Meter	32093
3	Brick masonary upto plinth level	69.46	2500	Cubic Meter	173650
4	Brick masonary above plinth upto slab	74.6	2500	Cubic Meter	186500
5	Brick masonary for parapet wall	3.56	2500	Cubic Meter	8900
6	Back filling for foundation	48.51	39	Cubic Meter	1892
7	Earth filling for foundation	62.3	39	Cubic Meter	2430
8	BBCC 10cm above earth filling	13.84	1000	Cubic Meter	13840
9	5cm thick tile bledding	6.28	1000	Cubic Meter	6280
10	DPC 5cm thick (1:2:4)	29.73	40	Square meter	1189.2
11	12mm thick smooth plaster	721	45	Square meter	32445
12	White colour/washing	721	5	Square meter	3605
13	RCC slab(1:1.5:2)	21.08	5400	Cubic Meter	113832
14	Steel	1655	45	Kg	74975
15	15cm thick RCC lintel above door & window	1.5	5400	Cubic Meter	8100
16	Number of tiles	2220	25	Nos	55500

17	Skirting	94	10	Square meter	940
18	Dedo For WC	17.3	75	Square meter	1298
19	Wood work	43.1	3870	Square meter	166797
	Total				890193
	Add 3% Contigencies				26706
	Add 2% Work charges				17804
	Add 10% Contractors Profit				89020
	Add 8% Electricity Supply				71216
	Grand Total				1094942
	Round off Total Amount in RS.				1100000

The rates of their respective works provided in the abstract sheet along with quantities are inclusive of water charges, contractor's profit, contingencies, utilities and labor charges.

Total cost = Rs. 11,000,00/-

8.1.4 Social cultural design (Civil) :Recreational park

Scenario:

According to smart village survey there is no Recreational park in village so village people can't fresh their mind by natural way so park is very useful for health or walking and entertainment purpose. Park is useful for senior citizen for walking purpose after implementation of public park its very useful for increase in health of public and as well tourist

Existing Situation in Bhujodi:

In the Bhujodi village there is no any Recreational park. So we have designed a no public garden as socio-cultural design of the village. Recreational park is a is very useful for health or walking and entertainment purpose.

Sustainability of the design:

Recreational Park as an important tool:

Design Utilized by,

All the people living in the village of even outsiders from near by villages and relatives of the villagers can use or utilize a Recreational park for their different uses.

Needs:

For health or walking and entertainment purposes.

Length:9.14m, Width:6.1m, Height: 4.36m

Proposed Design in Autocad

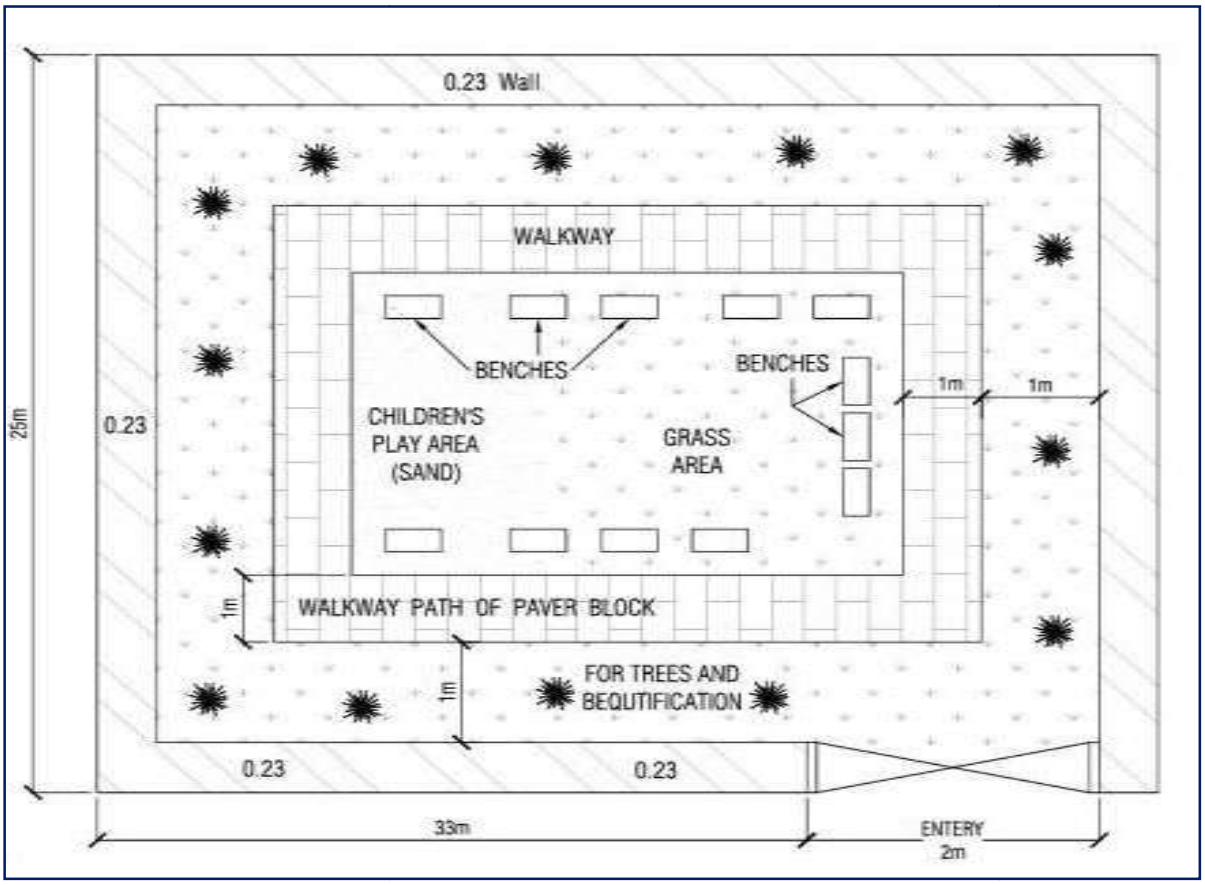


Fig 44: -Plan of Recreational park

Measurement Sheet of Recreational Park

Table 26: Measurement Sheet of Recreational Park

MEASUREMENT BOOK FOR PUBLIC GARDEN						
SR. NO.	DESCRIPTION	NO	L	B	H	QUANTITY
1	excavation for foundation of wall	2	35	0.4	0.6	17
		2	25	0.4	0.6	12
					Total	29.00 M3
2	PCC in foundation 1:3:6	2	35	0.4	0.2	5.6
		2	25	0.4	0.2	4
					Total	9.60 M3
3	brickwork in foundation to 1.5m height	1	60	0.3	0.2	3.6
		2	35	0.23	1.7	27.4

		2	35	0.23	1.7	20
					Total	51 M3
4	clay filling	1	35	25	0.2	175 M3
5	sand filling	1	35	25	0.2	175 M3
					Total	350 M3
6	paver block for walkway path	2	20.54	1		41.08
		2	30.54	1		61.08
					total	102.16 M3

AbstractSheet of Recreational Park

Table: 27Abstract Sheet of Recreational Park

ABSTRACT SHEET GYMNASIUM BUILDING					
ITEM NO.	DESCRIPTION	QTY	RATE	PER	AMOUNT
1	excavation in ordinary soil	29	85	M3	2465
2	PCC in foundation 1:3:6	9.6	3200	M3	30720
3	Brickwork in foundation up to 1.5m	51	3500	M3	178500
4	clay and sand filling	350	50	M3	17500
5	paver block for walkway path	103	750	M2	77250
6	approx. benches	20	2000	NOS	40000
7	beautification items trees	100	30	NOS	3000
8	grass etc.	875	50	M2	43750
				Total	393185 RS
			3% contingencies		11796
			2% Work charges		7863.7
			10% Contractor profit		39318.5
			1.5% Water charges		5897.78
			Grand Total		4,58,060 RS

The rates of their respective works provided in the abstract sheet along with quantities are inclusive of water charges, contractor's profit, contingencies, utilities and labor charges.

Total cost = Rs. 4,58,060/-

8.1.5 Smart Village Design (Civil) : Police Station

Scenario:

As per condition of village and according to smart village design there is no police station in village. Polish station is must require for safety purpose and reduced in robbery cases also. So we decided to make a sub police station in village for safety purpose. After implementation of this design we are increase the safety of villagers and surrounding area.

Existing Situation in Bhujodi:

In the Bhujodi village there is no any police station existing in the village. From the feed back swhich were given by the villagers we have decided to design a police station as a smart village design for the main purpose of increase the safety of villagers and surrounding area.

Sustainability of the design:

Police station as an important tool:

Design Utilized by,

People living in the village of even outsiders from nearby villages.

Needs:

Increase the safety of villagers and surrounding area.etc.

Design brief:

From the feedbacks which were given by the villagers we have decided to design a police station as a smart village design for the main purpose of increase the safety of villagers and surrounding area.

Police station Design:

Length : 4.79m ; Width : 4.79m : Height :

Proposed Design in Autocad

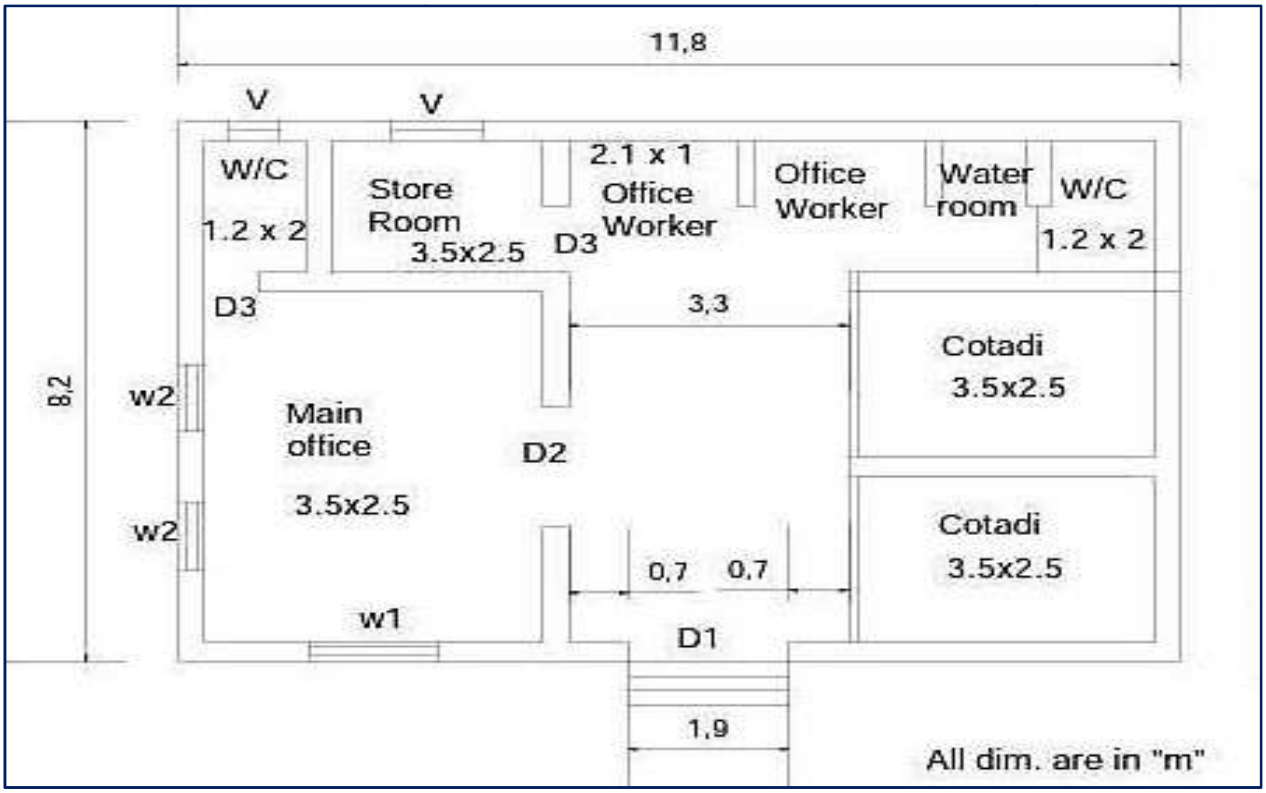


Fig 45: - Plan of Police Station

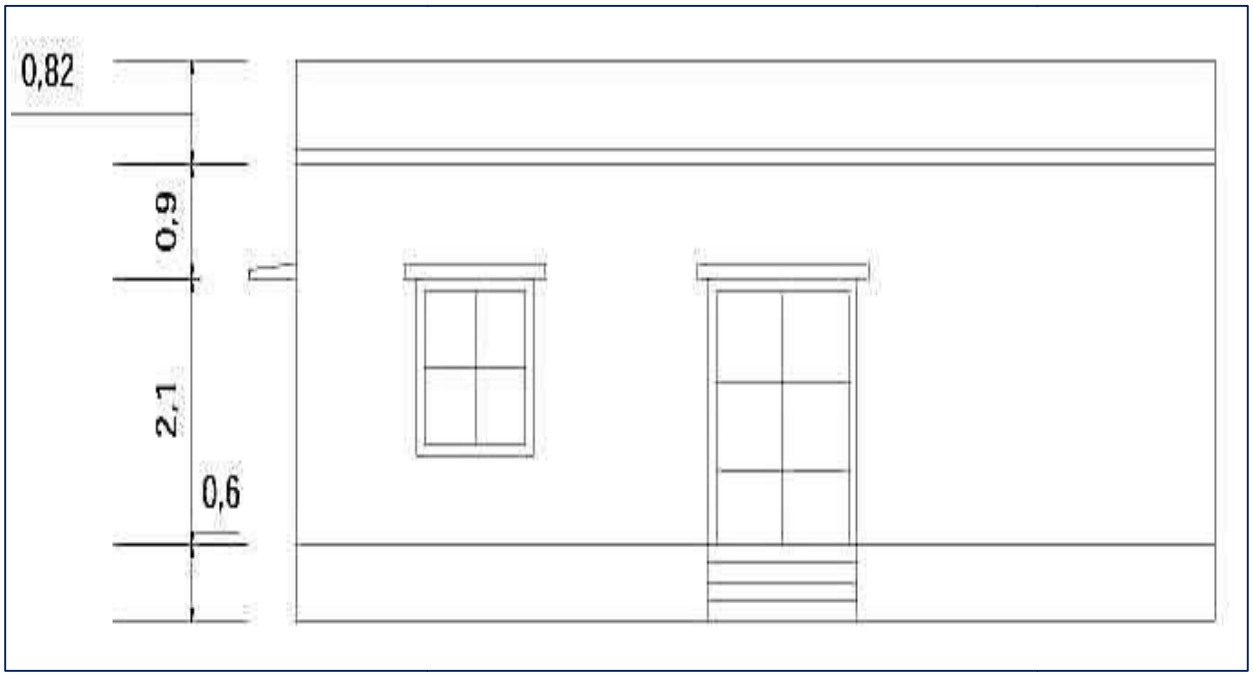


Fig 46: - Elevation of Police Station

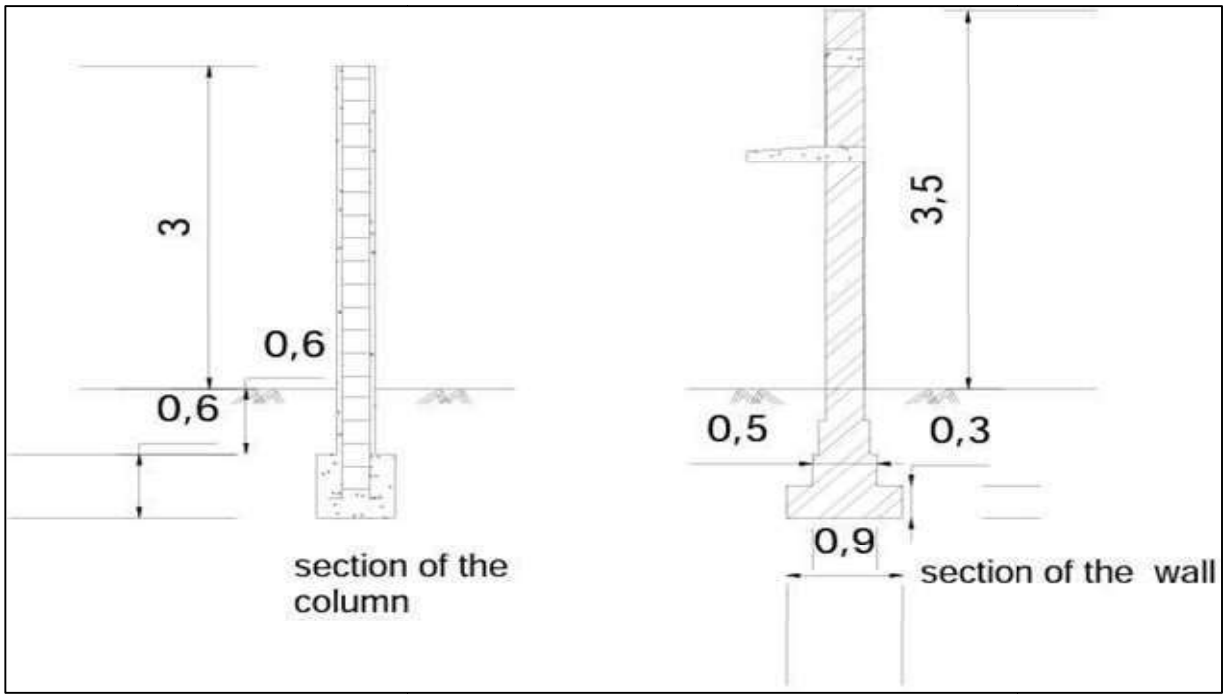


Fig 47: - Section of Police Station

Measurement Sheet of Police Station

Table 28: Measurement Sheet of Police Station

MEASUREMENT SHEET POLICE STATION						
Number of Junction = 10						
Total Centre line length = 2(1.2+1.2+2.5+5.4+1.2)+3(.6+265.3)+2(3.65)+4.3+(2.3*2) = 62.9m						
SR NO	ITEM DESCRIPTION	NO	L	B	H	QUANTITY
1	Earthwork in Excavation for foundation	1	58.4	0.9	1.4	73.58
	L = 62.9 - (0.05*0.9*10)					
2	PCC for foundation	1	58.4	0.9	0.2	10.51
3	Brick masonary upto plinth in cm 1:6					
	1st step	1	59.9	0.6	0.3	10.78
	2nd step	1	60.4	0.5	0.3	9.06
	3rd step	1	60.9	0.4	0.3	7.31
	4th step	1	61.4	0.3	0.85	15.66
	Masonary for step					

	Step-1	1	2.2	0.9	0.15	0.3
	Step-2	1	2.2	0.6	0.15	0.2
		1	2.2	0.3	0.15	0.1
	Total					43.41
4	Brick masonary above plinth upto slab level in CM 1:6	1	61.4	0.3	3	55.26
	Deduction for door,window and Ventilation					
	D0	1	2	0.3	2.1	1.26
	D1	1	1.8	0.3	2.1	1.13
	D2	1	1.1	0.3	2.1	0.69
	D3	2	0.9	0.3	2.1	1.13
	W1	1	1.5	0.3	1.4	0.63
	W2	2	1	0.3	1.4	0.84
	V	3	0.6	0.3	0.6	0.32
	Total					6
	Deduction for lintel					
	D0	1	2.3	0.3	0.15	0.1
	D1	1	2.1	0.3	0.15	0.09
	D2	1	1.4	0.3	0.15	0.06
	D3	2	1.2	0.3	0.15	0.11
	W1	1	1.8	0.3	0.15	0.08
	W2	2	1.3	0.3	0.15	0.17
	Total					0.61
5	Brick masonary for parapet wall					
	Front wall	2	11.8	0.2	0.7	3.3
	Side wall	2	8.2	0.2	0.7	2.3
	Total					5.6
6	Backfilling in Foundation		73.58 - 10.51 - 32.65			30.4
7	Earth filling in Plinth					
	WC	2	1.2	2	0.3	1.44
	Store room	1	2.5	2	0.3	1.5
	Main Office	1	4	5.3	0.3	6.36
	Jail	2	3.5	2.5	0.3	5.25
	Space	1	3.4	5.3	0.3	5.4
	Work office	1	5.4	2	0.3	3.24
	Total					23.19
	BBCC 10mm above earth filling					
	WC	2	1.2	2	0.1	0.48

	Store room	1	2.5	2	0.1	0.5
8	Main Office	1	4	5.3	0.1	2.12
	Jail	2	3.5	2.5	0.1	1.75
	Space	1	3.4	5.3	0.1	1.8
	Work office	1	5.4	2	0.1	1.1
	Total					7.75
9	5cm thick tile bledding					
	WC	2	1.2	2	0.05	0.24
	Store room	1	2.5	2	0.05	0.25
	Main Office	1	4	5.3	0.05	1.06
	Jail	2	3.5	2.5	0.05	0.87
	Space	1	3.4	5.3	0.05	0.9
	Work office	1	5.4	2	0.05	0.54
	Total					3.86
10	DPC 5cm thick 1:2:4	1	61.4	0.3		18.42
11	12mm thick smooth plaster					
	WC	4	1.2		3	14.4
		4	2		3	24
	Store room	2	2.5		3	15
		2	2		3	12
	Main Office	2	4		3	24
		2	5.3		3	31.8
	Jail	4	3.5		3	42
		2	2.5		3	15
	Space	1	7.6		3	22.8
	Office work	1	5.4		3	16.2
		1	2.3		3	6.9
	For Ceiling					
	WC	2	1.2	2		4.8
	Store room	1	2.5	2		5
	Main Office	1	4	5.3		21.2
	Jail	2	3.5	2.5		17.5
	Space	1	7.6	3.4		25.84
	Work office	1	5.4	2		10.8
	For outside wall					
	Front wall	2	11.8		4.42	104.31
	Side wall	2	8.2		4.42	72.5
	Inside for Parapet wall					
	Front wall	2	11.4		0.7	15.96
	Side wall	2	7.8		0.7	10.64
	Total					512.65

	Deduction for door, window and Ventilation					
	D0	1	2		2.1	4.2
	D1	1	1.8		2.1	3.78
	D2	1	1.1		2.1	2.31
	D3	3	0.9		2.1	5.67
	W1	1	1.5		1.4	2.1
	W2	2	1		1.4	2.8
	V	3	0.6		0.6	1.08
	Total					21.94
	Net Quantity					490.71
	20% Wastage Are consider					
	Total Quantity					590
12	Color/white wash					590
13	RCC Slab 0.12m thick (1:1.5:2)	1	11.8	8.2	0.12	11.61
	RCC Chajja for door & Window					
	D0	1	2.3	0.6	0.1	0.138
	W1	1	1.8	0.6	0.1	0.11
	W2	2	1.3	0.6	0.1	0.156
	Total					12
14	1% Steel of RCC work are used.		12*7850*0.01			950 Kg
15	15cm thick RCC lintel above Door and window					
	D0	1	2.3	0.3	0.15	0.1
	D1	1	2.1	0.3	0.15	0.09
	D2	1	1.4	0.3	0.15	0.06
	D3	2	1.3	0.3	0.15	0.117
	W1	1	1.5	0.3	0.15	0.06
	W2	2	1.3	0.3	0.15	0.12
	V	3	1	0.3	0.15	0.12
	Total					0.67
16	Number of Tiles					
	Main Office	1	4	5.3		21.2
	Jail	2	305	2.5		17.5
	Space	1	3.4	5.9		20
	Work office	1	5.4	2		10.8
	WC	2	1.2	2		4.8
	Store room	1	2.5	2		5
	Total					79.3
	Size = 0.25*0.25= 0.0625					

	Number of Tiles		79.3 / 0.0625			1270 nos
	Skirting					
	Main Office	2	4			8
		2	5.3			10.6
17	Jail	2	2.5			5
		4	3.5			14
	Store room	2	2.5			5
		2	2			4
	Space	1	5.9			5.9
		1	3.4			3.4
		1	2.3			2.3
	Deduction for Door					
	D0	1	2			2
	D1	1	1.8			1.8
	D2	1	1.1			1.1
	D3	2	0.9			1.8
	Total					51.5 m
18	Dado for Toilet					
	WC	4	1.2		1.2	5.76
		4	2		1.2	9.6
	Deduction for door					
	D3	2	0.9		1.2	2.16
	Total					13.2
19	Wood Work					
	D0	1	2		2.1	4.2
	D1	1	1.8		2.1	3.78
	D2	1	1.1		2.1	2.31
	D3	2	0.9		2.1	3.78
	W1	1	1.5		1.4	2.1
	W2	2	1		1.4	2.8
	Total					18.97

Abstract Sheet of Police Station

Table: 29 Abstract Sheet of Police Station

ABSTRACT SHEET POLICE STATION					
SR. NO.	**Item Description**	**Quantity**	**Per**	**Rate**	**Amount**
1	Earthwork in excavation for Foundation	73.58	Cubic meter	50	3679
2	PCC (1:4:8) for foundation	10.51	Cubic meter	1899	19959
3	Brick masonryup to plinth level	43.41	Cubic meter	2500	108525
4	Brick masonry above plinth up to slab	48.65	Cubic meter	2500	121625
5	Brick masonry for parapet wall	5.6	Cubic meter	2500	14000
6	Back filling for foundation	30.4	Cubic meter	39	1186
7	Earth filling for foundation	23.19	Cubic meter	39	904.41
8	BBCC 10cm above earth filling	7.75	Cubic meter	1000	7750
9	5cm thick tile bledding	3.86	Cubic meter	1000	3860
10	DPC 5cm thick (1:2:4)	18.42	Square meter	40	736.8
11	12mm thick smooth plaster	590	Square meter	45	26550
12	White colour/washing	590	Square meter	5	2950
13	RCC slab(1:1.5:2)	12	Cubic meter	5400	64800
14	Steel	950	Kg	45.3	43035
15	15cm thick RCC lintel above door window	0.67	Cubic meter	5400	3618
16	Number of tiles	1270	Nos	25	31750
17	Skirting	51.5	Meter	10	515
18	Dado For WC	13.2	Square meter	75	990
19	Wood work	18.97	Square meter	3870	73415
	Total				529847
	Add 3% Contingencies				15896
	Add 2% Work charges				10596
	Add 10% Contractors Profit				52985
	Add 8% Electricity Supply				42388
	Grand Total				65712
	Round off Total amount in RS.				652000

The rates of their respective works provided in the abstract sheet along with quantities are inclusive of water charges, contractor's profit, contingencies, utilities and labor charges.

Total cost = Rs. 6,52,000/

8.1.6 Heritage Village Design (Civil) : Pond Development

Scenario:

According to existing condition of lack villagers dump the solid waste near the lake and its very dangers for health of villagers and students so we design periphery wall near the lack for safety purpose we are provide walk way path near lack and reduced the waste dumping near beautification its look a good near pond and its increase the health of people and clean the village.

Existing Situation in Bhujodi:

In the Bhujodi village there is need to development in pond due to villagers dump the solid waste near the lake so it is a need to design periphery wall near the lack for safety purpose we are provide walk way path near lack and reduced the waste dumping, So we have designed pond development in the village as a heritage village design.

Sustainability of the design:

Pond Development as an important tool:

Design Utilized by,

People living in the village of even out siders from nearby village sand relatives of the villagers can use or utilize a Pond for their different uses.

Needs: For better esthetic pond view; Ease of use; Availability of good Environment ;etc.

Design brief: The village Pond design as a heritage village design is for better esthetics looks of Pond.

Pond Development Design: **Length:200m;Width:150m:Height:2m**

Proposed Design in Autocad

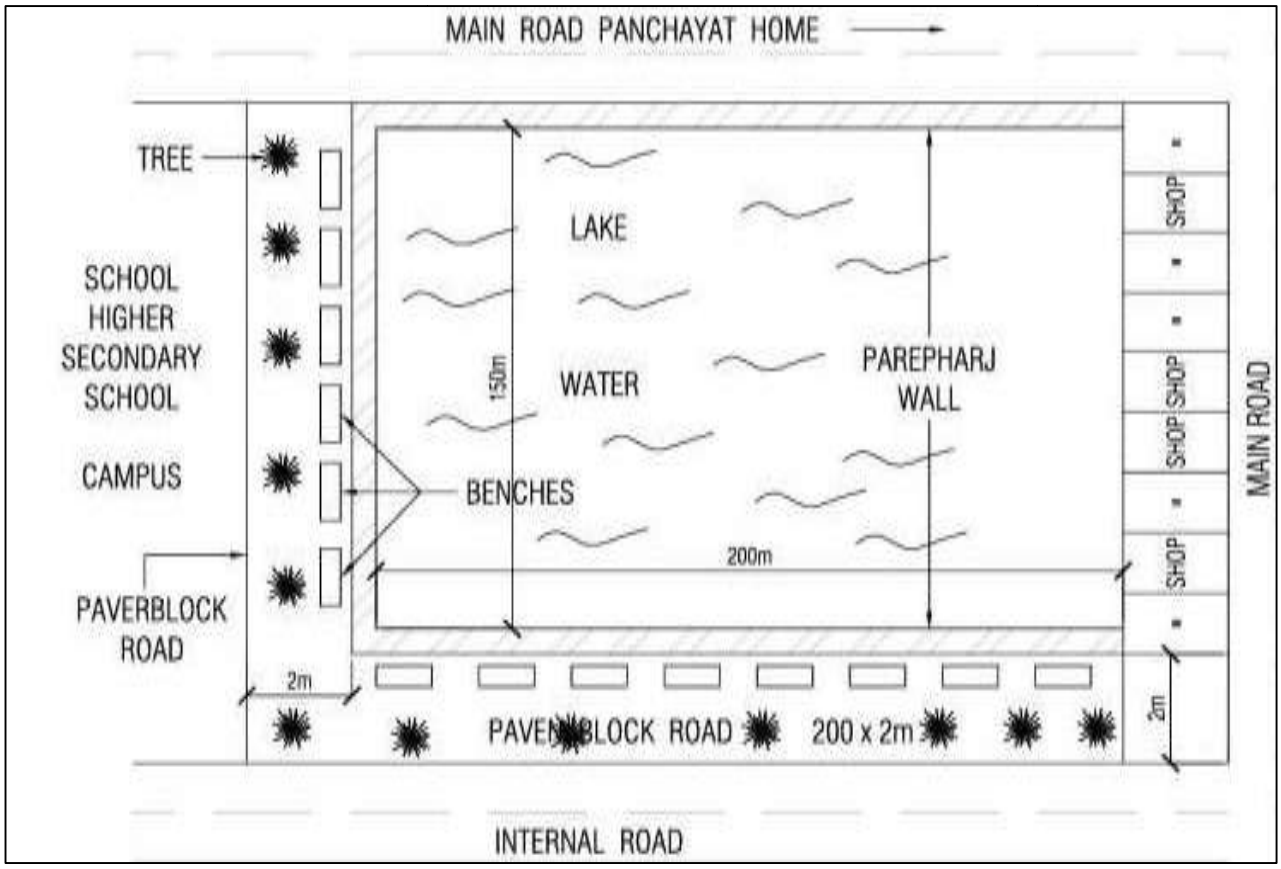


Fig 48: - Plan of Pond Development

Measurement Sheet of Pond Development

Table 30: Measurement Sheet of Pond Development

MEASUREMENT SHEET FOR POND DEVELOPMENT						
SR. NO.	DESCRIPTION	NO	L	B	H	QUANTITY
1	excavation for 1.5m depth for paver block or box cutting	1	200	2	0.6	240
		1	148	2	0.6	178
					TOTAL	418M3
2	sand filling for step or paver block fitting	1	200	2	0.12	48
		1	148	2	0.12	36
					TOTAL	84M3

3	providing and fixing precast rubber dye interlocking concrete block 60mm thick with gauge of concrete M25					
		1	200	2		400
		1	148	2		296
					TOTAL	696M3
4	providing and laying vatta in side of walkway path	1	200			200
		1	148			148
					TOTAL	348M
5	provide setting benches approximate NO	40				40NOS

Abstract Sheet of Pond Development

Table: 31 Abstract Sheet of Pond Development

ABSTRACT SHEET FOR POND DEVELOPMENT					
ITEM NO.	**DESCRIPTION**	**QTY**	**RATE**	**PER**	**AMOUNT**
1	box cutting excavation for laying of paver block	418	85	M3	35550
2	sand filling for providing sand fitting of precast concrete blocks	84	50	M3	4200
3	providing and fixing precast rubber dye interlocking concrete block 60mm thick with grade of concrete M25	696	700	M2	487200
4	providing and laying vatta inside of walkway	348	12	M	4176
5	provide seating benches as approximate no	35	1500	NOS	52500
6	providing tree plant for greenery and beautification of side	150	30	NOS	4500
				TOTAL	588106
			3% contingencies		17643
			Grand Total		605750

The rates of their respective works provided in the abstract sheet along with quantities are inclusive of water charges, contractor's profit, contingencies, utilities and labor charges.

Total cost = Rs. 6,05,750/-

8.1.7 Solar Street light (Electrical Design 1)

An independent sunlight based photovoltaic road lighting framework is an open air lighting unit utilized for enlightening a road or an open zone. Ongoing advances in LED lighting have brought extremely encouraging freedoms for application in road lighting. Joining LED's low force, high enlightenment qualities with current photovoltaic (PV) innovation, PV controlled streetlamp using LED has gotten a standard in numerous spots. In the present application, the vast majority of the basic High Intensity Discharge (Covered up) lights regularly High Pressure Sodium (HPS) lights are being supplanted by more low Light Emitting Diode (LED) lights.

A basic solar powered LED street light system components are:

- Solar Panel or Photovoltaic Module
- Lighting Fixture – LED lamp set
- Rechargeable Deep Cycle Battery
- Solar Charge Controller
- Light Pole

The Solar Panel will provide electricity to charge the battery during day time. The battery's charging is controlled by a charge controller. The operation of the LED bulb is controlled by a control circuit either by using sensors such as Light Dependent Resistor (LDR) or voltage or current sensor. All these components will be fixed on a pole as shown in Figure 1 below. The solar panel is mounted at the top of the pole to minimize the possibility of any shading on the panels.

Solar street lights are raised light sources which are powered by photovoltaic panels generally mounted on the lighting structure or integrated in the pole itself. The photovoltaic panels charge a rechargeable battery, which powers a fluorescent or LED lamp during the night.

Features

Most solar panels turn on and turn off automatically by sensing outdoor light using a light source. Solar streetlights are designed to work throughout the night. Many can stay lit for more than one night if the sun is not available for a couple of days. The photovoltaic panels charge a rechargeable battery, which powers a fluorescent or LED lamp during the night.

Latest designs use wireless technology and fuzzy control theory for battery management. The street lights using this technology can operate as a network with each light having the capability of performing on or off the network.

Fig 49 Solar street lighting

Components

Solar street lights consist of 5 main parts.

Solar Panel

The solar panel is one of the most important parts of solar street lights, as the solar panel will convert solar energy into electricity. There are 2 types of solar panel: mono-crystalline and poly-crystalline. Conversion rate of mono-crystalline solar panel is much higher than poly-crystalline. Solar panel are varies from wattage systems.

LED lamp

Driven is normally utilized as lighting wellspring of present day sunlight based streetlamp, as the LED will give a lot higher Lumens with lower energy utilization. The energy utilization of LED installation is at any rate half lower than HPS installation which is generally utilized as lighting source in Traditional streetlamps. LEDs absence of warm up time likewise considers utilization of movement locators for extra productivity gains.

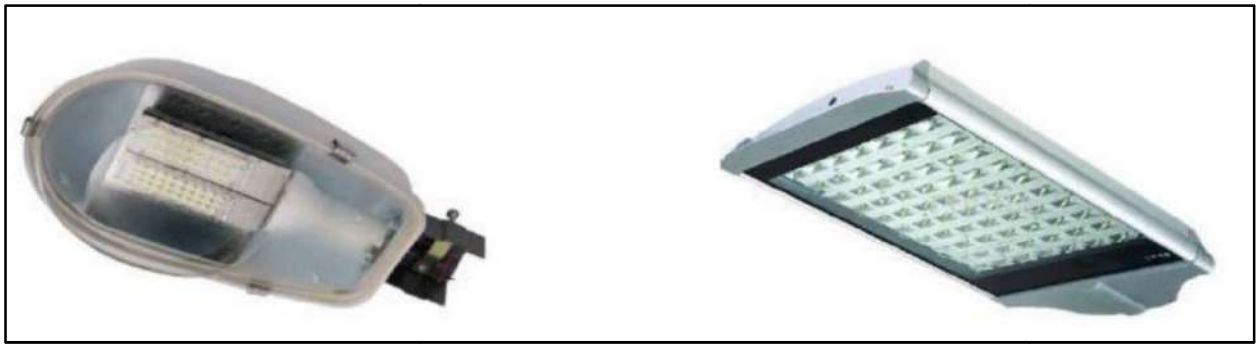


Fig. 50 Example of LED light

Rechargeable Battery

Battery will store the electricity from solar panel during the day and provide energy to the fixture during night.

Pole

Solid Poles are important to all streetlamps, particularly to solar light based streetlamps as there are frequently segments mounted on the highest point of the shaft: installations, boards and in some cases batteries.

Charge controller

Charge controllers are used to control the charging of the batteries. Since the output from solar panels are variable and needs adjustments, charge controllers fetches the variable voltage/current from solar panels, condition it to suit the safety of the batteries

There are three general kinds of charge regulator, essentially:

- Simple ON/OFF Controller
- Pulse Width Modulated (PWM) Controller

Most charge controllers operate at three stages to complete the charging cycle of the batteries. These stages vary according to different times and battery voltages. PWM can be employed to control the charging at the stages:

- Bulk stage
- Absorption stage
- Flo

Fig 51. Example of charge controller

- **Advantages**
  - Solar street lights are independent of the utility grid. Hence, the operation

costs are minimized.

- Solar street lights require much less maintenance compared to conventional street lights.
- Since external wires are eliminated, risks of accidents are minimized.

Disadvantages

- Initial investment is higher compared to conventional street lights.
- Risk of theft is higher as equipment costs are comparatively higher.
- Snow or dust, combined with moisture can accumulate on horizontal PV-panels and reduce or even stop energy production.

Plan for street light plan

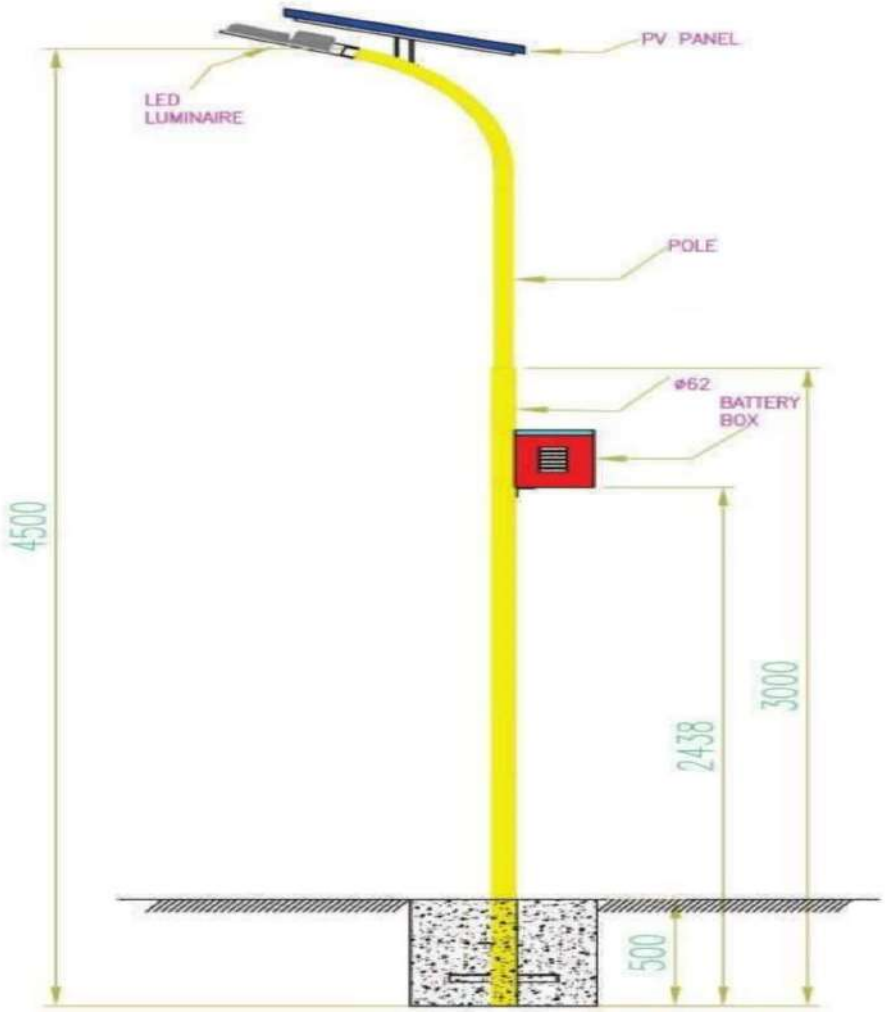


Fig 52. Solar street light foundation

Cost estimation of solar street light

Total 15 number of street lights are require for the village for good and proper illumination

This street light need to place at various particular areas at the village

Table 32. Cost estimation of street lighting

Sr no.	Name of component	Technical specification	Quantity	Rs/Qty	Total
1	Solar PV panel	140wp	15	5200	78,000
2	Battery 12 V	100Ah	15	3000	45,000
3	Charge controller	15A	15	2500	37,500
4	LED lamp	40W	15	950	14,250
5	Single arm galvanized pipe	9 meters	15	1500	22,500
6	Inter connecting wires and other accessories	As per the requirement	Nos	2500	2500
7	Transportation charge	-	-	1000	1000
8	Installation charge	-	-	3000	3000
9	Miscellaneous items	-	-	1000	1000
TOTAL COST					**2,04,750**

8.1.8 Smart Water Supply System (Electrical design 2)

Fig. 53. Motorized Butterfly Valve

Motorized butterfly valve is an automatic regulating valve and it is used in automatic control system.

- The control principle of the motorized butterfly valve is to control and dominate the opening and closing of the valve according to the power signal. The working power usually has: AC220V, AC380V, DC24V, and the input signal has a weak signal of 4~20mA 0~10v.
- The mechanized butterfly valve is a sort of multi-utilitarian valve. It additionally has the capacity of check valve, control valve and shut-off valve, so it is exceptionally adaptable. Typically, the electric butterfly valve is likewise outfitted with a manual control gadget. The capacity is to keep the butterfly valve from having the option to work physically through the manual gadget to guarantee the typical activity of the pipeline framework when the force signal is strange or power disappointment.
- The working standard of the electric butterfly valve: through force flexibly, the mechanized gadget drives the valve bar to move, and the valve bar drives the associated butterfly plate to produce 90° turn to understand the opening and shutting of the valve, in this way understanding the guideline of the streaming medium in the pipeline and control.
- The switch type electric butterfly valve is just answerable for opening and shutting in the pipeline.

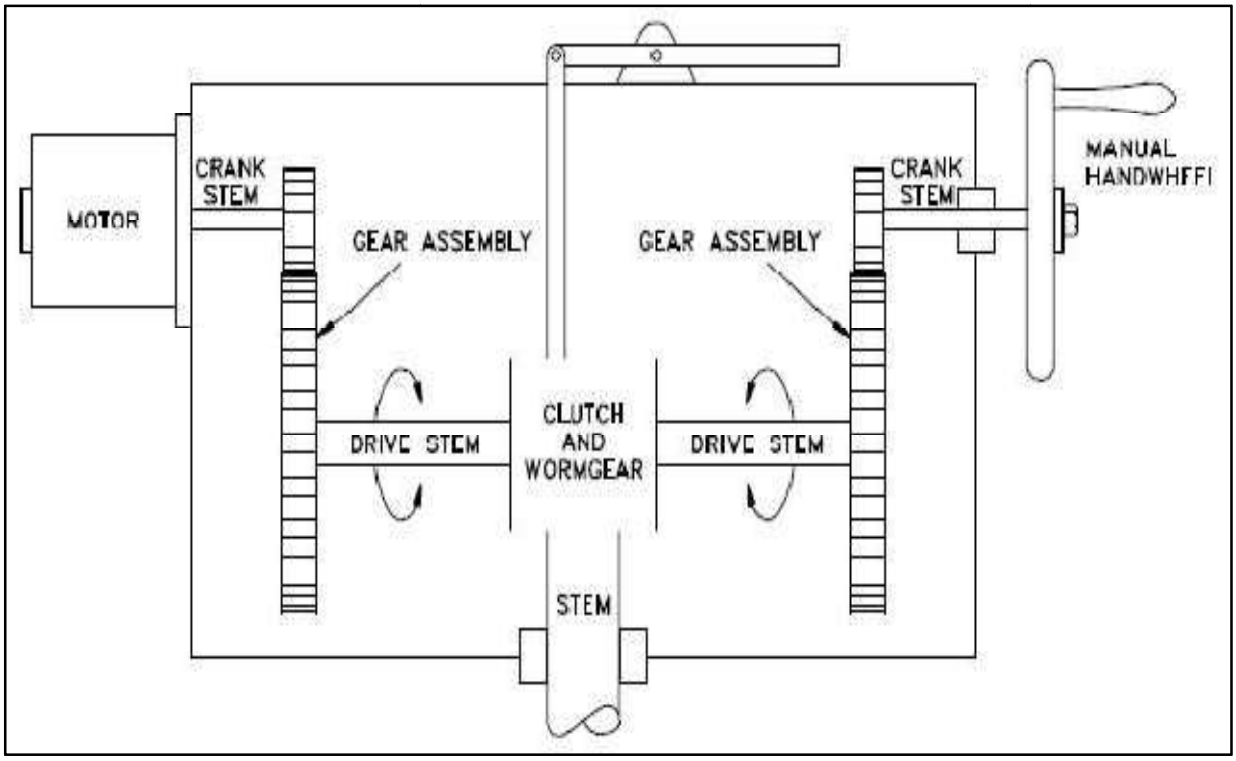


Fig. 54 Motor Arrangement

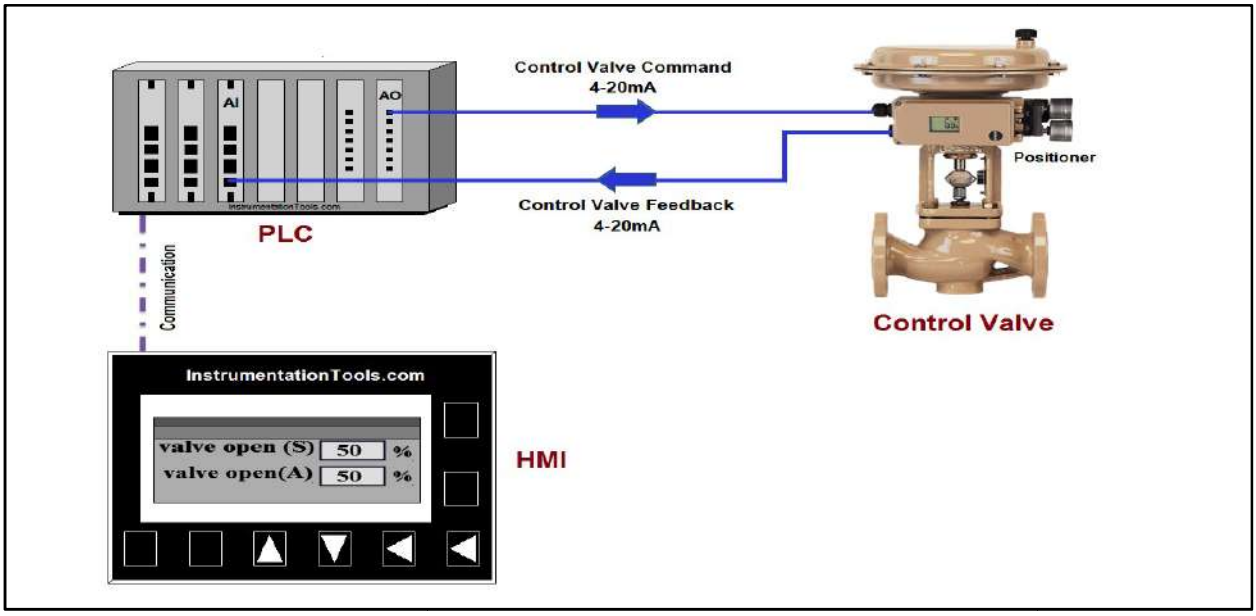


Fig.55 Control System

Sr. no.	Item	Quantity	Cost/Qty (INR)	Total cost (INR)
1	PLC	1 nos.	12,000	12,000
2	Motorized actuator	1 nos.	18,000	18,000
3	HMI unit	1nos.	15,000	15,000
4	Misc.	-	-	4,000
Total cost				**49,000**

Table 33. Cost estimation Smart water supply system

8.1.9 Electrical Wiring in Public Toilet (Electrical design 3)

Design electrical wiring for public toilet and estimate the stuff which is required in toilet and calculate total load of toilet

Plan of Electrical wiring in Public Toilet

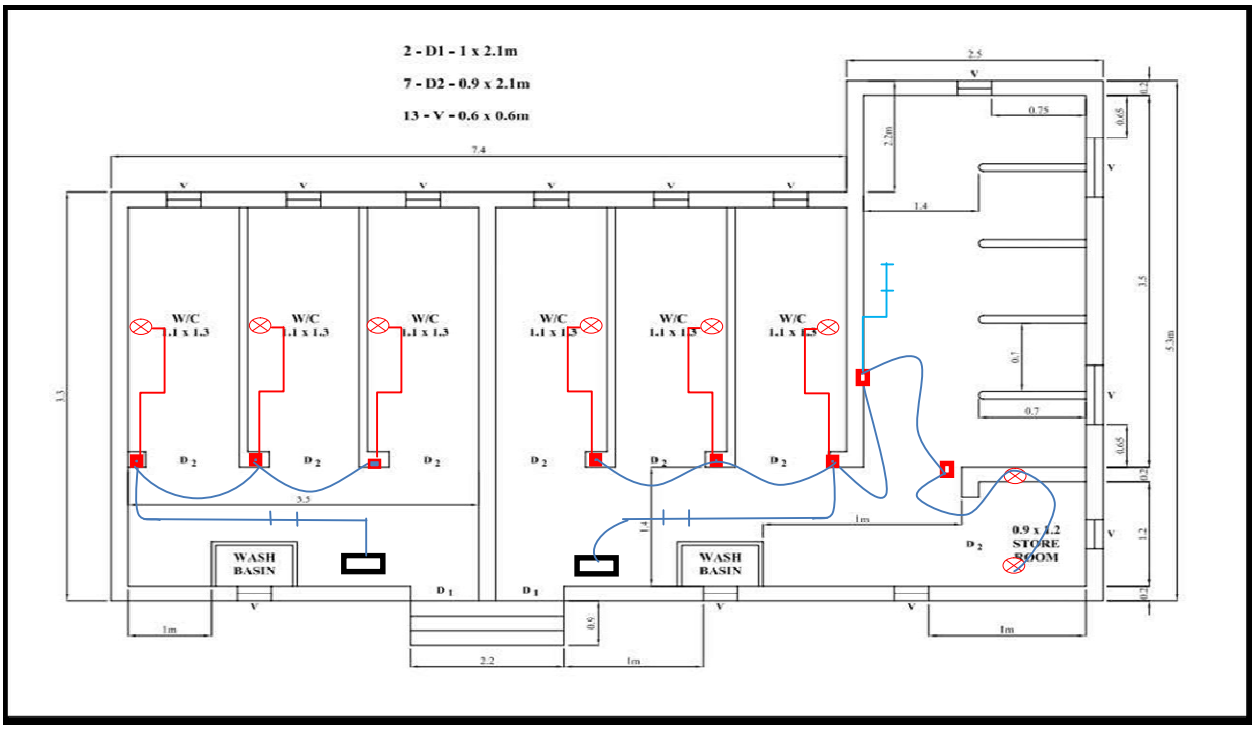


Fig. 56 Plan of electrical wiring in Public Toilet

LOAD CALCULATION

Tube light points

=Number of tube light × wattage

= 3 × 40

= **120 watt**

Lamp point

=Number of lamps × wattage

=8 × 60

=**480 watt**

Total load of public toilet

= Tube light load + lamp load

= 120 + 480

= **600 watt**

Total current draw by toilet

= Total wattage/supply voltage

= 600/230

= **2.60 amp.**

Factor of safety to be 2

Current rating = load current × 2

Current rating = 2.60 × 2 = 5.2

Therefore, for lighting circuit 1.5 sq. mm copper wire will be selected.

