# DETAIL PROJECT REPORT

## VISHWAKARMA YOJNA: VIII

### AN APPROACH TOWARDS RURBANISATION

# Antaliya Village

# Amreli District

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## YEAR:2020-21

**GUJARAT TECHNOLOGICAL UNIVERSITY**
**Chandkheda,Ahmedabad– 382424 Gujarat**

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**ON**

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**Chandkheda,Ahmedabad– 382424 Gujarat**

# CERTIFICATE

Thisistocertifythatthefollowingstudentsof DiplomaEngineeringsuccessfullysubmitted

**DetailProjectReportfor,**

**VILLAGE: -ANTALIYA**
**DISTRICT: - AMRELI**

**Under**

## VishwakarmaYojana: Phase-VIII

Inpartialfulfillmentoftheprojectofferedby

**GUJARATTECHNOLOGICALUNIVERSITY,CHANDKHEDA**

**Duringtheacademicyear2020-21.**

Thisprojectworkhasbeencarriedoutbythemunderoursupervisionandguidance.

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# ABSTRACT

The Government of Gujarat has launched Vishwakarma Yojana for development of villages by identifying the requirements of villages. It is about finding out what the basic facilities are present in the villages and what can be provided to betterment of the villages. Thus, the project is mainly aimed to take part in urbanization of undeveloped villages for the welfare of society.

This project deal with some interesting studies the various surveys at Antaliya district Amreli, in the course of his field work in the area during the 2020. Rural development is depending on modesty of people. If they want to carry their life darker to brighter, they have to follow their life according to government rules and regulation. "Creating 'big village' with a 'rural soul' but with all urban amenities that a city may have" Our survey area suffering from calamities Government is ready to help the particular village and find problems. In our village major problems are Poor conditions of Gram Panchayat building, good condition of Anganwadi, poor condition of public toilet block and bad condition of Road etc.

We have selected four designs after survey, because this design needed for in this village. Design is sustainable-Rainwater Harvesting system. Collect some data related to project and work on planning, designing, estimating.

Urbanization is to bring peace of mind to the villagers by providing them the basic amenities required and still keeping the village soul intact. It is about finding out what the basic facilities are present and what can be provided to betterment of the village. The present resources are made to such a use that it gives its cent percentage usability with sustainability.

**Key Words: -** Rural Development, Rurbanisation, Reduce Migration, Infrastructure Facilities, Agriculture Modernizing, Traditional Identities

# 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.

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## ABBREVIATIONS

| |
|---|
| **PHC** - Primary Health Centre |
| **CHC** - Community Health Centre |
| **TDO**-Taluka Developer Officer |
| **DDO**-District Developer Officer |
| **PPP**-Public Private Partnership NGO - Non Governmental Organization |
| **PURA**- Provision of Urban Amenities in Rural Area |
| **CSS**-Centrally Sponsored Schemes |

| |
|---|
| **BOD**- Biochemical Oxygen Demand |
| **COD**-Chemical Oxygen Demand |
| **DEWATS**-Decentralized Wastewater System |
| **BORDA**-Bremen Overseas Research & Development Association |
| **ZWM**-Zero Waste Management |
| **DRDA**-District Rural Development Agency |
| **EPF**-Eco-friendly Plastic Fuel |
| **MGNREGA**-Mahatma Gandhi National Rural Employment Guarantee Act |
| **PMGSY**-PradhanMantri Gram Sadak Yojana |
| **IAYUM**-National Urban Mission |
| **NGO**- Non-Governmental Organization |
| **BRTS**- Bus rapid transit system |
| **RMTS**- Rajkot Mass transport service |
| **IAY**- Indira Awas Yojana |
| **BIM**- Building Information Modelling |
| **NH**- National Highway |
| **IS**- Indian Standards |
| **PT**- Public Transport |
| **PMGSY**- Pradhan Mantri Gram Sadak Yojana |

# Chapter 1: Introduction

## 1.1 INTRODUCTION

About 70% of India's population, or 750 million, live in its 600,000 villages. More than 85% of these villages are in the plains or on the Deccan plateau. The average village has 200-250 households, and occupies an area of 5 sq. km. Most of this is farmland, and it is typical to find all the houses in one or two clusters. Villages are thus spaced 2-3 km apart, and spread out in all directions from the market towns. The market centres are typically spaced 30-40 km apart. Each such centre serves a catchment of around 250-300 villages in a radius of about 20 km. As the population and the economy grow, several large villages are continually morphing into towns and market centres. Around 65% of the State's population is living in rural areas. People in rural areas should have the same quality of life asks enjoyed by people living in sub urban and urban areas. Further there are cascading effects of poverty, unemployment, poor and inadequate infrastructure in rural areas on urban centres causing slums and consequential social and economic tensions manifesting in economic deprivation and urban poverty. Hence Rural Development which is concerned with economic growth and social justice, improvement in the living standard of the rural people by providing adequate and quality social services and minimum basic needs becomes essential. The present Project deals with the same.