Length of conduit required, use concealed conduit system of wiring.

Total PVC conduit = 21 + 5% wastage

= 22.95

= 23(approximate)

Screw = 2 (number of switch bord)

= 2 (10)

= 20 + 5% wastage

= 22 nos.

Number of PVC grip required = no of screw

Switches = no. of lamps + number of tube light

= 8 + 3

= 11

Number of holder is required 8 nos.

Table 34. Cost estimation of wiring in Public Toilet

Sr no.	Specification of materials	Quantity	Rate per unit(RS)	Total (RS)
1	1 Sq. mm copper wire	46 m	6/m	276
2	Medium PVC conduit	23 m	10/m	230
3	Distance saddle	2 packet	140	280

4	One way switch	11 nos.	35	385
5	PVC grip	10 packet	18	180
6	holders	8 nos.	25	200
7	Screw	22 nos.	10	220
8	Overhead charges	-	200	200
9	Labour cost	-	1000	1000
Total cost of project				**2,971**

8.2 Reason for Students Recommending this Design:

- Public toilet - to provide flexibility of emergency in toilet to the villagers.
- Hospital - Easier access to a patient of the village.
- Gymnasium building - villagers are keep their health fit and fine.
- Recreational Park - For health or walking and entertainment purposes.
- Police station - Increase the safety of villagers and surrounding area.etc
- Pond development – for the better aesthetic look of the village pond.

8.3 About designs Suggestions / Benefit of the villagers:

1. Public toilet:

There is no public toilet in village. Here we have designed the Public toilet for our Bhujodi village. So it is required to have one Public toilet in the village. The villagers have to go open in the village for toilet so that we have decided and finalized the design of Public toilet.

2. Hospital:

In the Bhujodi village there is no any Hospital. So according to the feedback given by the villagers, one Hosptal should be there in the village. The villagers have to go in Bhuj for any kind of health or medical facility. So that we have designed one Hospital for the urgent requirement of treatment for the sick peoples in villager.

3. Gymnasium building:

There is no Gymnasium building in the Bhujodi village. The Gymnasium building is an important public building in a prominent location. A public location where people are gather for physical exercise and health related activities, such as body building, yoga and etc., So the

villagers are keep their health fit and fine.

4. Recreational Park:

In the Bhujodi village there is no any Recreational park. So we have designed a no public garden as socio-cultural design of the village. Recreational park is a is very useful for health or walking and entertainment purpose.

5. Police station:

In the Bhujodi village there is no any police station existing in the village. From the feedbacks which were given by the villagers we have decided to design a police station as a smart village design for the main purpose of increase the safety of villagers and surrounding area.

6. Pond development:

In the Bhujodi village there is need to development in pond due to villagers dump the solid waste near the lake so it is a need to design periphery wall near the lack for safety purpose we are provide walk way path near lack and reduced the waste dumping.

Chapter 9.

Proposing designs for Future Development of the Village for the PART-II Design:

For future development of the Bhujodi village we are proposing the designs for Part II design in which following points should be considered,

1. Sustainable design : Overhead Tank

A source of water will be available which could be used for efficient water distribution system in the village households.

2. Physical design : Pickup Bus Station

Currently the villagers are facing hot temperature for catch the bus without bus station so we decided to design the pickup bus station.

3. Social design: Rain Water harvesting

An additional source of water will be available which could be used at the time of emergency or water shortage by implementing the Rain Water Harvesting system in the village households.

4. Socio-Cultural design :Vegetable Market

There is no any Vegetable market at Bhujodi village; villagers have to go buy vegetables from near village so we decided to design the Vegetable market for Bhujodi village.

5. Smart village design: Post Office

For the smart development of the Bhujodi village we have proposed the smart concepts as the Post office.

6. Heritage village design:Entrance Gate

The Bhujodi village has no main entrance gate at the village approach road. So that we have designed the village entrance gate as heritage village design. These are the proposed designs for the future development of Bhujodi village for Vishwakarma Yojana phase VIII, Part 2 design.

7. Electrical Design 1: Solar photovoltaic water pumping system

8. Electrical Design 2: Cctv for village security

9. Electrical Design 3: Based on civil

Chapter 10.

Conclusion of the Entire Village Activities of the Project:

- Vishwakarma Yojana is a Gujarat government project assigned to GTU, in which we GTU students who have been interested in this project have been assigned to a village in our Rurbanisation district. After carrying out physical survey and comparing the existing facilities of village with the basic amenities needed by a village based on population norms given by government of India and personal interface many of the villagers of Bhujodi
- By providing required amenities to village, development of village can be possible. So ultimately migration to the city from village will be reduced and livelihood of villagers will increase. So healthy and prosperous life can be possible for the villagers. Ultimate growth of village and people is base step for the development of country. India is developing country and GDP is highly depended on farming. As the development of village would be possible, farming techniques will increase and percentage of GDP will increase.
- Students who want to work towards preservation of rural soul of country can do many things for our own good and environment. By implanting given design proposals, we can say that all the missing amenities are provided will stop the migration of rural people towards the urban area.This can cause reduce the load on urban areas as well as pollution in both sector can be minimized gradually.
- These amenities designed under this project will be helpful for better development of village as physically as well as socially, which improves the overall lifestyle of people along with nation with preserving nature bit by bit.

.

Chapter 11.

References refereed for this project :

- https://www.google.com/earth/
- https://www.wikipedia.org/
- https://www.google.co.in/maps/
- https://www.census2011.co.in/
- www.youtube.com
- https://www.indiamart.com/
- http://www.vyojana.gtu.ac.in/
- Rural development principle, policies and management by Katar Singh.
- Panchayati Raj: System and Rural Development by Iqbal Mohammed.
- Building and Town planning by R P Rethaliya. Links
- http://www.onefivenine.com/india/villages/sabarkantha/Talod/punsari
- https://www.mapsofindia.com
- http://censusindia.gov.in/
- https://www.visitdubai.com/en
- https://citiesfoundation.org/wpcontent/
- uploads/2012/05/CITIES_Inflowence_Case-studies_Dubai1.pdf
- https://en.wikipedia.org
- business/crb-insights/case-studies-and-best-practices
- https://www.mapsofindia.com/villages/gujarat/kutch/

Chapter 12.
Annexure attachment:

12.1 Survey form of Ideal Village Scanned copy attachment in the report for Part-I:

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma 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:	Kerai
Name of Taluka:	Mundra
Name of District:	Kutch
Name of Institute:	Veerayatam Institute engineering
Nodal Officer Name & Contact Detail:	Vadagama Nilesh 94290 81163
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Anganwadi worker/Village dweller)	તલાટી / મંત્રી કેરા, તા. મુન્દ્રા-કચ્છ.
Date of Survey:	16/10/2020

1. Demographical Detail:

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	5009	2123	2886	1666
ii)	2011	8063	3998	4065	1863

2. Geographical Detail:

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	4055.84 23°5' 0" North 69° 36' 8" East
	Forest Area (In hect.)	86.69
	Agricultural Land Area (In hect.)	2272.27
	Residential Area (In hect.)	1696.88
	Other Area (In hect.)	371.60
	Water bodies	Lake, River, Tube-well
	Nearest Town with Distance:	Bhuj - 20km (Approx)

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

3. Occupational Details:

Name of Three Major Occupation groups in Village	1.	Agriculture
	2.	Employment
	3.	milk sale

4. Physical Infrastructure Facilities:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated)	Untreated	✓		Every Home
	• RO Water		✓		Private
	• Well (Covered/ Uncovered)	uncovered	✓		In village Area
	• Hand pumps	V-3	✓		In Agrical tural area
	• Tube well/ Borehole	yes	✓		
	• River/ Canal/ Spring/ Lake/ Pond	3 pond	✓		
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	✓		4 lakh liter
	Underground Sump	Capacity:	✓		7 lakh liter
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	yes	✓		
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	closed	✓		
	If Open than Pucca / Kutchcha	Pucca	✓		closed
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	River	✓		
Suggestions if any:					

Gujarat Technological University, Ahmedabad, Gujarat
Vishwakarma Yojana: Phase VIII
Techno Economic Survey

E.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Kera -	Bhuj		
	Main road	BT-road			
	Internal streets	C.C. Road	✓		
	Nearest NH/SH/MDR/ODR Dist. in kms.	S.H. 10km.			
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NO 20 km (Appral)			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	yes Good	✓		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Chhakda And Private Vehicles	✓		
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Govt 24 hrs	✓		Jyoti gram yojna
	Power supply for Domestic Use	24 hrs Govt.	✓		11
	Power supply for Agricultural Use	8 hrs Govt.	✓		11
	Power supply for Commercial Use	yes	✓		24 hrs.
	Road/ Street Lights	10 hrs	✓		

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Electrification in Government Buildings/ Schools/ Hospitals	School And Govt. Building			Jyoti Gram yojna
	Renewable Energy Source Facilities (Y/ N)	yes	✓		
	LED Facilities	yes	✓		
Suggestions if any:	Required 24 hrs in Agricultural Area.				
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	yes 4 nos.	✓		
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	yes	✓		
	Solid & liquid waste Disposal system available	yes	By providing Labour at Panchayat		
	Any facility for Waste collection from road	yes	By collecting vehical		
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Tubewell And well	✓		
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	kutchha And pucca.	398/1463		

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	yes	✓		
	Private Clinic/Private Hospital/ Nursing Home	yes	✓		
	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: 3.....kms.				
Suggestions if any:					

M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:	yes good			

	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	yes	✓		
	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	yes	✓		
P.	Bio-Gas Plant	NO	Require	dan kara village	
	Solar Street Lights	yes	✓		
	Rain Water Harvesting System	yes	✓		
Q.	Any Other	RO-Plant		By providing private sector	

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	soft copy Available in panchayat.

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VI
Techno Economic Survey

Recent Projects going on for Development of Village	NO.
Any NGO working for village development	No.

8. **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)	Repairs and maintance of road Network	
2.	Additional Information/ Requirement		
	Required a larger Panchayat office and		
	public garden.		

9. Smart Village Proposal Design

Sr. No.	Descriptions	Information/ Detail	Remarks
1.		N.A	—

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

તલાટી / સહ મંત્રી
ભેરા, તા. ભુજ-૪૨૭.

12.2 Survey Form of Smart Village scanned copy attachment in the report for Part:-1

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma 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:	Kutchh
Name of Taluka:	BHUJ
Name of Village:	BHUJODI
Name of Institute:	Veruyutan institute of engineering
Nodal Officer Name & Contact Detail:	Vadgama Nilesh 94290 81163
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	
Date of Survey:	2/11/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	2063	1214	849	430
2.	2011	3484	1876	1608	728

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	705.65
2.	Forest Area (In hect.)	14.70 Hee
3.	Agricultural Land Area (In hect.)	417.16 Hee
4.	Residential Area (In hect.)	108
5.	Other Area (In hect.)	103.32
6.	Distance to the nearest railway station (in kilometers):	8 KM - BHUJ

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

7.	Name of Nearest Town with Distance:	Vardhmem nagar (2Km)
8.	Distance to the nearest bus station (in kilometers):	available out of village (1Km)
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.	Milk scale
	2.	Handicraft Production
	3.	Weaver work.

Major crops grown in the village:	1.	Cottom
	2.	Wheet
	3.	-

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	Pipeal inter Dwelling	✓		
2.	**DUG WELL** Protected Well Un Protected Well				
3.	**WATER FROM SPRING** Protected Spring Unprotected Spring	Unprotected spring	✓		
4.	Rainwater Tanker Truck Cart With Small Tank **SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/** Irrigation Channel Bottled Water Hand Pump Other(Specify)**Lake/ Pond**	Rain water	✓		

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions if any:						
B.	**Water Tank Facility**					
	Overhead Tank	Capacity:	~			Utwakh
	Underground Sump	Capacity:	~			7 lakh
Suggestions if any:						
C.	**The Type of Drainage Facility**					
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	open without out let				
Suggestions if any:						
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**					
	Village approach road	BHJ road				
	Main road	BT Road				
	Internal streets	C.C. Road				
	Nearest NH/SH/MDR/ODR Dist. in kms.	S.H 11KM.				
Suggestions if any:						
E.	**Transport Facility**					
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NO 6kms				
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	NO 1Kms		~		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Chakda				
Suggestions if any:						
F.	**Electricity Distribution**					
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	GOVT 24 Hrs				PGVCL

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Power supply for Domestic Use	Govt 24 Hrs			
	Power supply for Agricultural Use	8 Hrs			
	Power supply for Commercial Use	Yes			
	Road/ Street Lights	Yes (10)			
	Electrification in Government Buildings/ Schools/ Hospitals	Yes			
	Renewable Energy Source Facilities (Y/ N)	NO		—	
	LED Facilities	N/A.		—	
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	NO			
	Location Condition	—			
	Community Toilet (With bath/ without bath facilities)	—			
	Solid & liquid waste Disposal system available	—			
	Any facility for Waste collection from road	—			
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL OTHER (SPECIFY)	Tube well & wells		—	
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	1.5/2			

Gujarat Technological University, Ahmedabad, Gujarat

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	✓		
	Sub-Centre	Yes	✓		
	PHC	In Process		✓	
	BLOCK PHC	NO		✓	
	CHC/RH	NO			
	District/ Govt. Hospital	NO			
	Govt. Dispensary	NO			
	Private Clinic	NO			
	Private Hospital/ 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: 5 kms Facility Available in Madhapar				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	Yes	✓		
	Primary School	Yes	✓		
	Secondary school	Yes		✓	
	Higher sec. School	NO			
	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: 10 kms. all facility Available in BHUJ				

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions if any:

L.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)	Medium		yes	
	Public Library (With daily newspaper supply: Y/N)				NO
	Public Garden	good		yes	
	Village Pond	good		yes	
	Recreation Center				NO
	Cinema/ Video Hall				NO
	Assembly Polling Station	good		yes	
	Birth & Death Registration	good		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	good		✓	
	Telecommunication Network/ STD booth				✓
	General Market	good		✓	
	Shops (Public Distribution System)	good		✓	
	Panchayat Building	good		✓	
	Pharmacy/Medical Shop				✓
	Bank & ATM Facility	good		✓	
	Agriculture Co-operative Society	good		✓	
	Milk Co-operative Soc.	good		✓	
	Small Scale Industries	good		✓	
	Internet Cafes/ Common Service Center/Wi Fi				✓
	Youth Club	good		✓	
	Mahila Mandal	good		✓	

19

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-chaupal / Mills / Small Scale Industries	good.		✓	
	Other Facility				

Suggestions if any:

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

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 – Yes			Available in Industries sector
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	Soft copy			
2.	Recent Projects going on for Development of Village	Yes			
3.	Any NGO working for village development	NO			Road work
4.	Any natural calamity in the village during the last one year: EARTHQUAKES FLOODS CYCLONE DROUGHT LANDSLIDES AVALANCHE OTHER (SPECIFY)	NO			

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

8

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	Highschool Building and Public Toilet is required
2.	Additional Information/ Requirement	
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?	cleaning every day by Labour of Grampanchayat

IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	→ Public Toilet → No space for	required Highschool

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

-મંત્રી
ભુજોડી ગ્રામ પંચાયત

12.3 Survey Form of Allocated Village scanned copy attachment in the report for Part:-1

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma 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:	Kutch
Name of Taluka:	Bhuj
Name of Village:	Bhojodi
Name of Institute:	Veerayatan institute of engineering.
Nodal Officer Name & Contact Detail:	Vadgama Nilesh 94290 81163
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	
Date of Survey:	21/11/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	2063	1214	849	430
2.	2011	3484	1876	1608	728

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	705.65
2.	Forest Area (In hect.)	214.70 Hectors
3.	Agricultural Land Area (In hect.)	417.16 Hectors
4.	Residential Area (In hect.)	108 Hectors (Approx)
5.	Other Area (In hect.)	103.32
6.	Distance to the nearest railway station (in kilometers):	8 Km - BHUJ

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

7.	Name of Nearest Town with Distance:	Vardhomanmageer (2Km)
8.	Distance to the nearest bus station (in kilometers):	Available out of village (1Km)
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.	weever work.
	2.	Milk scale
	3.	Handicraft production

Major crops grown in the village:	1.	Wheeat
	2.	cottom
	3.	—

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	Piped into Dwelling	✓		
2.	**DUG WELL** Protected Well Un Protected Well	Un protected well	✓		
3.	**WATER FROM SPRING** Protected Spring Unprotected Spring Rainwater Tanker Truck Cart With Small Tank	Rain water	✓		
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/** Irrigation Channel Bottled Water Hand Pump				

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Other(Specify)**Lake/ Pond**	Lake			
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	✓		4Lakh
	Underground Sump	Capacity:	✓		4Lakh
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1		✓		
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Bhuj Road			
	Main road	B.T Road.			
	Internal streets	C.C Road			
	Nearest NH/SH/MDR/ODR Dist. in kms.	SH 1KM			
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NO 65KMS			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	NO 1KMS		✓	
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Chhakda			
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	GOVT 24 Hours			PGVCL

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Power supply for Domestic Use	CGVT 24 Hrs	✓		
	Power supply for Agricultural Use	CGVT 8 Hrs	✓		
	Power supply for Commercial Use	Yes	✓		
	Road/ Street Lights	Yes (10)	✓		
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
	Renewable Energy Source Facilities (Y/ N)	NO		✓	
	LED Facilities	N/A		✓	
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	NO			
	Location Condition	–			
	Community Toilet (With bath/ without bath facilities)	–			
	Solid & liquid waste Disposal system available	–			
	Any facility for Waste collection from road	–			
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL OTHER (SPECIFY)	Tube well & well		✓	
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	1.5/2			

Gujarat Technological University, Ahmedabad, Gujarat

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	✓		
	Sub-Centre	Yes	✓		
	PHC	NO		✓	
	BLOCK PHC	NO		✓	
	CHC/RH	NO			
	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: 5 kms.	Facility Available in Nadhepar			
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	Yes	✓		
	Primary School	Yes	✓		
	Secondary school	Yes		✓	
	Higher sec. School	NO			
	ITI college/ vocational Training Center	NO			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	NO			

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions if any:

L.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)	Medium		yes	
	Public Library (With daily newspaper supply: Y/N)				NO
	Public Garden	good		yes	
	Village Pond	good		yes	
	Recreation Center				NO
	Cinema/ Video Hall				NO
	Assembly Polling Station	good		yes	
	Birth & Death Registration	good		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	good		✓	
	Telecommunication Network/ STD booth				✓
	General Market	good		✓	
	Shops (Public Distribution System)	good		✓	
	Panchayat Building	good		✓	
	Pharmacy/Medical Shop				✓
	Bank & ATM Facility	good		✓	
	Agriculture Co-operative Society	good		✓	
	Milk Co-operative Soc.	good		✓	
	Small Scale Industries	good		✓	
	Internet Cafes/ Common Service Center/Wi Fi				✓
	Youth Club	good		✓	
	Mahila Mandal	good		✓	

19

Gujarat Technological University,
Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-chaupal / Mills / Small Scale Industries	good			
	Other Facility				

Suggestions if any:

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

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 yes			Available in Industeries sector
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	Soft copy			
2.	Recent Projects going on for Development of Village	yes			
3.	Any NGO working for village development	NO			Road work
4.	Any natural calamity in the village during the last one year: EARTHQUAKES FLOODS CYCLONE DROUGHT LANDSLIDES AVALANCHE OTHER (SPECIFY)	NO			

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

Gujarat Technological University,
Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
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	High school Building ~~are~~ and Public Toilet required.	
2.	Additional Information/ Requirement	—	—
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?	cleaning everyday by Labour of Gram Panchayat.	

IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	→ Public Toilet required → No space for Highschool	

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

તલાટી-મંત્રી
ભુજોડી ગામ પંચાયત

12.4 Gap Analysis of the Allocated Village

Facilities	Planning Commission/UDP FI Norms	Village Name:	Bhujodi	
		Population:		3484
		Existing	Required as per Norms	Gap
Social Infrastructure Facilities				
Education				
Anganwadi	Each or Per 2500 population	3	1	**0**
Primary School	Each Per 2500 population	1	2	**1**
Secondary School	Per 7,500 population	1	1	**0**
Higher Secondary School	Per 15,000 Population	0	0	**0**
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**
Health Facility				
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	0	1	**1**
PHC & CHC	Per 20,000 population	0	2	**2**
Child Welfare and Maternity Home	Per 10,000 population	0	2	**2**
Hospital	Per 100000 Population	0	2	**2**
Public Latrines	1 for 50 families (if toilet is not there in home, specially for slum pockets &kutcha house)	0	35	**35**

Physical Infrastructure Facilities				
Transportation		**Adequate**	**Inadequate**	**Adequate**
Pucca Village Approach Road	Each village	**Adequate**	NO	
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	**Adequate**	1	**0**
Drinking Water (Minimum 70 lpcd)		**Adequate**		**Inadequate**
Over Head Tank	1/3 of Total Demand	**Adequate**	50000	-30000
U/G Sump	2/3 of Total Demand	**Adequate**	63000	-63000
Drainage Network		**Adequate**	**Inadequate**	
open		**Adequate**		
cover		**Adequate**	**Adequate**	
Waste Management System		**Adequate**	**Inadequate**	**Inadequate**
Electricity Network		**Adequate**	**Inadequate**	**Adequate**
Socio- Cultural Infrastructure Facilities				
Community Hall	Per 10000 Population	1	0	0
community hall cum Public Library	Per 15000 Population	0	1	1
Cremation Ground	Per 20,000 population	0	0	**0**
Post Office	Per 10,000 population	1	1	**0**
Gram Panchayat Building	Each individual/group panchayat	1	1	**0**
APMC	Per 100000 Population	0	0	**0**
Fire Station	Per 100000 Population	0	1	**1**
Public Garden	Per village	1	0	**0**
Police post	Per40,000Population	0	1	**1**
Any Smart Village Facility				
Technology				
		Sump cap	2.0 lacks lit.	

12.5 Summary Details of All the Villages Designs in Table form as Part-I and Part-II

Table: 35 Summary details of the entire village design

Sr.NO.	Village Name	Discipline	Part-I	Part-2
1	Bhujodi	Civil	Public toilet	Overhead Tank
			Hospital	Pickup Bus Station
			Gymnasium Building	Rain Water harvesting
			Recreational park	Vegetable Market
			Police Station	Post Office
			Pond development	Entrance Gate
		Electrical	Solar Street light	Solar photovoltaic water pumping system
			Smart Water Supply System	Cctv for village security
			Electrical Wiring in Public Toilet	Based on civil
2	Moti-Rayan	Civil	Solid waste management	Rain water harvesting
			ATM	Death & birth register centre
			Amphitheater	Phc center
			Cyber cafe	Public garden
			Grocery store	Super market
			Entrance gate	Solar street lights
		Electrical	Automatic street light control	Electrical design in phc centre
			Smart water supply system	Design of starter in agriculture
			Solar system	Electrical design for street light

12.6 Drawings (if, required, A1, A2, A3 design is not visible then only

All the drawings and images are attached in their respective chapters along with designs and their listing are mentioned in the list of figures along with their page numbers. And we have added A3 sheets of proposed designs at the end of the Vishwakarma Yojana Phase VIII part 1 report.

12.7 Summary of Good Photographs in Table Format (village visits, Ideal, Smart Village or any other)

Table 36:-Ideal Village Kera

 Village Market	 P.H.C Centre
 Elevated Water tank	 Sump Water tank
 Panchayat	 Village Road

TABLE 37:- ALLOCATED VILLAGE (BHUJODI)

House

Internal Road

Community hall

School

Main road

Sansad Bhavan Memorial

12.8 Village Interaction with Sarpanch Report

Village interaction with Sarpanch/Talati Letter

Vishwakarma Yojana Phase VIII

Bhujodi village, Bhuj Taluka, Kachchh District.

Village code: 506854

Subject : Village interaction Form with Sarpanch/Talati of BhujodiVillage

I Sarpanch/Talati of BhujodiVillage undersigned give approval of doing village interaction activity under Vishwakarma Yojana phase VIII – An approach towards Rurbanisation by Students of Veerayatan Institute of Engineering named Gajjar Bijen J.(180923106008), Chheda Dhaval H.(180923106005) and Jethi Sagar M.(180923109008).

તલાટી-કમ-મંત્રી
ભુજોડી ગામ પંચાયત

Date: 02/11/2020

Seal ofGrampanchayat

12.9 Sarpanch Giving letter information about the village development

Approval Letter for Proposed DesignsApproval

Approval Latter For Proposed Design Approval

Vishwakarma Yojana Phase VIII

Bhujodi village, Bhuj Taluka, Kachchh District.

Village code: 506854

Subject: Approval of design proposal for Bhujodi village

I sarpanch/talati of Bhujodi village undersigned gives approval for following main design proposal given under Vishwakarma yojana phase VIII- An approach towards Rurbanisation by students of Veerayatan Institute of Engineering named Gajjar Bijen J.(180923106008), Chheda Dhaval H.(180923106005) and Jethi Sagar M.(180923109008).

- Approved main design proposals as of part 1:
  1) Public toilet
  2) Hospital
  3) Gymnasium building
  4) Recreational park
  5) Police station
  6) Pond development

Date: 21/11/2020

Seal of Grampanchayat

Chapter 13.

From the Chapter- 9 future designs of the aspects (Feasibility, Construction, Operation and maintenance of various design options in Rural Areas along with cost with AutoCAD designs / planning with any software

13.1. Design Proposals

For future development of the Bhujodi village we are proposing the designs for Part II design in which following points should be considered,

13.1.1 Sustainable design: Overhead Tank

A source of water will be available which could be used for efficient water distribution system in the village households.

13.1.2 Physical design: Pickup Bus Station

Currently the villagers are facing hot temperature for catch the bus without bus station so we decided to design the pickup bus station.

13.1.3. Social design: Rain Water harvesting

An additional source of water will be available which could be used at the time of emergency or water shortage by implementing the Rain Water Harvesting system in the village households.

13.1.4. Socio-Cultural design: Vegetable Market

There is no any Vegetable market at Bhujodi village; villagers have to go buy vegetables from near village so we decided to design the Vegetable market for Bhujodi village.

13.1.5. Smart village design: Post Office

For the smart development of the Bhujodi village we have proposed the smart concepts as the Post office.

13.1.6. Heritage village design: Entrance Gate

The Bujodi village has no main entrance gate at the village approach road. So that we have designed the village entrance gate as heritage village design. These are the proposed designs for the future development of Bhujodi village for Vishwakarma Yojana phase VIII , Part 2 design.

13.1.7. Electrical Design 1: Solar photovoltaic water pumping system

13.1.8. Electrical Design 2: Cctv for village security

13.1.9. Electrical Design 3: Based on civil

13.1.1. Sustainable design: Overhead Tank

Scenario:

In this sustainable design of overhead tank villagers will get the sufficient source of water for their daily need, and the villagers are also keep their health fit and fine.

Existing Situation in Bhujodi:

In the Bhujodi village there is no any overhead tank so that according to interaction with the villagers there should be one overhead tankin village. Overhead water tanks can be used in various applications can serve both domestic purposes and commercial purposes

Sustainability of the design:

Overhead tankas an important tool:

Design Utilized by,

All the people living in the village of even outsiders from nearby villages and relatives of the villagers can use of water from overhead tankfor their different uses. Overhead water tanks can be used in various applications can serve both domestic purposes and commercial purposes

Needs:

For their physical health fit and fine.

Design brief:

The overhead tank is an important in village. A public location where people get the sufficient source of water for their daily need, So the villagers are keep their health fit and fine. Overhead water tanks can be used in various applications can serve both domestic purposes and commercial purposes, constantly maintain the flow in all the general bathroom usages and other water requiring appliances. In the domestic purposes, the water is utilized in almost every action we perform like drinking, cooking, bathing, cleaning, washing machine and purifiers need constant flow these needs are satisfied by these overhead tanks at the domestic level.

WATER SUPPLY SYSTEM

Before planning of any water supply system in any area it is necessary to calculate the total water demand by the community. For this purpose total consumption per day will be a product of total population and the consumption of water per person per day. So determination of total water requirement involves determination of

1) Waterdemand
2) Population

Water Demand

The total quantity of water can be estimated by estimating the water required for the different purposes. The water requirement generally expressed in the terms of litre per capita per day. In the Bhujodi village only domestic water demand is considered. For this the total water quantity in the

terms of lpcd is decided based on the following table.

Table: 38 Water Demand

Use	Water requirement (LPCD)
Drinking	5
Cooking	5
Bathing	55
Washing of clothes	20
Washing of utensils	10
Washing and cleaning of house and residences	10
Flushing of Water closets	30
Total	**135 lpcd**

Population Forecasting

The various methods adopted for estimating future populations are given below. The particular method to be adopted for a particular case or for a particular city depends largely on the factors discussed in the methods, and the selection is left to the discretion and intelligence of the designer.

1. Incremental Increase Method
2. Decreasing Rate of Growth Method
3. Simple Graphical Method
4. Comparative Graphical Method
5. Ratio Method
6. Logistic Curve Method
7. Geometric Increase Method.

Here we forecast the population by using Geometric increase method. In this method the per decade percentage increase or percentage growth rate(r) is assumed to be constant, and the increase is compound over the existing population every decade. This method is therefore known as a uniform increase method. This method is well suitable for the rapidly developing new city. The following formula is used for this method.

$$Pn = P0\left(1+\frac{r}{100}\right)^{n}$$

Where, P0 = Initial population i.e. the population at the end of last known census.

Pn =Future population after n decades.

r = Assumed growth rate (%):

Table: 39 Population calculations

Year	Population	Increase population	% increase population
2000	990		
2005	1150	160	17%
2010	1391	241	20%
	Total	401	37%
	Average		18.5%

The population at the end of 20 years,

P_{2030}= 1391 (1+18.56/100)2

=1954

=2000

Total population = 2000

Average daily demand = 135 lpcd

Therefore total water supply= 2000×135=2,70,000 liters

Proposed Design in Autocad

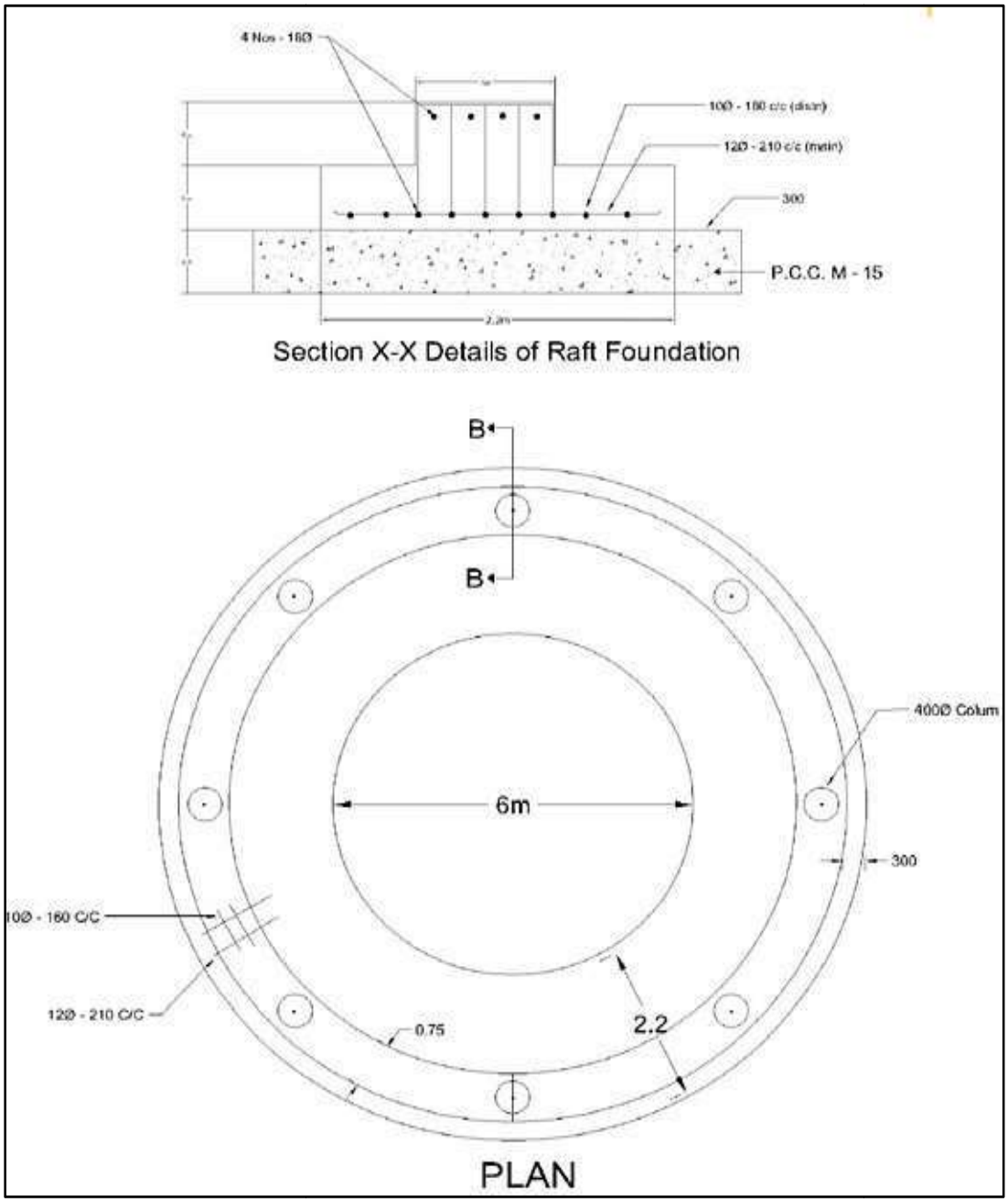


Fig 57: - Plan of Overhead Tank

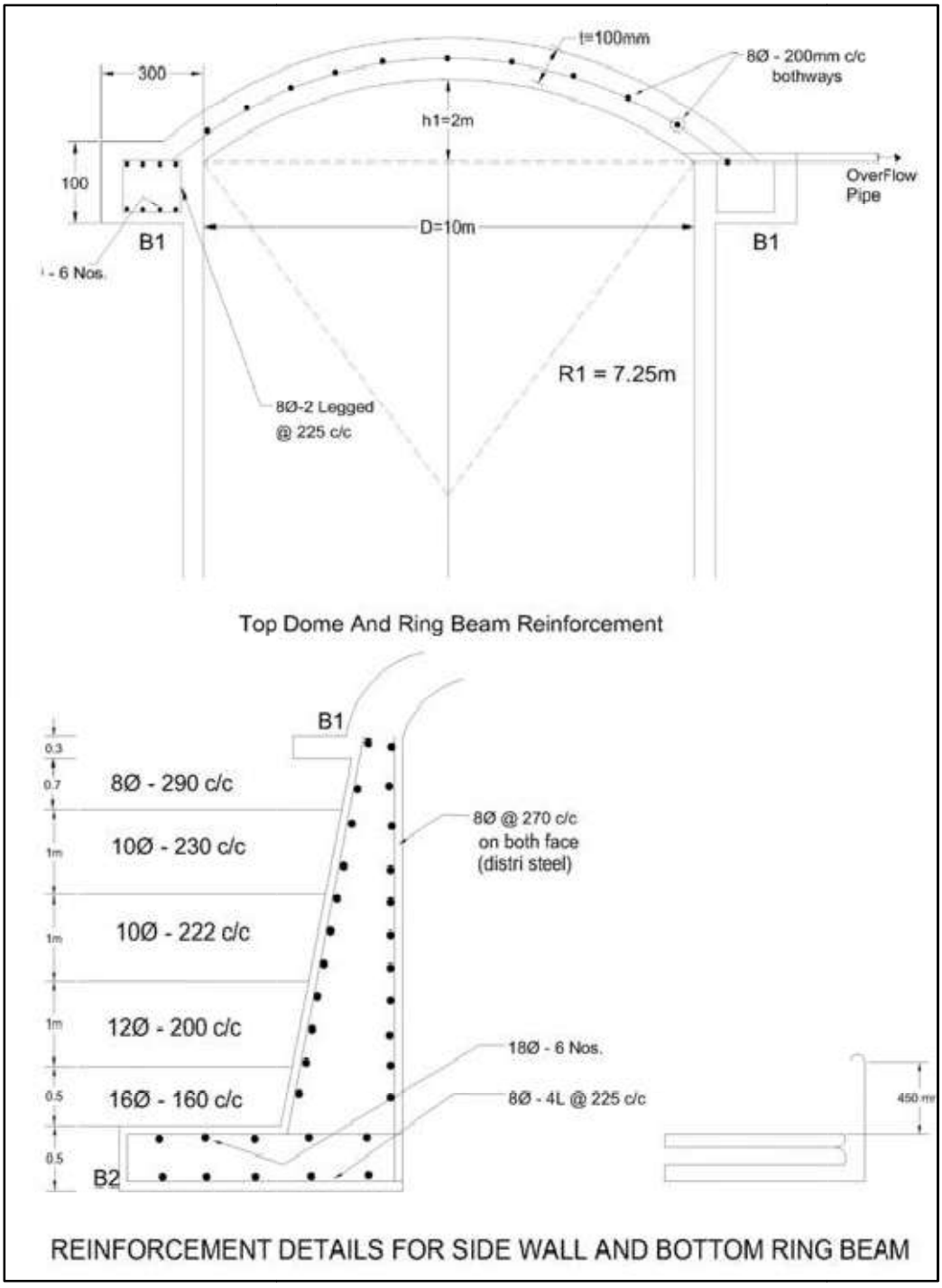


Fig 58: - Elevation of Overhead Tank with their Reinforcement details

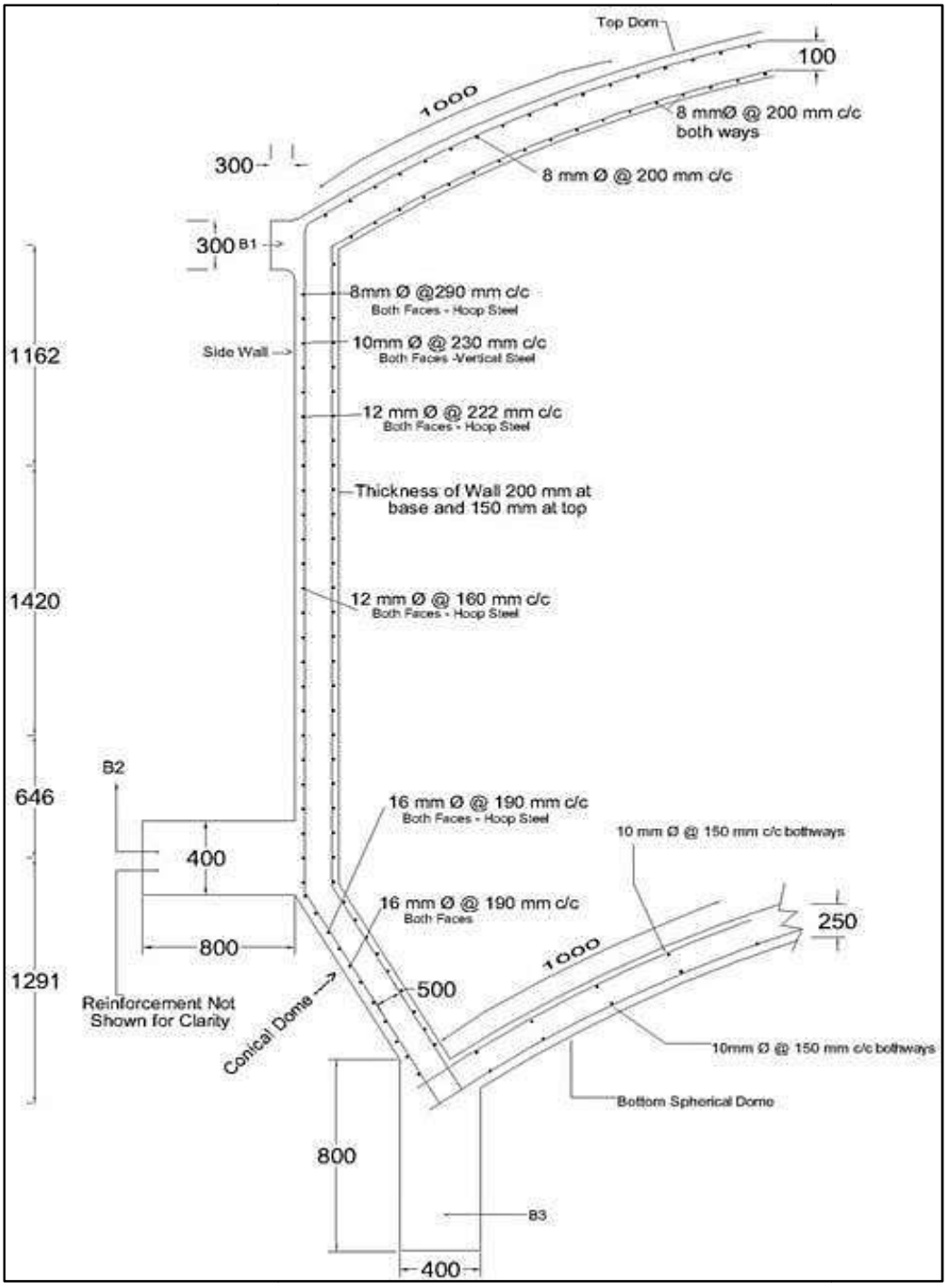


Fig 59: - Section of Overhead Tank with their Reinforcement details

Measurement Sheet of Overhead Tank

Table: 40 Measurement Sheet of Overhead Tank

Measurement Sheet of Overhead Tank						
Sr. No	**Item description**	**No**	**L**	**B**	**H**	**Quantity**
1	Earth work in excavation 1.5 m depth $A=\pi/4(8.2)^2=52.81m^2$	1	52.81	-	1.5	$79.21m^3$
2	M10 P.C.C at bed concrete $\pi/4\ (8.2)^2$	1	52.81	-	0.10	$5.281m^3$
3	M25 grade for 2.2 m wide raft foundation $=\pi/4(D^2-d^2)$ $=\pi/4(14.4^2-10^2)=84.32m^2$	1	84.32	-	0.4	$33.72m^3$
4	For 0.7m wide upper raft $\pi/4(2.2^2-0.7^2)=3.416m^2$	1	3.416	-	0.4	$1.366m^3$
5	M25P.C.Ccolumn 6m diameter Total R.C.C in column $\pi/4(0.4)^2=0.125m^2$ M25grade R.C.C	8	0.125	-	16	$16.08m^3$
6	M25 R.C.C Tie beam Total n.=8 L=2.65m	8	2.65	0.3	0.2	$1.27m^3$
7	Ring beam Top ring beam $L=\pi\times6=18.85m$ Provide0.3×0.3	1	18.85	0.3	0.3	$1.696m^3$
8	Bottom ring beam $L=\pi\times6=18.85m$ Provide0.8×0.4	1	18.85	0.8	0.4	6.032m
9	Conical Portion(10+6)/2=8.0m Average depth=3.0m t=0.5m	1	8.0	0.5	3.0	$12.0m^3$
10	H_2S cylindrical wall $L=\pi\times10.175=31.97mB=0.175m$ D=4m	1	31.97	0.175	4.0	$22.379m^3$

11	H_2SR.C.CDomeSlab$\pi\times(c^2/4+h^2)$ Top dome $=(\pi\times10^2/4+2^2)0.25$ $=8.25m^3$	1				$8.25m^3$
12	Bottom dome $=8.07m^3$	1				$8.07m^3$
13	Bottom circular Beam L=π×6=18.85mB=0.4m D=0.8m	1	18.85	0.4	0.8	$6.03m^3$
14	Steel for Reinforcement					
	Raft($33.72m^3$)	40				1348.8kg
	Column($16.08m^3$)	20				3216kg
	Tie beam($6.35m^3$)	0				1270kg
	Ring beam($7.728m^3$)	20				1543.6kg
	Conical beam($12m^3$)	0				840kg
	Cylindrical wall($22.379m^3$)	20				1566.53k
	Dome slab($16.32m^3$)	0				g
	Bottom circular beam	70				1142.4kg
	($6.03m^3$)	70				1206kg
15	In side plaster cement $\pi\times6\times7=131.94m^2$	1				$131.94m^2$
16	Waterproof inside Plaster Intake cylindrical wall$(\pi\times10\times4)=125.66m^2$ Waterproof in tank bottom$(\pi\times6\times7)=131.94m^2$	1 1				$125.66m^2$ $131.94m^2$
17	Water proof inside Plaster Intake cylindrical wall$(\pi\times10\times4)=125.66m^2$ Waterproof in tank bottom$(\pi\times6\times7)=131.94m^2$	1 1				$125.66m^2$ $131.94m^2$
18	Outside Sand face					
	Plaster tank$(\pi\times6.8\times7)$	1				$149.53m^2$
	Conical portion$(\pi\times8\times3)$	1				$75.39m^2$
	Cylindrical					

	portion(π×10.35×4) Top dome(π×15.70×0.1)	1 1				130.06m^2 4.93m2

Abstract Sheet of Overhead Tank

Table: 41 Abstract Sheet of Overhead Tank

Abstract Sheet of Overhead Tank					
Sr.No	**Item Description**	**Quantity**	**Rate**	**Per**	**Amount**
1	Earth in excavation(excavation and disposed of earth moving lead Including lift)	158.43m^3	93.5	m^3	14813.20
2	M10P.C.C at Bed concrete	5.281m^3	1700	m^3	8977.7
3	M25gradefor 2.2wideraft foundation	33.72m^3	3600	m^3	121392
4	For 0.7 m wide upper raft	1.366m^3	3000	m^3	4098
5	M25 R.C.CColumn6m Diameter	16.08m^3	3800	m^3	61104
6	M25gradeR.C.CTieBeam	6.35m^3	3800	m^3	24130
7	Ring Beam	7.728m^3	3800	m^3	29366.4
8	Conical Portion	12.0m^3	4200	m^3	50400
9	M25 Cylindrical wall	22.379m^3	3800	m^3	85040.2
10	M25R.C.Cdomeslab	16.32m^3	4200	m^3	68544
11	Bottom Circular beam	6.03m^3	3800	m^3	22914
12	Steel Reinforcement	12135.33kg	45	Kg	546089.85
13	Inside Plaster cement	131.94m^2	105	m^2	13853
14	Water proof in side Plaster	125.66m^2	35	m^2	4398
15	Water proof in tank bottom	131.94m^2	35	m^2	4617.9
16	Out sides and face plaster	359.91m^2	90	m^2	32391

17	White washing	359.91m²	35	m²	12596.85
18	Coloring	359.91m²	40	m²	14396.40
	Total				11,19,122.50
Add 3% contingency = 33573/-					
Add 2% water charge= 22382/-					
Grand total= 1175077.50/-					

The rates of their respective works provided in the abstract sheet along with quantities are inclusive of water charges, contractor's profit, contingencies, utilities and labor charges.

Total cost = Rs. 11,75,077.50/-

13.1.2. Physical design: Pickup Bus Station

Scenario:

Currently the villagers are facing hot temperature for catch the bus without bus station so we decided to design the pickup bus station.

Existing Situation in Bhujodi:

In the Bhujodi village there is no any pickup bus stationso that according to interaction with the villagers there should be one pickup bus stationin village. pickup bus stationcan be used in various applications can serve both domestic purposes and commercial purposes.

Sustainability of the design:

Pickup Bus Station as an important tool:

Design Utilized by,

All the people living in the village of even outsiders from nearby villages and relatives of the villagers can use of pickup bus station for their different uses. pickup bus station can be used in various applications can serve both domestic purposes and commercial purposes

Needs:

For their physical health fit and fine.

Design brief:

The pickup bus stationis an important in village. Pickup bus station can be used in various applications can serve both domestic purposes and commercial purposes. Currently the villagers are facing hot temperature for catch the bus without bus station so we decided to design the pickup bus station.

Proposed Design in Autocad

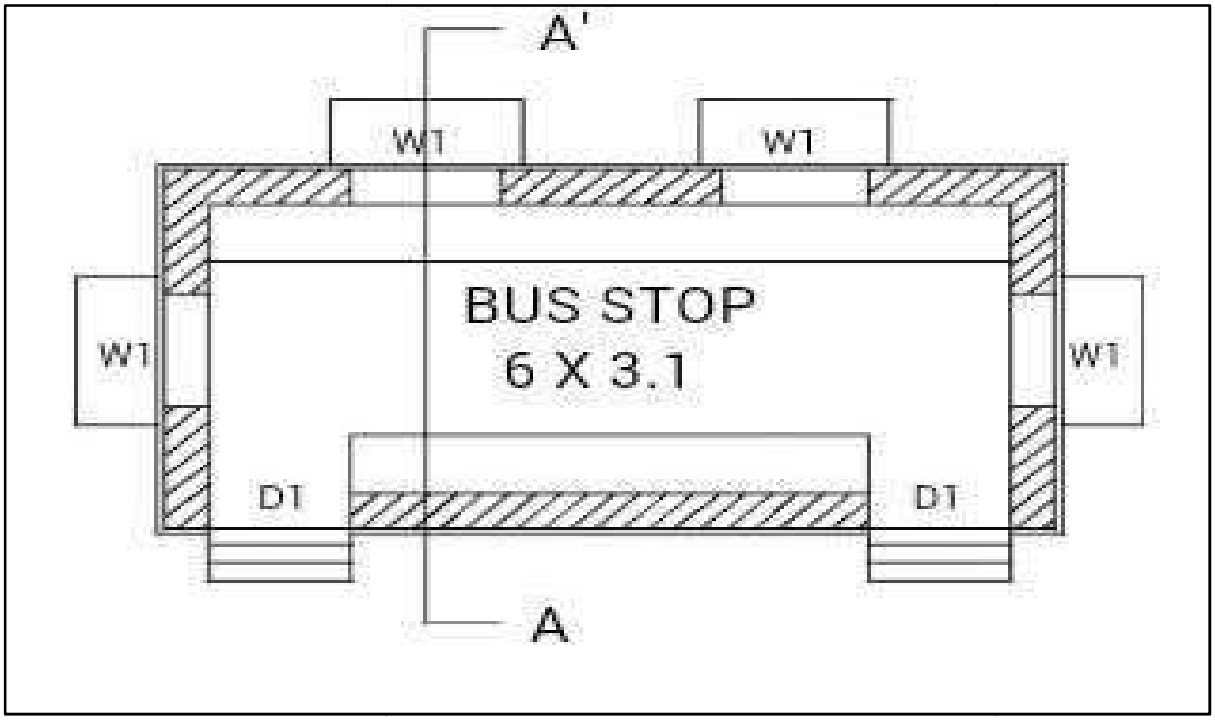


Fig 60: - Plan of Pickup Bus Station

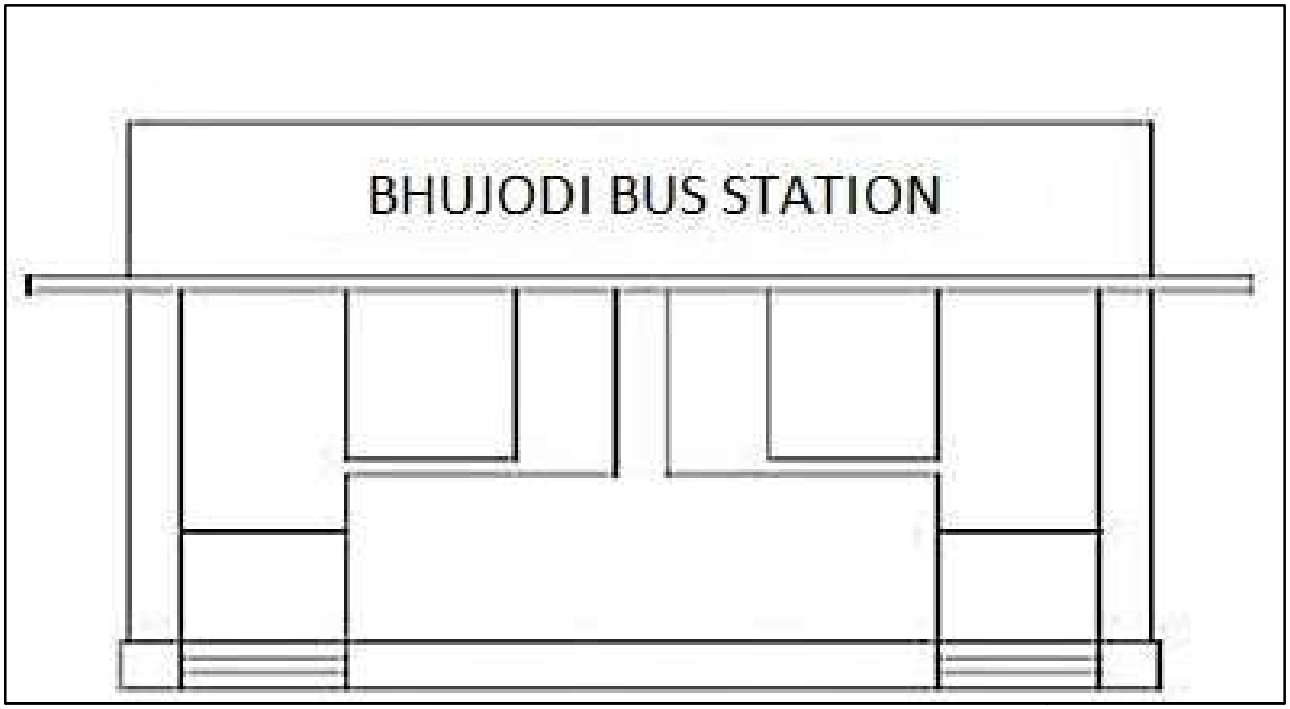


Fig 61: - Elevation of Pickup Bus Station

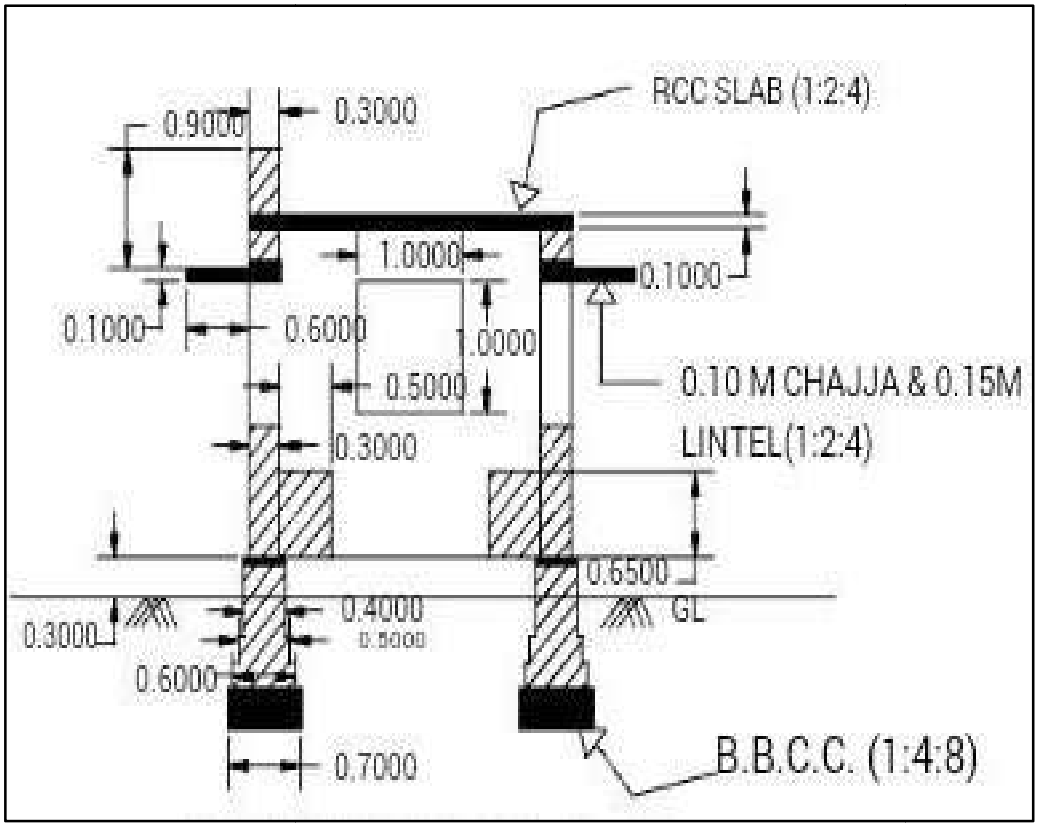


Fig 62: - Section of Pickup Bus Station

Measurement Sheet of Pickup Bus Station

Table: 42 Measurement Sheet of Pickup Bus Station

Measurement Sheet of Pickup Bus Station							
SrNo	**Description**	**Nos**	**L(m)**	**B(m)**	**H(m)**	**Q**	**TQ**
1	Excavation in foundation	1	19.3	0.7	1	13.51	
	L=19.3m						
	Step	2	1.1	1.0	0.1	0.22	
							13.73
2	B.B.C.C in foundation	1	19.3	0.7	0.3	4.053	
	Step	2	1.1	1.0	0.1	0.22	
							4.273
3	Brick masonary in foundation upto Ground level						
	For60cmwall	1	19.3	0.6	0.2	2.316	

	For50cmwall	1	19.3	0.5	0.2	1.93	
	For40cmwall	1	19.3	0.4	0.3	2.316	
							6.562
4	Brick masonary in ground level to Plinth level	1	19.3	0.4	0.3	2.316	
	Step	12	1.0	0.3	0.15	0.54	
							2.856
5	Refiling						
	Total quantity of excavation-Total quantity of BBCC-Brick masonary upto ground level =13.73-4.273-6.526						2.931
	-Yellow earth filing	1	6.0	3.1	0.28		5.208
6	Flooring(2cmthick)	1	6.0	3.1	-	18.6	18.6
7	Brick masonary in superstructure Plinth to slab(CM1:4)	1	13.1	0.3	3.0	11.79	
		1	6.3	0.3	1.0	1.89	
							13.68
	-Deduction						
	W1	2	1.0	0.3	1.0	1.2	
	O	1	0.9	0.3	2.1	1.134	
	Lintel	4	1.0	0.3	0.15	0.18	
							2.514
	Net quantity of brick masonary in superstructure =13.68-2.514						11.166
	Brick masonary for platform	1	6.0	0.1	0.5	0.3	
		1	4.2	0.1	0.5	0.21	
		2	0.5	0.1	0.5	0.05	
							0.56
	Total Brick masonary =11.166+0.56						11.726
8	RCC work						
	Chajja Assume 0.1m bearing						
	(a)W1	4	1.1	0.6	0.1	0.264	

	(b) Lintel same as in brick masonary forW1					0.18	
	(c) RCC slab (0.10m Thick) 1:2:4	1	6.6	3.7	0.1	2.442	
							2.886
9	Out side plaster						
	Front	1	6.6	-	3.0	19.8	
		1	4.2	-	1.0	4.2	
	Side	2	3.7	-	3.0	22.2	
							45.2
	Deduction W1	2	1.0	-	1.0	2	
	Net out side plaster =45.2-2						43.2
10	Inside plaster						
	Walls						
		1	6	-	3.0	18	
		2	3.1	-	3.0	18.6	
		1	4.2	-	1.0	4.2	
							40.8
	Deduction	2	1.0	-	1.0	2	38.8
	Ceiling	1	6.0	3.1	-	18.6	
	Net inside plaster =38.8+18.6						57.4
11	White washing only inside wall Same as inside plaster						57.4
12	Platform 1:2:4						
		1	6.0	0.5	0.5	1.5	
		1	4.2	0.5	0.5	1.05	
							2.55
	Plaster						
	Wall	1	6.0	-	0.5	3.0	
		1	4.2	-	0.5	2.1	

		2	0.5	-	0.5	0.5	
	Upper side of the platform	1	6.0	-	0.5	3	
		1	4.2	-	0.5	2.1	
							10.7
13	10mm ϕ main steel@320mm c/c For slab	22	3.816			0.62kg	52.05kg
14	6mmϕdistribution steel @ 130mm	30	6.65			0.22kg	43.89kg
	Total steel						95.94kg

Abstract Sheet of Pickup Bus Station

Table: 43 Abstract Sheet of Pickup Bus Station

Abstract Sheet of Pickup Bus Station					
Sr No	Item Description	Quantity	Rate	Per	Amount
1	Excavation for foundation(earth work for foundation in all of soil including timbering, dewatering up to50mlead)	13.73	92	M^3	1263.16
2	B.B.C.C.(1:4:8) (providing and laying B.B.C.C. in foundation 1:4:8 for base concrete)	4.273	2627	M^3	11225.17
3	Brick masonary for foundation(brick masonary in CM 1:6 using second class brick)	6.562	3482	M^3	22848.88
4	Brick masonary for super structure	11.166	3747	M^3	41839
5	Earth filling in plinth	5.208	53	M^3	276.02
6	Plaster work for inside(12mm smooth plater with flooring coat)	57.4	150	M^2	8610
7	Outside plaster(outside plaster 12mm thick send face plaster including scaffolding, curing)	43.2	180	M^2	7776
8	R.C.C Works for slab/lintle/chajja (providing and laying R.C.C for beam including mixing, curing etc)	2.886	8800	M^2	25396.8
9	Flooring-Marble(20mm thick)	18.6	600	M^2	11160

10	Brick masonary for platform	0.56	3747	M^3	2098.32
	Total				1,37,102.79
	3% contingency				4113.08
	2% works charge				2742.05
	Grand total				1,43,957.92
	Say,				1,44,000

The rates of their respective works provided in the abstract sheet along with quantities are inclusive of water charges, contractor's profit, contingencies, utilities and labor charges.

Total cost = Rs. 1,44,000/-

13.1.3. Social design: Rainwater Harvesting

Scenario:

There is no any Rainwater Harvestingfacilities at Bhujodi village; villagers are face problem of water crisis when the raining season late and the available source of water were not available at this time so we decided to design the Rainwater Harvestingfor Bhujodi village to reduce crisis in this drought type situations.

Existing Situation in Bhujodi:

In the Bhujodi village there are no any Rainwater Harvesting facilities so that according to interaction with the villagers there should be one Rainwater Harvestingfacilities in village. villagers have to face water crisis problem when the raining season were late.

Sustainability of the design:

Rainwater Harvesting as an important tool:

Design Utilized by,

All the people living in the village of even outsiders from nearby villages and relatives of the villagers can use of Rainwater Harvesting for their uses. Rainwater Harvesting can be used in various applications can serve both domestic purposes and commercial purposes.

Needs:

To reduce the water crisis in the drought year in Bhujodi village.

Design brief:

The Rainwater Harvesting is an important in village. Rainwater Harvesting can be used in various applications can serve both domestic purposes and commercial purposes. The villagers are facing problem for water crisis when the drought year, so we decided to design the Vegetable market.

Proposed Design in Autocad

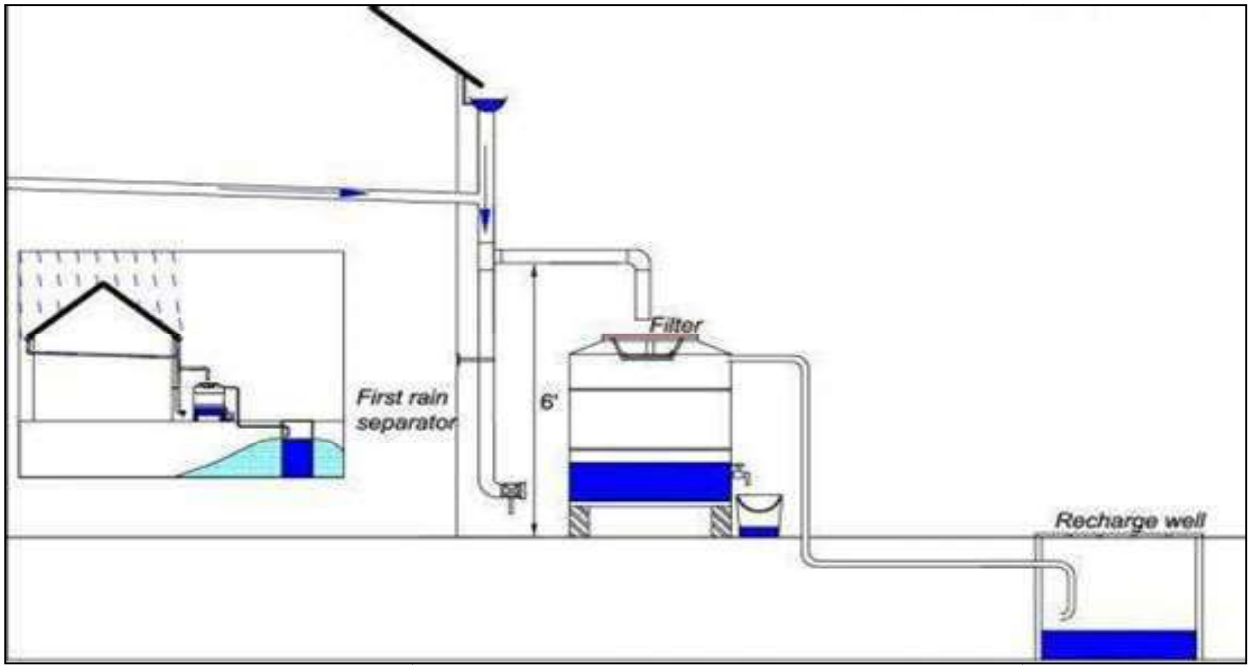


Fig 63: - Plan of Rainwater Harvesting

Design of storage tank:

Average size of roof slab or catchment area is 1200 square feet

For every 1 inch rain fall 620 gallon water is collect by 1000 square feet area means every square feet is collect 0.62 gallon water.

Now for calculate water storage requirement is 0.62 gallon multiply by average rainfall of Bhujodi village(23 inch).

= 23 ×0.62 gallon

= 13.8 gallon per square feet

For size of tank

= gallon per square feet × catchment area

= 13.8 × 1200

= 16560 gallon

We know that 1 gallon is equal to 3.785 liter

∴ 16560 ×3.785 = 62679.6 liter = 62679.6/1000=62.68m^3

Provide 3 m × 2.5 m Storage tank with 2 m height

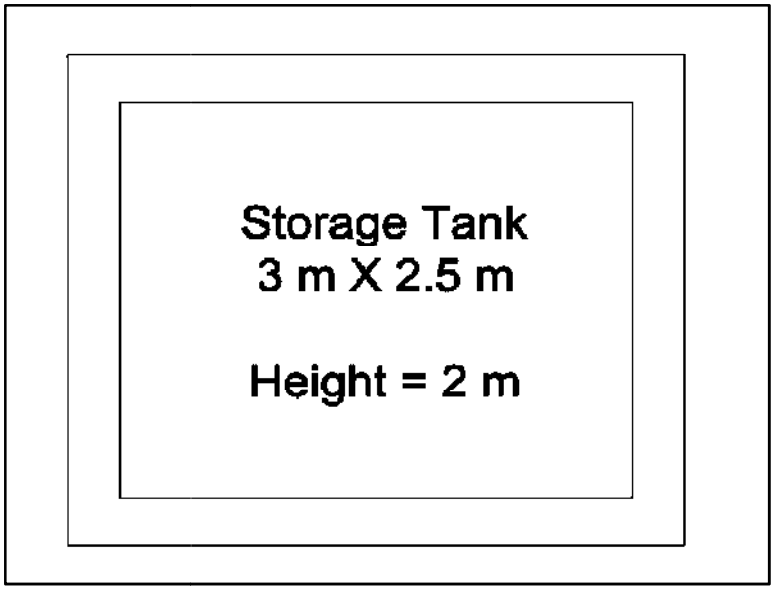


Fig 64: - Plan of Rainwater Storage Tank

Design of filter media:

Provide below the layer of different material,

- Porous bed sheet with 15 cm thick at bottom of filter media.
- 20 cm top layer of gravel.
- 30 cm middle layer of sand.
- 20 cm bottom layer of gravel.

Provide Size of filter media 0.8 m ×0.8 m × 1.2 m

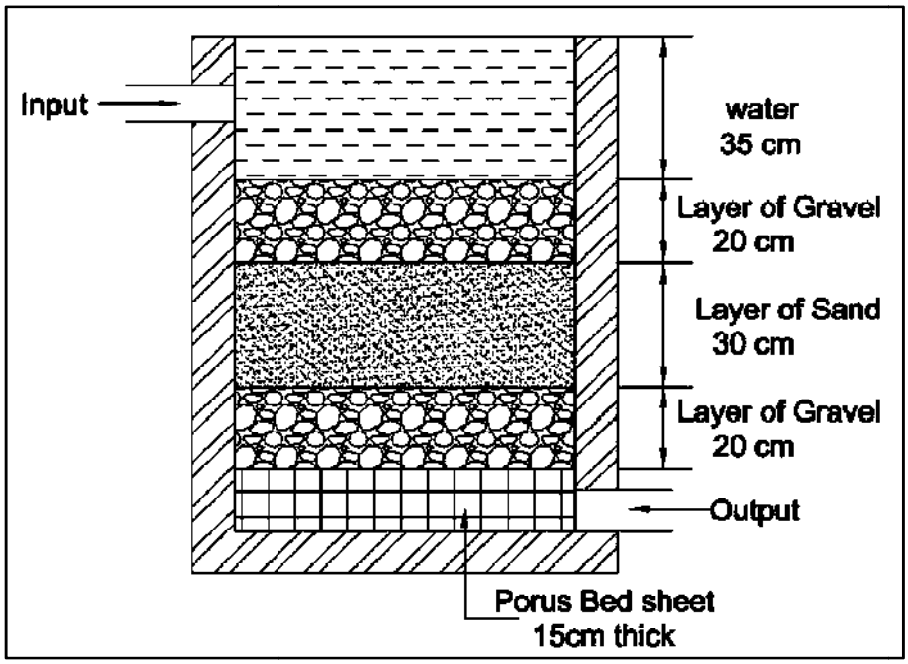


Figure 65: Details Filter media

Design of recharge pit:

For extra water which is over flow after the filling of storage tank it's convey to the recharge pit for increase ground water storage.

Provide 1.5 m × 2m × 2 m which is enough to recharge extra water to ground.

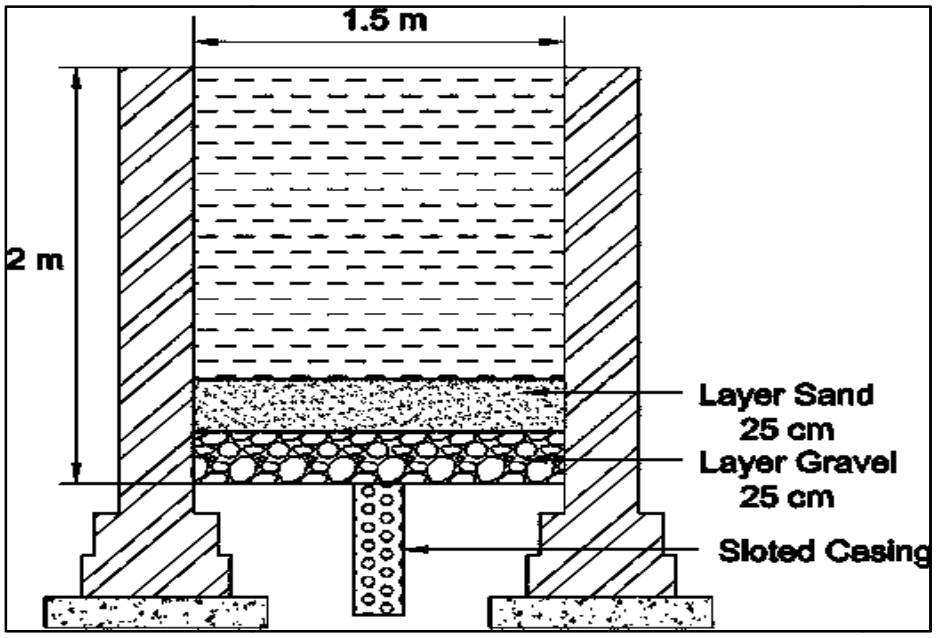


Figure 66: Cross section of recharge pit

Measurement Sheet of Rainwater Harvesting

Table: 44 Measurement Sheet of Rainwater Harvesting

Measurement Sheet of Rainwater Harvesting						
Sr. No.	**Description Of Item**	**Nos.**	**Length (m)**	**Breadth (m)**	**Height (m)**	**Quantity**
1	**Excavation**					
	For Storage tank	1	3.5	3	3.05	32.025 m^3
	For Recharge pit	1	2	2.5	3.05	15.25 m^3
				Total		**47.28m^3**
2	**PCC for foundation**					
	Total centerline = 20.4m	1	20.4	0.7	0.15	2.14 m^3
3	**Brick Masonry**					
	Step1 (Width0.5m) L=20.4m	1	20.4	0.5	0.2	2.04 m^3
	Step2 (Width0.4m) L=20.4m	1	20.4	0.4	0.2	1.63 m^3

	Step4 (Width0.3m) L=20.4m	1	20.4	0.3	0.2	1.22 m^3
	Step5 (Width0.3m) L=20.4m	1	20.4	0.3	2.3	13.46 m^3
				Total Brickwork		**18.05m^3**
4	**Sand fillingup to bottom PCC**					
	Quantity = (Excavation –PCC-Brick work upto GL) =(10.71 – 2.17 –4.9)=3.64	-	-	-	-	3.64 m^3
	Sand filling from bottom PCC to top	1	20.4	0.2	2.3	9.38 m^3
				Total		**13.02m^3**
5	**Storage tank bottom PCC**	1	3	2.5	0.15	1.125**m^3**
6	**Top Slab Concreting**					
	For storage tank	1	3.6	3.1	0.15	1.67 m^3
	For recharge pit	1	2.1	2.6	0.15	0.82 m3
				Total		**2.49m^3**
10	**Inside plaster**					
	Storage tank	2	3	-	2	12
		2	2.5	-	2	10
	Recharge pit	2	1.5	-	2	6
		2	2	-	2	8
				Total		**36m^2**

Abstract Sheet of Rainwater Harvesting

Table: 45 Abstract Sheet of Rainwater Harvesting

Abstract Sheet of Rainwater Harvesting					
Sr.No.	**Description Of Item**	**Quantities**	**Rate**	**Per**	**Amount**
1	Excavation	47.28 m^3	110	Cu.M	5201
2	PCC	3.27 m^3	965	Cu.M	3156
3	Sand Filling	13.02 m^3	90	Cu.M	1172
4	Concreting Work	16.62 m^2	130	Sq.M.	2161
5	Brick Work	18.05 m^3	1250	Cu.M	22563
6	Inside Plaster	36 m^2	150	Sq.M.	5400

7	Steel Work	16.62 m^2	200	Sq.M.	3324
8	Shuttering	16.62 m^2	70	Sq.M.	1164
9	Cement	61bags	280	Bag	17080
10	Sand	8.25 m^3	900	Cu.M	7425
11	Aggregate	5.12 m^3	1000	Cu.M	5120
12	Brick	10000Nos.	4	Brick	40000
13	Steel	200 kg	55	Kg	11000
14	Binding Wire	2 kg	60	Kg	120
15	Floating switch	1nos.	450	Nos.	450
16	Filter media	-	-	L.S	9000
				TOTAL	1,34,336
Add1.5% water charge Rs. 2,016					
Add10% contractor profits Rs. 13,434					
Total Cost:-1,50,000Rs					

The rates of their respective works provided in the abstract sheet along with quantities are inclusive of water charges, contractor's profit, contingencies, utilities and labor charges.

Total cost = Rs. 1,50,000/-

13.1.4. Social- Cultural design: Vegetable Market

Scenario:

There is no any Vegetable market at Bhujodi village; villagers have to go buy vegetables from near village so we decided to design the Vegetable market for Bhujodi village.

Existing Situation in Bhujodi:

In the Bhujodi village there is no any Vegetable market so that according to interaction with the villagers there should be one Vegetable market in village. During the interaction with villagers they have also suggested that there should be a Vegetable market in Bhujodi village.villagers have to go buy vegetables from near village.

Sustainability of the design:

Vegetable Market as an important tool:

Design Utilized by,

All the people living in the village of even outsiders from nearby villages and relatives of the villagers can use of Vegetable market for their uses. Vegetable market can be used in various

applications can serve both domestic purposes and commercial purposes.

Needs:

Easy available vegetables in Bhujodi village no need to go in near village for buy vegetables.

Design brief:

The Vegetable market is an important in village. Vegetable market can be used in various applications can serve both domestic purposes and commercial purposes. Currently the villagers are facing problem for buy vegetables from near village, so we decided to design the Vegetable market.

Proposed Design in Autocad

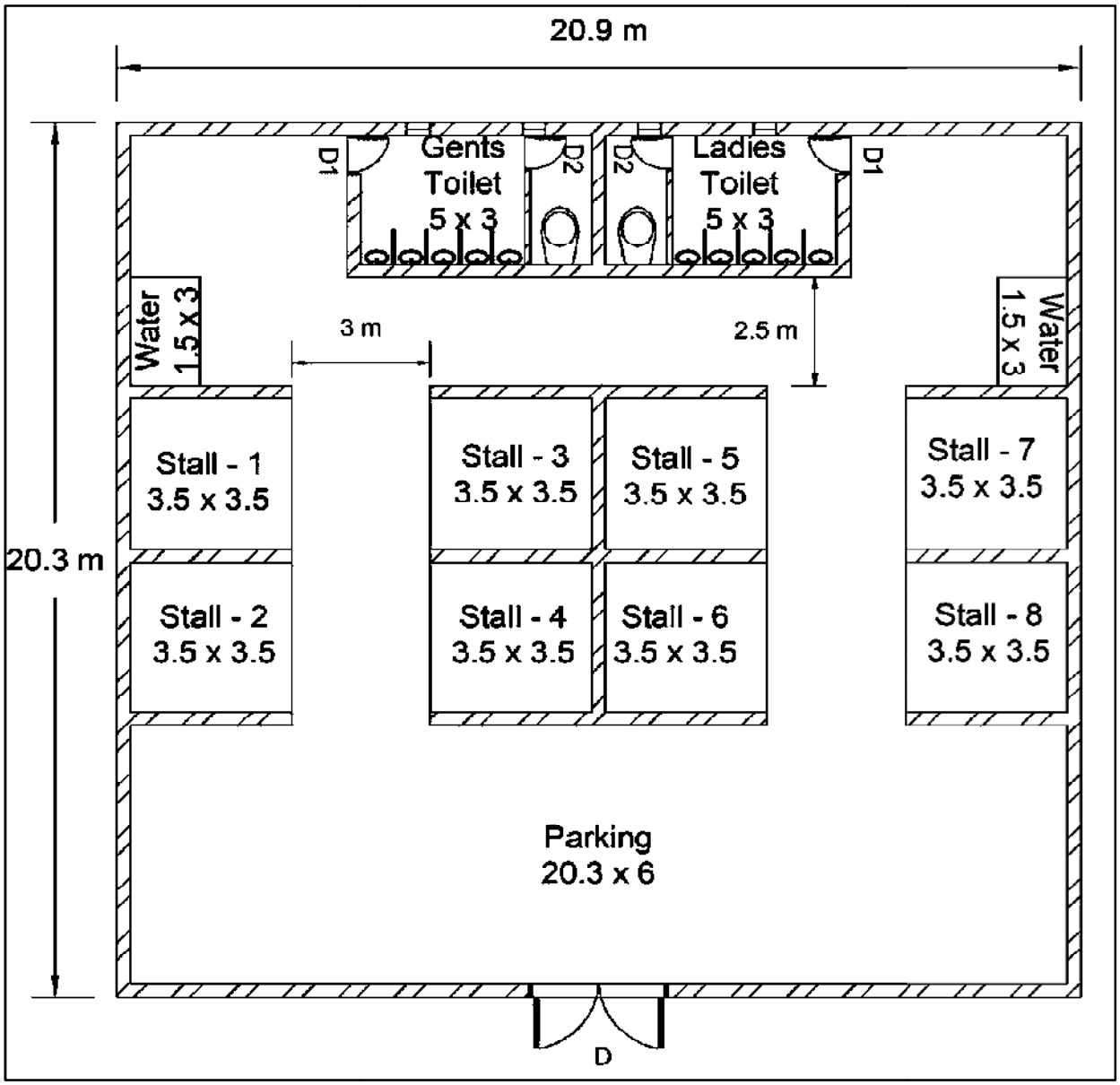


Fig 67: - Plan of Vegetable Market

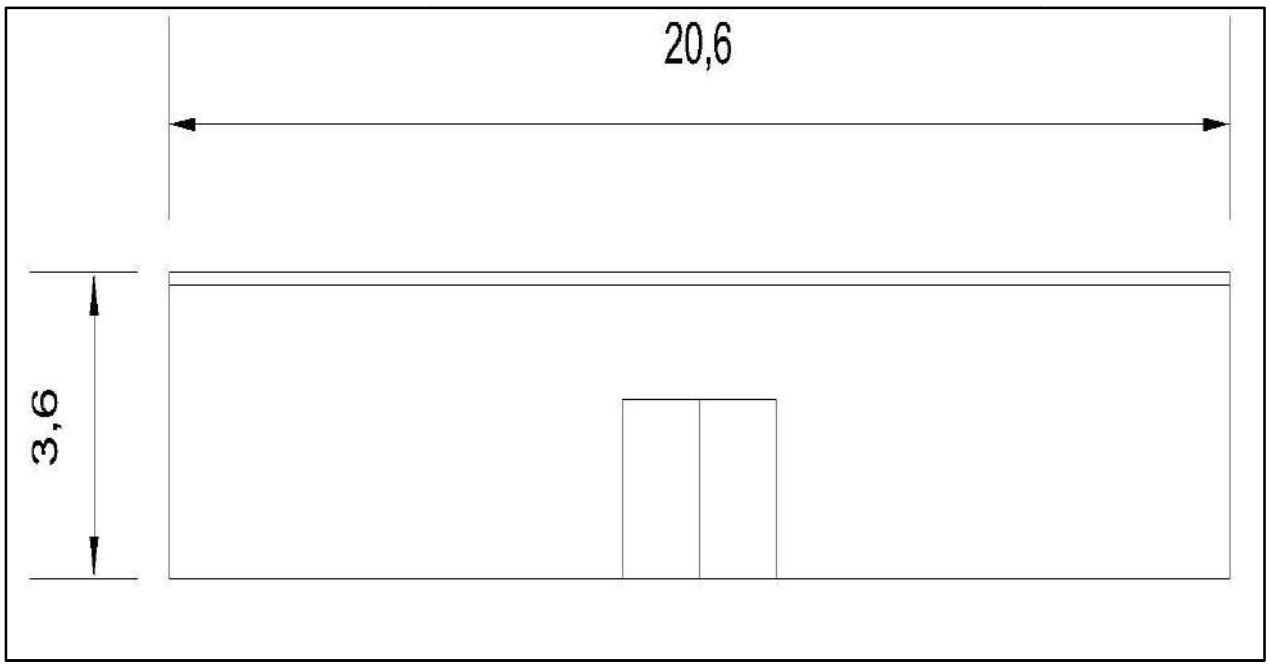


Fig 68: - Elevation of Vegetable Market

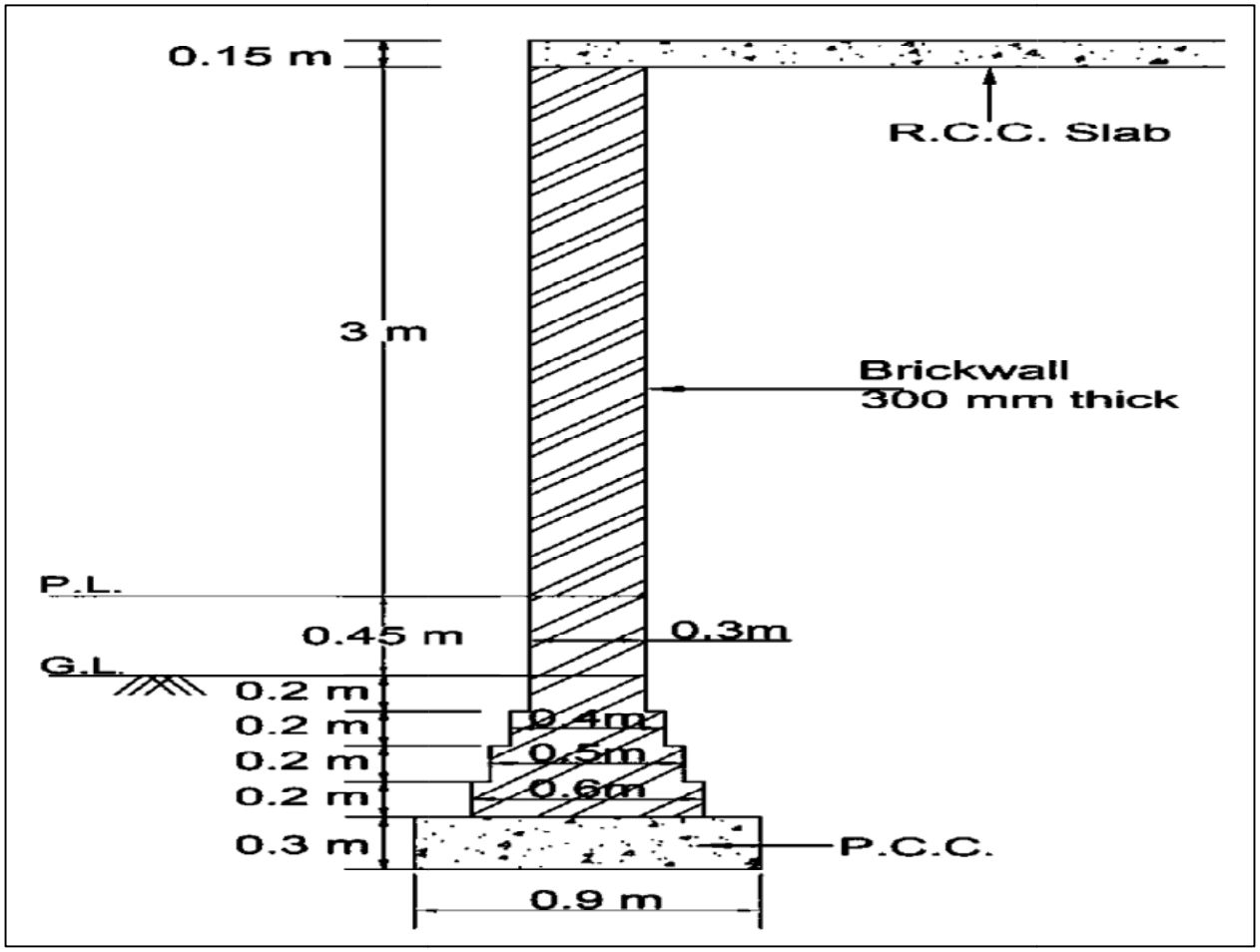


Fig 69: - Section of Vegetable Market

Measurement Sheet of Vegetable Market

Table: 46 Measurement Sheet of Vegetable Market

Measurement Sheet of Vegetable Market						
Sr. No.	**Description Of Item**	**Nos.**	**Length (m)**	**Breadth (m)**	**Height (m)**	**Quantity**
1	Excavation for foundation Net centerline =153.1 –(1/2×0.9 ×14)= 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					
	Step1(Width0.6m) L= 153.1-(1×0.6 ×14)= 148.9	1	148.9	0.6	0.2	17.87 m^3
	Step2(Width0.5m) L= 153.1-(1×0.5 ×14)= 149.6	1	149.6	0.5	0.2	14.96 m^3
	Step3(Width0.4m) L= 153.1-(1×0.4 ×14)= 150.3	1	150.3	0.4	0.2	12.02 m^3
	Step 4(Width0.3m) L= 153.1-(1×0.3 ×14)= 151	1	151	0.3	0.2	9.06 m^3
	Step5(Width0.3m) L= 153.1-(1×0.3 ×14)= 151	1	151	0.3	0.45	20.38 m^3
				Total Brickwork		74.29m^3
4	Sand filling upto G.L.					
	Quantity = (Excavation –PCC-Brickwork 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=54.5m	1	54.5	0.3	2	32.7 m^3
	Stall wall L=102.5m	1	102.5	0.3	3	92.25 m^3
	Deduction for ventilation	4	0.4	0.3	0.4	-0.192m^3
	Deduction for maingate	1	3	0.3	2.1	-1.89m^3
				Total		122.87 m3

6	Sand filling for Plinth level				
	Total area	1	20.3	19.7	0.35-
	Deduction of wall L=69.8 m	1	69.8	0.3	0.35
				Total	132.64m^3
7	PCC above sand filling				
	Total area	1	20.3	19.7	0.1
	Deduction of wall L=69.8 m	1	69.8	0.3	0.1
				Total	37.9m^3
8	Concreting for slab above toilet	1	10.9	3.6	0.15
9	Formwork for slab	2	5.9	-	0.17
		2	3.6	-	0.17
				Total	3.22m^2
10	Inside plaster				
	Stall	8	10.5	-	3
	Toilet	2	16	-	3
	Open Space	1	99.4	-	3
	Deduction for main gate	$\frac{1}{2}$	3	-	3
				Total	641.7m^2

Table: 47Abstract Sheet of Vegetable Market

Abstract Sheet of Vegetable Market					
Sr. No.	**Description Of Item**	**Quantities**	**Rate**	**Per**	**Amount**
1	Excavation	145.33 m^3	110	Cu.M	15987
2	PCC	77.54m^3	965	Cu.M.	74836
3	Sand Filling	184.42 m^3	90	Cu.M	16598
4	R.C.C. Work	5.89 m^3	12000	L.S.	12000
5	Brick Work	208.11 m^3	1250	Cu.M	260137
6	Inside Plaster	641.7 m^2	150	Sq.M.	96255

7	Outside Plaster	242.7 m^2	250	Sq.M.	60675
8	Roof	150 m^2	250	Sq.M.	37500
9	Cement	682bags	280	Bag	190960
10	Sand	108.36 m^3	900	Cu.M	97524
11	Aggregate	77.41 m^3	1000	Cu.M	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% watercharge Rs. 20,400					
Add 10% contractor profits Rs. 1,36,000					
Total Cost:-15,16,400 Rs.					

The rates of their respective works provided in the abstract sheet along with quantities are inclusive of water charges, contractor's profit, contingencies, utilities and labor charges.

Total cost = Rs. 15,16,400/-

13.1.5. Smart village design: Post Office

Scenario:

There is no any Post office at Bhujodi village; villagers have to facing communication, courier sending problem so we decided to design the Post office for Bhujodi village.

Existing Situation in Bhujodi:

In the Bhujodi village there is no any Post office so that according to interaction with the villagers there should be one Post office in Bhujodi village. Villagers have to villagers have to facing communication, courier sending problem.

Sustainability of the design:

Post office as an important tool:

Design Utilized by,

All the people living in the village of even outsiders from nearby villages and relatives of the villagers can use of Post office for their uses. Post office can be used in various applications can serve both domestic purposes and commercial purposes.

Needs:

Easy to communication with other and they can send courier through post office for important parcel to their desirable location.

Design brief:

The Post office is an important in village. Post office can be used in various applications can serve both domestic purposes and commercial purposes. Currently the villagers are facing problem in communication with other and courier related facilities, so we decided to design the Post office.

Proposed Design in Autocad

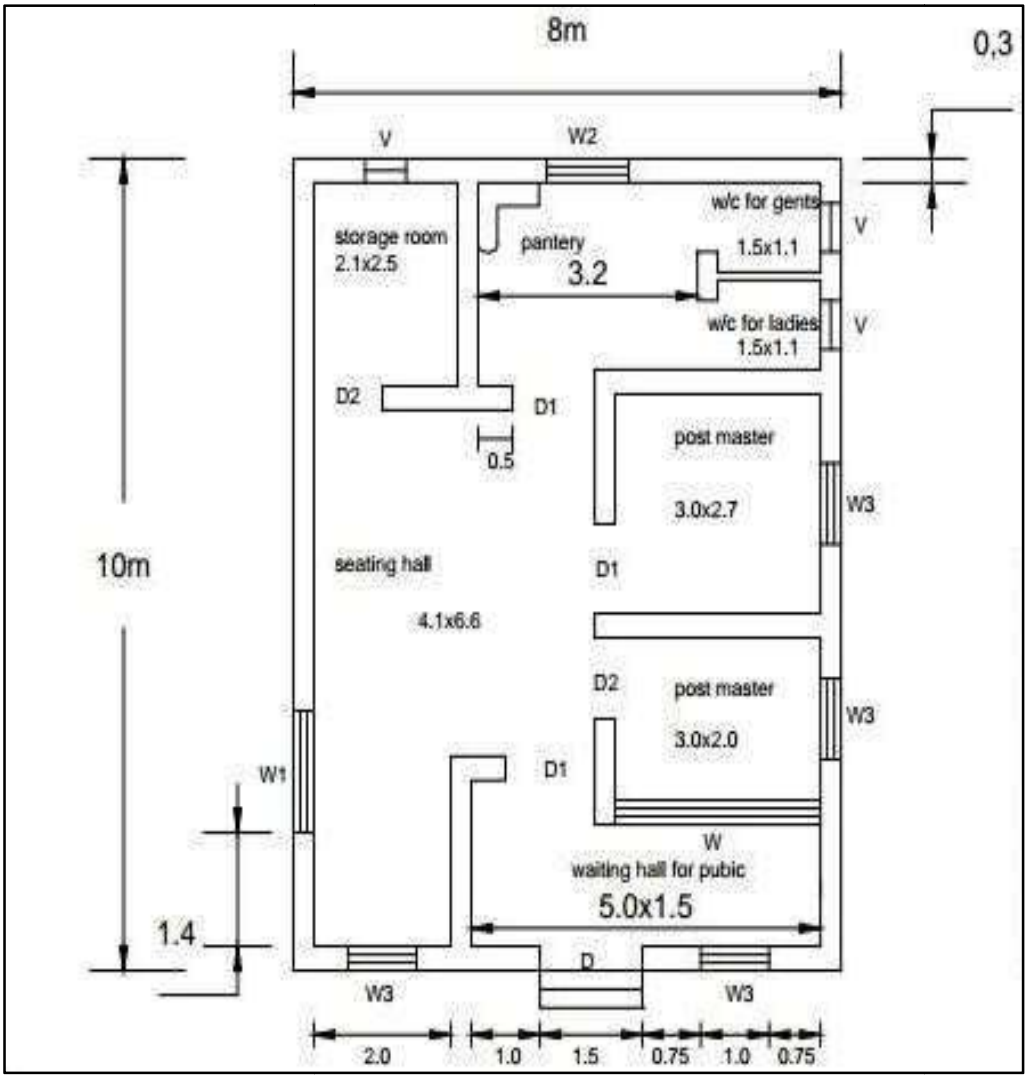


Fig 70: - Plan of Post Office

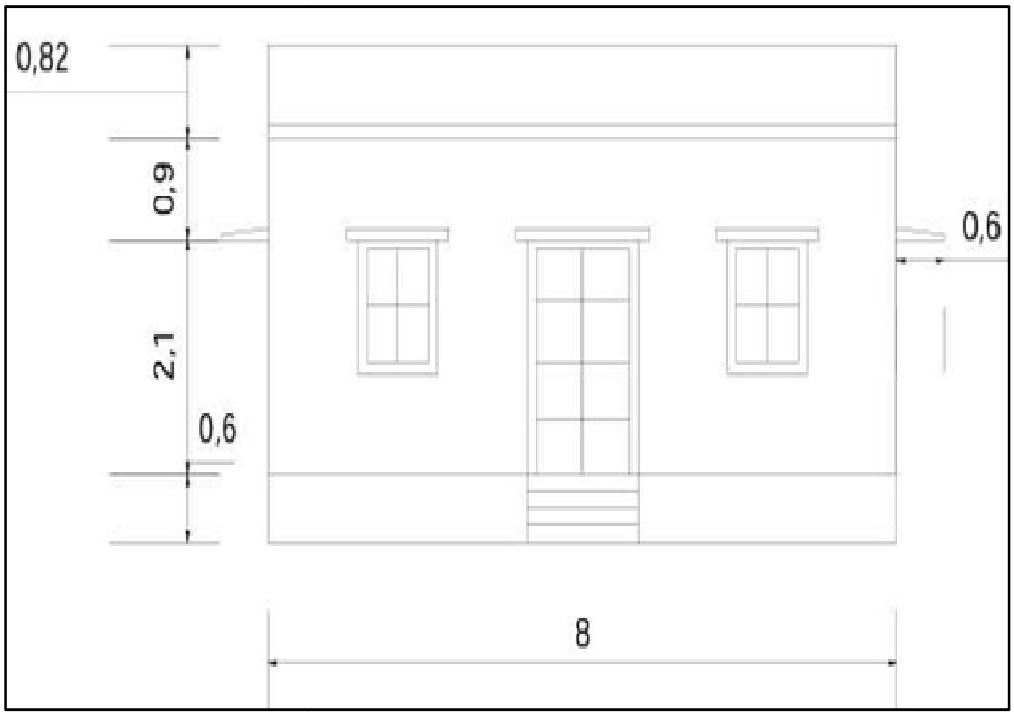


Fig 71: - Elevation of Post Office

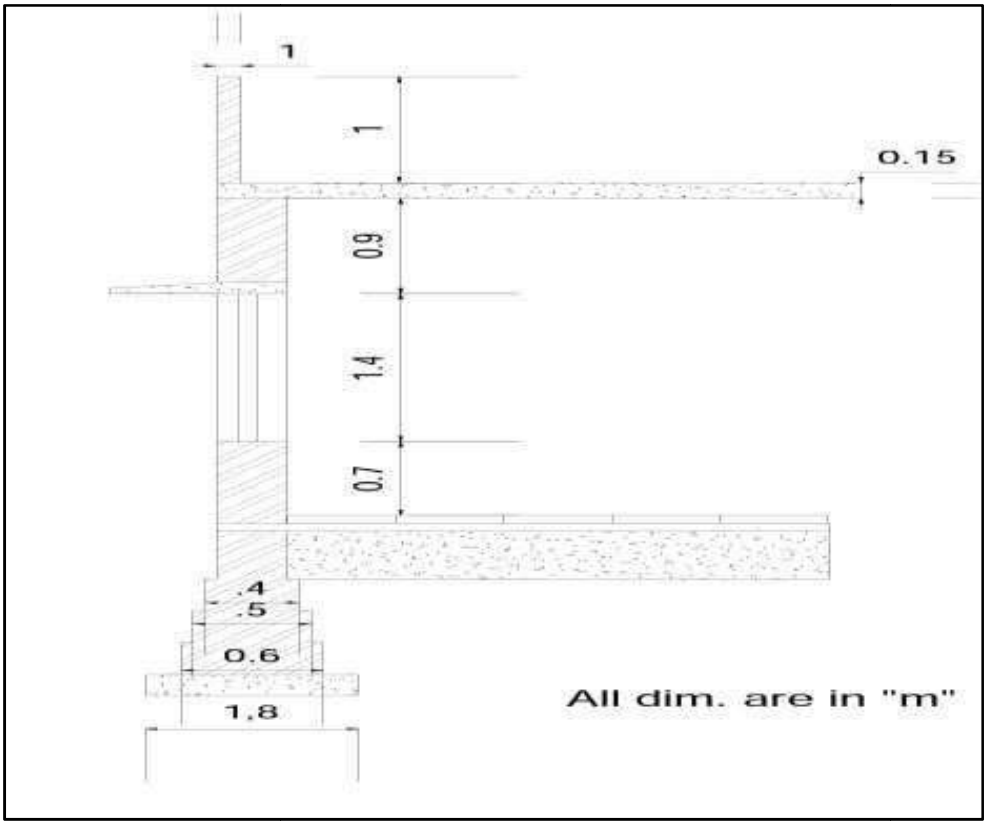


Fig 72: - Section of Post Office

Measurement Sheet of Post Office

Table: 48 Measurement Sheet of Post Office

MEASUREMENT SHEET OF POST OFFICE						
SR NO.	ITEM DESCRIPTION	NO	L	B	H	QUANTITY
1	Earthwork in excavation for foundation					
	total centre line length					
	L=23.1+19.4+9.9+5.1+5.6+4.4=67.5m					
	no of junctions = 10					
	L=67.5-(0.5x0.9x0.10)=63m	1	63	0.9	1.2	68.04
2	PCC 1:4:8 for foundation	1	63	0.9	0.2	11.34
3	Brick masonry up to plinth in CM 1:6					
	first step					
	L=64.5m	1	64.5	0.6	0.3	11.61
	second step					
	L=65m	1	65	0.5	0.3	9.75
	third step					
	L=65.5m	1	65.5	0.4	0.8	20.96
	masonry for step					
	step 1	1	1.5	0.9	0.15	0.21
	step 2	1	1.5	0.6	0.15	0.135
	step 3	1	1.5	0.3	0.15	0.067
					Total	42.73M^3
4	brick masonry above plinth up to slab level in cm1:6					
	L=66m	1	66	0.3	3	59.4
	deduction for door window and ventilation					
	D	1	1.5	0.3	2.1	0.945
	D1	3	1.2	0.3	2.1	2.27
	D2	2	1	0.3	2.1	1.26
	D3	2	0.85	0.3	2.1	1.07
	W1	1	1.5	0.3	1.4	0.63
	W2	1	1.2	0.3	1.4	0.508
	W3	4	1	0.3	1.4	1.68

	W4	1	3	0.3	1.4	1.26
	V	3	0.6	0.3	0.6	0.324
					total	-9.94
	deduction for lintel					
	D	1	1.8	0.3	0.1	0.054
	D1	3	1.5	0.3	0.1	0.135
	D2	2	1.3	0.3	0.1	0.078
	D3	2	1.15	0.3	0.1	0.069
	W1	1	1.8	0.3	0.1	0.054
	W2	1	1.5	0.3	0.1	0.045
	W3	4	1.3	0.3	0.1	0.156
	W4	1	3.3	0.3	0.1	0.099
					total	0.69
					net total	48.77
5	brick masonry for parapet wall					
	front wall	2	8	0.2	0.9	14.76
	side wall	2	9.6	0.2	0.9	3.46
					total	18.22
6	back filling for foundation					
	L=24.86m					24.86m3
7	Earth filling in plinth					
	storage room	1	2	2.4	0.3	1.44
	post master office	1	2.9	2.4	0.3	2.1
	Counter	1	2.9	1.9	0.3	1.65
	WC	2	1.4	1.1	0.3	0.924
	front of WC space	1	3.1	2.4	0.3	2.23
	surting male	1	4	6.5	0.3	7.8
	waiting hall for public	1	3.8	1.5	0.3	1.71
					total	17.85
	deduction for wall 1& wall 2	1	2	0.4	0.3	0.24
		1	0.6	0.4	0.3	0.07
						-0.31
					net total	17.54
8	BBCC 10mm above earth filling					
	storage room	1	2	2.4	0.1	0.48
	post master office	1	2.9	2.4	0.1	0.696
	Counter	1	2.9	1.9	0.1	0.55
	WC	2	1.4	1.1	0.1	0.154
	front of WC space	1	3.1	2.4	0.1	0.744
	surting male	1	4	6.5	0.1	2.1

	waiting hall for public	1	3.8	1.5	0.1	0.532
					total	5.76
	deduction for wall 1& wall 2	1	2	0.4	0.1	0.08
		1	0.6	0.4	0.1	0.024
						-0.0104
					net total	5.66
9	5cm thick tile bedding					
	storage room	1	2	2.4	0.05	0.24
	post master office	1	2.9	2.4	0.05	0.35
	counter	1	2.9	1.9	0.05	0.275
	WC	2	1.4	1.1	0.05	0.154
	front of WC space	1	3.1	2.4	0.05	0.372
	surting male	1	4	6.5	0.05	1.3
	waiting hall for public	1	3.8	1.5	0.05	0.27
					total	2.96
10	DPC 5cm thick					
	L=65.5m	1	65.5	0.4		26.2
11	12mm thick smooth plaster					
	storage room	2	2.1		3	12.6
		2	2.5		3	15
	post master office	2	3		3	18
		2	2.5		3	15
	counter	2	3		3	18
		2	2		3	12
	WC	4	3.9		3	23
		2	1.5		3	9
	front of WC space	2	3.2		3	19.2
		2	2.5		3	15
	surting male	2	4.1		3	24.6
		2	6.6		3	39.6
	waiting hall for public	2	3.9		3	23
		2	1.5		3	9
					total	253.8
	for ceiling					
	storage room	1	2.1		2.5	5.25
	post master office	1	3		2.5	7.5
	counter	1	3		2	6
	WC	1	1.5		1.2	1.8
	front of WC space	1	3.2		2.5	8
	surting male	1	4.1		6.6	27.1
	waiting hall for public	1	3.9		1.5	5.85

					total	63.3
	outside wall	2	8		4.05	64.8
		2	10		4.05	81
					total	145.8
	inside for parapet wall	2	9.6		0.9	17.28
		2	7.6		0.9	13.28
					total	30.96
					grand total	453.36
	deduction for door window and ventilation					
	D	1	1.5		2.1	3.15
	D1	3	1.2		2.1	7.56
	D2	2	1		2.1	4.2
	D3	2	0.85		2.1	3.57
	W1	1	1.5		1.4	2.1
	W2	1	1.2		1.4	1.68
	W3	4	1		1.4	5.6
	W4	1	3		1.4	4.2
	V	3	0.4		0.6	1.08
						-33.14
					net	420.22
12	white wash					420.22
13	RCC slab 0.15m thick1:1.5:2	1	8	10	0.15	12
	RCC chajja for door window					
	D	1	1.5	0.6	0.1	0.09
	W1	1	1.5	0.6	0.1	0.09
	W2	1	1.2	0.6	0.1	0.072
	W3	4	1	0.6	0.1	0.24
					total	0.49
					grand total	12.49m3
14	1% steel of RCC work are used					980kg
15	15cm thick RCC lintel above door					
	D	1	1.8	0.3	0.1	0.054
	D1	3	1.5	0.3	0.1	0.135
	D2	2	1.3	0.3	0.1	0.078
	D3	2	1.15	0.3	0.1	0.069
	W1	1	1.8	0.3	0.1	0.054
	W2	1	1.5	0.3	0.1	0.045
	W3	4	1.3	0.3	0.1	0.156

	W4	1	3.3	0.3	0.1	0.099
					total	0.69
16	no of tiles					
	storage room	1	2.1		2.5	5.25
	post master office	1	3		2.5	7.5
	counter	1	3		2	6
	WC	1	1.5		1.2	1.8
	front of WC space	1	3.2		2.5	8
	surting male	1	4.1		6.6	27.1
	waiting hall for public	1	3.9		1.5	5.85
	door tiles					
	D	1	1.5		0.3	0.45
	D1	3	1.2		0.3	1.08
	D2	2	1		0.3	0.6
	D3	2	0.85		0.3	0.51
					total	63.5
	total no of tiles 1067 nos					1067nos
17	skirting					
	storage room	2	2.1			4.2
		2	2.5			3
	post master office	2	3			6
		2	2.5			5
	Counter	2	3			6
		2	2			4
	front of WC space	2	3.2			6.4
		2	2.5			5
	surting male	2	4.1			8.2
		2	6.6			13.2
	waiting hall for public	2	3.9			7.8
		2	1.5			3
	deduction for door window and ventilation					
	D	1	1.5			1.5
	D1	3	1.2			3.6
	D2	2	1			2
	D3	2	0.85			1.7
					net quantity	65RMT
18	dado for toilet WC					
	WC	4	3.9		1	6
		2	1.5		1	4.8
	deduction for door	1	0.83		1	-0.83

					net quantity	9.1m2
19	wood work					
	D	1	1.5		2.1	3.15
	D1	3	1.2		2.1	7.56
	D2	2	1		2.1	4.2
	D3	2	0.85		2.1	3.57
	W1	1	1.5		1.4	2.1
	W2	1	1.2		1.4	1.68
	W3	4	1		1.4	5.6
	W4	1	3		1.4	4.2
	V	3	0.4		0.6	1.08
					total	33.14

Abstract Sheet of Post Office

Table: 49Abstract Sheet of Post Office

ABSTRACT SHEET OF POST OFFICE					
SR NO	ITEM DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
1	Earthwork in excavation for foundation	68.4	M3	85	5814
2	PCC 1:4:8 for foundation	11.34	M3	1500	17010
3	brick masonry upto plinth level in CM 1:6	42.73	M3	1600	68368
4	brick masonry above plinth above slab level 1:6	59.4	M3	1500	89100
5	brick masonry for parapet wall	18.2	M3	1500	27300
6	backfilling for foundation	24.86	M3	50	1243
7	earthfilling in plinth	17.54	M3	50	877
8	BBCC 10mm above earth filling	5.66	M3	1000	5660
9	5cm thick bedding	2.92	M3	160	467.2
10	DPC 5cm thick 1:2:4	26.2	M2	150	3930

11	12cm thick smooth plaster inside and outside	420.22	M2	150	63033
12	whitewash	420.22	M2	10	4202.2
13	RCC slab 1:1.5:2	12.49	M2	2500	31225
14	steel in RCC	980	kg	35	34300
15	RCC lintel	12.01	M3	2500	30025
16	Tile flooring	1067	M2	150	160050
17	Skirting	65	RMT	210	13650
18	Dado	9.1	M2	750	6825
19	woodwork for door window and ventilation	27.86	M2	1500	41790
				total	604870
10% Contractors = 60487					
3% contingency = 18147					
Grand total=6,83,504.Rs					

The rates of their respective works provided in the abstract sheet along with quantities are inclusive of water charges, contractor's profit, contingencies, utilities and labor charges.

Total cost = Rs.6,83,504/-

13.1.6. Heritage village design: Entrance Gate

Scenario:

There is no any entrance gate at Bhujodi village, so in the heritage village design we decided to design of entrance gate in Bhujodi village.

Existing Situation in Bhujodi:

In the Bhujodi village there are no any entrance gateso that according to interaction with the villagers there should be one entrance gate in village.

Sustainability of the design:

Entrance gate as an important tool:

Design Utilized by,

Bhujodi village has not a entrance gate at entry point of village. Outer side person which is first time visit this village is not find which point is started a village. So we design the design the one gate at entrance point. This gate is improve the aesthetic look of village and also easy for outer person for identify of village.

Needs:

This gate is improve the aesthetic look of village and also easy for outer person for identify of village.

Design brief:

Bhujodi village has not an entrance gate at entry point of village. So we design the design the one gate at entrance point. This gate is improve the aesthetic look of village and also easy for outer person for identify of village.

Proposed Design in Autocad

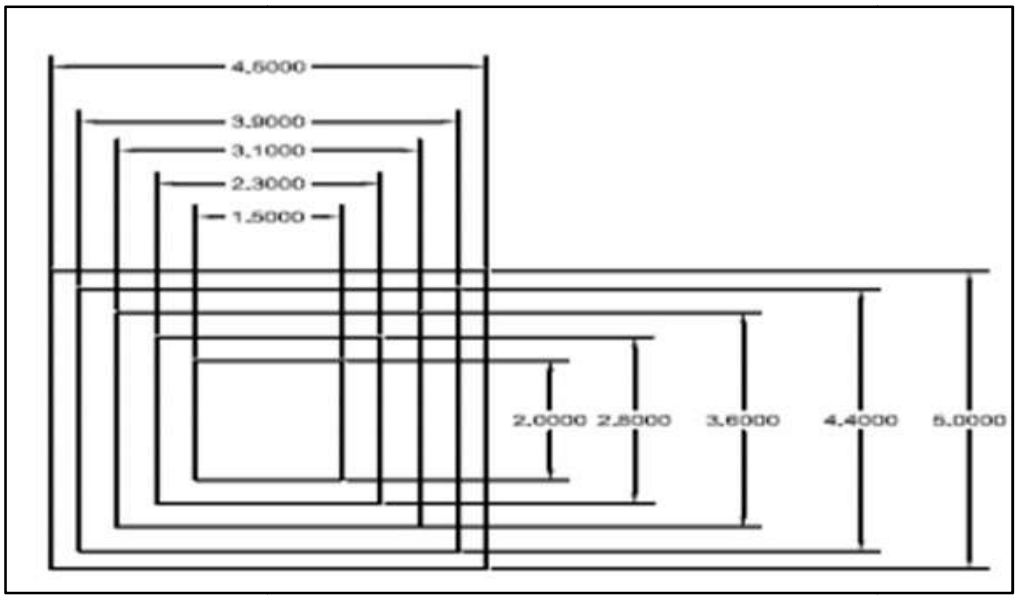


Fig 73: - Plan of Entrance Gate

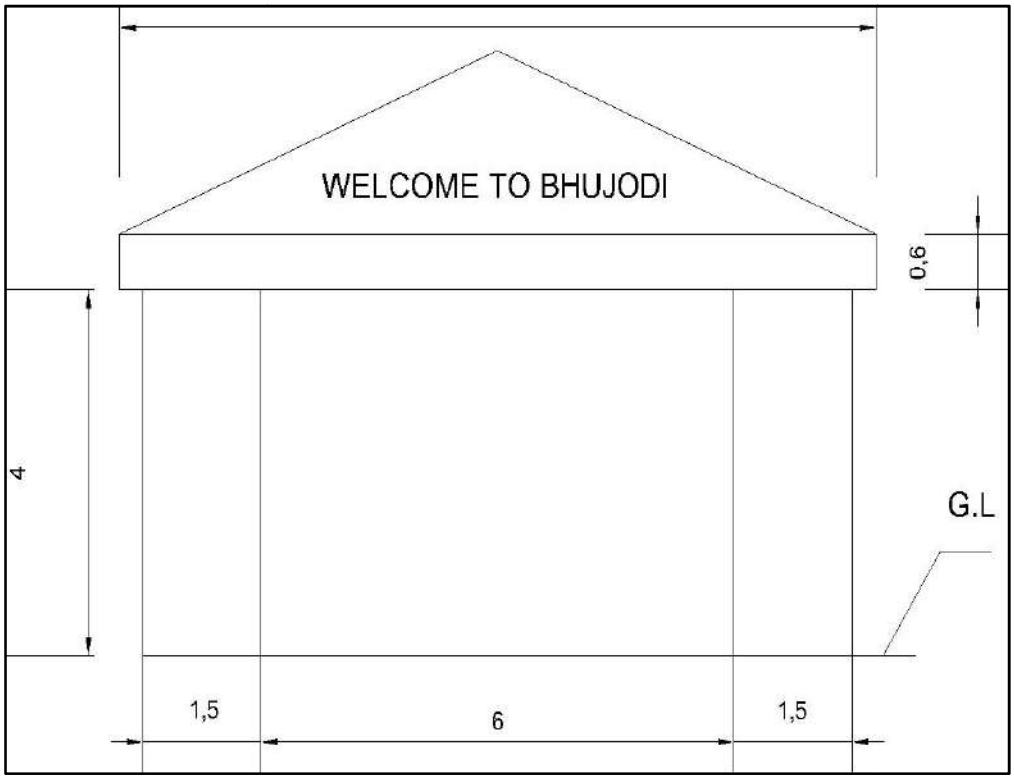


Fig 74: - Elevation of Entrance Gate

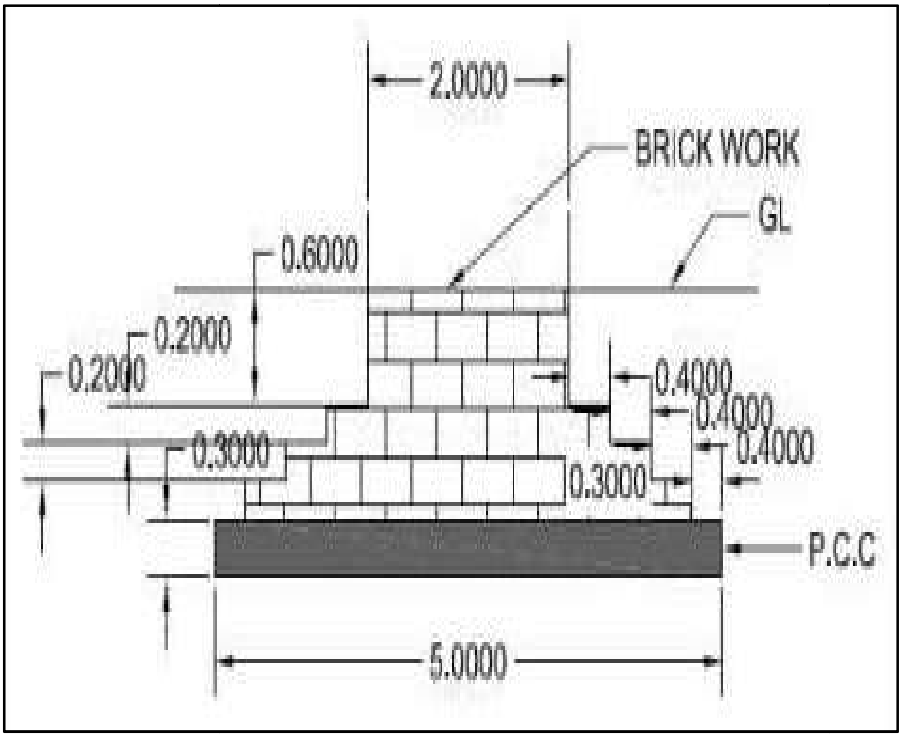


Fig 75: - Section of Entrance Gate

Measurement Sheet of Entrance Gate

Table: 50 Measurement Sheet of Entrance Gate

Measurement Sheet of Post Office						
ITEMNO	**ITEMDESCRIPTION**	**NO**	**L**	**B**	**H**	**QT. m³**
1	**Earth Work of Excavation In Foundation**	2	5	4.5	1.5	**67.5**
2	**P.C.C Work In Footing**	2	5	4.5	0.3	**13.5**
3	**Masonry Up To Plinth In C.M.1:6**					
	Step-1	2	4.4	3.9	0.2	6.864
	Step-2	2	3.6	3.1	0.2	4.464
	Step-3	2	2.8	2.3	0.2	2.576
	Column Up to Gl	2	2	1.5	0.6	3.6
4	**MESONRYWORKUPTO BEAM LEVELC:M- 1:6**	2	2	1.5	4.5	27

	Total Mesonry Work					**44.504**
5	**R.C.C Work 1:1.5:3 for Beam L=6+1.5+1.5+0.3+0.3=9.6**	1	9.6	2.6	0.6	**14.976**
	Formwork For Beam					
	Bottom	1	6	1.5		9
	Sides	2	9.6		0.6	11.5
	Ends	2		1.5	0.6	1.8
	Total Quantity Of Steel In Kg 20 ϕ Bottom Bars (Straight)					
	L=6+1.5+1.5+0.24-0.1=9.14	10	9.14		2.47	225.758
	12MmΦTopAnchorBars					
	L=6+1.5+1.5+0.144-0.1=9.05	5	9.05		0.88	39.82
	6mm Φ Stirrups:@150mmC/C					
	Nos =(9.6-0.1)+1=65Nos 0.15	65	1.7		0.22	24.31
	Total Steel					**289.888**
6	**Brick WorkInTopeTriangelPoetion1:6**	1	9.6	2.6	1	**12.48**
7	**Plaster On Column**					
	On2MeterSide	2		2	4.5	18
	0n1.5MeterSide	2		1.5	4.5	13.5
8	**Plaster On Beam**					
	On 2.30 Meter Side	1	9.6	2.6		24.96
	0n 0.6 Meter Side	2	9.6		0.6	11.52
9	**Deduction**					
	Area Of Cross Section Of Colum	2	2	1.5		6
	Total Quantity					**61.98=62**

10	**Plaster On Triangle Portion**					
	Side	2	9.6		0.6	5.76
	Top Surface	1	9.67	2.3		22.25
	Total					**28.011**
11	**Paint On Gate 62+28.011= 90.011**					**90.011**

Abstract Sheet of Entrance Gate

Table: 51 Abstract Sheet of Entrance Gate

Abstract Sheet of Entrance Gate					
Item No	**Description Of Work**	**Quantity**	**Unit**	**Rate**	**Amount**
1	Excavation Up To 1.5M Depth	67.5	M3	85	5737.5
2	P.C.C Work	13.5	M3	3000	40500
3	Brick Masonry In Foundation :M-1:6	17.504	M3	3200	3217.5
4	Brick masonry In SuperstructureC:M-1:6	27	M3	3500	94500
5	Cement PlasterC:M-1:3	90.011	M2	150	13501.7
6	R.C.C Work For Beam	14.976	M3	13000	194688
7	Brick Masonry In Top Triangle	12.48	M3	3500	43680
8	Paint	90.011	M2	100	9001.1
Total = 404826					
ContractorProfit10% 40482					
Total Cost = 4,45,308 Rs.					

The rates of their respective works provided in the abstract sheet along with quantities are inclusive of water charges, contractor's profit, contingencies, utilities and labor charges.

Total cost = Rs.4,45,308

13.1.7. Electrical design Solar Photovoltaic Water Pumping System

Agricultural technology is changing rapidly. Farm machinery, farm building and production facilities are constantly being improved. Agricultural applications suitable for photovoltaic (PV) solutions are numerous. These applications are a mix of individual installations and systems installed by utility companies when they have found that a PV solution is the best solution for remote agricultural need such as water pumping for crops or livestock. A solar powered water pumping system is made up of two basic components. These are PV panels and pumps. The smallest element of a PV panel is the solar cell. Each solar cell has two or more specially prepared layers of semiconductor material that produce direct current (DC) electricity when exposed to light. This DC current is collected by the wiring in the panel. It is then supplied either to a DC pump, which in turn pumps water whenever the sun shines or stored in batteries for later use by the pump.

It is common to use diesel to power generators in agricultural operations. While these systems can provide power where needed1 there are some significant drawbacks, including:

- Fuel has to be transported to the generator's location, which may be quite a distance over some challenging roads and landscape
- Their noise and fumes can disturb livestock.
- Fuel costs add up, and spills can contaminate the land.
- Generators require a significant amount of maintenance and, like all mechanical systems; they break down and need replacement parts that are not always available.

There are also major disadvantages in using propane or bottled gas to heat water for pen cleaning or in crop processing applications, or to heat air for crop drying, including transportation to the location where you need the heat, costs of fuel and safety issues. For many agricultural needs, the alternative is solar energy. Modern, well-designed, simple to-maintain solar systems can provide the energy that is needed where it is needed, and when it is needed. These are systems that have been tested and proven around the world to be cost-effective and reliable, and they are already raising levels of agricultural productivity worldwide

The solar cells in a PV module are made from semiconductor materials. When light energy strikes the cell, electrons are knocked loose from the material's atoms. Electrical conductors attached to the positive and negative sides of the material allow the electrons to be captured in the form of a D.C. current. This electricity can then be used to power a load, such as a water pump, or it can be stored in a battery.

It's a simple fact that PV modules produce electricity only when the sun is shining, so some form of energy storage is necessary to operate systems at night. You can store the energy as water by pumping it into a tank while the sun is shining and distributing it by gravity when it's needed after dark. PV systems are very economical in providing electricity at remote locations on farms, ranches, orchards and other agricultural operations. A "remote" location can be as little as 15

meters from an existing power source. PV systems can be much cheaper than installing power lines and step-down transformers in applications such as electric fencing, area or building lighting, and water pumping – either for livestock watering or crop irrigation.

Solar-Powered Water Pumping System Configurations

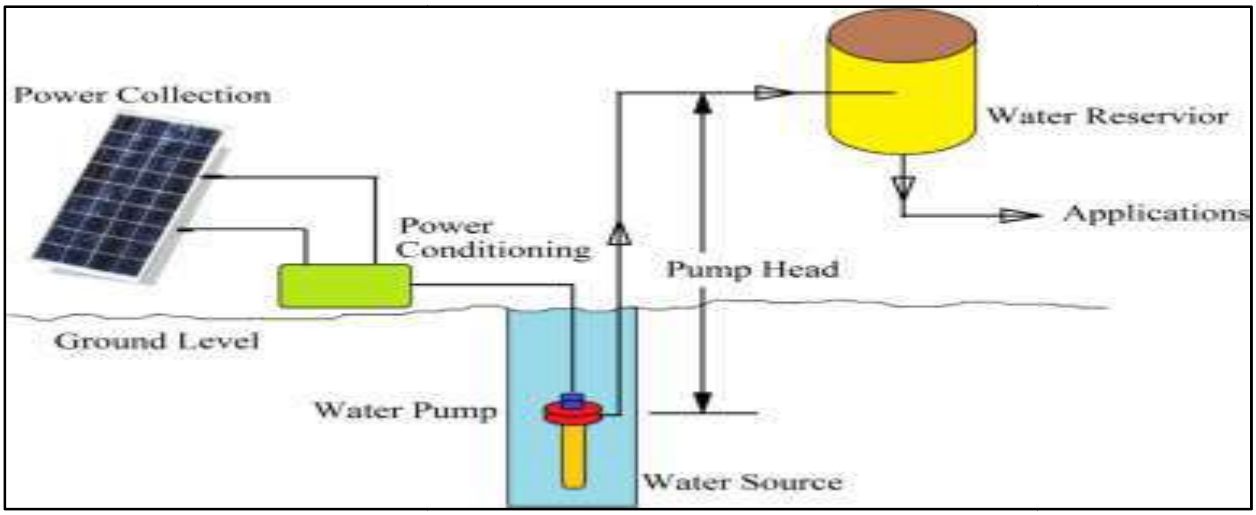


Fig. 76 Solar-Powered Water Pumping System Configurations

There are two basic types of solar-powered water pumping systems, battery-coupled and direct-coupled. A variety of factors must be considered in determining the optimum system for a particular application.

Battery-coupled water pumping systems consist of photovoltaic (PV) panels, charge control regulator, batteries, pump controller, pressure switch and tank and DC water pump.The electric current produced by PV panels during daylight hours charges the batteries, and the batteries in turn supply power to the pump anytime water is needed. The use of batteries spreads the pumping over a longer period of time by providing a steady operating voltage to the DC motor of the pump. Thus, during the night and low light periods, the system can still deliver a constant source of water for livestock.

The use of batteries has its drawbacks. First, batteries can reduce the efficiency of the overall system because the operating voltage is dictated by the batteries and not the PV panels. Depending on their temperature and how well the batteries are charged, the voltage supplied by the batteries can be one to four volts lower than the voltage produced by the panels during maximum sunlight conditions. This reduced efficiency can be minimized with the use of an appropriate pump controller that boosts the battery voltage supplied to the pump.

May drop by as much as 25 percent or more under these low-light conditions. During cloudy days, pump efficiency will drop off even more. To compensate for these variable flow rates, a good match between the pump and PV module(s) is necessary to achieve efficient operation of the system. Direct-coupled pumping systems are sized to store extra water on sunny days so it is

available on cloudy days and at night. Water can be stored in a larger-than-needed watering tank or in a separate storage tank and then gravity-fed to smaller watering tanks. Water-storage capacity is important in this pumping system. Two to five days' storage may be required, depending on climate and pattern of water usage. Storing water in tanks has its drawbacks. Considerable evaporation losses can occur if the water is stored in open tanks, while closed tanks big enough to store several days water supply can be expensive. Also, water in the storage tank may freeze during cold weather.

Solar Modules

Solar electric systems are sometimes called photovoltaic systems. The word "photovoltaic" is often abbreviated PV. Most solar panels, or modules, generate direct current (DC) electricity. A group of modules is called an array.

Mounting Structures

There are two ways to mount solar modules: either on a fixed structure or on a tracking structure. Fixed mounts are less expensive and tolerate higher wind loading but have to be carefully oriented so they face true south (not magnetic south).

Pumps

DC water pumps in general use one-third to one-half the energy of conventional AC (alternating current) pumps. DC pumps are classed as either displacement or centrifugal, and can be either submersible or surface types. Displacement pumps use diaphragms, vanes or pistons to seal water in a chamber and force it through a discharge outlet. Centrifugal pumps use a spinning impeller that adds energy to the water and pushes into the system, similar to a water wheel. Submersible pumps, placed down a well or sump, are highly reliable because they are not exposed to freezing temperatures, do not need special protection from the elements, and do not require priming. Surface pumps, located at or near the water surface, are used primarily for moving water through a pipeline. Some surface pumps can develop high heads and are suitable for moving water long distances or to high elevations

Storage

Batteries are usually not recommended for solar-powered livestock watering systems because they reduce the overall efficiency of the system and add to the maintenance and cost. Instead of storing electricity in batteries, it is generally simpler and more economical to install 3 to 10 days' worth of water storage.

Controller or Inverter

The pump controller protects the pump from high- or low-voltage conditions and maximizes the amount of water pumped in less than ideal light conditions. An AC pump requires an inverter, an electronic component that converts DC electricity from the solar panels into AC electricity to operate the pump.

Other equipment

A float switch turns a pump on and off when filling the stock tank. It's similar to the float in a

toilet tank but is wired to the pump controller. Low water cut-off electrodes protect the pump from low water conditions in the well.

Designing and Installing Systems

Every pumping and stock-watering situation is unique. The average consumer is likely to be intimidated by the prospect of sizing and designing a solar pumping system, and most people need the assistance of a qualified solar dealer. In general dealers are eager to help. Many will provide a no-cost proposal based on a few simple questions that can be asked over the phone. If the price seems too high, you can easily get bids from other dealers.

In order to size and design a system correctly, the dealer will want to know:

- how much water you need
- when you need the water
- whether your water source is a stream, pond, spring, or well
- water available in gallons per minute
- well depth
- how far the water needs to be pumped, and with what elevation gain
- water quality problems (e.g., silt or high mineral content) that may damage the pump
- how much volume is available in storage tanks and how the tanks are arranged.

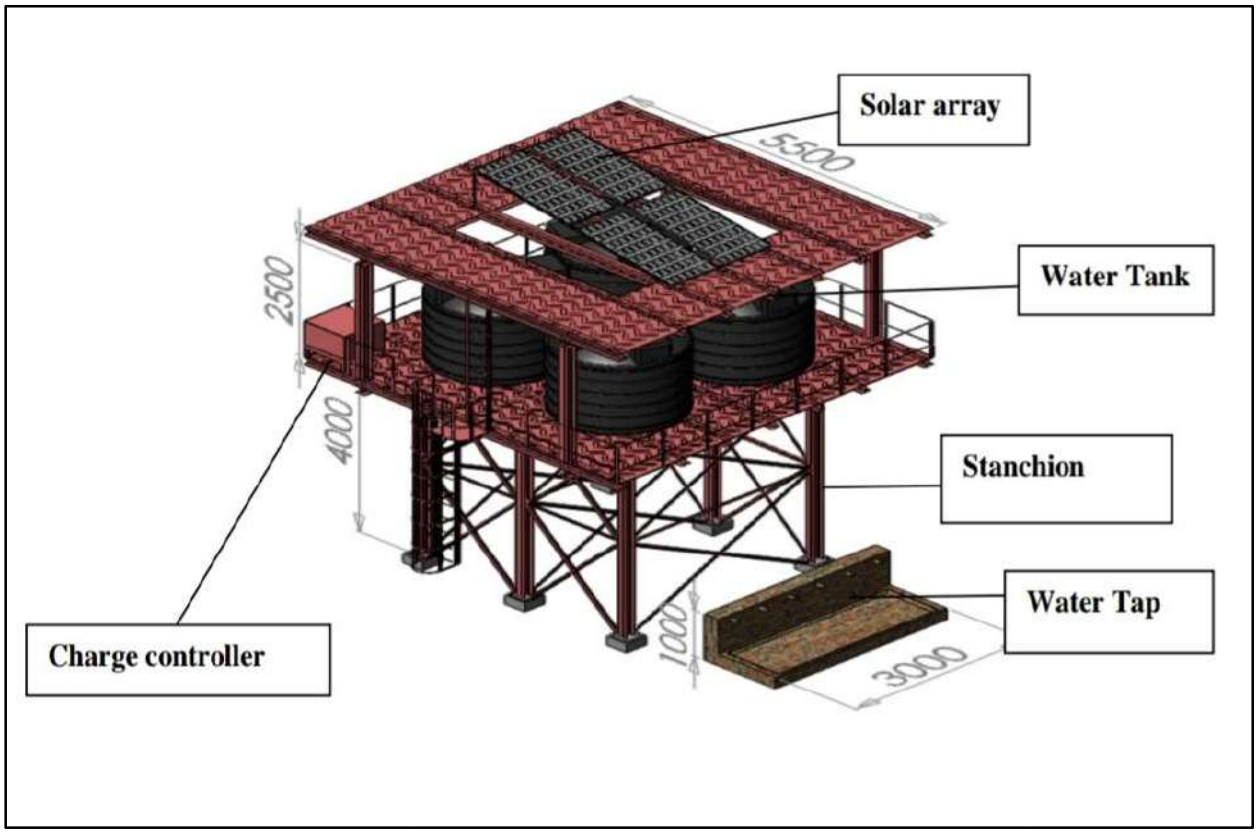


Fig: 77. System Of Pumping

Sr. no.	Name of component	Quantity	RS/Qnty	Total(RS.)
1	Solar panel	3	11000	33000
2	Charge controller	1	6000	6000
3	Submersible pump	1	10000	10000
4	Inverter	1	8000	8000
5	Motor	1	5000	5000
6	Structural cost	-	10000	10000
7	Installation	-	8000	8000
8	Storage tank	1	12000	12000
Total cost				**92,000**

Table: 52 Cost and estimation

13.1.8. Electrical design: 2 CCTV for village security

To their ability to achieve high-performance video capabilities at a low cost. The industry has found ways to IP-based systems have emerged as an attractive alternative to other technologies, due in large part implement IP-based systems that use existing cameras, cables, and other equipment. However, organizations planning and designing new systems should consider IP-based technology. This section addresses the basic parameters of an IP-based network system.

Internet Protocol Network System Overview

IP-based CCTV frameworks are intended to give the capacity to screen, record, and transfer video over an organization to PCs or other hardware. The framework can utilize existing neighborhood (LANs), wide region organizations (WANs), and additionally remote LANs (WLANs) to save money on establishment costs. Be that as it may, for added security, an association could introduce its own private territory organization (PAN) cabling and support equipment. Control over Ethernet (PoE) innovation is likewise a choice inside an IP-based framework to build reserve funds and dependability. PoE empowers different arranged gadgets to get force and information through one standard link, which can be a tremendous expense investment funds when planning CCTV frameworks.

A simple IP-based CCTV system, such as the one seen in Figure 4-5, consists of a network camera (although analog cameras can be used with additional equipment), a network switch, and a PC for viewing, storing, and analyzing data and managing the CCTV system. Traditional analog-based CCTV systems require dedicated point-to-point cabling from each camera to the recording and/or viewing locations. In an IP-based CCTV system, video is digitized at the camera and can then be transmitted over the IP network to virtually any location around the world.
Most analog systems are traditionally unidirectional, whereas network based systems are

bidirectional, easier to integrate into larger systems, and highly scalable.

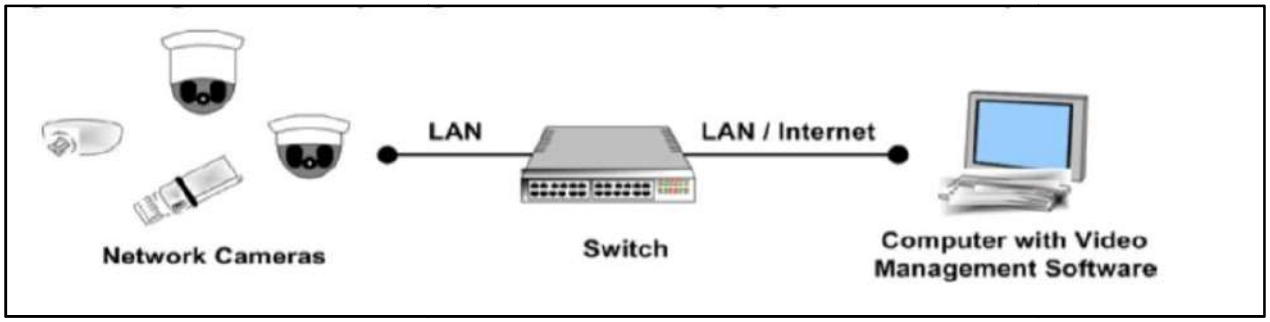


Figure: 78 IP-Based CCTV System

Network cameras and other devices can not only send audio/video, but can also send other data like text or short message service (SMS) messages to users as well as receive audio and data (which can activate alarms, door entries, and external alarms). In addition, IP-based systems have the ability to interface and communicate with multiple parallel applications.

Benefits of IP-Based Systems

Digital systems in general have a variety of advantages over analog systems such as ease of use, advanced search capabilities, simultaneous record and playback, improved image quality, and efficient compression and storage options. IP-based systems also provide many benefits that include.

- Remote accessibility.
- High image quality.
- Future integration with digital technologies.
- Flexibility.
- Scalability .
- Cost-effective transmission.

IP-Based System Components

The flexibility of IP-based systems is attributed to the variety of configurations and types of components compatible with IP technology. Since the number of possible custom configurations is so vast, the following list is just a sample of the type of components compatible with IP-based systems.

Cameras–Both IP network cameras and analog cameras can be used in an IP-based system.

Video Encoders–When using analog cameras, a video encoder or video server needs to be connected to the analog cameras to convert the video to a digital format. The encoder then sends the data over an IP network.

Network Switches–Switches allow CCTV devices to communicate with each other and share information.

Networks–A network can be small or extensive, wired or wireless or a combination thereof. The most common approach taken by organizations is to use LANs or WANs. Network bandwidth capacity can be increased by adding switches and routers. Wireless networks are a good option when traditional wired networks are too costly or difficult to install.

Power over Ethernet–PoE is an option for using a wired network to distribute both data and power.

PC with Web Browser–PCs can access live and recorded video over the Internet as needed.
PC with Video Management Software–PCs can record and store video from cameras, as well as view live and recorded video as needed. Additionally, video management software can support video being accessed over smart phones or tablets.

Storage Devices–Video transmitted through an IP system can be stored on a server, a network device such as direct attached storage (DAS), storage area networks (SAN), network attached storage (NAS), or a PC hard disk.

Mobile Devices–IP-based systems can be easily configured to facilitate access to video via the Internet from smart phones, laptops, and other mobile devices.

Systems Approach

Organizations should strive to have all security systems and their subsystems linked together to ensure the system's components work together as a whole. Achieving systems integration is both a conceptual and a logistical challenge.

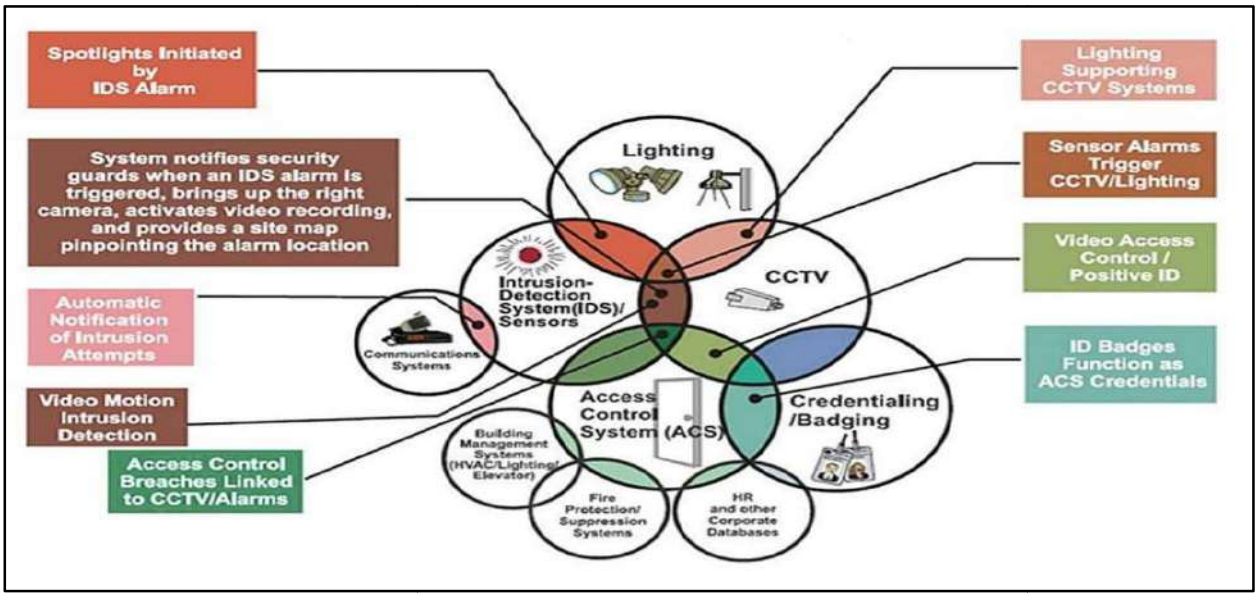


Fig. 79 Integrated Security System

Integrating CCTV Components

Newly designed CCTV systems have an advantage over existing systems because they can be designed from start to finish with current technology components from manufacturers that are

easy to integrate. When selecting CCTV devices, organizations should consider future needs and requirements, such as the potential for expansion, scalability, integration, and upgrading.

Some additional technology considerations include:

- Ability to use a consistent hardware platform throughout the enterprise.
- Off the shelf software and equipment, not proprietary.
- Compatibility for data collection and storage.
- Advanced software graphical user interfaces (GUIs) to integrate controls and displays.
- Ability to create single security user profiles used by multiple security applications.
- Vendor support to facilitate, test, and commission system integration.

Other Considerations

An organization should consider system integration during the project planning and design phase. This applies to various types of projects that may impact the CCTV system including:

- New CCTV systems;
- Acquisition or expansion of existing structures into an existing CCTV system.
- Newly designed and built structures.
- Upgrades to associated parallel system.
- Adding new technologies into an existing CCTV system.
- Expansion of cameras (renaming cameras across stove-piped platforms could be a problem).

Organizations should ensure that any new projects have a commissioning process to ensure proper integration of CCTV components and enterprise system integration.

Visual tools, such as camera feeds, maps, facility blueprints, and alarm logs, available in a monitoring facility are valuable in assessing and determining the best response or course of action. Monitoring facilities can range from a small room with a single operator to a robust emergency operations center with many pods of workstations, interdisciplinary operational and planning experts, computers, printers, phones, and a video wall.

Sr. no.	Name of component	Quantity	RS/Qnty	Total (RS.)
1	CCTV	15	3000	45000
2	Router	15	1200	18000
3	Computer	1	40000	40000
4	Cables	-	5000	5000
5	DVR unit	1	7000	7000
6	Installation charge	-	5000	5000
7	Misc. charge	-	1000	1000
Total cost				**121,000**

Table: 53 Cost Estimation

13.1.9. Electrical design: 3 wiring of Pick up Bus Stand

Here our civil student designed pick bus stand for Bhujodi village in which for electrical wiring is designed by electrical student.

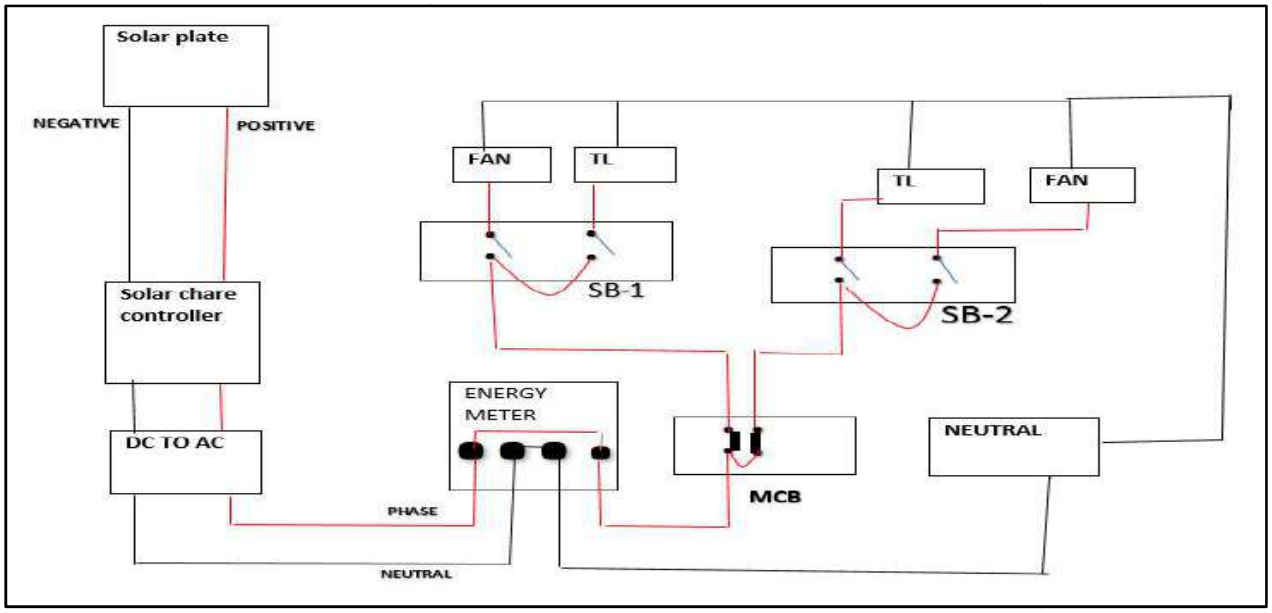


Fig. 80 wiring diagram of pick up stand

Here we use 2 lube light and 2 fan for pick up stand and did their wiring for particular.
In which we directly use solar energy for usage for loads in which one small inverter converts dc into ac supply.
The cost estimation for supply is estimated as below and also planning for that is given.
Here is the full cost estimation.

SR NO.	COMPONENETS	QUANTITY	PRICE/QTY	TOTAL
1	solar	1	1500	1500
2	inverter	1	1000	1000
3	wires	-	500	500
4	switch	4	10	40
5	MCB	2	120	240
6	fan	2	2000	4000
7	Tube light	2	550	1100
TOTAL				**8,380**

Table: 54 Estimation of stuffs

ESTIMATION AND COSTING OF WIRING

- The height of the meter board, distribution board from the floor level = 2 meters.
- Height of horizontal run and lighting fitting from floor level = 3 meters.
- Height of switchboard from floor level = 1.5 meters.

Total load of bus stand
Total number of Fan is 2 so 2*80 = 160W
Total number of Tube light 2 then 2*40 = 80W
Total load of installation is 240W

- MB – Meter Board
- DB – Distribution Board
- SB – Switch Board contains switches & sockets

To calculate any size of the wire, first, we should calculate load current and by using a wire table size of the wire can be calculated.
Load current = Total lighting circuit load/Voltage
= 240/230 = 1.030 Amps
Here we are using 1.5 mm square wire
Length of Conduit required, use concealed conduit system of wiring.
Total PVC conduit = 15+5% wastage
= 15.75 = 16 meter (say)
The total length of wire required
length of wire(3/22 copper wire) = 16 *2
= 32meter

Wood screws(assorted size) = 4(No of MB+SB)
= 4(1 + 1)
= 12 + 5% wastage
= 13 Nos
The number of wood plugs required is 13 Nos as same as wood screws.

Other accessories required

Switches = No of lamps + fans +
= 2+ 2
= 4 Nos
A 250 V, 5 A switches = 4 Nos
No of fan regulators = 2 Nos
No of ceiling roses = No of fan = 2
Fluorescent fitting, 230 V, 5 A = 4 set
Ceiling fans, 230 V = 2 set
Meter Board = 1 Nos
Switch Board = 1 Nos
Labor Charge
The labor charge depends upon the number of points

13.2. Reasons for Students Recommending this Design

- **Overhead Tank**-In the domestic purposes, the water is utilized in almost every action we perform like drinking, cooking, bathing, cleaning, washing machine and purifiers need constant flow these needs are satisfied by these overhead tanks at the domestic level.
- **Pickup Bus Station**- Currently the villagers are facing hot temperature for catch the bus without bus station so we decided to design the pickup bus station.
- **Rainwater Harvesting**- To reduce the water crisis in the drought year in Bhujodi village.
- **Vegetable Market**- Easy available vegetables in Bhujodi village no need to go in near village for buy vegetables.
- **Post office**- Easy to communication with other and they can send courier through post office for important parcel to their desirable location.
- **Entrance Gate**- This gate is improve the aesthetic look of village and also easy for outer person for identify of village.

13.3. About design Suggestions / Benefit of the Villagers

1. **Overhead Tank**

The overhead tank is an important in village. A public location where people get the sufficient source of water for their daily need, So the villagers are keep their health fit and fine. Overhead water tanks can be used in various applications can serve both domestic purposes and commercial purposes, constantly maintain the flow in all the general bathroom usages and other water requiring appliances.

2. **Pickup Bus Station**

The Post office is an important in village. Post office can be used in various applications can serve both domestic purposes and commercial purposes. Currently the villagers are facing problem in communication with other and courier related facilities, so we decided to design the Post office.

3. **Rainwater Harvesting**

The Rainwater Harvesting is an important in village. The villagers are facing problem for water crisis when the drought year, so we decided to design the Vegetable market.

4. **Vegetable Market**

The Vegetable market is an important in village. Currently the villagers are facing problem for buy vegetables from near village, so we decided to design the Vegetable market.

5. **Post office**

The Post office is an important in village. Currently the villagers are facing problem in communication with other and courier related facilities, so we decided to design the Post office.

6. **Entrance Gate**

Bhujodi village has not an entrance gate at entry point of village. So we design the design the one gate at entrance point. This gate is improving the aesthetic look of village.

Chapter 14.

Technical Options with Case Studies (EXPLAIN ALL TOPIC AND FOR MINIMUM ONE TOPIC EXPLAIN NEW CONCEPT, DESIGN, PROTOTYPE MODEL WITH ACTUAL COST ESTIMATION)

14.1 Civil Engineering

14.1.1 Advanced Earthquake Resistant

Base Isolation Method of Earthquake Resistant Design

A base isolated structure is supported by a series of bearing pads which are placed between the building and the building's foundation. A variety of different types of base isolation bearing pads have now been developed. The bearing is very stiff and strong in the vertical direction, but flexible in the horizontal direction. Base isolation is widely used in the earthquake-resistant design. This passive control technique basically decouples the structure from the ground motion by introducing a flexible or sliding type interface. During the earthquake, when the frequency of the ground motion is close to the natural frequency of the building, the structure can sway significantly. Base isolation deflects and dissipates the seismic energy, lowering the natural frequency of the structure. That way, the base isolation minimizes the displacement of the structure and protects its structural integrity. Structural engineers use two types of base isolation systems – or their combination – to enhance the earthquake resistance of the structure: elastomeric bearings and sliding isolation bearings. Elastomeric bearings consist of layers of natural or synthetic rubber that act in the isolator as a spring. This method is well-known in isolating vibrating machines. Civil engineers used it for the first time in 1969 to protect an elementary school in Skopje, Republic of Macedonia. Sliding isolators work on a principle of friction, limiting the transfer of shear across the isolation interface. Imagine two plates that can slide over each other: the sliding starts only when the exciting force of the earthquake is greater than the frictional force between the plates. As a result, the displacement motion of the isolator is of a stick-slip nature. Sliding isolators can be implemented in different ways. Pure friction systems use flat stainless-steel plates to introduce the sliding motion. However, this technique has some limitations. Their main disadvantage is due to the geometry of the sliding surface – it can produce large and residual sliding displacements.

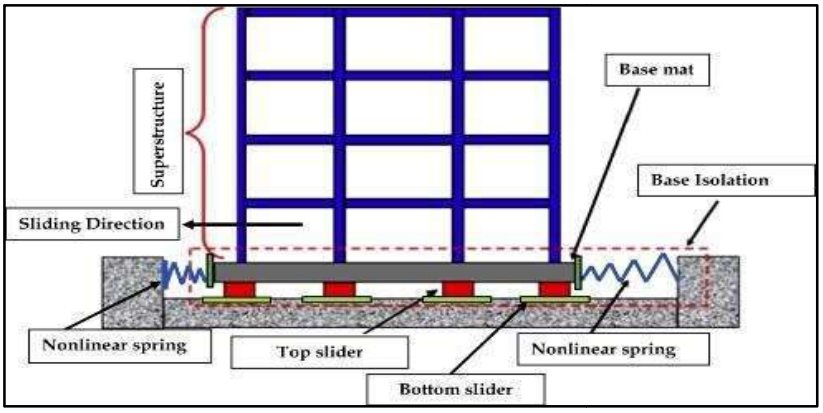


Fig. 81 Base Isolation Method of Earthquake Resistant Design

14.1.2 Seismic Retrofitting of Buildings

Seismic Retrofitting Techniques are required for concrete constructions which are vulnerable to damage and failures by seismic forces. In the past thirty years, moderate to severe earthquakes occurs around the world every year. Such events lead to damage to the concrete structures as well as failures. Thus the aim is to focus on a few specific procedures which may improve the practice for the evaluation of seismic vulnerability of existing reinforced concrete buildings of more importance and for their seismic retrofitting by means of various innovative techniques such as base isolation and mass reduction.

Basic Concept of Retrofitting:

The aim is at:

- Up gradation of lateral strength of the structure
- Increase in the ductility of the structure
- Increase in strength and ductility

Adding New Shear Walls:

- Frequently used for retrofitting of non-ductile reinforced concrete frame buildings.
- The added elements can be either cast in place or precast concrete elements.
- New elements preferably be placed at the exterior of the building.
- Not preferred in the interior of the structure to avoid interior mouldings.

Fig. 82 Adding New Shear Wall

Adding Steel Bracings:

- An effective solution when large openings are required.
- Potential advantages due to higher strength and stiffness, opening for natural light can be provided, amount of work is less since foundation cost may be minimized and adds much less weight to the existing structure.

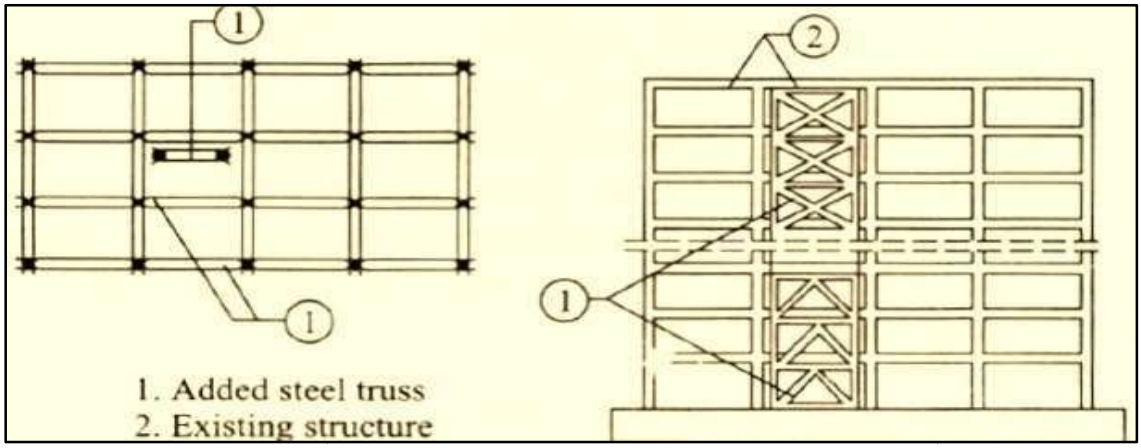


Fig. 83 Adding Steel Bracing

Jacketing:

Jacketing is the process whereby a section of an existing structural member is restored to original dimensions or increased in size by encasement using suitable materials. A steel reinforcement cage or composite material wrap can be constructed around the damaged section onto which shotcrete or cast-in- place concrete is placed. Collars are jackets that surround only for a part of a column or pier.

Purpose for jacketing:

- To increase concrete confinement
- To increase shear strength

Fig. 84 Jacketing of Column and Beam

Conclusion – Seismic Retrofitting Techniques for concrete structures:

- Seismic Retrofitting is a suitable technology for protection of a variety of structures.
- It has matured in the recent years to a highly reliable technology.
- But, the expertise needed is not available in the basic level.

- Proper Design Codes are needed to be published as code of practice for professionals related to this field.

14.1.3 Advanced Practices in Construction field in Modern Material, Techniques and Equipment's

Building construction methods have experienced significant facelift in recent times with innovative technologies being harnessed optimally for improving the qualitative index of buildings.

This has spelled considerable advantages for end users like us who can remain immune from recurrent expenses on repairs and other incidental building-related jobs. Construction lead time has also been reduced and building costs have been rationalized.

This takes you through 8 techniques that have given the much-needed fillip to the most primitive human pursuit that still exists i.e. construction.

1) 3D Volumetric Construction

Using this modular construction technology, 3D units are produced in controlled factory settings using needful construction and building materials. Finished units are transported to site in various modules, basic structural blocks or final touched up units with all amenities installed, for assembly.

Fig. 85 3D Volumetric Construction

2) Precast Flat Panel Modules

These are primarily wall and floor modules which are manufactured away from the actual site and then transported to site for erection. Load bearing components like decorative cladding and insulation panels can also be produced. Also called cross-wall construction, the technology has gained momentum due to seamless adherence to specifications and ease as well as swiftness of construction.

Fig. 86 Precast Flat Panel Modules

3) Tunnel Formwork System

With this tunnel technique, construction is paced up for cellular structures of repetitive patterns through the building of monolithic walls or units in a single operation per day. Expeditious work is achieved by deploying formwork and readily mixed concrete with the convenience and agility of factory conditions. Formworks in tunnel form are stacked and used at the site with cranes.

Fig. 87 Tunnel Formwork System

4) Flat Slabbing Technology

This technique utilizes the simplicity of contemporary formwork for quickly building flat slabs to facilitate easy and swift placing of horizontal amenities and for partitioning. Maximization of pre-fabricated services occurs as services can be carried out in an uninterrupted manner in zones underneath the floor slabs.

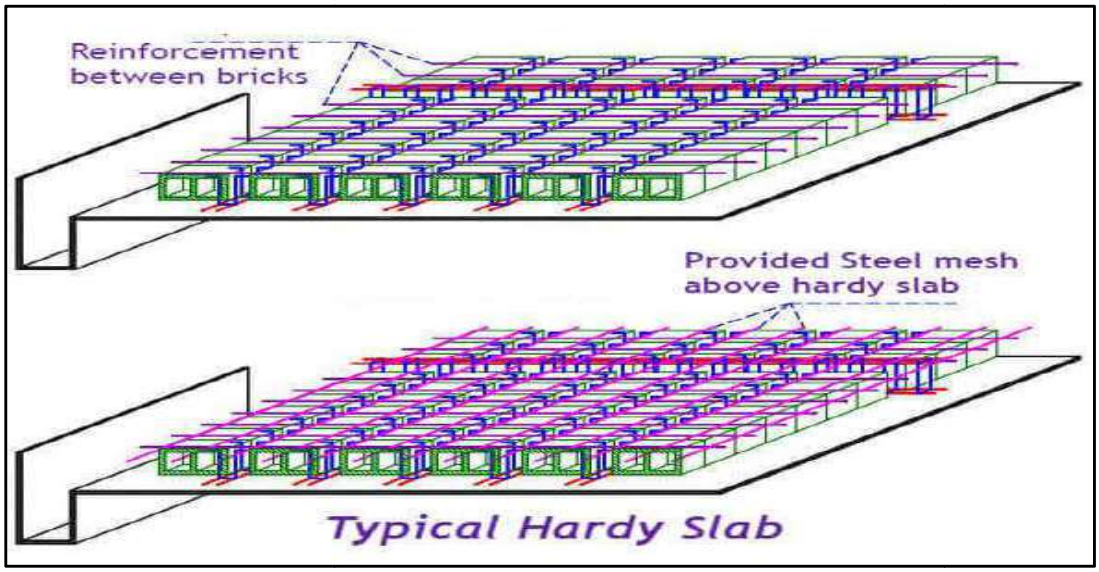


Fig. 88 Flat Slabbing Technology

5) Pre-cast Foundation Technique

Foundations can be built swiftly with precast concrete units which are produced in a factory and are high on quality quotient. Strength is imparted to foundation related building construction materials through interconnected concrete piles

Fig. 89 Pre-cast Foundation Technique

6) Hybrid Concrete Building Technique

This technique expedites construction turnaround time by blending the advantages of concrete pre-casting with the in-situ building. Quality improves, whereas the cost of construction plummets. Hybrid concrete structures are easy to build, competitive in nature and perform consistently.

Fig.90 Hybrid Concrete Building Technique

7) Thin Joint Masonry Technique

Utilization of this technique leads to the reduction of the quantum of mortar applied by slashing it depth from 10mm to lesser than 3mm. Consequently, mortar can be laid swiftly with enhanced productivity on the longer wall panels.

Fig. 91 Thin Joint Masonary Technique

8) Insulating Concrete Formwork (ICF) Technique

ICF technique employs polystyrene blocks that feature twin walls and can be rapidly put together for creating building wall formwork. The formwork is then pumped in with high quality, ready mixed, factory-made concrete.

Fig.92 Insulating Concrete Formwork (ICF) Technique

14.1.4 Engineering Aspect of Soil Mechanics – Environmental Impact Assessment

Engineering Aspect of Soil Mechanics:

Soil mechanics is a discipline of civil engineering that predicts the soil performance characteristics utilizing the engineering techniques of dynamics, fluid mechanics, and other technologies. Soil mechanics includes the study of soil composition, strength, consolidation, and the use of hydraulic principles to deal with issues concerning sediments and other deposits.

Environmental Impact Assessment:

It is a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural, and human-health impacts, both beneficial and adverse.

Objectives of environmental Impact Assessment:

- Identifying, predicting, and evaluating economic, environmental, and social impacts of development activities.
- Providing information on the environmental consequences for decision making.
- Promoting environmentally sound and suitable development by identifying appropriate alternatives and mitigation measures.

Importance of Environmental Impact Assessment:

- EIA is a good tool for prudent environment management.
- It is government-policy that any industrial project in India has to secure EIA clearance from the Environment Ministry before approval for the project itself.

Environmental Impact Assessment in India

- EIA started in India in 1976-77 when the Planning Commission directed the Department of Science & Technology to assess the river valley projects from the point of view of the environment. This was extended for all those projects that required approval from the Public Investment Board.
- Then, in 1986, the government enacted the Environment (Protection) Act which made EIA statutory. The other main laws in this regard are the Indian Wildlife (Protection) Act (1972), the Water Act (1974), the Air (Prevention and Control of Pollution) Act (1981), and the Biological Diversity Act (2002).

14.1.5 Water Supply–Sewerage system–Waste Water–Sustainable development techniques

Water Supply:

Water supply is the provision of water by public utilities, commercial organisations, community endeavours or by individuals, usually via a system of pumps and pipes. Aspects of service quality include:

Sewerage system:

What is Sewerage System & Disposal of Sewerage

It is the system and infrastructure of collecting, treating and disposal of sewage. There are three sewerage systems types.

1. Separate System
2. Partially Separated System
3. Combined System

1. Separate Sewerage System

In this system the sanitary sewage and storm water are carried separately in two sets of sewers. The sewage is conveyed to waste water treatment plant (WWTP) and the storm water is discharges into rivers without treatment.

2. Partially Separate Sewerage System

This system is the compromise between separate and combine system taking the advantages of both systems.

3. Combined Sewerage System

In this system the sewage and storm water are carried combine in only one set of sewers to the waste water treatment. Plant (WWTP) before disposal.

Waste Water:

Wastewater is any water that has been contaminated by human use. Wastewater is "used water from any combination of domestic, industrial, commercial or agricultural activities, surface runoff or stormwater, and any sewer inflow or sewer infiltration". Therefore, wastewater is a

byproduct of domestic, industrial, commercial or agricultural activities. In developing countries and in rural areas with low population densities, wastewater is often treated by various on-site sanitation systems and not conveyed in sewers. These systems include septic tanks connected to drain fields, on-site sewage systems (OSS), vermifilter systems and many more.

Sources:

Sources of wastewater include the following domestic or household activities:

- Human excreta (feces, urine, blood and other bodily fluids) often mixed with used toilet paper or wet wipes; this is known as black water if it is collected from flush toilets
- Washing water (personal hygiene, clothes, floors, dishes, cars, etc.), also known as grey water or sullage
- Surplus manufactured liquids from domestic sources (drinks, cooking oil, pesticides, lubricating oil, paint, cleaning detergents, etc.)

Activities producing industrial wastewater include:

- Industrial site drainage (silt, sand, alkali, oil, chemical residues);
- Industrial cooling waters (biocides, heat, slimes, silt)
- Industrial processing waters
- Extreme pH waste from acid and alkali manufacturing
- Toxic waste from metal plating, cyanide production, pesticide manufacturing, etc.
- Water used in hydraulic fracturing
- Produced water from oil & natural gas production

Sustainable development techniques

Sustainable development is the practice of using guidelines for environmentally responsible and energy savings to create new development projects and to maintain and retrofit older projects.

Techniques of Sustainable Development

Wind Energy

Wind energy is energy harnessed from the motion of wind using wind turbines or windmills. Wind energy is renewable, which means it's never-ending and can be used to substitute energy at the grid. This makes it a good sustainable development practice.

Solar Energy

This is energy harnessed from the sun using solar panels. It's advantageous since it's absolutely free and its supply is infinite. These factors make it beneficial to consumers and good for Mother Nature because it doesn't contribute to the emission of greenhouse gasses.

Green Space

Green spaces are locations where plants and animals are left to flourish. Parks also fall into the category of green spaces. Green spaces provide people a remarkable opportunity to take pleasure in outdoor recreation, more so in big cities, where resting space is hard to come by.

Green spaces also help regulate climate and quality of air, insulate rivers and streams from polluted runoff and lowers energy usage by dealing with the warming impacts of paved surfaces.

Crop Rotation

Crop rotation is the practice of planting different crops in the same farm to enhance soil fertility and assist control diseases and insects. Crop rotation is beneficial in many ways; most importantly, it's chemical-free. This means using this farming practice maintains the integrity of your soil, making it a sustainable development practice.

As more people join this bandwagon, a lot more of the resources will be required, and this will mean faster depletion of resources. With time sustainable development will not be an option for individuals wanting to live a healthy life and lifestyle choices.

Drainage System

In Bhujodi village there is some place where the need to provide drainage system, so it caused many problem related to sanitation and health and aesthetic appearance. So good drainage system is needed to be developing in the village of good sanitation.

Fig. 93 Drainage System

Main advantages of drainage system are

- **Prevents Water Accumulation:**

Drainage systems can prevent water accumulation that can lead to flooding by directing the water away from your home. Water that over-accumulates in your yard may kill plants. Drainage systems also prevent the accumulation of stagnant water, which can encourage mosquitoes to breed.

- **Reduces Soil Erosion:**

Over time, stagnant water accumulated can make soil muddy, which in turn can cause soil to erode. Drainage systems maintain balanced moisture in your garden to reduce soil erosion.

- **Removes Toxic Materials and Disease Organisms:**

Continuous, heavy rains may cause the water to rise, which can lead to flash floods, especially when you live near a big body of water. Often these flash floods bring contaminated water into your soil. Drainage systems can remove these toxic materials by draining them away from your yard.

Disadvantagesofdrainagesystemare

- **Expensive:** Installing a drainage system is very costly investment. You'll end up paying a high price, especially if you hire a professional to install a drainage system. You may also need a permittoinst all drainage systems, especially if your particular project requires multiple channels and deep excavations.
- **Maintenance:** Regular maintenance of your drainage system will ensure that it functions properly at all times, says the university of Illinois. You have to ensure that the outlet ditches of your subsurface systems are free from blockages caused by sediment buildup. If a tile of your drainage system breaks you have to replace it.
- **Can Contaminate Bodies of Water:** A research conducted by the university of Illinois has shown drainage systems can also contribute to contamination problems, especially when not properly maintained. According to the study, subsurface drainage systems can carry nitrate through the drain pipes, channeling it directly into the bodies of water such as streams, rivers and lakes.
  - First of all to develop a drainage system taken the RL of different points in Bhujodi village.

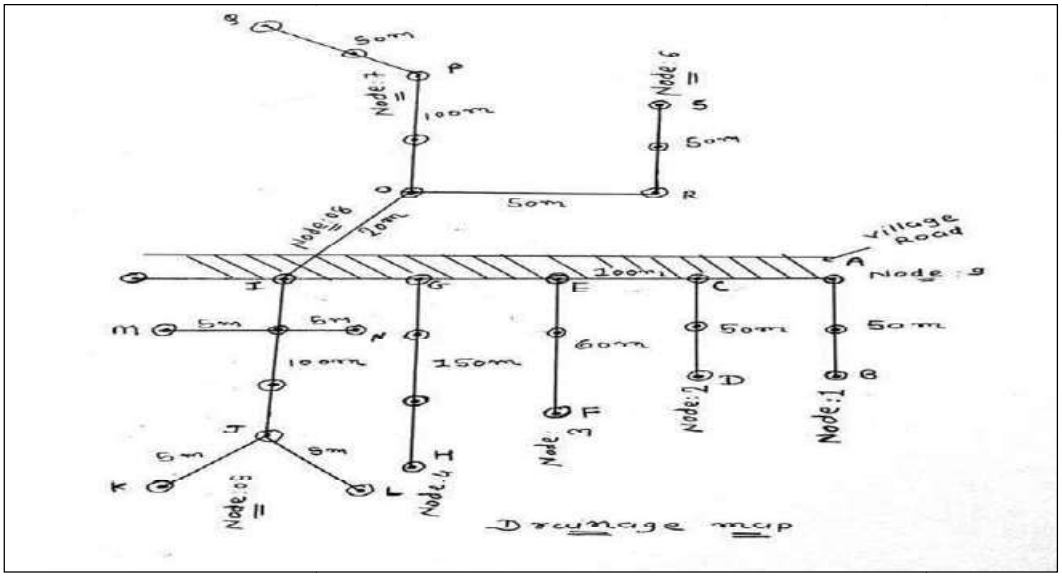


Fig: 94 Drainage Map

DISTANCE	INMETER
AB	50
CD	50
EF	60
GH	150
IJ	100
JK	5
JL	5
MN	10
OI	20
OP	100
OR	50
RS	50
PQ	50

Table: 55 Measurement Sheet of Drainage network

Measurement Sheet of Drainage network							
Particular of work	**No.**	**L**	**B**	**AVG D/H**	**Content ofArea**	**NetQuantity**	**Unit**
Excavation							
Node no. 1	1	50	0.9	1.050	47.25		
Node no. 2	1	50	0.9	1.050	47.25		
Node no. 3	1	60	0.9	1.050	56.7		
Node no. 4	1	150	0.9	1.100	148.5		
Node no. 5	4	5	0.9	1.000	18		
	1	100	0.9	1.075	96.75		
Node no. 6	1	100	0.9	1.100	99		
Node no. 7	1	150	0.9	1.100	148.5		
Node no. 8	1	20	0.9	1.175	21.15		
Node no. 9	1	130	0.9	1.200	140.4		

					823.5	**823.5**	**Cmt**
Pipe laying							
200 mm Dia.							
Node no.1	1	50			50		
Node no.2	1	50			50		
Node no.3	1	60			60		
Node no.4	1	150			150		
Node no.5	4	5			20		
	1	100			100		
Node no.6	1	100			100		
Node no.7	1	150			150		
Node no.8	1	20			20		
					700	**700**	**Rmt**
300mm Dia.(Mainline)							
Node no.9	1	130			**130**	**130**	**Rmt**
Earth Filling							
Node no.1	1	50	0.9	1.050	**47.25**		
Node no.2	1	50	0.9	1.050	**47.25**		
Node no.3	1	60	0.9	1.050	**56.7**		
Node no.4	1	150	0.9	1.100	**148.5**		
Node no.5	4	5	0.9	1.000	**18**		
	1	100	0.9	1.075	**96.75**		
Node no.6	1	100	0.9	1.100	**99**		

Node no.7	1	150	0.9	1.100	**148.5**		
Node no.8	1	20	0.9	1.175	**21.15**		
Node no.9	1	130	0.9	1.200	**140.4**		
					823.5		**Cmt**
Deduction							
Pipe-200mm(Outer Dia.- 0.250)		700	0.0491		**34.344**		
(0.785*0.25*0.25)							
Pipe-300mm(Outer Dia.- 0.360)		130	0.102		**13.226**		
(0.785*0.36*0.36)					**47.569**		**Cmt**
						775.931	**Cmt**

Table: 56 Abstract Sheet of Drainage Network

Abstract Sheet of Drainage Network				
Item	**Qty**	**Unit**	**Rate**	
Excavation	830	Cmt	90	74700
Pipe Laying				
200 mm Dia.	700	Rmt	450	315000
300mm Dia.	130	Rmt	600	78000
Earth Filling	775.930	Cmt	50	38796.5
			Total	**5,06,496.5 Rs**

14.2 Electrical Engineering

14.2.1 Design of power electronics converter

Why Power Electronics?

- Power Electronics is one of the fastest changing technologies today, having gone through dynamic changes in the last several decades

Importance of Importance of Power Electronics Power Electronics

- Conversion of electrical energy from one form to another of choice.
- Smooth control of electrical power flow.
- High efficiency involved in the above processes.

ELECTRICAL SPECIFICATIONS ELECTRICAL SPECIFICATIO

- Input Voltage Range
- Input Frequency Range (if ac input)
- Reverse Polarity Protection (if dc)

BASIC BLOCK DIAGRAM OF POWER ELECTRONICS

Power electronic technology deals with processing and controlling the flow of electrical energy in order to supply voltages and currents in a form that optimally suited for end user's requirements.

The following are the power electronics devices.

Rectifier: It converts AC to unipolar (DC) current

Inverter: It converts DC to AC of desired frequency and voltage

Chopper: It converts constant to variable DC or variable DC to constant DC

Cyclo converter: It converts AC of desired frequency and/or desired voltage magnitude from a line AC supply.

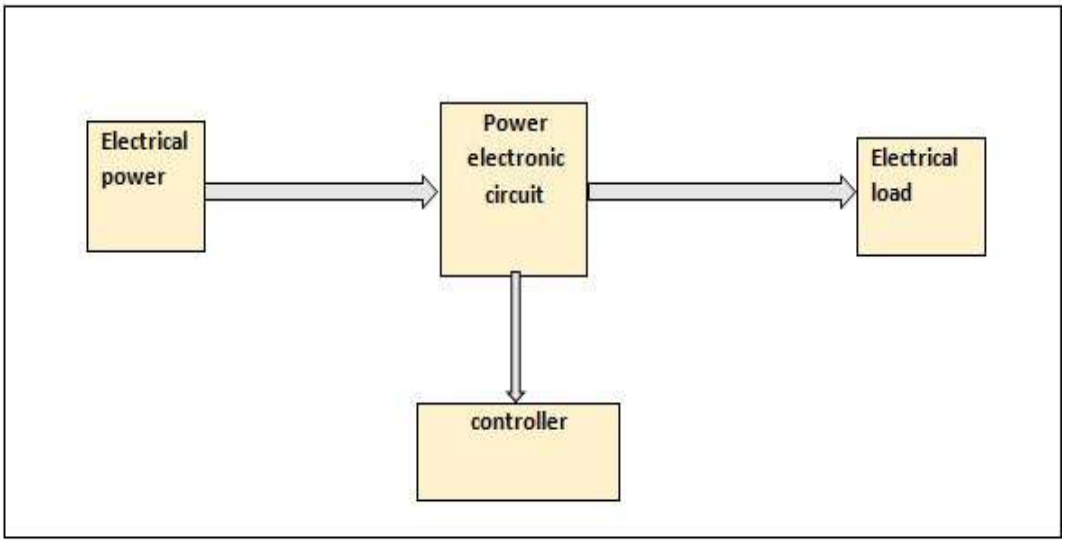


Fig: 95 Block diagram of power electronics

Rectifier's converter

An AC to DC converter is additionally called a rectifier, which changes over AC supply from principle lines to DC supply for the heap. The square chart of an AC to DC converter is appeared in figure beneath.

Here, the transformer changes the essential AC source supply to the contribution of rectifier stage. Generally it is a stage down transformer that decreases the inventory voltage to a circuit working reach.

The rectifier converts the low voltage AC supply into DC supply.

It comprises diode and/or thrusters based on type of rectifier. The output of the rectifier is of pulsed DC and hence it is filtered using filter circuit, which is usually made with a capacitor or a choke.

The control block controls the firing angle of thrusters in case of phase controlled rectifiers. Since the diode is not a controllable device, control block is not needed in case of diode rectifiers.

Rectifiers are majorly classified into two types

- Uncontrolled diode rectifiers
- Controlled rectifiers

Uncontrolled Diode Rectifiers

This type of rectifier converts AC voltage from mains into a fixed DC voltage .Since the diodes are uncontrollable components (which do not require any triggering), these converters are called as uncontrolled converters as they produce a fixed voltage. The input voltage can be either single phase or three-phase. The diode rectifiers are classified into following types.

1. Single phase half-wave rectifier
2. Single phase center-tapped full-wave rectifier
3. Single phase full-wave bridge rectifier.

Three-phase Half-wave diode rectifier

It utilizes three diodes and its anode terminals are associated with three stage source by means of transformer as demonstrated in figure. The heap is associated between the regular cathode point and unbiased terminal of star associated source.

When R-phase is at its peak value, maximum conduction occurs through diode D1 as it is forward biased and no conduction takes place through it during negative alteration of phase R. During Y-phase and B-phase maximum values, other two diodes conduct in a similar manner.

The primary drawback of this rectifier is that the auxiliary twisting comprises of DC segment of current which can cause the transformer center to go under immersion issue.

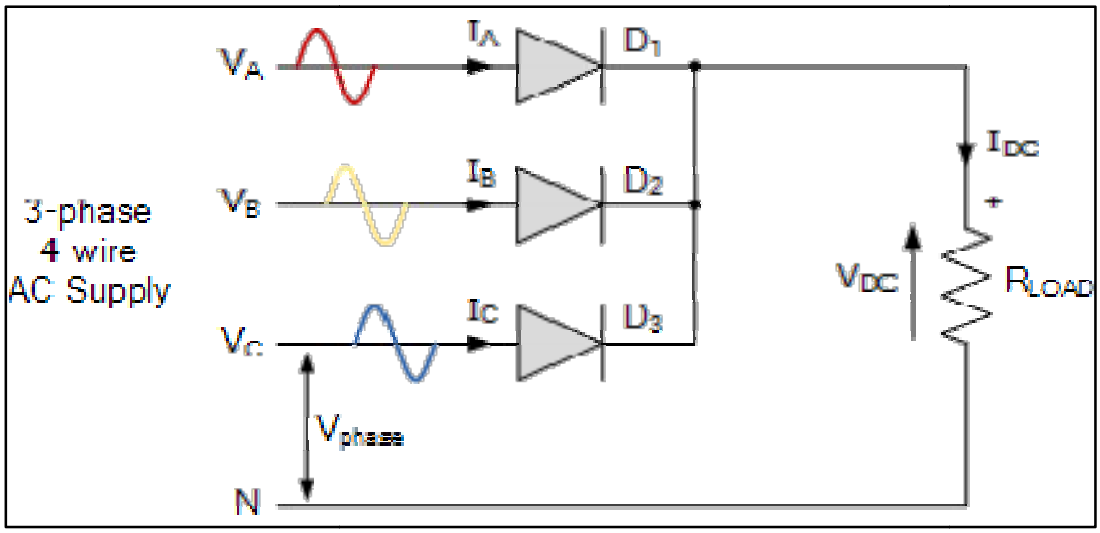


Fig. 96 Three-phase Half-wave diode rectifier

Three-phase full-wave diode bridge rectifier

This sort of rectifiers is reasonable for high force applications, normally the force yield higher than 15KW. The circuit of full-wave diode connect rectifier is appeared in figure underneath.
It requires six diodes for the operation of the circuit. This type of circuit doesn't need any neutral connection from three phase source therefore; a star as well as delta-connected sources can be used.

Here the output current flows through one diode of the upper group and one diode of lower group of diodes. If anode of a diode is at high potential, this upper group diode will conduct while other two diodes are reversed biased.

Likewise, the diode having the cathode at lower potential will direct while other two diodes are off. The diode pair's conduction for above circuit is given as D6 D1, D1 D2, D2 D3, D3, D4, D4 D5 and D6 D1.

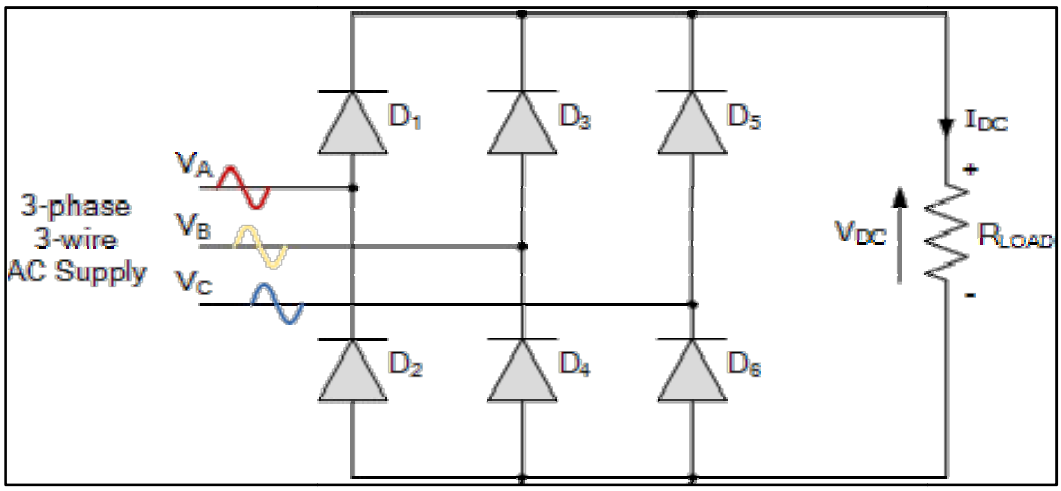


Fig. 97 Three-phase full-wave diode bridge rectifier

Since, one diode from upper gathering and one diode from lower bunch are continually leading; negative individuals from three-stage voltages are amended, so the yield voltage comprises of six sections of line voltage during one cycle.

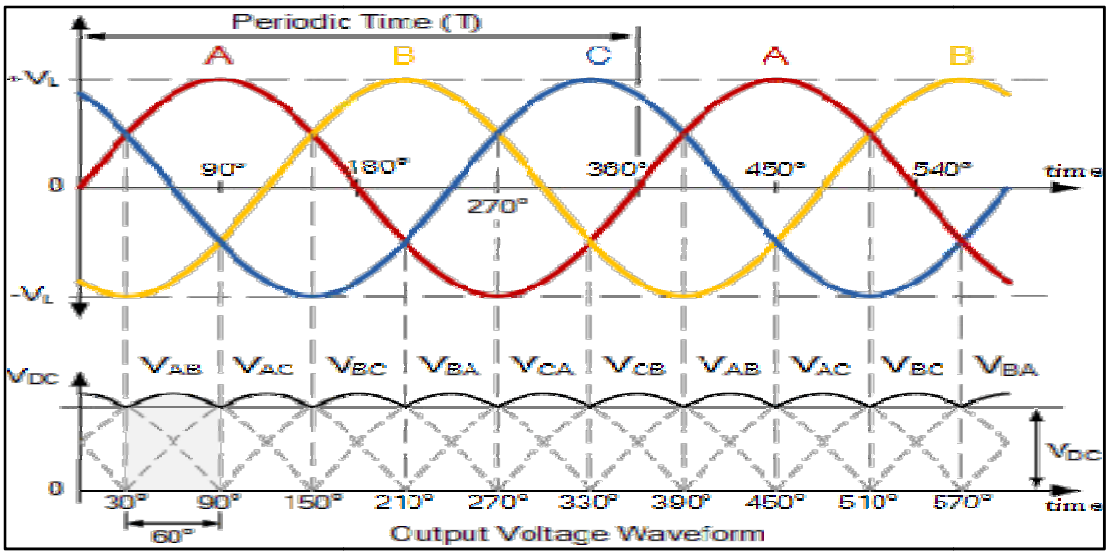


Fig. 98 Wave forms

Phase Controlled Rectifiers

These are similar to the uncontrolled rectifiers but the only difference is that the uncontrolled diodes are replaced by controlled thyristor family of devices such as SCRs.

These are also called as phase controlled rectifiers. Unlike diodes, thyristors can be controlled by triggering them at desired instants in order to vary the output voltage.

The block diagram of a controlled rectifier is shown in the above figure that transfers the DC power to the load in a control manner by varying triggering angle of thyristors (by the control circuit) using different technologies such as a microprocessor or microcontroller based techniques.

The start of thyristor conduction varies the average value of output voltage of the converter. Similar to the uncontrolled rectifier types, these thyristor based converters are also classified into following types.

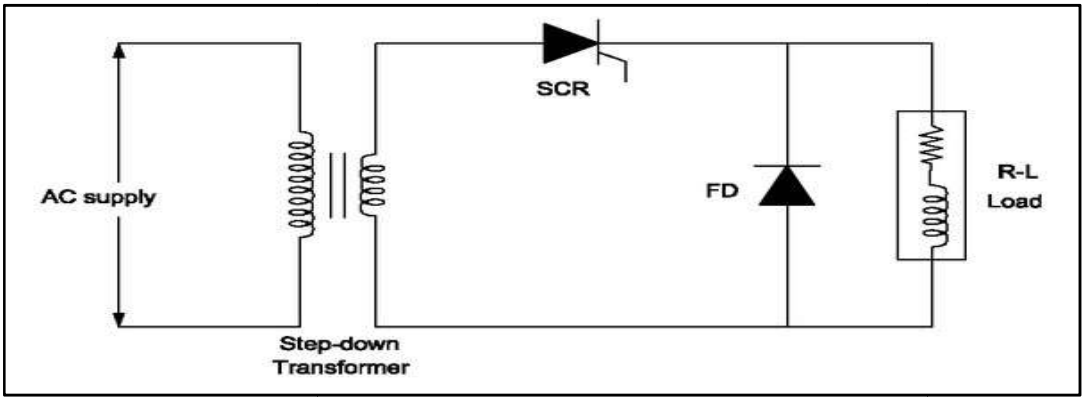


Fig. 99 Phase Controlled Rectifiers

Single full wave bridge rectifier phase

The circuit diagram of a full wave bridge rectifier using thyristors in shown in figure below. It consists of four SCRs which are connected between single phase AC supply and a load. This rectifier produces controllable DC by varying conduction of all SCRs.

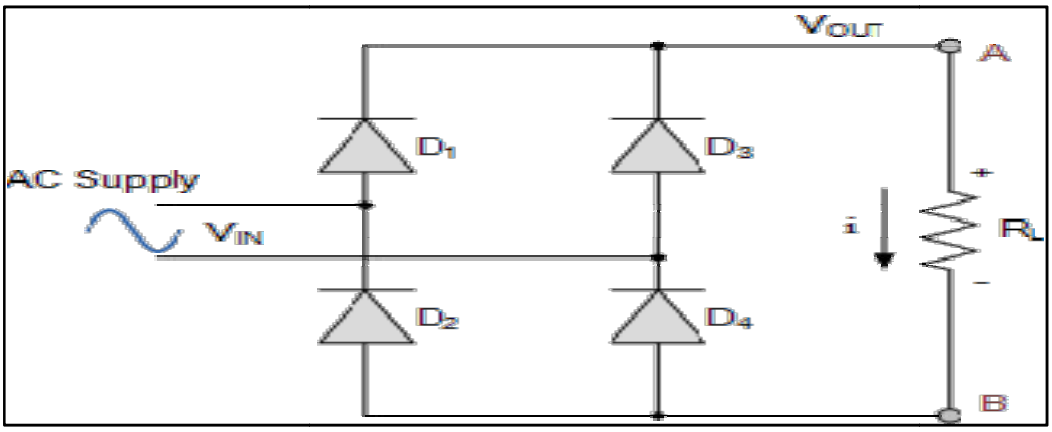


Fig: 100 Single phase full wave bridge rectifier

Single phase full wave mid-point rectifier

This converter rectifies both positive and negative half-cycles of the input supply. It uses two SCRs with center-tapped secondary transformer as shown in figure.

In sure half-pattern of the information supply, thyristor T1 is forward one-sided while T2 is opposite one-sided. WhenT1 is set off, the inventory voltage show up across the heap.

These are essential when one of the terminals on DC side has to be grounded. However, a center-tapped transformer with a VA rating twice that of load is required and also high voltage rating thyristors are needed in this converter.

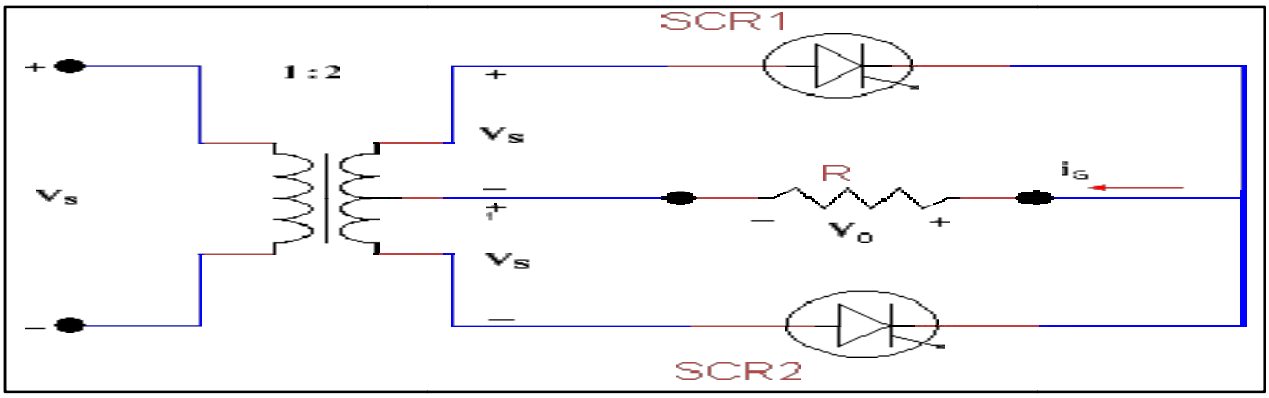


Fig: 101 Single phase full wave mid-point rectifier

Single phase half-wave rectifier

In this a single thyristor or SCR is connected between the secondary of the transformer and a resistive load as shown in figure. The primary of the transformer is connected to a single phase supply and consider that load is of resistive.

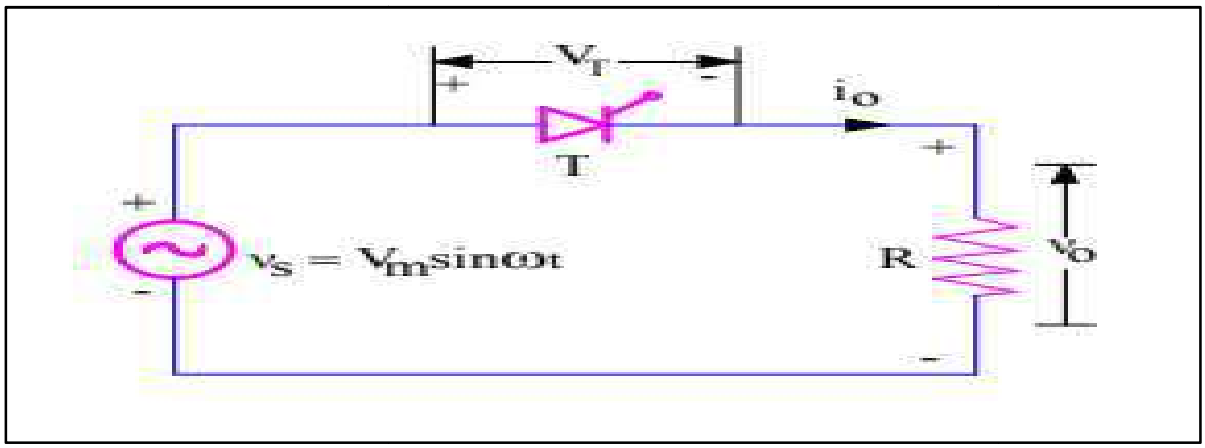


Fig: 102 Single phase half-wave rectifier

During the positive half cycle of the input AC supply, thyristor T1 is forward biased, and when it is triggered at some firing angle though gate terminal, it starts conducting current to the load.

Since the SCR is a unidirectional gadget, it kills during negative half-cycle. So the yield voltage is created uniquely for positive half cycle.

The yield power conveyed by this half-wave rectifier is constrained by stage control, i.e., shifting terminating point to the entryway terminal. The heap of this rectifier can be a RL burden and RLE load with freewheeling diode.

Three-phase full wave converter

It is obtained by connecting a DC terminal of two three-pulse converters in series. It is also called as 6-pulse bridge converter. This type converter is used in industrial applications where two-quadrant operation is required.

This converter can be connected to RL or RLE loads. By controlling the firing angle to respective thyristor, average power delivered to the load is changed.

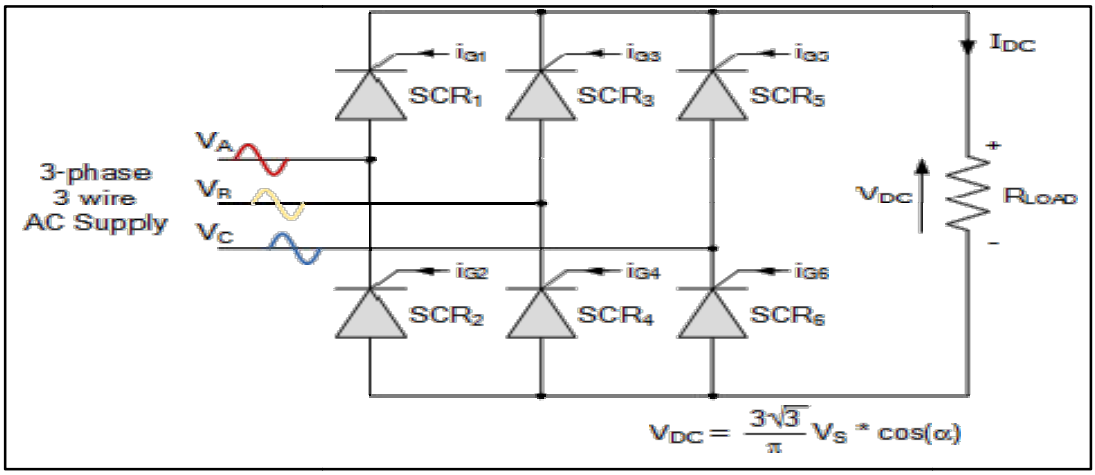


Fig: 103 Three-phase full wave converter

The firing angle of particular thyristor in positive group measured from the instant when its anode becomes maximum positive.

Three-phase half-wave converter

The output from single phase converter is small; when high power is required, three phase rectifiers are used. A three-phase half-wave rectifier with thyristors is shown in figure below.

The three-phase supply is given to this converter through a three-phase transformer with star connected secondary.

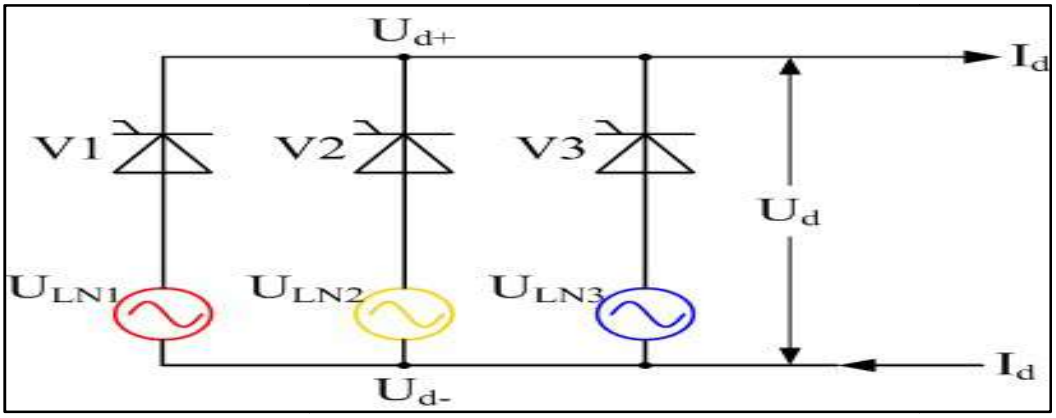


Fig:104 Three-phase half-wave converter

It works as similar to the three-phase diode bridge rectifier. In this, thyristor T1 is at highest positive anode voltage in the interval π/6 to 5π/6. During this interval, T1 can be made to conduct by giving a firing pulse to its gate.

Current beginnings coursing through T2. Essentially, thyristor T3 is begins directing once thyristor T2 is killed This thyristor T1 keeps on directing till thyristor T2 is made to lead in the span 5π/6 < wt < 3π/2. Presently the heap.

In this, there are three pulses of output voltage during each complete cycle of supply voltage. Thus the ripple frequency is three times the supply frequency.

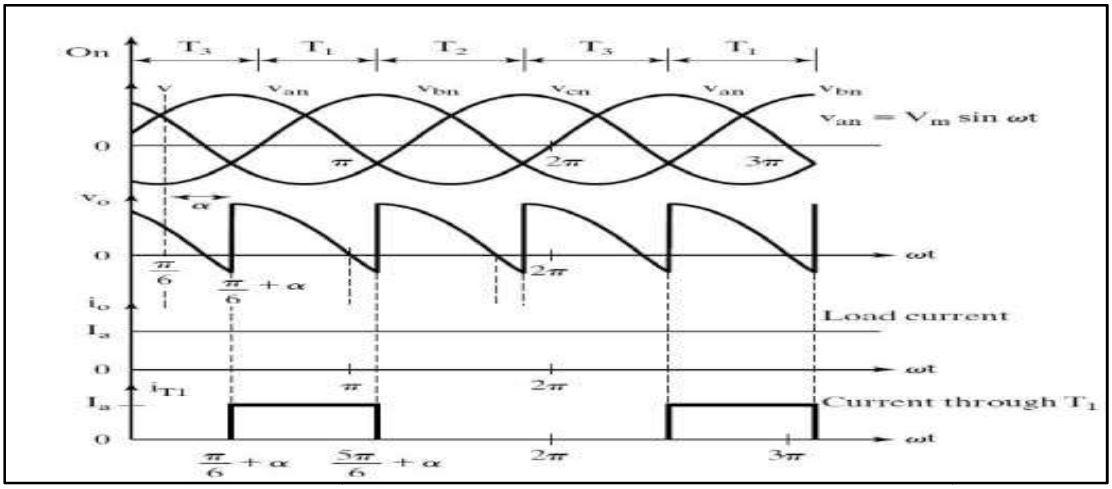


Fig. 105 Waveform for inductive load

CHOPPER (DC TO DC CONVERTER)

A DC-to-DC converter is an electronic circuit or electromechanical gadget that changes over a

wellspring of direct current (DC) starting with one voltage level then onto the next. It is a kind of electric power converter. Power levels range from low (little batteries) to exceptionally (high-voltage power transmission).

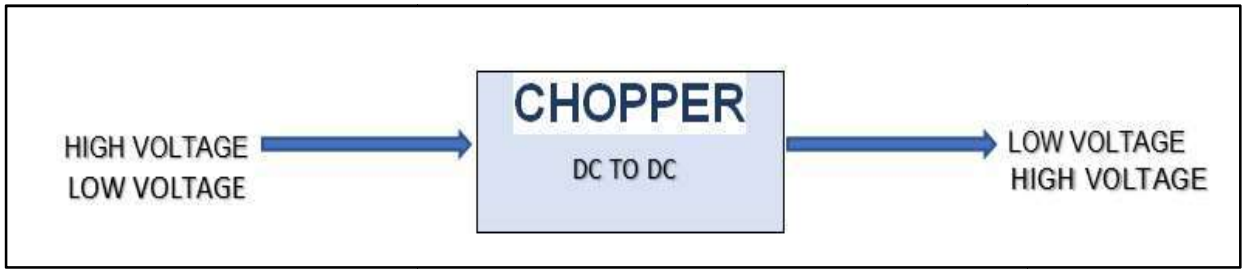


FIG. 106 BLOCK DIAGRAM OF CHOPPER

A dc to dc converter, also known as dc chopper, is a static device which is used to obtain a variable dc voltage from a constant dc voltage source. Choppers are widely used in trolley cars, battery operated vehicles, traction motor control, control of large number of dc motors, etc. They are also used as dc voltage regulators.

BOOST CONVERTER

To understand the working principle, let us first have a look at the circuit diagram of step-up chopper. This is shown in figure below. In the circuit diagram, chopper is shown as a switch CH. We will understand the working of this chopper in two steps: Switch ON period and Switch OFF period of chopper.

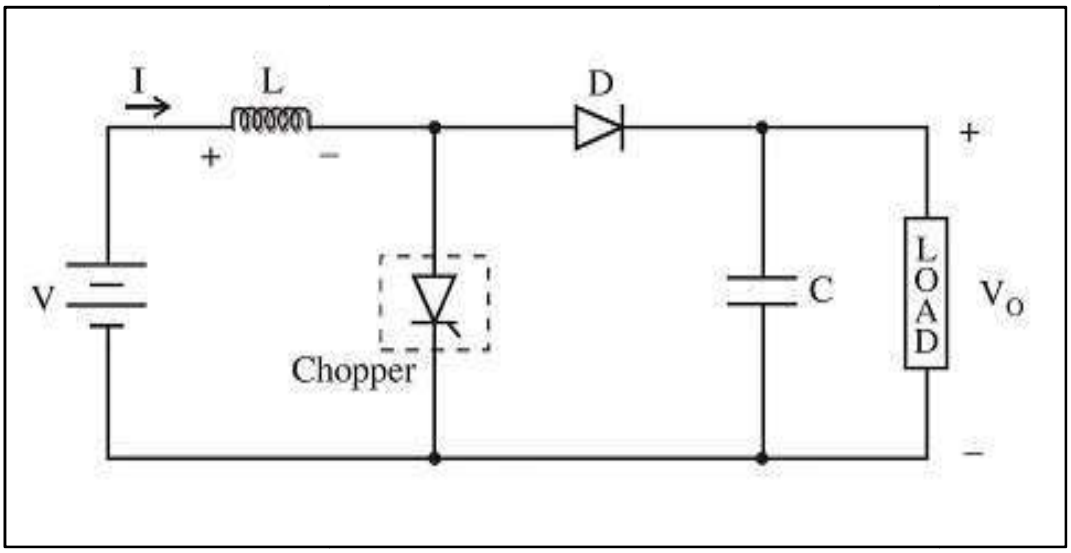


Fig: 107 Boost converter

Switch ON Period: When chopper (CH) is switched ON, the current will flow through the closed path formed by supply source Vs, inductor L and chopper CH. During this period, no current will flow through the load. Only source current i_s will flow and the value of load current i_o will be ZERO during the ON period

Also, during the T_{ON} period, energy is stored in the inductor L. This energy storage in L is essential to boost the load output voltage above the source voltage. Therefore, a large value of L is

essential in a step-up chopper.

Switch OFF period: When the chopper CH is switched OFF, the current through the L cannot die instantaneously rather it decays exponentially. Due to this behaviour of L, it will force the current through the diode D and load for the entire time period $T_{OFF.}$

$$\mathbf{V_o = V_s + L\ (di/dt)}$$

Thus, the circuit works as a step-up chopper. It may be noted here that, the voltage across the load increases because the inductor releases its stored energy to the load during the OFF period.

BUCK CONVERTER

Which reduces the input DC voltage to a specified DC output voltage?

A typical Buck converter is shown below.

The second switch used is a diode. The switch and the diode are connected to a low-pass LC filter which is appropriately designed to reduce the current and voltage ripples. The load is a purely resistive load

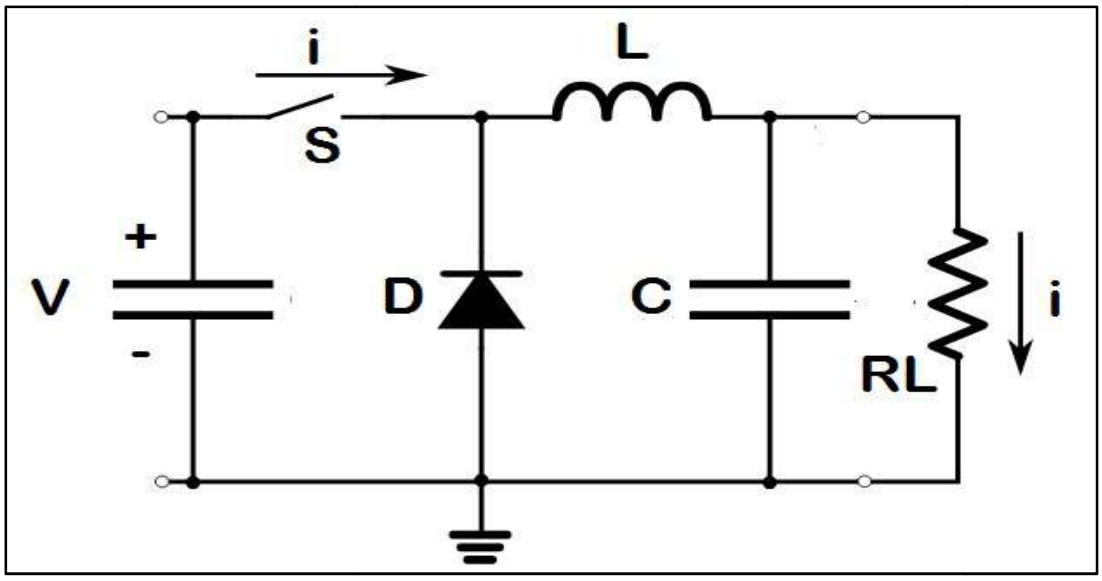


Fig: 108 Buck Converter Circuit

The input voltage is constant and the current through load is also constant. The load can be seen as current source.

Time based Modulation is mostly used for DC-DC converters. It is simple to construct and use. The frequency remains constant in this type of PWM modulation.

BUCK BOOST CONVERTER

A buck-boost boost converter can supply a regulated DC output from a power source delivering a voltage either below or above the regulated output voltage.

A buck-boost converter circuit combines elements of both a buck converter and a boost converter; however they are often larger in footprint than either alternative

A very common use of buck-boost converters is for high power LED lighting where, for example, lead-acid batteries supply a nominal 9-14V to a constant 12V LED load.

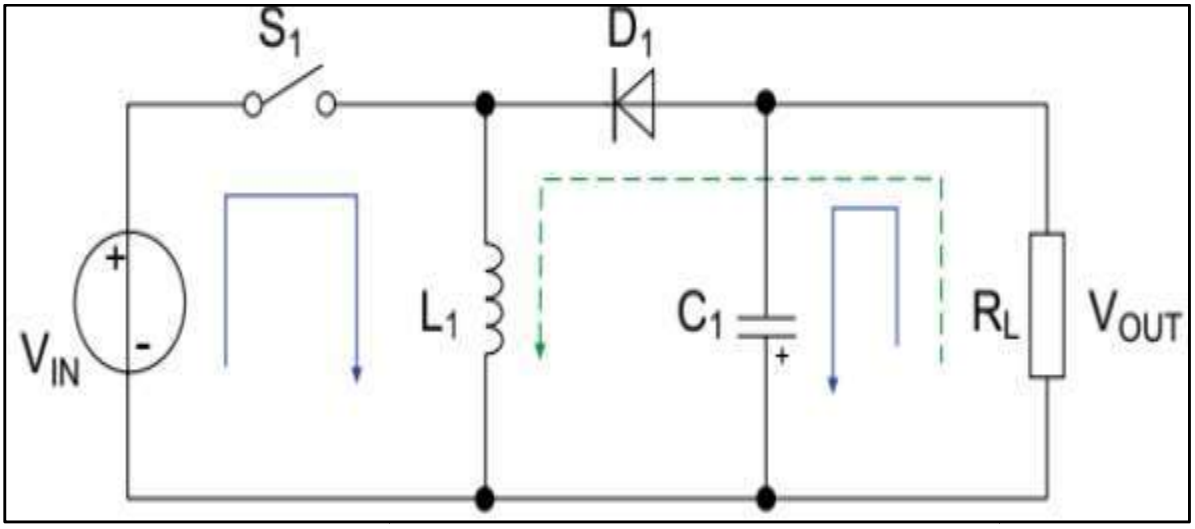


Fig. 109 Buck Boost Converter Circuit

INVERTER (DC TO AC CONVERTER)

These converters are connected between DC source of fixed input, and variable AC load. Most commonly, these DC to AC converters are called as inverters. An inverter is a static device that converts fixed DC supply voltage to variable AC voltage.

Fig:110 Inverter (Dc to Ac Converter)

This conversion from DC to AC along with variable supply is produced by varying the triggering angle to the thyristors. Most of the thyristors used in inverters are employed with forced commutation technique.

CYCLOCONVERTER (AC TO AC)

A cyclo converter is a device that converts AC, power at one frequency into AC power of an adjustable but lower frequency without any direct current, or DC, stage in between. It can likewise be acknowledged as a static recurrence charger and holds silicon-regulated rectifiers. Cyclo-converters are used in very large variable frequency drives with ratings from few megawatts up to many tens of megawatts.

The operation principles of cyclo converters can be classified into the following three types based on the type of input AC supply applied to the circuit.

Single-Phase to Single-Phase Cyclo converter

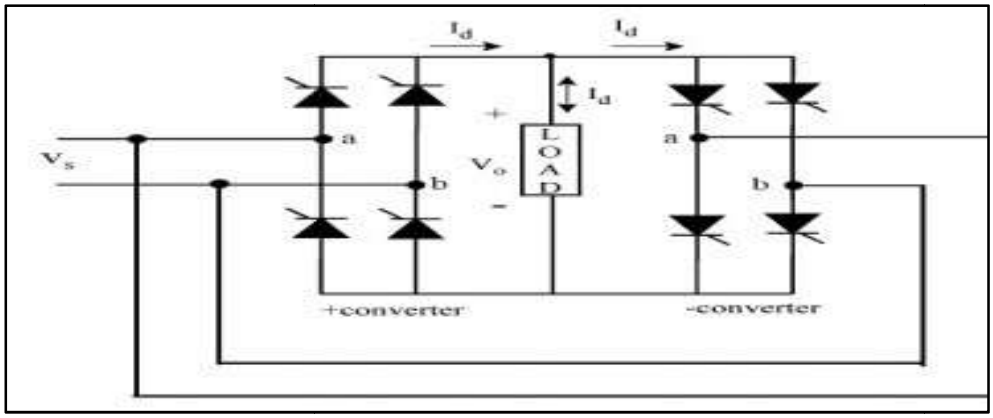


Fig: 111 Single-Phase to Single-Phase Cycloconverter

Understanding of operation principles of cyclo converters should begin with single-phase to single-phase cycloconverter.

Three-Phase to Single-Phase Cycloconverters:

Like as above converters, three-phase to single-phase cycloconverter applies rectified voltage to the load. Positive Cycloconverters will supply positive current only while negative converters will supply negative current only. The cyclo converters can operate in four quadrants as (+v, +i), (+v, -i) rectification modes and (-v, +i), (-v, -i) inverting modes. The polarity of the current determines if the positive or negative converter should be supplying power to the load. When there is a change in current polarity, the converter previously supplying current is disabled and the other one is enabled.

Three-Phase to Three-Phase Cycloconverter

Two basic configurations are available for three-phase cyclo converters such as delta and wye. If the outputs of the above converter are connected in wye or delta and if the output voltages are 120º phase-shifted the resulting converter is three-phase to the three-phase converter.

AC/AC Voltage Converters

These converters control the rms value of output voltage at a constant frequency. The common application of these converters includes starting of AC motors and controlling power to heaters.

The other names of this controller are single phase full wave converter and AC voltage controller.

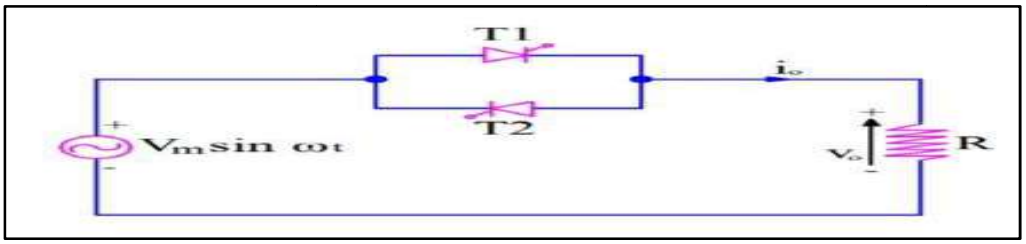


Fig: 112 AC/AC Voltage Converters

During positive half cycle of the input signal, thyristor-1 is forward biased and it starts conducting, when the triggering is applied. Thus the power flows from source to load.

The other popular form of AC voltage controller is the use of TRIAC in place of two anti-parallel

thyristors. The figure below shows TRIAC based AC controller along with triggering control circuit

AC/AC frequency Converters

These converters are mainly used for varying the frequency of the input source to desired level of the load. An AC/AC frequency converter changes the frequency of input voltage/current of the load compared to the frequency of the source.

Some of these converters may control magnitude of voltage besides the frequency control. These are mainly used for adjusting the speed of AC drives and also for induction heating.

Matrix Converter

Since the cyclo-converters satisfactorily work only for a certain range of frequencies, matrix converters are invented that has unrestricted frequency conversion capability.

These are constructed using full-controlled static devices, mostly uses bidirectional switches. With the use of these switches in three-phase matrix converters, any phase of the load can be connected to any phase of the input supply.

By using pulse width modulation techniques, the load frequency and voltages are controlled from zero value to their maximum values.

14.2.2 Electronic Soft Starter for 1/3 Phase Induction Motor for Agriculture

An Induction motor can self-start owing to the interaction between the rotating magnetic field flux and the rotor winding flux, causing a high rotor current as torque is increased. As a result, the stator draws high current and by the time the motor reaches to full speed, a large amount of current (greater than the rated current) is drawn and this can cause heating up of the motor, eventually damaging it. To prevent this, motor starters are needed.

Motor starting can be in 3 ways

- Applying full load voltage at intervals of time: Direct On Line Starting
- Applying reduced voltage gradually: Star Delta Starter and Soft starter
- Applying part winding starting: Autotransformer starter

Defining Soft Starting

In specialized terms, a delicate starter is any gadget that lessens the force applied to the electric engine. It by and large comprises of strong state gadgets like thyristors to control the utilization of supply voltage to the engine. The starter deals with the way that the force is relative to the square of the beginning current, which thusly is corresponding to the applied voltage. Hence the force and the current can be changed by diminishing the voltage at the hour of turning over the motor.

Open Control: A start voltage is applied with time, irrespective of the current drawn or the speed of the motor. For each phase, two SCRs are connected back to back and the SCRs are conducted initially at a delay of 180 degrees during the respective half-wave cycles (for which each SCR conducts). This delay is reduced gradually with time until the applied voltage ramps up to the full supply voltage. This is also known as Time Voltage Ramp System. This method is not relevant as it doesn't control the motor acceleration.

Closed-Loop Control: Any of the motor output characteristics like the current drawn or the speed is monitored and the starting voltage is modified accordingly to get the required response. The current in each phase is monitored and if it exceeds a certain set point, the time voltage ramp is halted.

Thus the basic principle of the soft starter is by controlling the conduction angle of the SCRs the application of supply voltage can be controlled.

2 Components of a basic soft starter

- **Power switches** like SCRs which need to be phase controlled such that they are applied for each part of the cycle. For a 3 phase motor, two SCRs are connected back to back for each phase. The switching devices need to be rated at least three times more than the line voltage.
- **Control Logic** using PID controllers or Microcontrollers or any other logic to control the application of gate voltage to the SCR, i.e. to control the firing angle of SCRs to make the SCR conduct at the required part of the supply voltage cycle.

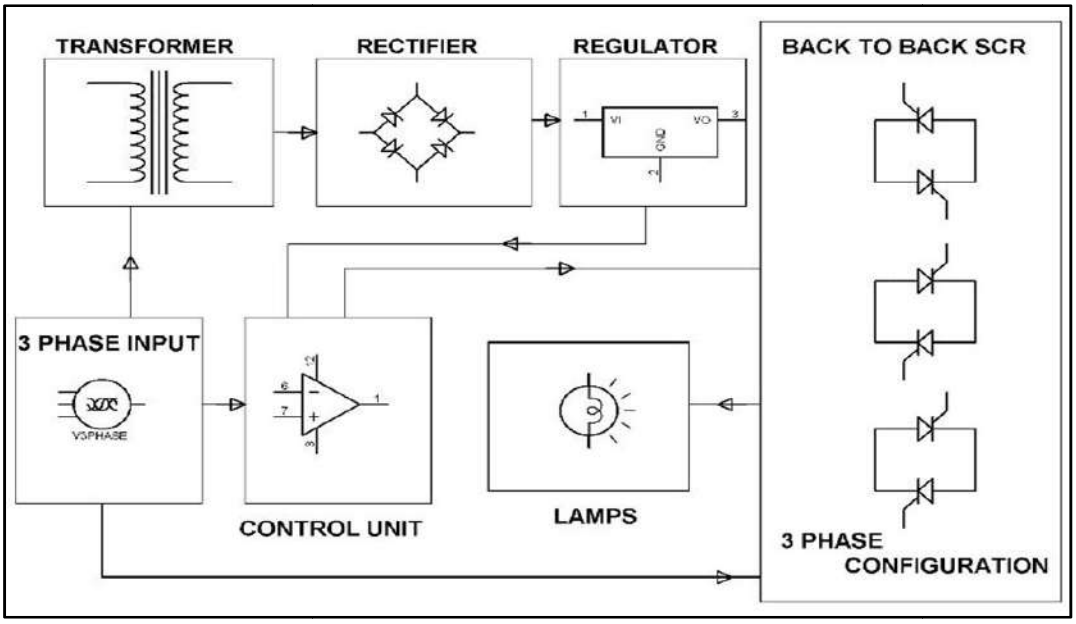


Fig: 113 Block Diagram showing Electronic Soft Start System for 3 phase Induction Motor

The system consists of the following components.

- Two back to back SCRs for each phase, i.e. 6 SCRs in total.
- Control Logic circuitry in the form of two comparators- LM324 and LM339 to produce the level and the ramp voltage and an optoisolator to control the application of gate voltage to each SCR in each phase.

The level voltage is generated using the comparator LM324 whose inverting terminal is fed using a fixed voltage source and the no inverting terminal is fed through a capacitor connected to the collector of an NPN transistor.The charging and discharging of the capacitor cause the output of the comparator to change accordingly and the voltage level to change from high to low. This output level voltage is applied to the no inverting terminal of another comparator LM339 whose inverting terminal is fed using a ramp voltage. This ramp voltage is produced using another

comparator LM339 which compares the pulsating DC voltage applied at its inverting terminal to the pure DC voltage at its no inverting terminal and generates a zero voltage reference signal which is converted to a ramp signal by the charging and discharging of an electrolyte capacitor.

The 3rd comparator LM339 produces a High pulse width signal for every high-level voltage, which decreases gradually as the level voltage reduces. This signal is inverted and applied to the Opt isolator, which provides gate pulses to the SCRs.

As voltage level falls, the pulse width of the Opt isolator increases and more the pulse width, lesser is the delay and gradually the SCR is triggered without any delay. Thus by controlling the duration between the pulses or delay between applications of pulses, the firing angle of SCR is controlled and the application of supply current is controlled, thus controlling the motor output torque.

The whole process is an open-loop control system where the time of application of gate triggering pulses to each SCR is controlled based on how earlier the ramp voltage decreases from the level voltage.

Advantages of Soft Start

Now that we have saw about how an electronic soft start system works, let us recollect a few reasons why it is preferred over other methods.

Improved Efficiency: The efficiency of the soft starter system using solid-state switches is more owing to the low on-state voltage.

The starting current can be controlled smoothly by easily altering the starting voltage and this ensures smooth starting of the motor without any jerks.

Controlled acceleration: Motor acceleration is controlled smoothly.

Low Cost and size: This is ensured with the use of solid-state switches

14.2.3 Advanced Wireless Power Transfer System

The project is a device to transfer power wirelessly instead of using conventional copper cables and current carrying wires. The concept of wireless power transfer was introduced by Nikolas Tesla.

This power is made to be transferred within a small range only for example charging rechargeable batteries etc.

For demonstration purposes we have used a fan instead of battery that operates by using wireless power.

This requires an electronic circuit for conversion of AC 230V 50Hz to AC 12V, high frequency and this is then fed to a primary coil of an air core transformer.

The secondary coil of the transformer develops 12V high frequency. Therefore by this way the power gets transferred through primary coil to secondary coil that are separated by certain distance around 3cm.

Here the primary coil acts as transmitter and secondary coil receives the power to run a load. This project can be used to charge batteries of a pace maker and similar applications.

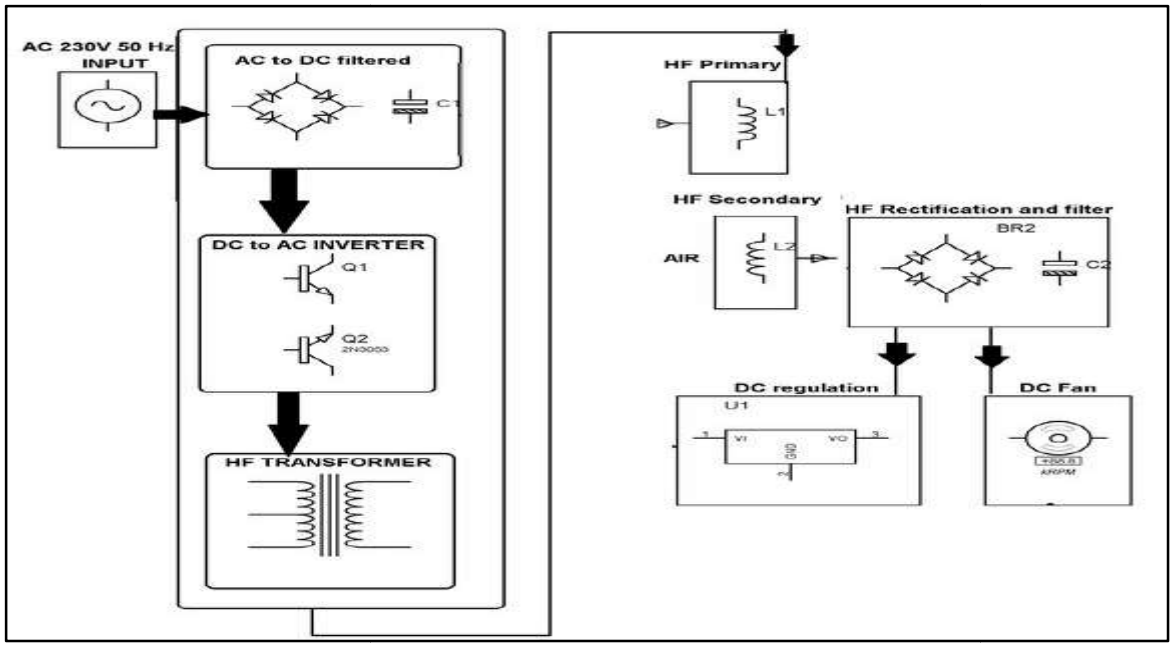


Fig. 114 Block Diagram

Hardware Specification

- 2 Inductor Coil
- Capacitor
- Cable and connectors
- PCB and breadboards
- Transformer/adapter
- Switch
- HF Transformer
- Resistor
- Transistor
- Diodes
- LEDs
- Push button

14.2.4 Industrial Temperature Controller

Case Study On Temperature Controller

Temperature controllers are used in most of the manufacturing industries. The industries like textile mill, pharmaceutical industry, oil refinery etc. all requires temperature controller. The temperature controllers are used to maintain constant temperature of process or plant or any material. In such temperature controller system there is one reference temperature called set point or set temperature that is the desired temperature that must be maintained. This reference temperature is set by external system tries to maintain it by sensing the current temperature and controlling it using heater, cooler or compressor etc.

It detects current temperature, contrasts it and reference temperature and creates mistake signal. At that point dependent on this blunder signal it controls warming component (or cooling component). Whenever set temperature is all the more then mistake signal is negative and the

other way around So here I have given one such temperature control framework that detects current temperature utilizing temperature sensor. It contrasts it and the set temperature that is set by outside reference. Also, it gives sign of blunder signal as certain or negative

System Block Diagram

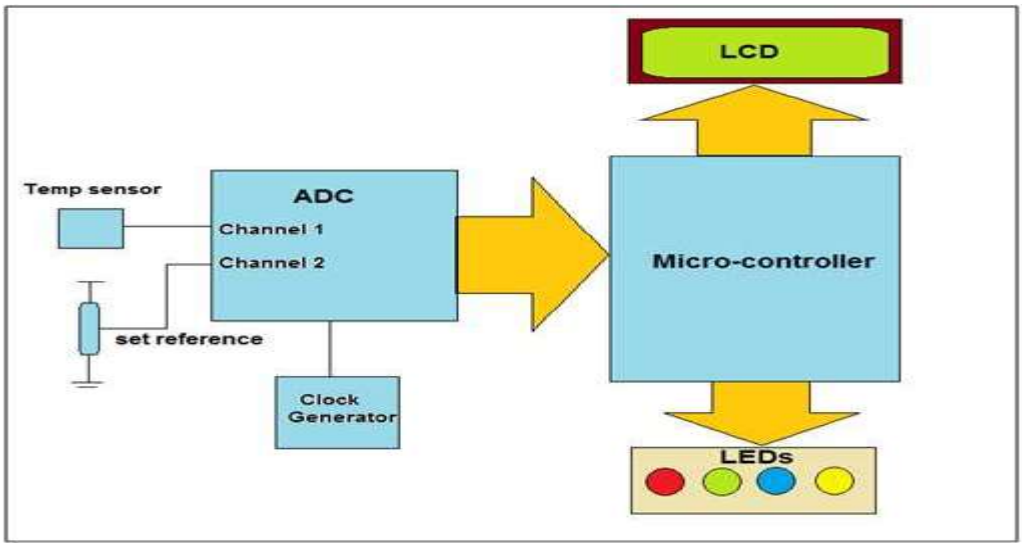


Fig: 115 Block diagram of Industrial Temperature Controller

As shown in above figure, major building blocks of system are temperature sensor, Analog to Digital Converter (ADC), micro-controller, LCD, clock generator and LED indicators.

Temperature sensor: It's a transducer. It gives corresponding voltage (or current) output as change in temperature. It can be calibrated to degree Celsius. Otherwise it has to be calibrated first.

Reference potentiometer: It sets reference temperature between min to max value. The system operation depends upon this set temperature value.

ADC: Its analog to digital converter with built in multiplexer. It takes two analog inputs one from temperature sensor and another from reference potentiometer. It gives 8-bit digital output corresponding selected analog input. To get the digital output of any one channel, micro controller will select the required channel and takes digital output.

Clock generator: ADC requires clock signal for its operation. This clock signal is generated by IC555 based clock generator.

Micro controller: it controls operation of ADC and LCD. It takes digital output of both channels and displays them on LCD. It takes suitable decision by comparing two temperatures. Also it gives different indications on LEDs

LED indicators: shows different indications like

Reading channel 1 temperature	RED LED
Reading channel 2 temperature	GREEN LED
Sensor temperature is more than set temperature (+Ve error)	BLUE LED
Sensor temperature is less than set temperature (-Ve error)	YELLOW LED

Working and operation:

Microcontroller first latches address of channel 1 in to ADC. Then it asserts start signal to start conversion. It waits for end of conversion (EOC) signal from ADC. When it gets it, it takes digital input from P1 and after processing it displays it on LCD as set temperature

Next microcontroller latches address of channel 2. Again it asserts start signal and waits for EOC. When it gets EOC, takes digital input – process it – displays it on LCD as current temperature

Then microcontroller take difference of these two temperature values that is the error. If error is positive then it indicates this on BLUE LED. If error is negative then it gives indication on YELLOW LED

This process is continuously repeated after every two second.

SR. NO	NAME OF COMPONENT	QUNATITY	RS/QNTY	TOTAL
1	Temperature sensor	1	1000	1000
2	Potentiometer	1	180	180
3	ADC	1	800	800
4	Clock generator	1	950	950
5	Microcontroller	1	400	400
6	LED indicator	4	5	20
7	Mics. items	-	300	300
TOTAL COST				**3650**

Table: 57 Cost estimation of temp. Controller

14.2.5 Accident Alerts in Modern Traffic Signal Control System -Camera Surveillance System.

It consists of two transmitters and two receivers.

One transmitter is connected first (One arm of the curve) and a receiver is fixed just opposite to the transmitter.

The other transmitter is connected at the same side (Other arm of the curve) and the receiver is fixed just opposite to the second transmitter.

When the vehicle passes the first transmitting and receiving unit (One arm of the curve), it senses that one vehicle is crossing.

When it crosses the second unit (Other arm of the curve), it also senses.

The microcontroller unit calculates the speed=displacement/time taken.

If the speed exceeds the particular value, it sends signal to the other side vehicle to be alert.

It also alerts the other side vehicle when someone crosses one side Also it captures the high speed

vehicle. Thus the high speed vehicle can be traced easily.

- This system is very much used in traffic controller.
- It is very accurate and cost effective.
- **Radio transmitters**: A radio transmitter consists of several elements that work together to generate radio waves that contain useful information such as audio, video, or digital data.
- **Power supply:** The second, called frequency modulation or FM, makes slight increases Provides the necessary electrical power to operate the transmitter.
- **Oscillator:** Creates alternating current at the frequency on which the transmitter will transmit. The oscillator usually generates a sine wave, which is referred to as a carrier wave.
- **Modulator:** Adds useful information to the carrier wave. There are two main ways to add this information. The first, called amplitude modulation or AM, makes slight increases or decreases to the intensity or decreases the frequency of the carrier wave.
- **Amplifier:** Amplifies the modulated carrier wave to increase its power. The more powerful the amplifier, the more powerful the broadcast.
- **Antenna:** Converts the amplified signal to radio waves.

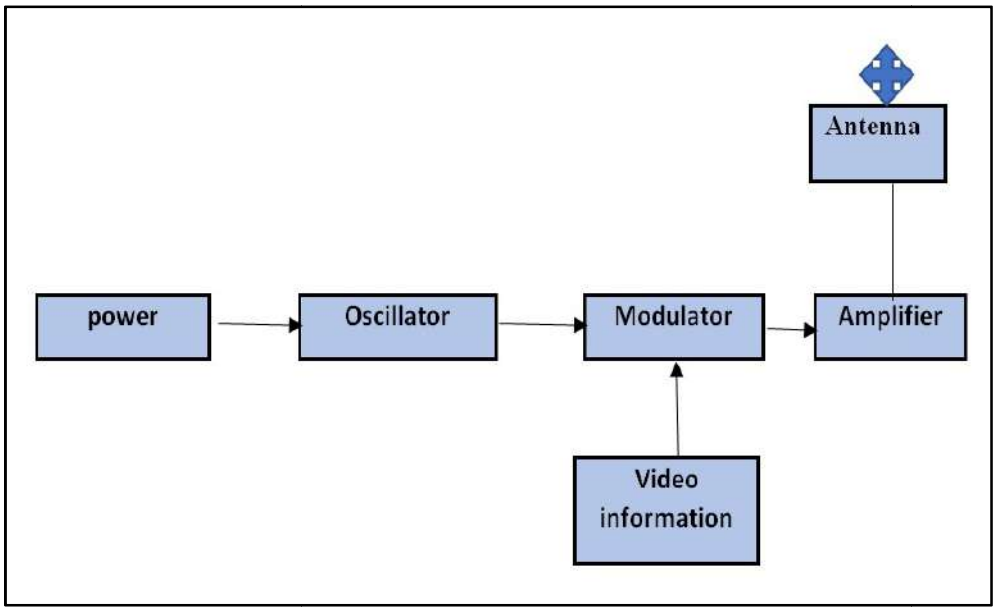


Fig: 116 Modern Traffic Signal Control System

- **Radio receivers**: A radio receiver is the opposite of a radio transmitter. It uses an antenna to capture radio waves, processes those waves to extract only those waves that are vibrating at the desired frequency, extracts the audio signals that were added to those waves, amplifies the audio signals, and finally plays them on a speaker.
- **Antenna:** Captures the radio waves. Typically, the antenna is simply a length of wire. When this wire is exposed to radio waves, the waves induce a very small alternating current in the antenna.

- **RF amplifier:** A sensitive amplifier that amplifies the very weak radio frequency (RF) signal from the antenna so that the signal can be processed by the tuner.
- **Tuner:** A circuit that can extract signals of a particular frequency from a mix of signals of different frequencies. On its own, the antenna captures radio waves of all frequencies and sends them to the RF amplifier, which dutifully amplifies them all.
- **Detector:** Responsible for separating the audio information from the carrier wave. For AM signals, this can be done with a diode that just rectifies the alternating current signal. What's left after the diode has its way with the alternating current signal is a direct current signal that can be fed to an audio amplifier circuit. For FM signals, the detector circuit is a little more complicated.
- **Audio amplifier:** This component's job is to amplify the weak signal that comes from the detector so that it can be heard. This can be done using a simple transistor amplifier circuit.
- RX5019/5020 is a pair of radio remote control transmitter / receiver-specific components. Use of its fixed operating frequency change is not easy, the circuit is simple, easy to install, simply plug in the power and signal lead wire can be put into use. They can be used alone, can also be used in combination, is an ideal radio remote control transmitter / receiver devices.

Chapter 15.

Smart and/or Sustainable features of Chapter 8 & 13 designs, Impact on society. (For Allocated village development, villagers happiness, comfortable and for enhancement of the village) (With the Smart village development Concept As Per Your Idea And VillageVisit, modern technology with innovation). With doing small changes, Period, Amount Expenditure and Benefit–

a) **Immediately b) Within 1year c) Long term (3-5years) along with cost estimation.**
b) **If possible, List the sources of the funding available with the Village gram panchayat**

a) Immediately b)Within 1yearc) Long term (3-5years) along with cost estimation.

Table: 58 List of Design with Completion Period and Amount Expenditure

Sr.No	Design Name	Period	Amount Expenditure	Benefit
8.1.1	Public Toilet	Immediately	3,18,140	• Public toilet design to making the atmosphere clean and fresh and no need to go for toilet in open for villagers.
8.1.2	Hospital	Long term	9,14,000	• Easier access for a patient; when emergency occurs in village related to health they easily access to hospital facilities.
8.1.3	Gymnasium Building	Long term	11,000,00	• Physical exercise and health related activities, such as bodybuilding, yoga and etc., So the villagers are keep their health fit and fine.
8.1.4	Recreational Park	Within 1 Year	4,58,000	• Provide refreshment to Village people. • Good aesthetic purpose. • Provide walkway. • Children use play ground to improve physical fitness.
8.1.5	Police Station	Within 1 Year	6,52,000	• Increase the safety of villager sand surrounding area

8.1.6	Pond Development	Within 1 Year	6,05,750	• For better esthetic pond view; Ease of use; Availability of good Environment; etc.
13.1.1	Overhead Tank	Long term	11,75,077.50	• People get the sufficient source of water for their daily need. • Villegers get the fresh &clean water from overhead tank.
13.1.2	Pickup Bus Station	Immediately	1,44,400	• Currently the villagers are facing hot temperature for catch the bus without bus station so we decided to design the pickup bus station.
13.1.3	Rain Water Harvesting	Immediately	1,50,000	• Increase ground water level. Water can be used during Scarcity of water.
13.1.4	Vegetable Market	Long term	15,16,400/-	• Increase availability of Vegetables. • Increase facility of people.
13.1.5	Post Office	Within 1 Year	6,83,504	• Villagers easily do communication; villagers get the courier service and parcel services.
13.1.6	Entrance Gate	Within 1 Year	4,45,308	• This gate is improve the aesthetic look of village and also easy for outer person for identify of village.
8.1.7	Solar Street Light	Within 1 Year	2,04,750	• Good appearance • Renewable energy
8.1.8	Smart Water Supply System	Immediately	49,000	• Smart technology can change conventional water and wastewater • Intelligent system
8.1.9	Electrical Wiring In Public Toilet	Immediately	2,971	• Villagers can use good toilet Clean and good illumination in toilet
13.1.7	Solar Photovoltaic Water Pumping System	Immediately	92,000	• Faster than simple one • Reliable and quick • Clean

13.1.8	Cctv for Village Security	Immediately	1,21,000	• Village security • Less chances of crime
13.1.9	Wiring of Pickup Bus Station	Immediately	8380	• Passengers won't need to stand in sunny atmosphere • Good facility with electricity

b) If possible, List the sources of the funding available with the Village gram panchayat

- Fourteenth Finance Commission Grant
- Jilla Panchayat Sadasya Grant
- MLA (Member of Legislative Assembly) Grant
- MGNREGA (Mahatma Gandhi National Rural Employment Act) Grant
- ATVT (Apno Taluko Vibrant Taluko) Grant
- Gram Panchayat Grant,etc.

Chapter 16.

Survey By Interviewing With Talati And /Or Sarpanch

Survey By Interviewing With Talati And /Or Sarpanch

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Survey with Interviewing

SURVEY BY INTERVII WING 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	Hunnar craft
2	What are the chances of employment in village?	Yes	Job in Ashapuraco.
3	What are the special technical facilities in village?	NO	
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?	ANDY	
10	Are village people aware about child vaccination and done to each and every child as per norms?	Y	
11	Women help line number information is provided to village people?	Y	
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.	-	
18	Is village improvement is observed in comparative scenario from past to present?	Y	Too much improvement in last 3 years.
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?	Y	

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

ભુજોડી ગામ પંચાયત

સરપંચ
શ્રી ભુજોડી ગામ પંચાયત

Chapter 17.

Irrigation/Agriculture Activities and Agro Industry, Alternate Technics and Solution

Irrigation:

Irrigation is the process of applying water to the crops artificially to fulfil their water requirements. Nutrients may also be provided to the crops through irrigation. The various sources of water for irrigation are wells, ponds, lakes, canals, tube-wells and even dams. Irrigation offers moisture required for growth and development, germination and other related functions.

Let us have a look at different types of irrigation and the methods used for irrigation.

Fig: 117 The Irrigation Canal

Types of Irrigation

There are different types of irrigation practised for improving crop yield. These types of irrigation systems are practised based on the different types of soils, climates, crops and resources. The main types of irrigation followed by farmers include:

Surface Irrigation

In this system, no irrigation pump is involved. Here, water is distributed across the land by gravity.

Localized Irrigation

In this system, water is applied to each plant through a network of pipes under low pressure.

Sprinkler Irrigation

Water is distributed from a central location by overhead high-pressure sprinklers or from sprinklers from the moving platform.

Drip Irrigation

In this type, drops of water are delivered near the roots of the plants. This type of irrigation is rarely used as it requires more maintenance.

Centre Pivot Irrigation

In this, the water is distributed by a sprinkler system moving in a circular pattern.

Sub Irrigation

Water is distributed through a system of pumping stations gates, ditches and canals by raising the water table.

Manual Irrigation

This a labour intensive and time-consuming system of irrigation. Here, the water is distributed through watering cans by manual labour.

Methods of Irrigation

Irrigation can be carried out by two different methods:

- Traditional Methods
- Modern Methods

Traditional Methods of Irrigation

In this method, irrigation is done manually. Here, a farmer pulls out water from wells or canals by himself or using cattle and carries to farming fields. This method can vary in different regions.

The main advantage of this method is that it is cheap. But its efficiency is poor because of the uneven distribution of water. Also, the chances of water loss are very high.

Some examples of the traditional system are pulley system, lever system, chain pump. Among these, the pump system is the most common and used widely.

Modern Methods of Irrigation

The modern method compensates the disadvantages of traditional methods and thus helps in the proper way of water usage.

The modern method involves two systems:

- Sprinkler system
- Drip system

Sprinkler System:

A sprinkler system, as its name suggests, sprinkles water over the crop and helps in an even distribution of water. This method is much advisable in areas facing water scarcity.

Here a pump is connected to pipes which generate pressure and water is sprinkled through nozzles of pipes.

Drip System

In the drip system, water supply is done drop by drop exactly at roots using a hose or pipe. This

method can also be used in regions where water availability is less.

Importance of Irrigation

The importance of irrigation can be explained in the following points:

- Insufficient and uncertain rainfall adversely affects agriculture. Droughts and famines are caused due to low rainfall. Irrigation helps to increase productivity even in low rainfall.
- The productivity on irrigated land is higher as compared to the un-irrigated land.
- Multiple cropping is not possible in India because the rainy season is specific in most of the regions. However, the climate supports cultivation throughout the year. Irrigation facilities make it possible to grow more than one crop in most of the areas of the country.
- Irrigation has helped to bring most of the fallow land under cultivation.
- Irrigation has stabilized the output and yield levels.
- Irrigation increases the availability of water supply, which in turn increases the income of the farmers.

Irrigation should be optimum because even over-irrigation can spoil the crop production. Excess water leads to water logging, hinder germination, increased salt concentration and uprooting because roots can't withstand standing water. Thus the proper method is to be used for the best cultivation.

Different Types of Agricultural Activity:

Summary

- Agriculture involves rearing of animals and crop cultivation
- Agriculture aims at providing enough, healthy food to feed the population worldwide
- Different types of agricultural activities are practiced in different regions across the world
- Factors such as climate affect the type of agricultural activity a farmer can practice
- Types of agricultural activities include subsistence farming, nomadic herding, commercial plantation, livestock rearing, etc.

Agriculture involves plants and animals breeding and land cultivation to offer fiber, food and medicine. It also provides other products necessary for life enhancement and sustenance. During the sedentary human civilization, agriculture was a critical aspect of development. Domesticated plant and animal species were farmed for food surpluses to sustain people living in cities.

Crops have their origin in about 11 regions across the world. Within the previous century, large-scale monoculture has driven the growth of industrial agriculture and thus its domination of agricultural output. However, more than 2 billion people worldwide rely on subsistence agriculture for sustenance.

Top 13 Types of Agriculture

Although agriculture is not uniform across the world, it is the most widespread activity. It is

classified based on the type of crop being grown, scale of cultivation, intensity, mechanization level, combinations of livestock and how farm produce is distributed. The following are the different types of agricultural activities worldwide:

1. Shifting Cultivation

Shifting cultivation is commonly practiced in the tropics. It involves forest clearance through burning and slashing. The cleared land is cultivated until its fertility declines, or for three to five years or until native flora and weeds overtake it.

Fig: 118 Shifting Cultivation

It is a type of subsistence farming usually done manually. People in the tropical regions such as south-east Asia tend to adopt this type of agricultural activity with a focus on growing grains. However, due to the pressure environmentalists and activists exert to support environment protection from such unsustainable practices, the activity is declining.

2. Nomadic Herding

Nomadic herding is the practice of keeping and grazing animals on natural pastures. It is common in the arid and semi-arid regions such as certain parts of Saudi Arabia, northern Africa and northern parts of Eurasia.

3. Rudimentary Sedentary Tillage

Unlike other types of agricultural activities, rudimentary sedentary cultivation is a type of subsistence farming practiced on the same piece of land year-in, year-out. Land is then left fallow after some years to regain its soil fertility.

4. Live stock Ranching/Pastoral Farming

Livestock ranching focuses on rearing animals. Unlike nomadic herding, farmers do not move from one place to another in search of pasture and water, but live in settlements. Pasture lands are developed for grazing the animals.

5. Commercial Plantations

Also known as tree crop farming, industrialized agriculture or plantation farming, commercial plantations cover large land areas. Even if practiced on a smaller piece of land, the activity has a high commercial value. It involves the cultivation of tropical crops such as tea, rubber, coffee, coconut, cocoa, grapes, apples, spices, oranges, avocado, mangoes and palm oil.

6. Mixed Farming

Also known as grain and livestock farming, mixed farming involves the growing of crops and

rearing of animals. It has its origins in the humid, mid-latitudes, excluding Asia. It is an agricultural activity with its roots mainly in Europe. Mixed farming develops in close relation to market infrastructure.

Fig: 119 Mixed Farming

7. Specialized Horticulture

Increased demand for horticultural products in highly urbanized areas with dense populations led to the development of specialized horticulture. It has been successfully adopted in northern Hungary, France and the Swiss Lake regions for vineyard cultivation.

Fig: 120 Specialized Horticulture

8. Subsistence Farming

Subsistence farming involves growing crops and keeping animals for the sole purpose of feeding the farmer and his family. It involves the use of simple farm tools on small pieces of land. Most subsistence farmers are believed to be poor and thus cannot afford to buy improved seeds and fertilizers.

9. Intensive Subsistence Farming with/without Rice as a Dominant Crops

Farming with Rice as a Dominant Crop

Tropical regions with dense populations and high rainfall are the areas where intensive subsistence farming is practiced. Rice is the major crop grown because it can fee and employ many people in every unit area

Fig: 121 Subsistence Rice Farming

10. Mediterranean Agriculture

Mediterranean agriculture involves the rearing of animals and growing of crops in the rugged, Mediterranean terrain. Small animals and crops such as citrus fruits, vineyards and wheat are the crops mainly grown in the region. Horticulture is also practiced with the majority of crops sown in winter due to winter rains.

Fig: 122 Mediterranean Agriculture

11. Dairy Farming

Dairy farming involves the rearing of cattle for milk. With its origins in Europe, the activity is highly developed in Sweden and Denmark. However, it has spread to other parts of the world and is practiced in areas near markets. It thrives in regions that enjoy temperate climate.

Fig: 123 Dairy Farming

12. Commercial Grain Farming

Commercial grain farming resulted from mechanization of farms. It is mainly practiced in areas with less-dense population and low rainfall. The grains grown in these areas are drought and weather hardy and thus can survive in dry conditions. Mainly adopted in steppes, prairies and the temperate grasslands of Australia and South America, the activity mainly involves wheat monoculture.

Fig: 124 Commercial Grain Farming

13. Arable Farming

Arable farming, unlike pastoral or mixed farming, involves the growing of crops without keeping animals. It can be practiced on a large, commercial or small scale. Annual crops such as plantains, vegetables, grains, cassava, potatoes and legumes are often grown in arable farms.

Fig: 125 Arable Farming

Agro Industry

Agro-Based Industries in India

The agro-based industry includes industries related to textiles, sugar, paper and vegetable oil. These industries use agricultural products as their raw materials.

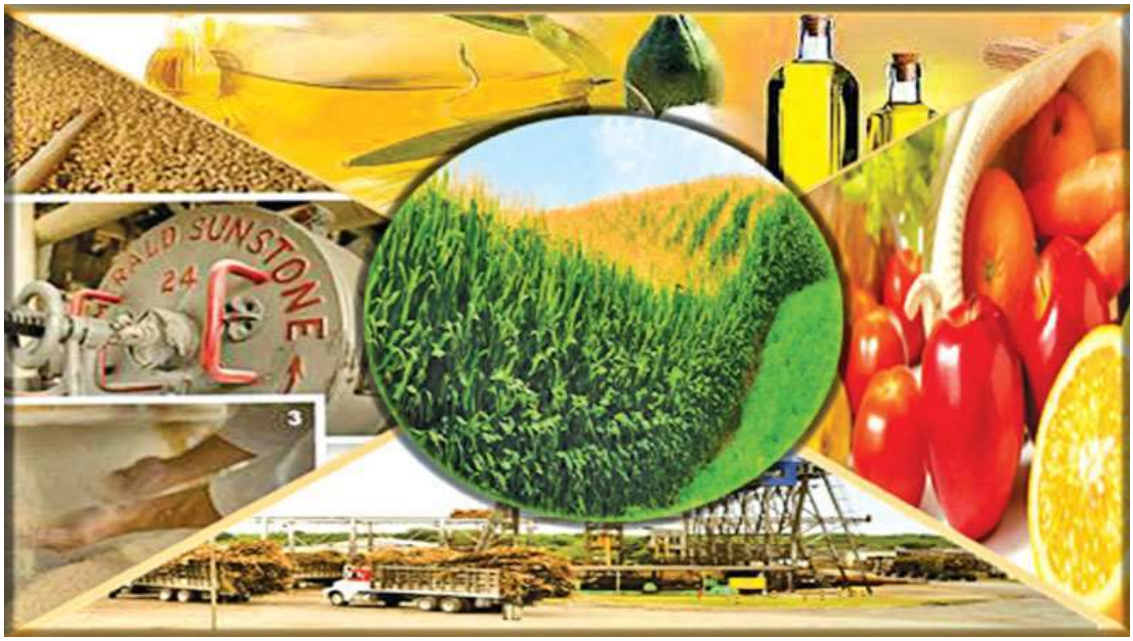


Fig: 126 Agro Based Industries in India

Types of Agro-based Industry

1. Cotton textiles
2. Woollen textiles
3. Silk Textile's

4. Synthetic fibres

5. Jute textile industries

Textile Industry

It occupies unique position in the Indian economy, because it contributes significantly to industrial production (14 per cent), employment generation (35 million persons directly – the second largest after agriculture) and foreign exchange earnings (about 24.6 per cent). It contributes 4 per cent towards GDP.

Cotton Textiles

In ancient India, cotton textiles were produced with hand spinning and handloom weaving techniques

About 80 per cent of these are in the private sector and the rest in the public and cooperative sectors. Apart from these, there are several thousand small factories with four to ten looms. In the early years, the cotton textile industry was concentrated in the cotton growing belt of Maharashtra and Gujarat.

We have a large share in the world trade of cotton yarn, accounting for one fourth of the total trade.

Jute Textiles

India is the largest producer of raw jute and jute goods and stands at second place as an exporter after Bangladesh. There are about 70 jute mills in India. Most of these are located in West Bengal, mainly along the banks of the Hugli river, in a narrow belt (98 km long and 3 km wide).

Sugar Industry

India stands second as a world producer of sugar but occupies the first place in the production of gur and khandsari. The raw material used in this industry is bulky, and in haulage its sucrose content reduces.

In recent years, there is a tendency for the mills to shift and concentrate in the southern and western states, especially in Maharashtra; this is because the cane produced here has higher sucrose content.

Problems and Constraints to the Development of the Agro-Processing Sector

Some of the constraints which seem to bedevil the development of the agro-industrial sector in India include:

- An inconsistent and insufficient supply of raw material
- Seasonality of crops
- Poor quality of raw material supply and high losses during transport from farm to factory
- Inappropriate or obsolete processing and ancillary equipment
- Absence of good management of the processing facility once commercialized

The impact of agro-based industry on regional development is :

- Well-functioning agriculture sector is critical for the overall macroeconomic framework.

Inflation in India is largely due to supply side constraints and as such any variability in performance in agricultural sector has a direct impact on the poor.

Alternate Techniques and Solution

In the Alternate Techniques and solution we give here the Technique of Drip Irrigation

What is Drip Irrigation?

Drip irrigation, is also known as trickle irrigation or micro irrigation or localized irrigation, is an irrigation method that saves water and fertilizer by allowing water to drip slowly to the roots of plants, either on to the soil surface or directly on to the root zone, through a network of valves, pipes, tubing, and emitters.

Components of Drip Irrigation

- Pumping set
- Filters
- Mainlines
- Sub-main lines
- Laterals
- Emiters

Pumping set-to create a pressure about 2.5 Kg/sq cm to regulate the amount of water to be supplied.

Fig:127 Pumping Set

Filter to filter the water in Order to remove the suspended impurities from water.

Fig: 128 Filter

Main lines

It is a Distribution system in drip irrigation. Rigid

PVC and high density polyethylene pipes are used as main pipes to minimized corrosion and clogging. Pipes of 65 mm diameter and with pressure rating of 4 to 10 kg/sq. cm

Sub Main lines

It is usually connected to the main lines through a

Control valve assembly.

Emitters

These connect to the tubing or can be inside the tubing and deliver water at a slow, consistent rate, usually, 0.5, 1, 2 gallons per hour.

Fig: 129 Emitters

Why should we use drip irrigation

- Drip irrigation saves water because little is lost to runoff or evaporation. This watering method also promotes healthy plant growth, controls weed growth, and reduces pest problems.

Drip irrigation is useful for crop

Fruit crops

Banana, Grapes, Citrus, Pomegranate Papaya, Pineapple, Watermelon, Sweet lime, Mango.

Vegetable crops

Cabbage, Cauliflower, Okra, Tomato, Potato, Onion, Chillis, Radish, Brinjal, French been, Capsicum, Bhindi, Beans, Carrots, Cucumber, Bottle gourd, Gherkins.

Commercial crops

Sugarcane, Cotton, Ground nut.

ADVANTAGES

- Reduced water use
- Automation
- Adaptation
- High yield
- Joint management of irrigation

Chapter 18.

Social Activities–Any Activates Planned By Students e.g. Teaching Learning activities, awareness camp, business idea for SELF HELP GROUP OR ANY OTHER

In the Social Activities we can do many things with the gathering in the Bhujodi village e.g. teaching learning activities, awareness camp, business idea, self-employment idea, selling technics, recognize the available resources and use of available resources.

In the Current Situation of Covid-19 pandemic, gathering not allowed and any other activities are strictly not allowed by the Sarpanch shri& Talati sir for the safety of villager's, because of the current situation villagers are suffering from the corona virus & not only bhujodi village all other villages have the some cases in the villages in the preventive part of corona the higher authorities are taken the decision that the no any other activities are allowed. In the Bhujodi Village have some of Containment zones, Due to the prevent of corona spreading they don't give us any other permission to perform the social type activities in the Bhujodi Village.Whereas, an Order of even number dated 17.05.2020 was issued for containment of

COVID-19 in the country, for a period up to 31.05.2020; Whereas, in exercise of the powers under section 6(2)(i) of the Disaster Management Act, 2005, National Disaster Management Authority (NDMA) has directed the undersigned to issue an order to extend the lockdown in Containment Zones up to 30.06.2020, and to re-Open prohibited activities in a phased manner in areas outside Containment Zones.

In the thought of the social activities in Bhujodi village we are available to help for all Kutch districts people, it is covered Bhujodi village in the activities of emergency blood requirement full filled by our whatsapp groups and also help to find a bed availability, oxygen cylinder and their kit for covid-19 patients& provide the information about vaccine availability and appointments related quastions. Here are the some photos of our whatsapp groups in we help to needy people.

Fig: 130 Kutch Social Group

Fig: 131 Donor Social Group

Chapter 19.

BHUJODI VILLAGE SAGY Questionnaire Survey form with the Sarpanch Signature (Scanned copy attachment in the soft copy report and Original copy in hard bound report)

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Bhujodi Gram Panchayat: Bhujodi Ward No.

Block: District: Kachchh

State: Gujarat L S Constituency: 26

1. Family Identity and Size

Name of Head of Household	Bijlani Nurshibhai Revchand						Male/ Female	M
SECC Survey ID:		Family Size	5	Over 18	5	6 to 18	Under 6	

2. Category & Entitlement Details (Tick as appropriate)

Social Category[1]	SC	Life Insurance	1. All Adults 2. Some Adults 3. None ✓	AABY	1. Yes 2. No ✓	Kisan Credit Card	Yes / No ✓
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]
Somtuben N. Bijlani	49	F	N	Married	7th	Y	Y	N
Dipesh N. Bijlani	25	M	N	Unmarried	BCA	Y	Y	N
Mukesh N. Bijlani	23	M	N	"	BA	Y	Y	N
Amita N. Bijlani	20	F	N	"	B.com	Y	Y	N

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 Immu-nised 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	N	N
Children	N	N

9. House & Homestead Data

Own House: Yes / No ✓	No. of Rooms: 2
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	4	2. Cultivable Area	4
3. Irrigated Area	4	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) - Leather work	
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
Cotton	kg	3500
Groundnuts	kg	6500

17. Livestock Numbers

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

18. What games do Children Play
- Hockey & some indoor games

19. Do children play musical instrument (mention)
NO

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: Bhujodi

b. Block: -

c. District: Kachchh

d. State: Gujarat

e. Lok Sabha Constituency: 26

f. Number of Wards in the Gram Panchayat: _____

g. Number of Villages in the Gram Panchayat: _____

h. Names of Villages:

Bhujodi

Demographic Information

Number of Households ~~1130~~ 728 Total Population 3483 Male 1876 Female 1606

SC HHs 342 ST HHs 600 OBC HHs 2041 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	Y	
b.	Nearest Primary Health Centre (PHC)	N	4 km
c.	Nearest Community Health Centre (CHC)	N	4 km
d.	Nearest Post Office	N	
e.	Nearest Bank Branch (Any)	N	2 km
f.	Nearest Bank with CBS Facility	N	4 km
g.	Nearest ATM	N	2 km
h.	Nearest Primary School	Y	
i.	Nearest Middle School	Y	
j.	Nearest Secondary School	Y	
k.	Nearest Higher Secondary School / +2 College	N	2 km
l.	Nearest Graduate College	N	10 km
m	Nearest ITI / Polytechnic Centre	N	10 km
n	Kisan Seva Kendra	N	10 km

1

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	N	4KM
p	Nearest Agro Service Centre	N	5KM
p	MSP based Government Procurement Centre	N	5KM
q	Milk Cooperative /Collection Centre	Y	
r	Veterinary Care Centre	N	4KM
s	Ayurveda Centre	N	5KM
t	E – Seva Kendra	N	5KM
u	Bus Stop	N	1KM
v	Railway Station	N	10KM
w	Library	N	10KM
x	Common Service Centre	N	10KM

IV. Sports Facilities in the Gram Panchayat

a. Number of Play Grounds in the GP: Total 1 Public 1 Private –

b. Mini Stadium : NO 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.: 1

Higher Secondary Private: – Higher Secondary Govt: NO

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)	–	–	–	–	GOUT	–	–
b.	Kerosene	–	–	–	–	11	–	–
c.	Other (mention)	–	–	–	–	–	–	–

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: Y / Not Covered: -	Bhujodi	-
b.	Hand Pump Coverage in Villages:	Covered: - / Not Covered: ✓	-	-
c.	Coverage under Covered Drains:	Covered: Y / Not Covered: -	-	-
d.	Coverage under Open Drains:	Covered: - / Not Covered: ✓	-	-
e.	Villages with Household Electricity Connection (Numbers)	Connected: Y / Not Connected: -	Bhujodi	-

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	417.16	d.	Pasture / Grazing Land	-	g.	Check Dam	-
b.	Irrigated Land	-	e.	Forests/ Plantations	14.70	h.	Wells/Bore Wells	2
c.	Un-irrigated Land	-	f.	Other Common Land	108	i	Tanks /Ponds	7

[1] Mention the number of Villages Covered and Not Covered

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)	11
b)	Number of Households receiving pension (old age, widow, disability)	11
c)	Number of eligible Households who are not receiving pension	-
d)	Number of Households eligible for Ration Card	All
e)	Number of eligible HHs having ration cards	
f)	Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	-
g)	Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	-
h)	Number of active Job Card holders under MGNREGA	-
i)	Number of Job Card holders who completed 100 days of work during 2013-14	
j)	Number of shops selling alcohol	
k)	Number of BPL families	75
l)	Number of landless households	90
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	5
q)	Number of Households headed by physically handicapped persons	6
r)	Total number of Persons with Disability in the village	-
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 Respondent'

Dhaval Chheda Bijemaniyar Sagar Jethi Surveyor	તલાટી-સહ-મંત્રી ભુજોડી ગામ પંચાયત PRI Respondent (Preferably Gram Panchayat Chairperson)	સરપંચ Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	11/05/2021 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

l.	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	10KM - Bhuj
m	Common Service Centre	N	10KM - Bhuj
n	Veterinary Care Centre	N	10KM - Bhuj

li. 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: 1

iii. Drinking Water Facilities

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

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

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

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

b. Coverage under Open Drains: — *(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: _____

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: _____

b.Coverage under Street Lighting: All *(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): 1

b.Mini Stadium : N Yes(Y) /No (N)

vii. Education, ICDS

a. Number of Anganwadi Centres: 3

c. Schools (Number)

Primary Private: — Primary Govt.: 1

Middle Private: — Middle Govt.: 1

Secondary Private: — Secondary Govt.: 1

Higher Secondary Private: — Higher Secondary Govt: —

2

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	417.16	d.	Pasture / Grazing Land	-	g.	Check Dam	-
b.	Irrigated Land	-	e.	Forests/ Plnatations	14.70	h.	Wells/Bore Wells	2
c.	Un-irrigated Land	-	f.	Other Common Land	108	I	Tanks /Ponds	1

ix. Entitlement Related Parameters		
1	Number of active Job Card holders under MGNREGA	8590
2	Number of active Job Card holders who have completed 100 days of work	-
3	Number of shops selling alcohol	0
4	Number of BPL families	113
5	Number of landless households	90
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	0
13	Number of Bharat Nirman Volunteers	-

Name and Signature of Surveyor and Respondent'

Dhaval chheda Bijem Engineer sugker Jethi Surveyor	તલાટી-સહ-મંત્રી ભુજોડી ગામ પંચાયત PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	સરપંચ શ્રી ભુજોડી જૂથ ગ્રામ પંચાયત Official Respondent (Preferably Seniormost Government official in the Gram Panchayat)	25/05/2022 Date of Survey

Chapter 20.

TDO-DDO-Collector email sending soft copy attachment in the report

5/30/2021 Gmail - Vishwakarma Yojna Phase-VIII project report Bhujodi for information

Gmail

Bijen Gajjar <bijengajjar8@gmail.com>

Vishwakarma Yojna Phase-VIII project report Bhujodi for information
1 message

Bijen Gajjar <bijengajjar8@gmail.com> 30 May 2021 at 22:29
To: ddo-kut@gujarat.gov.in, tdo.bhuj@gmail.com

Dear Sir/Mem,

Greetings!
We are introducing ourselves. We are students from veerayatan engineering college, studying in 8th sem. This is the part of our project that we have to send the email of our report to Ddo sir and Tdo sir and add that in the report so as the process we are sending this report to you for information.
We are doing a project with 3 students.Their names are
1) Gajjar Bijen J.
2) Chheda Dhaval H.
3) Jethi Sagar M

Our Nodal Officer Name is Mr. Nilesh J. Vadagama
We are doing project under Vishwakarma Yojna Phase-VIII in which the village will allocated to students and the students have to make that village smart, ideal and available them to new infrastructure facilities in the allocated village. So the our allocated village is Bhujodi in which we are doing available new infrastructure facilities like public toilet, pick up bus station, vegetable market, gymnasium building in village. In our group 2 students are from civil department and 1 is from electrical department, the students of electrical department doing their field related new design in village e.g. solar street light, smart water supply system, solar panel designs to use available resources and reduce energy consumption in village . Our aim of this project to give the facilities to villagers to live their life in comfort and peacefully.

Thanks & Regards,
1) Gajjar Bijen J.
2) Chheda Dhaval H.
3) Jethi Sagar M.
Team Veerayatan Institute of Engineering Students

Vishwakarma Yojna Phase-VIII Report Bhujodi_compressed.pdf
9247K

https://mail.google.com/mail/u/0?ik=b4225e6ad5&view=pt&search=all&permthid=thread-a%3Ar2356413602193794 0&simpl=msg-a%3Ar25216619238... 1/1

Chapter 21.

Comprehensive report for the entire village

GTU informed all the teams of Vishwakarma Yojana to present their work in village for the effective implementation of Vishwakarma Yojana. Under his guideline Student's team of Bhujodi village presented the village development plan of Bhujodi village at Gram panchyat.

Sarpanch, and Talati there are present to know how the development of Bhujodi village is possible and to give their feedback. We talked about our work under Vishwakarma Yojana. We explained core theme of Vishwakarma Yojana, various benefit its of village development and issues prevailing in villages.

We explained various designs under Physical infrastructure, Social infrastructure and Socio-Cultural facilities such as design new infrastructure facilities of in Civil design as Public toilet blocks and Bio Gas plant, Hospital, Gymnasium Building, Recreational Park, Police Station, Pond Development, Overhead Tank, Pick up Bus Station, Rain Water Harvesting, Vegetable Market, Post Office, Entrance Gate, and in the Electrical part we Design a Solar Street light, Smart Water Supply System, Electrical Wiring in Public Toilet, Solar Photovoltaic Water Pumping System, Cctv for Village Security, Electrical Wiring In Pick up Bus Station.

We explained all the parameters of various designs, how the designs can be sustainable by using local labour force and local materials. Economy transportation of the village can be made possible by implementing these all above new designs and Sustainable/ Renewable Energy source Planning. Sarpanch and Talati shared various problems faced by them while designing such a facilities, We gave various approaches and also presented management techniques of such facilities with proposed design.

The meeting was very much interactive and helpful to understand various amenities to be designed at village level for the overall development of the Bhujodi village as Rurban town (Rural Soul + Urban Amenities).

Bhujodi is a major centre for woven cotton and woolen textiles, a 500 year old village and 8 kms from Bhuj. "The craft is said to have evolved as a need to cover against weather. At that time barter system was practiced. Rabaris being the original nomads and cattle rearers provided wool, milk products and grains to the village. Vankars took to weaving of cloth. With an indigenous technique in hand they had one success after another."A couple from a leading store from Kolkata was buying these saris in large numbers. The shop attracts buyers from far and wide. It was just like another Indian village - rustic, unpretentious, with narrow lanes leading to a cluster of houses with mud walls, and freshly painted, vibrant doors. But behind these colorful frames were stories of hands crafting magic. Some with nimble fingers and some aged with wrinkles, but all excelling in the art passed on by their forefathers to them over centuries.

Fig: 132 Heeralaxmi Park, Bhujodi

Hiralaxmi Craft Park, Bhujodi

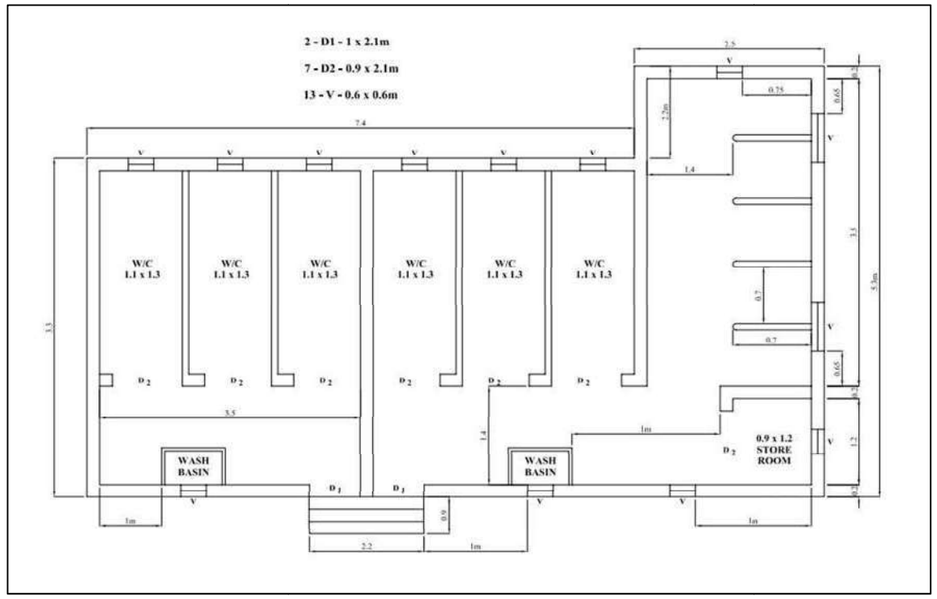
For those who want a craft flavour of the entire region, Hiralaxmi Craft Park is an ideal option.

- There are well-defined shops in a traditional, rustic setting, where locals from nearby villages sell their wares on fixed rates, on a monthly rotational basis.
- There aren't any demonstrations here, but ample variety to choose from: leather ware of Hodko, Ajrakh prints of Khavda, Bandhni work of Mandvi, Khavda weaving of Kukma and many more.

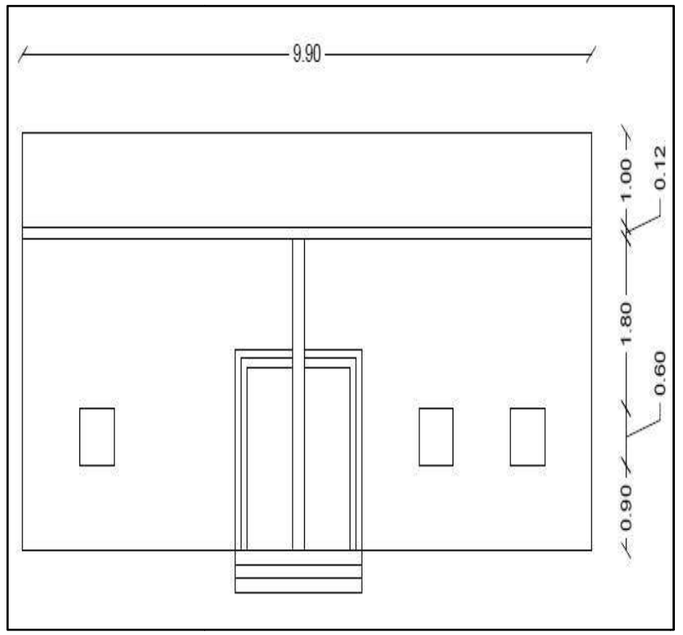
Fig: 133 Heeralaxmi Craft Centre, Bhujodi

Craft trails are one of the key highlights of Kutch. Bhujodi are important pit stops, there are many other

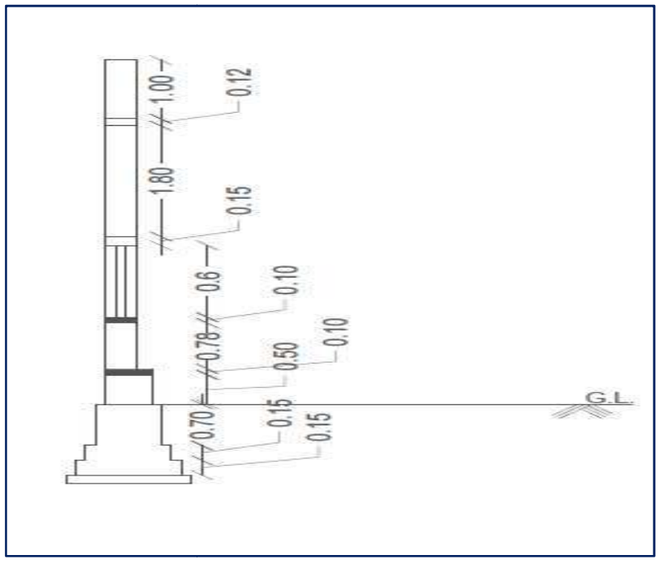
Our team of Vishwakarma Yojana thanked all the members of the village for their support during this work period and made them understand that the implementation of such facilities can build a better village and hence lead to build a strong nation.



Plan



Elevation



Section

GUJARAT TECHNOLOGICAL UNIVERSITY

- All Dimensions are in feet and inches unless stated otherwise
- Design is not responsible for any kind of wrong data.
- Minimum grade of concrete is m20 and all steel grade is fe500
- Check first the plot dimensions

Veerayatan Institute of Engineering (Approved by AICTE, Affiliated to GTU)

Public Toilet

Designed by:- Bijen J. Gajjar
Dhaval H. Chheda

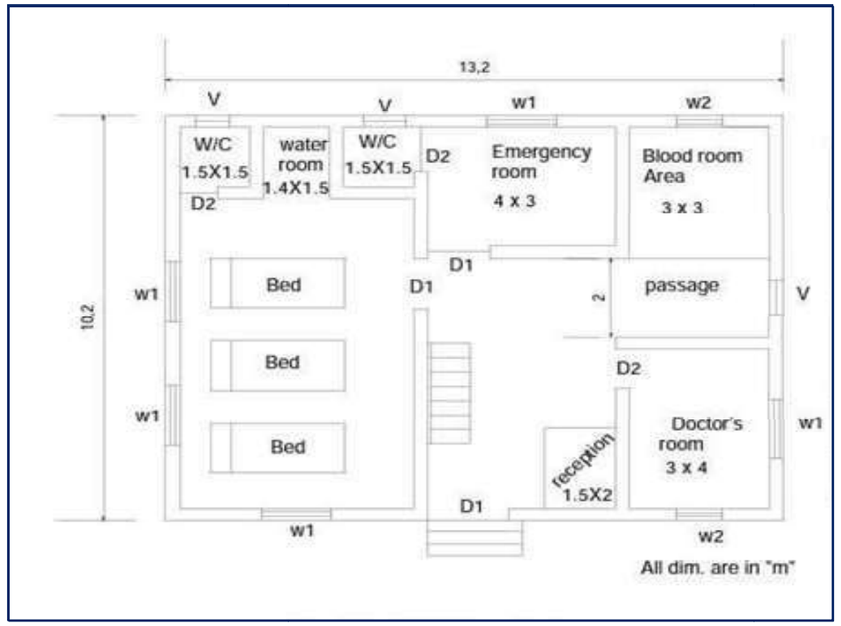
Dwg.no. 1

Date: 13/12/2020

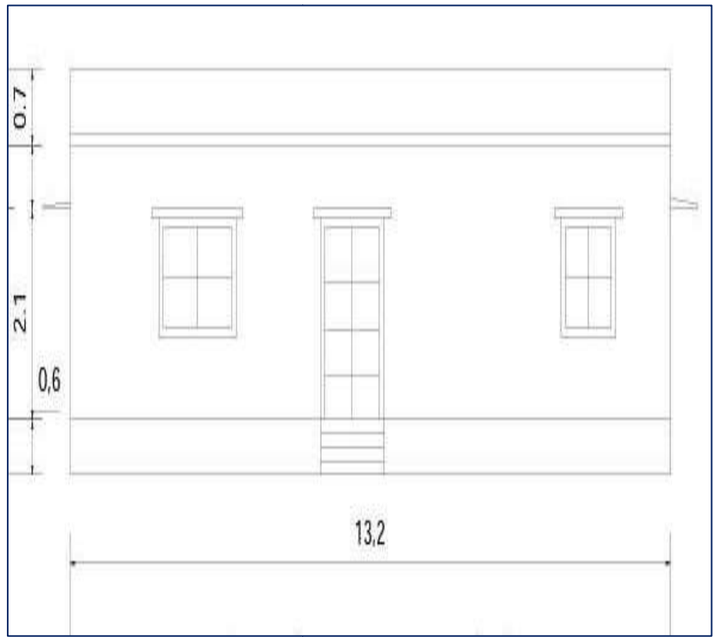
Guided by: Mr. Nilesh J. Vadgama

Vishwakarma Yojana

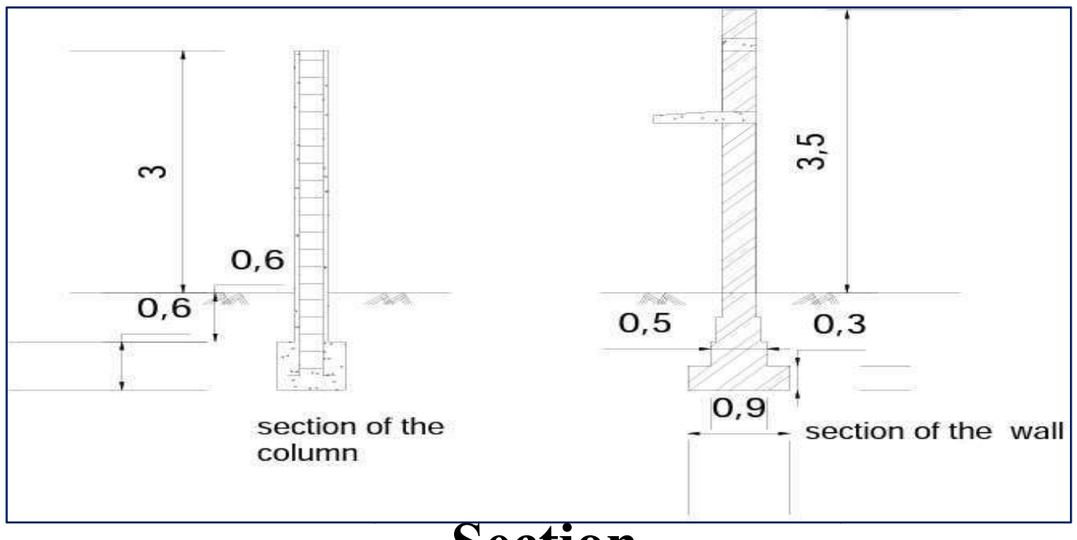
Scale: 1:20



Plan



Elevation



Section

GUJARAT TECHNOLOGICAL UNIVERSITY

- All Dimensions are in feet and inches unless stated otherwise
- Design is not responsible for any kind of wrong data.
- Minimum grade of concrete is m20 and all steel grade is fe500
- Check first the plot dimensions

Veerayatan Institute of Engineering (Approved by AICTE, Affiliated to GTU)

Hospital

Designed by:- Bijen J. Gajjar
Dhaval H. Chheda

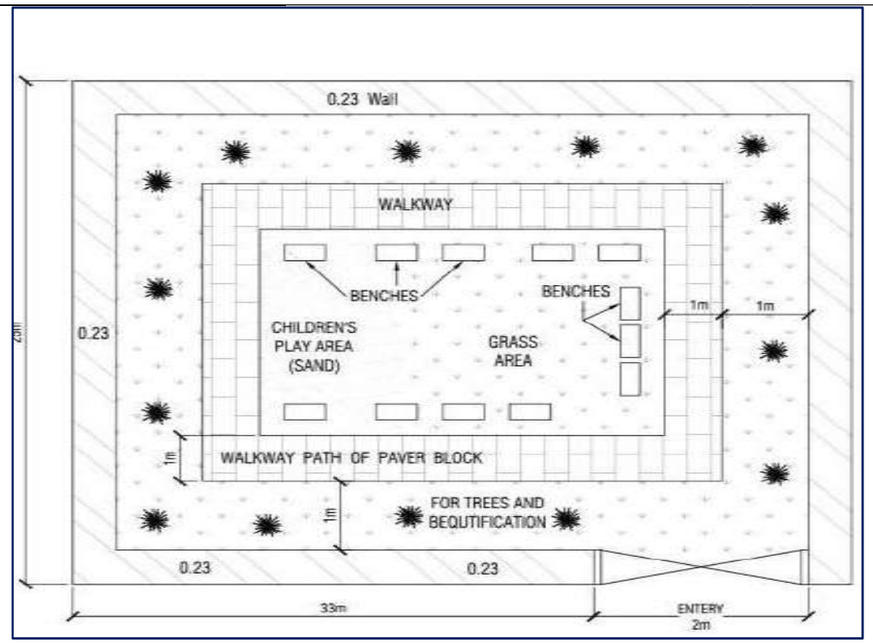
Dwg.no. 2

Date: 14/12/2020

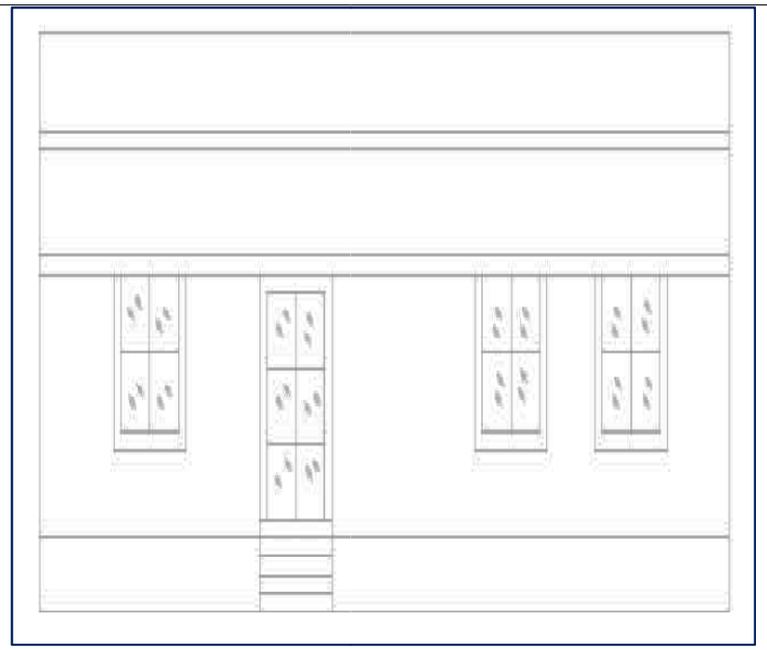
Guided by: Mr. Nilesh J. Vadgama

Vishwakarma Yojana

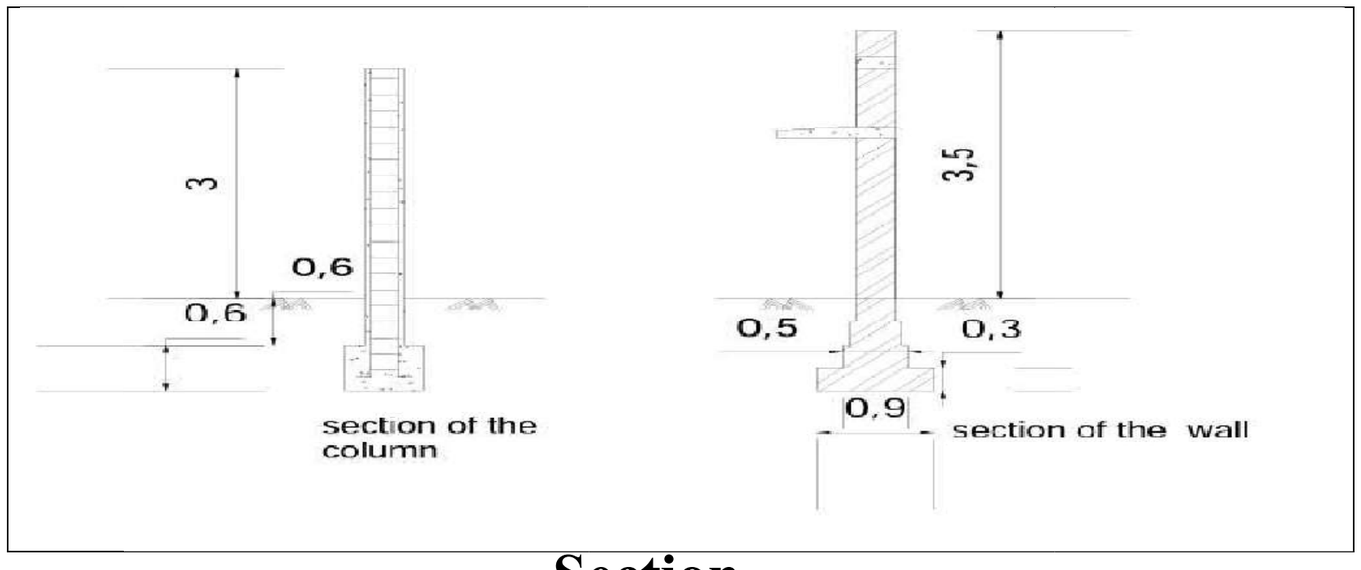
Scale: 1:20



Plan



Elevation



Section

GUJARAT TECHNOLOGICAL UNIVERSITY

- All Dimensions are in feet and inches unless stated otherwise
- Design is not responsible for any kind of wrong data.
- Minimum grade of concrete is m20 and all steel grade is fe500
- Check first the plot dimensions

Veerayatan Institute of Engineering (Approved by AICTE, Affiliated to GTU)

Gymnasium Building

Designed by:- Bijen J. Gajjar
Dhaval H. Chheda

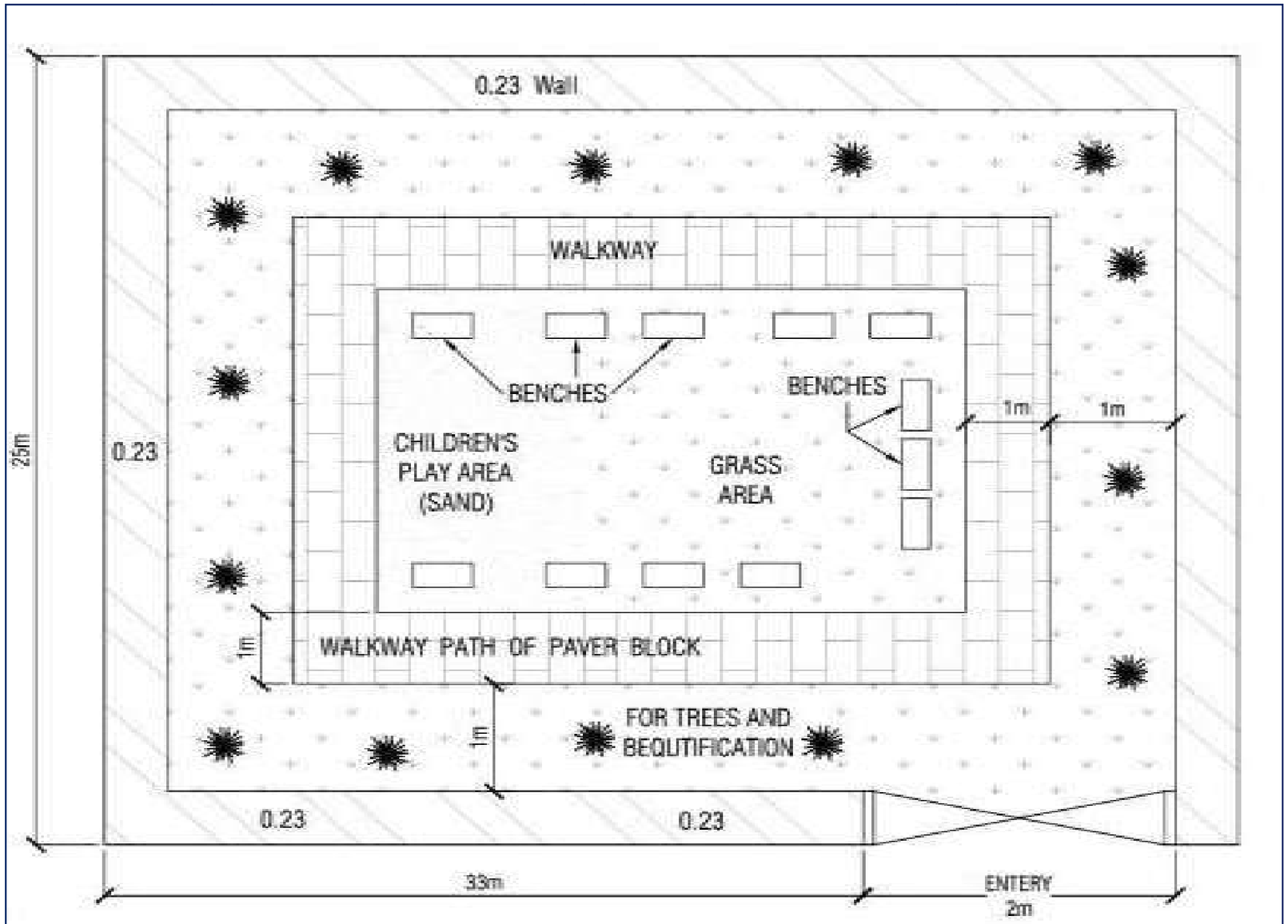
Dwg.no. 3

Date: 16/12/2020

Guided by: Mr. Nilesh J. Vadgama

Vishwakarma Yojana

Scale: 1:20



Plan

GUJARAT TECHNOLOGICAL UNIVERSITY

- All Dimensions are in feet and inches unless stated otherwise
- Design is not responsible for any kind of wrong data.
- Minimum grade of concrete is m20 and all steel grade is fe500
- Check first the plot dimensions

Veerayatan Institute of Engineering (Approved by AICTE, Affiliated to GTU)

Recreational Park

Designed by:- Bijen J. Gajjar
Dhaval H. Chheda

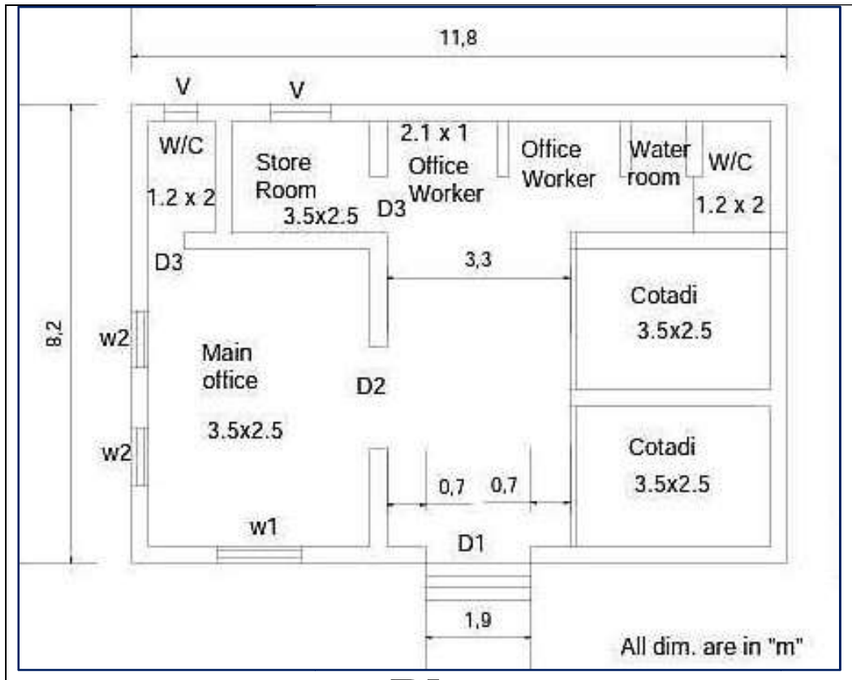
Dwg.no. 4

Date: 19/12/2020

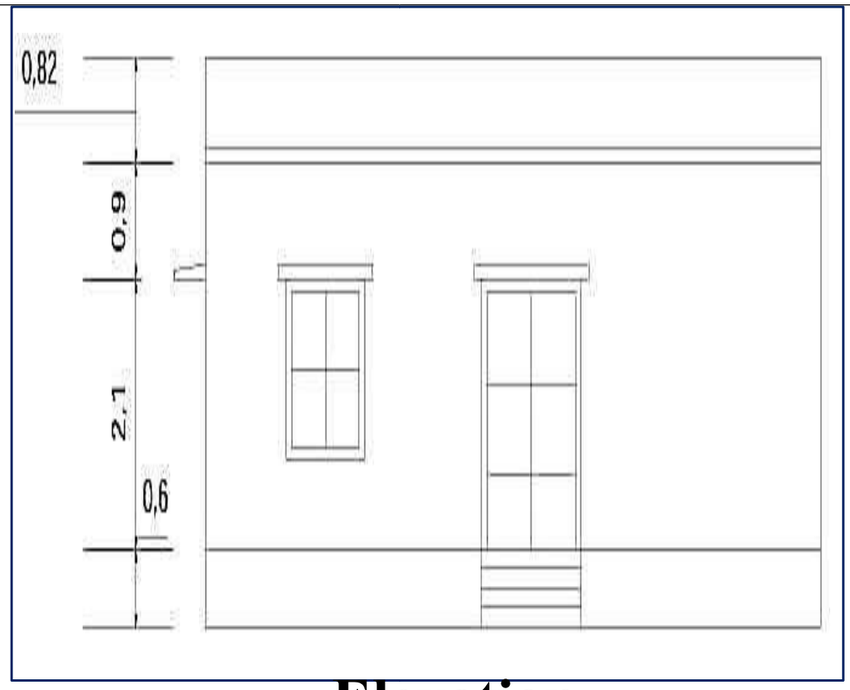
Guided by: Mr. Nilesh J. Vadgama

Vishwakarma Yojana

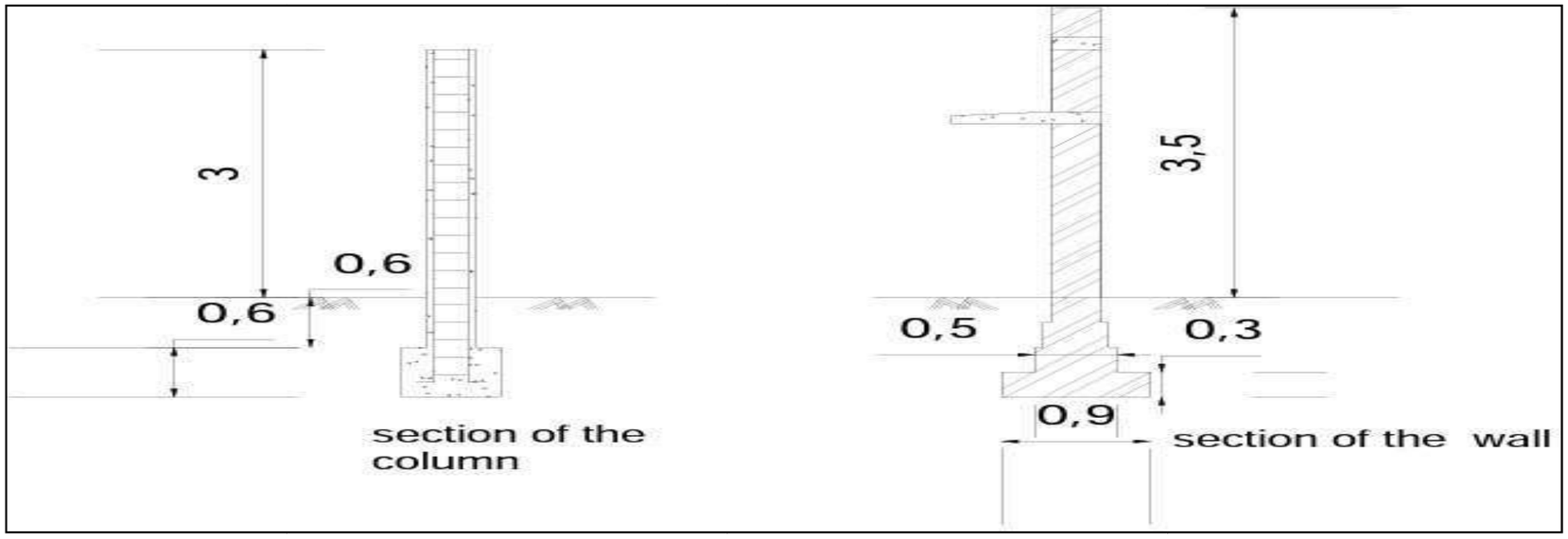
Scale: 1:20



Plan



Elevation



Section

GUJARAT TECHNOLOGICAL UNIVERSITY

- All Dimensions are in feet and inches unless stated otherwise
- Design is not responsible for any kind of wrong data.
- Minimum grade of concrete is m20 and all steel grade is fe500
- Check first the plot dimensions

Veerayatan Institute of Engineering (Approved by AICTE, Affiliated to GTU)

Police Station

Designed by:- Bijen J. Gajjar

Dhaval H. Chheda

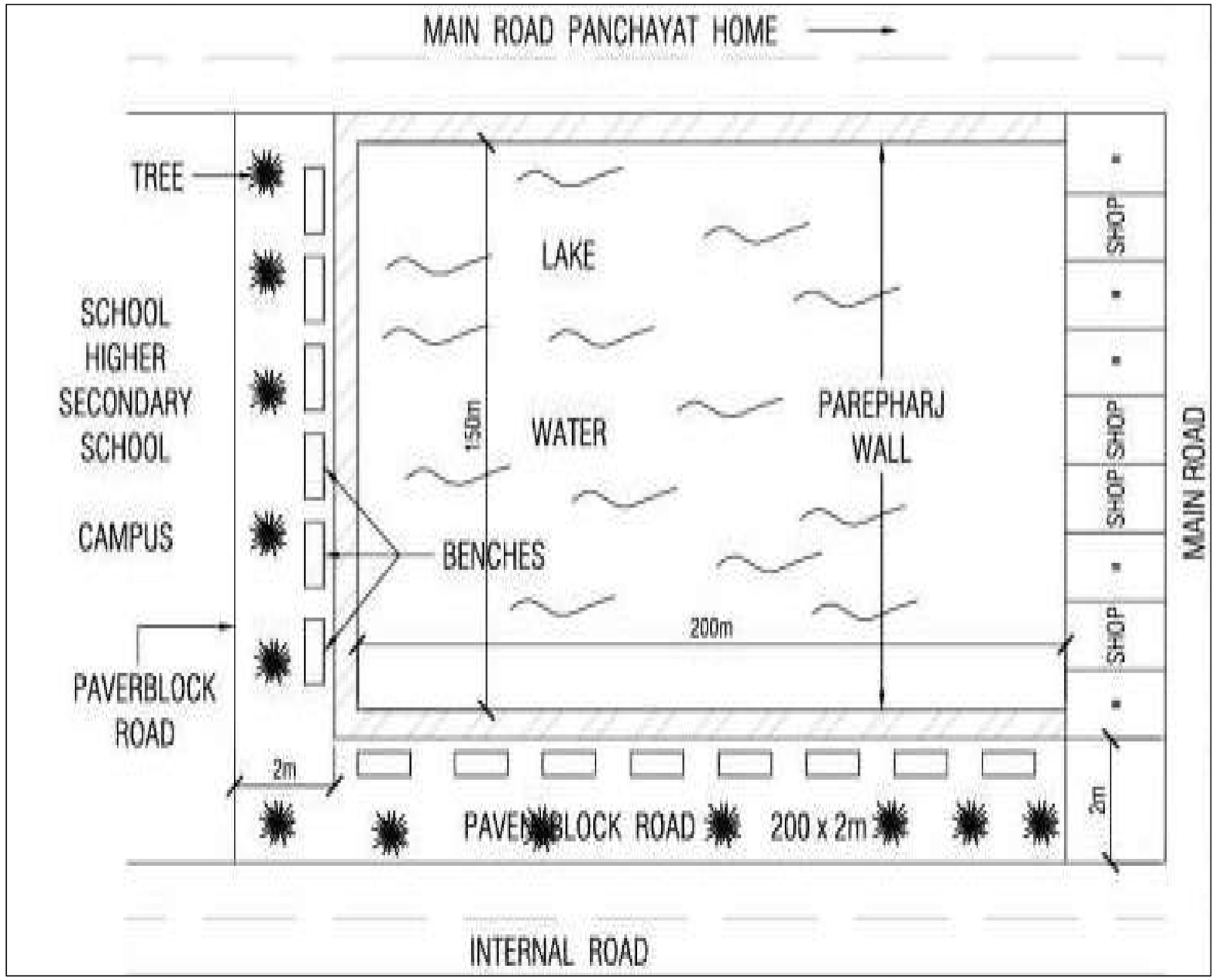
Dwg.no. 5

Date: 23/12/2020

Guided by: Mr. Nilesh J. Vadgama

Vishwakarma Yojana

Scale: 1:20



Plan

GUJARAT TECHNOLOGICAL UNIVERSITY

- All Dimensions are in feet and inches unless stated otherwise
- Design is not responsible for any kind of wrong data.
- Minimum grade of concrete is m20 and all steel grade is fe500
- Check first the plot dimensions

Veerayatan Institute of Engineering (Approved by AICTE, Affiliated to GTU)

Pond Development

Designed by:- Bijen J. Gajjar
Dhaval H. Chheda

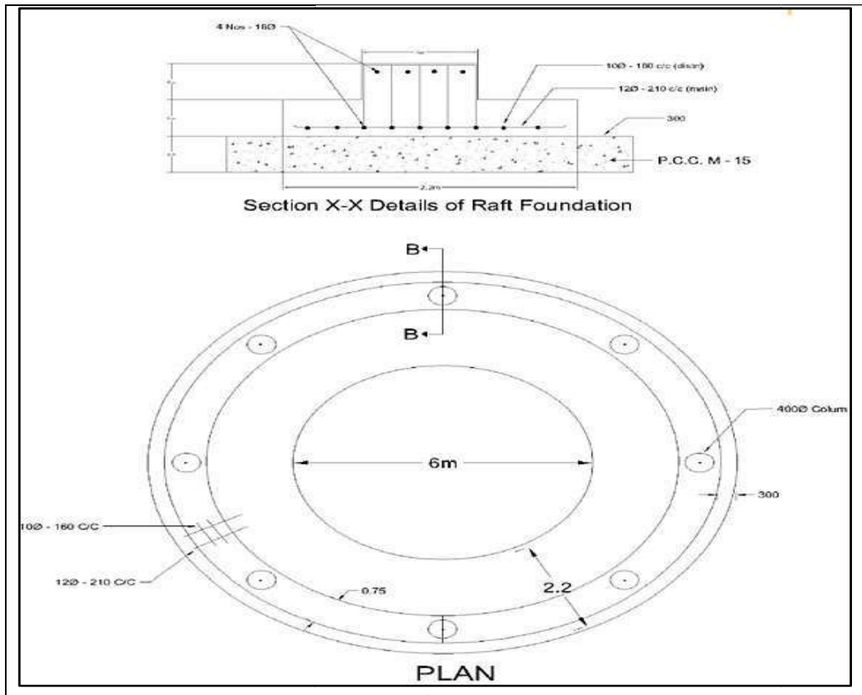
Dwg.no. 6

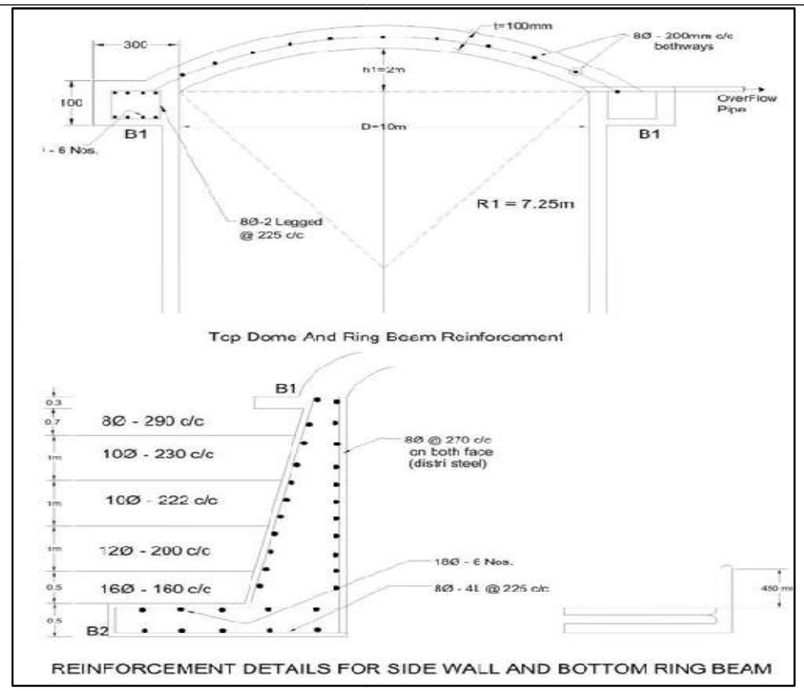
Date: 25/12/2020

Guided by: Mr. Nilesh J. Vadgama

Vishwakarma Yojana

Scale: 1:20



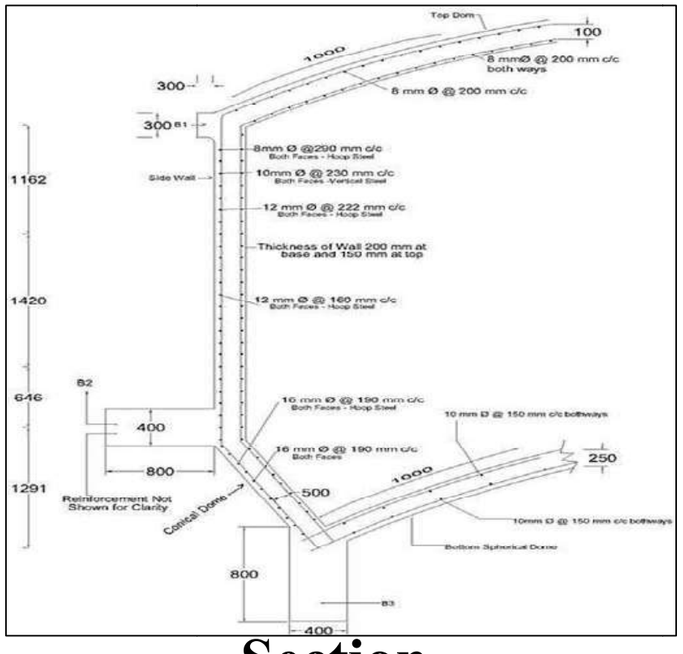


GUJARAT TECHNOLOGICAL UNIVERSITY

- All Dimensions are in feet and inches unless stated otherwise
- Design is not responsible for any kind of wrong data.
- Minimum grade of concrete is m20 and all steel grade is fe500
- Check first the plot dimensions

Plan

Elevation



Section

Veerayatan Institute of Engineering
(Approved by AICTE, Affiliated to GTU)

Overhead Water Tank

Designed by:- Bijen J. Gajjar
Dhaval H. Chheda

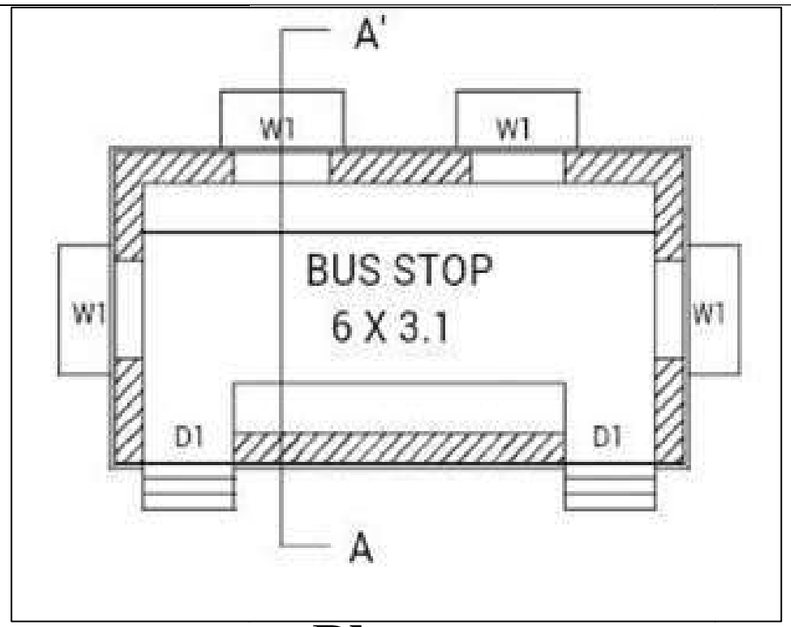
Dwg.no. 7

Date: 03/03/2021

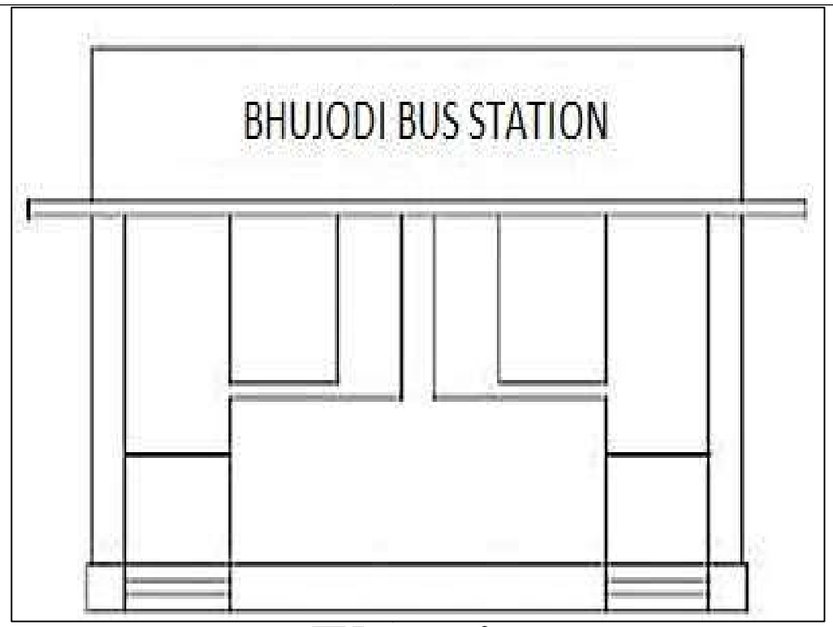
Guided by: Mr. Nilesh J. Vadgama

Vishwakarma Yojana

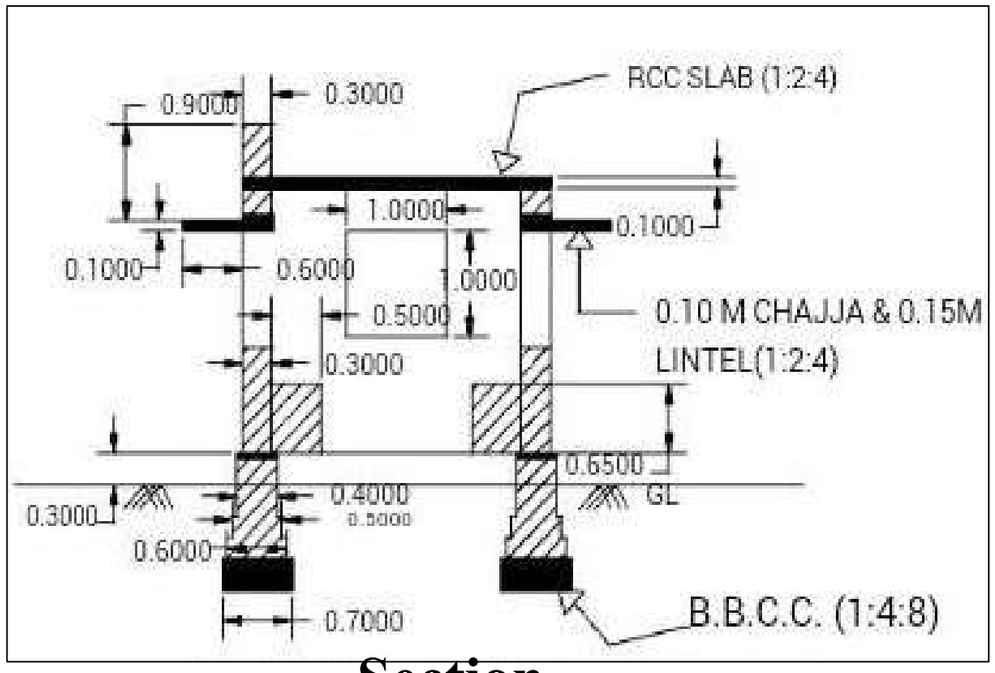
Scale: 1:20



Plan



Elevation



Section

GUJARAT TECHNOLOGICAL UNIVERSITY

- All Dimensions are in feet and inches unless stated otherwise
- Design is not responsible for any kind of wrong data.
- Minimum grade of concrete is m20 and all steel grade is fe500
- Check first the plot dimensions

Veerayatan Institute of Engineering (Approved by AICTE, Affiliated to GTU)

Pick up Bus Station

Designed by:- Bijen J. Gajjar
Dhaval H. Chheda

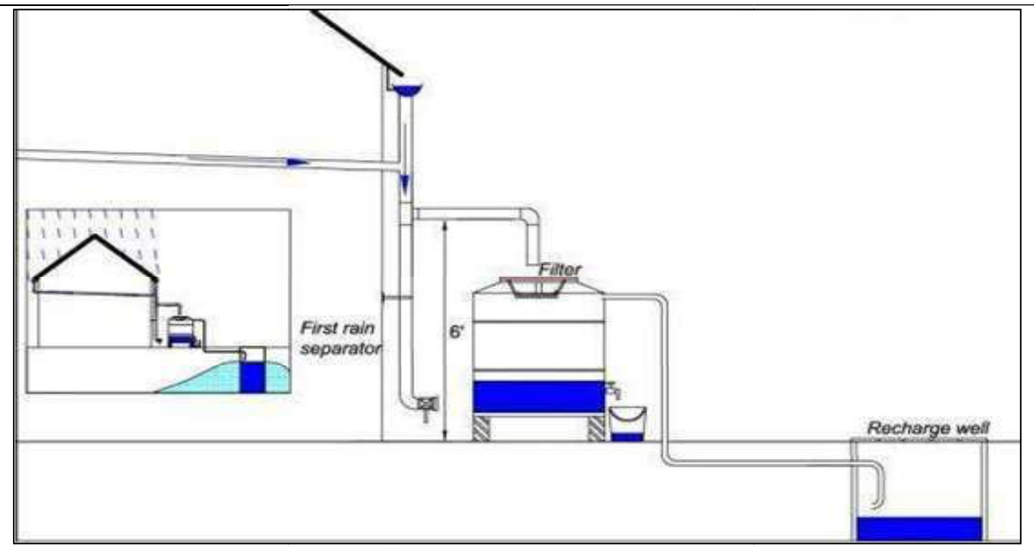
Dwg.no. 8

Date: 10/03/2021

Guided by: Mr. Nilesh J. Vadgama

Vishwakarma Yojana

Scale: 1:20

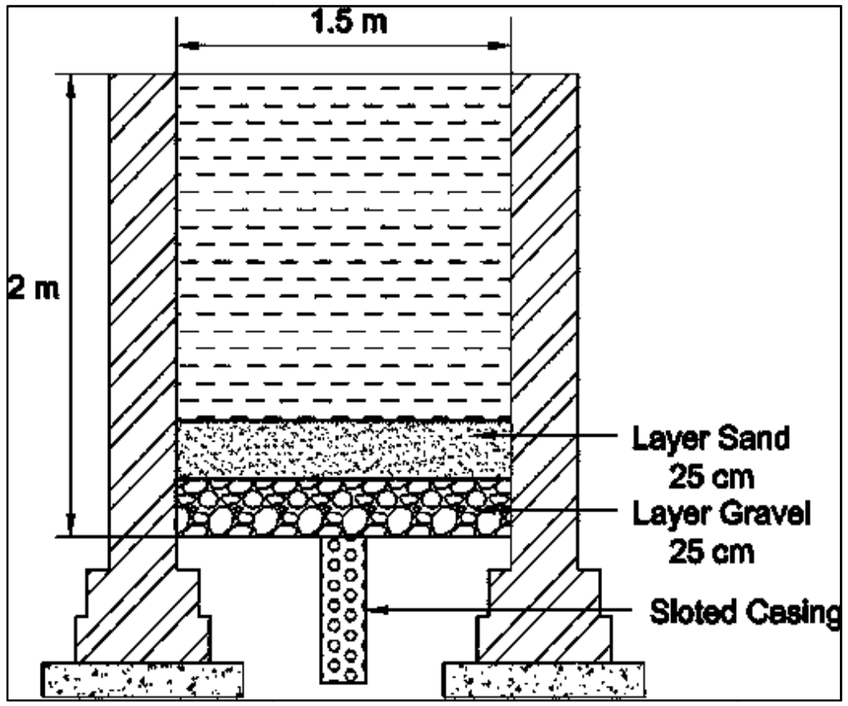


Plan

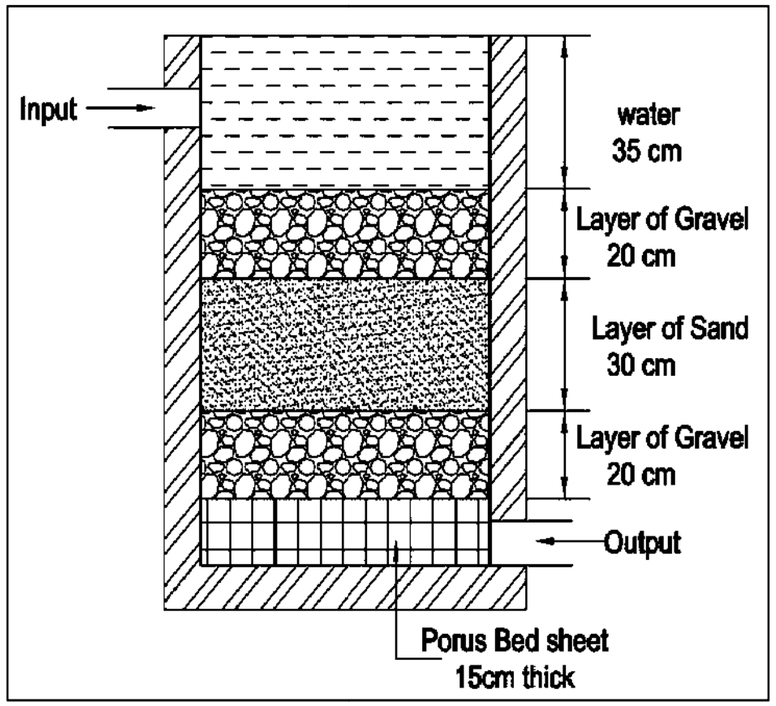
Storage Tank
3 m X 2.5 m

Height = 2 m

Storage Tank



Recharge pit



Filter Media

GUJARAT TECHNOLOGICAL UNIVERSITY

- All Dimensions are in feet and inches unless stated otherwise
- Design is not responsible for any kind of wrong data.
- Minimum grade of concrete is m20 and all steel grade is fe500
- Check first the plot dimensions

Veerayatan
Institute of Engineering
(Approved by AICTE, Affiliated to GTU)

Rain Water Harvesting

Designed by:- Bijen J. Gajjar
Dhaval H. Chheda

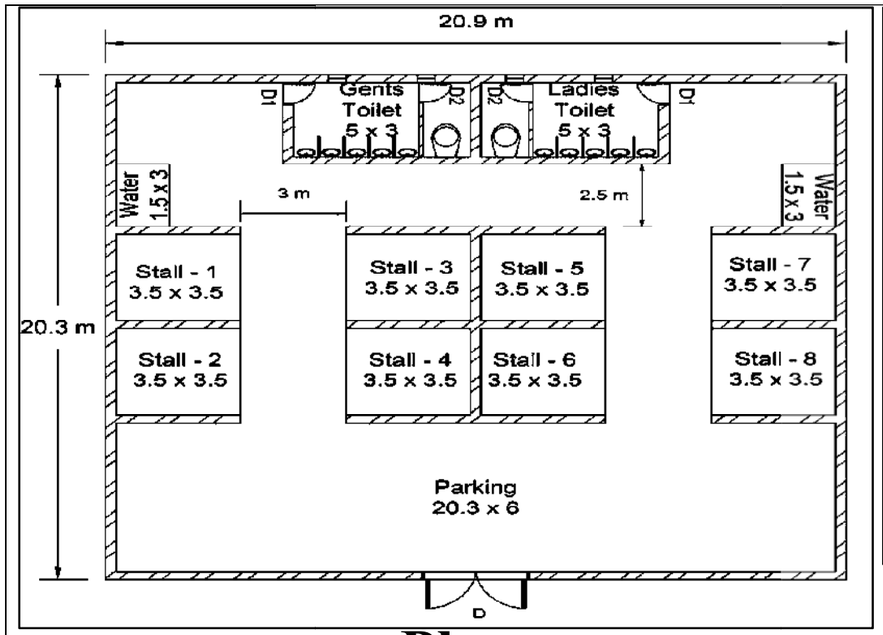
Dwg.no. 9

Date: 17/03/2021

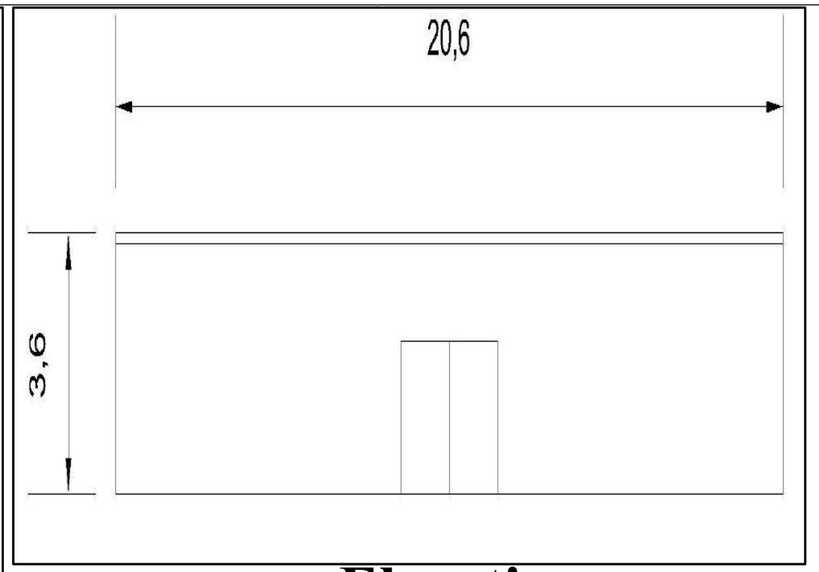
Guided by: Mr. Nilesh J. Vadgama

Vishwakarma Yojana

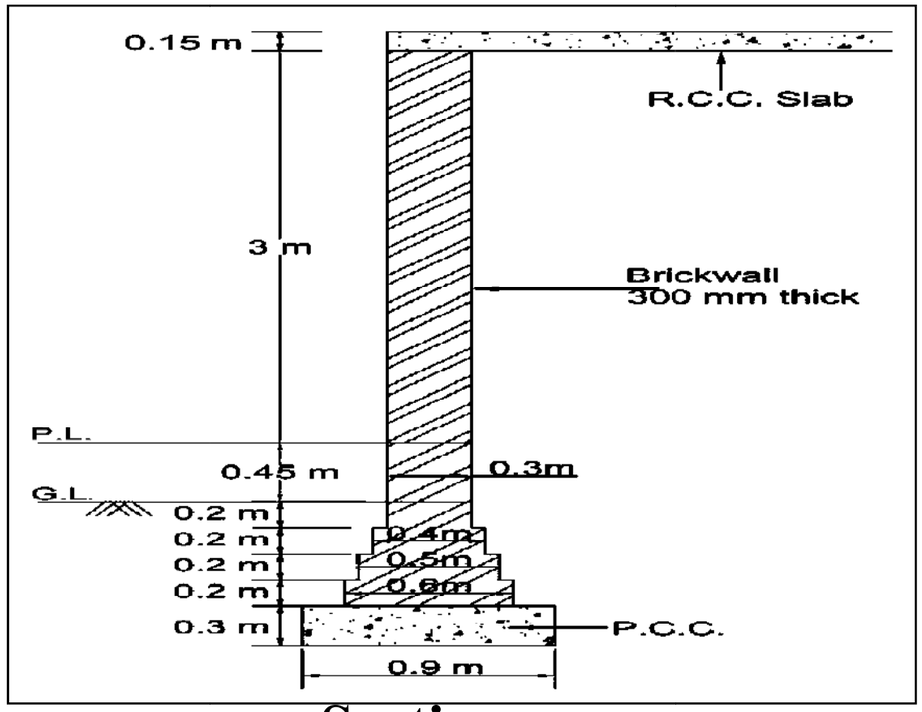
Scale: 1:20



Plan



Elevation



Section

GUJARAT TECHNOLOGICAL UNIVERSITY

- All Dimensions are in feet and inches unless stated otherwise
- Design is not responsible for any kind of wrong data.
- Minimum grade of concrete is m20 and all steel grade is fe500
- Check first the plot dimensions

Veerayatan Institute of Engineering (Approved by AICTE, Affiliated to GTU)

Vegetable Market

Designed by:- Bijen J. Gajjar
Dhaval H. Chheda

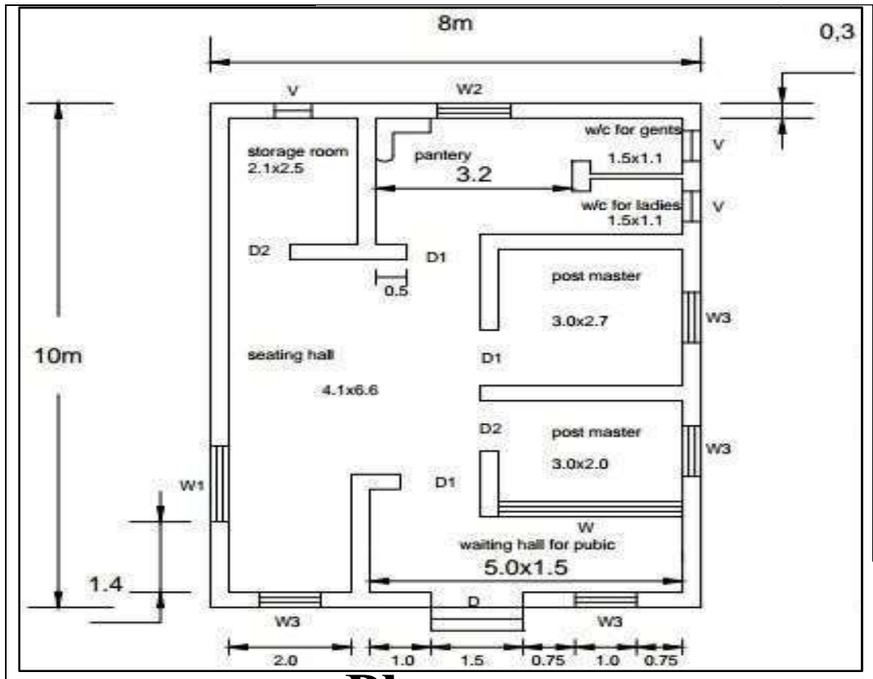
Dwg.no. 10

Date: 21/03/2021

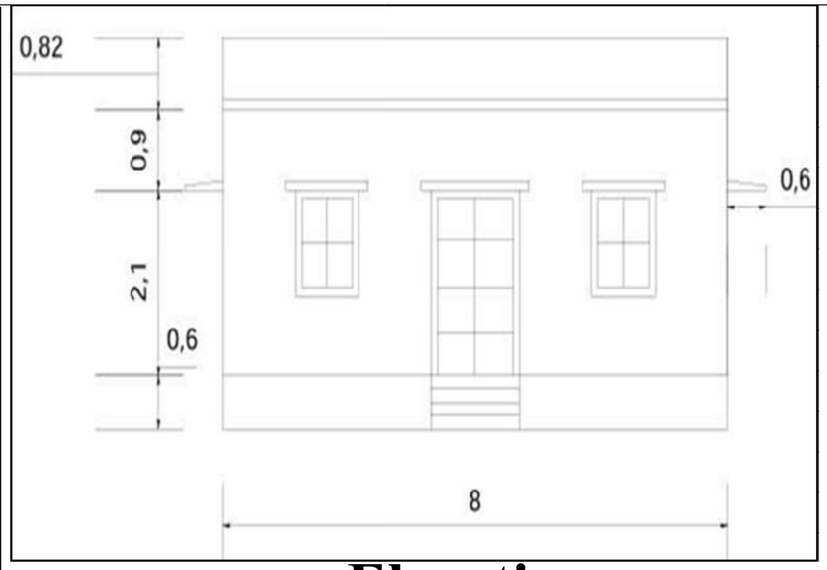
Guided by: Mr. Nilesh J. Vadgama

Vishwakarma Yojana

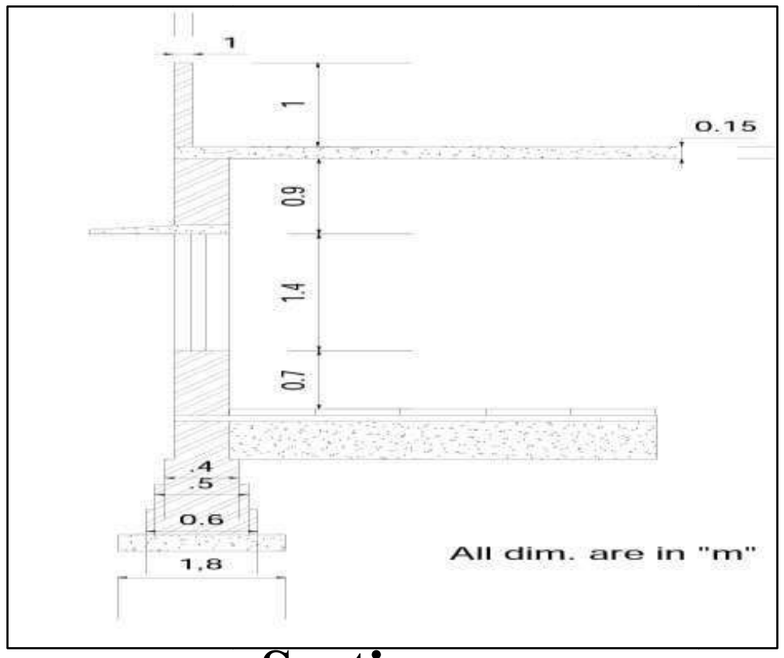
Scale: 1:20



Plan



Elevation



Section

GUJARAT TECHNOLOGICAL UNIVERSITY

- All Dimensions are in feet and inches unless stated otherwise
- Design is not responsible for any kind of wrong data.
- Minimum grade of concrete is m20 and all steel grade is fe500
- Check first the plot dimensions

Veerayatan Institute of Engineering (Approved by AICTE, Affiliated to GTU)

Post Office

Designed by:- Bijen J. Gajjar
Dhaval H. Chheda

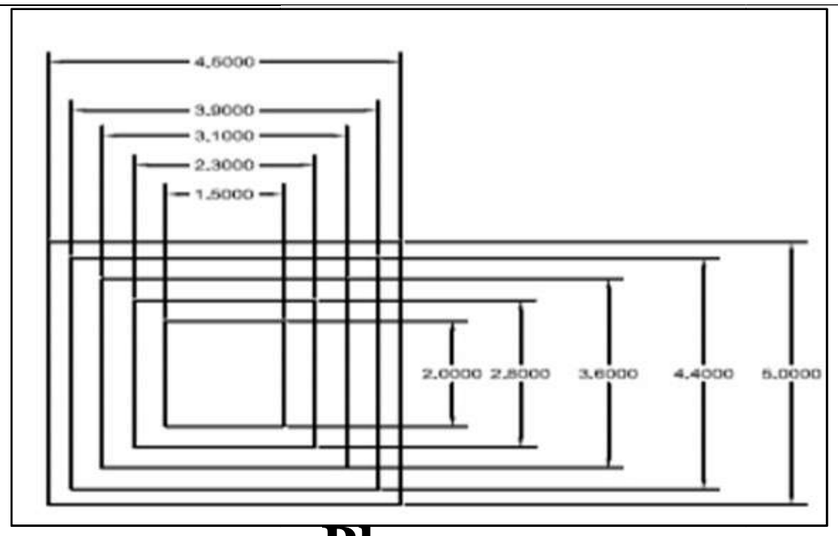
Dwg.no. 11

Date: 26/04/2021

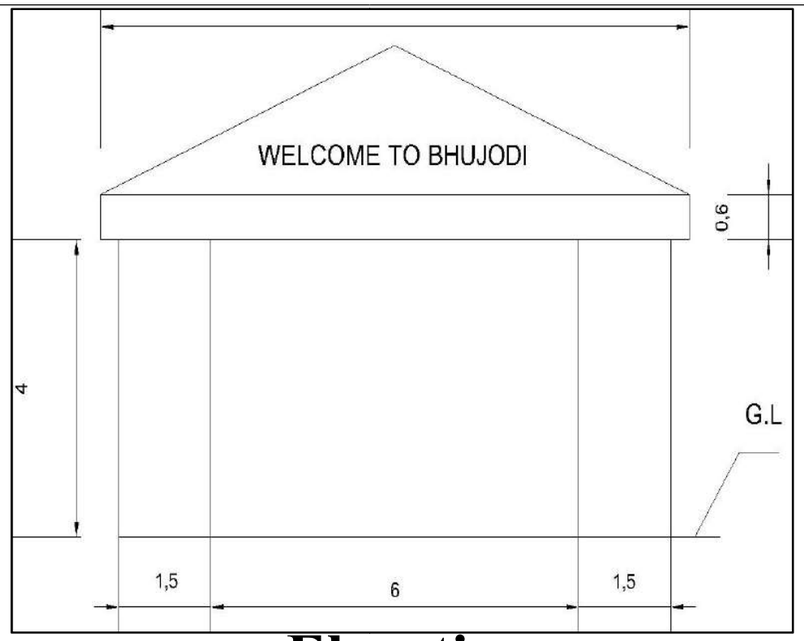
Guided by: Mr. Nilesh J. Vadgama

Vishwakarma Yojana

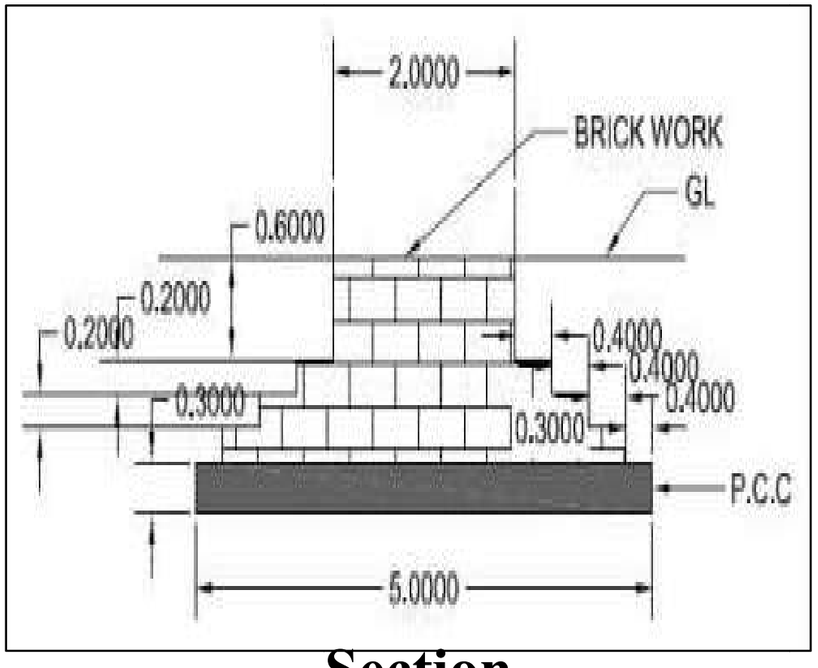
Scale: 1:20



Plan



Elevation



Section

GUJARAT TECHNOLOGICAL UNIVERSITY

- All Dimensions are in feet and inches unless stated otherwise
- Design is not responsible for any kind of wrong data.
- Minimum grade of concrete is m20 and all steel grade is fe500
- Check first the plot dimensions

Veerayatan Institute of Engineering (Approved by AICTE, Affiliated to GTU)

Entrance Gate

Designed by:- Bijen J. Gajjar
Dhaval H. Chheda

Dwg.no. 12

Date: 07/05/2021

Guided by: Mr. Nilesh J. Vadgama

Vishwakarma Yojana

Scale: 1:20