Densely populated areas can be more environmentally sustainable than sprawling communities and allow for more efficient provision of services. The ideas, connections and activities in cities often generate the solutions to the problems they create. Vishwakarma Yojana would provide "Design to Delivery" solution for development of villages in 'Urban' areas. The developmental work in villages that could be undertaken as per the need of the village in particular includes Physical infrastructure facilities (Water, Drainage, Road, Electricity, Solid waste Management, Storm Water Network, Telecommunication & Other), Social infrastructure facilities (Education, Health, Community Hall, Library, Recreation Facilities & other)and renewable energy (Rain water harvesting, Biogas plant, Solar Street lights & Other) for Sustainable development. The Engineering colleges would study the identified villages and make there commendations on the application of technology to achieve integrated and comprehensive development, through project preparation and management.

## 1.2 STUDY JUSTIFICATION

The basic need of this study is to provide facilities in the villages for the Urban Development. Implement the different Physical and Social infrastructural facilities in the villages and to lessen the urban migration of people of the village. So, for this purpose information of village is to be collected like Drainage Facility, Education Facilities, Health Facilities, Transportation Facilities, Banking Facilities, and Public Toilets etc. It will also provide so many job opportunities. Development of the village will indirectly affect the GDP of India. So, it is very important to develop the villages of India.

## 1.3 STUDY AREA

Study area mainly includes the study of the village **Antaliya** which is located in LiliaTaluka in Amreli district of Gujarat state. It is about 20 km from Amreli.

The Vishwakarma Yojana is aimed to urban development of the village. For that purpose study area is decided for taking detail information of the village. The study area includes education, health and safety, drainage, transportation facilities, social life etc.

Education includes various facilities like Anganwadi, Primary School, Secondary School, higher secondary School, College etc. Medical Facility includes study of Gov. / PanchayatDispensary, Health Centre, PHC & CHC, Child Welfare and Maternity Home, Hospital etc. Drainage facilities include the open drainage system or the closed or underground drainage facilities etc.

## 1.4 OBJECTIVES OF THE STUDY

Following are the various objectives of the study:-

- To provide basic physical infrastructure Water Supply, Transport, Sewerage and Solid Waste Management should be the priority focus and be provided.
- To provide insufficient Social infrastructure like health and education facilities and to ensure proper delivery of facilities to village dwellers.
- To promote integrated development of rural areas with provision of quality housing, better connectivity, employment opportunities and supporting physical and social infrastructure.
- Reduce migration from rural to urban areas due to lack of basic services and sufficient economic activities in rural areas.
- Electricity connection like street lighting that is energy efficient and eco-friendly.
- Identification of sanitation facilities that need improvement.

## 1.5 SCOPE OF THE STUDY

By studying the present status and techno-economic survey of Antaliya village in Amreli district of the Gujarat state in terms of basic services, public amenities, other infrastructural facilities for the need of the people and to prepare a report on the expected socio-economic growth of the area with the consultation of TDO, DDO and Serpent; will help full in providing better facilities and services in village.

From the gap analysis, development strategies for village development will be proposed and planning proposals for Physical infrastructure, Social Infrastructure and Renewable energy Source will be suggested for the village. The study will focus on the development of the village.

## 1.6 METHODOLOGY/STUDY FRAMEWORK

- Firstly, we studied what are various objectives and the need of the Vishwakarma Yojana.
- Then we completed our Literature Review that includes the basic definitions of rural area, urban area, Urbanisation, Sustainable development etc.
- We also visited an ideal village named Moviya which is also located in the LiliaTaluka in Amreli district. There we understood what kind of facilities is required in the village and how to implement it.
- After this we met our village (Antaliya) Sarpanch, talati mantra and other gram Panchayat members.

# Chapter 2: Literature Review

## 2.1 INTRODUCTION: URBAN & RURAL

**Urban:**

Urban is that area where the population density is more and new facilities are provided to the people. Urban area is the region surrounding a city. Most of inhabitants of urban areas have non-agricultural jobs. Urban areas have municipality, corporation, and cantonment board or notified town area committees. According to census 2011, there are 7,935 towns, 4,041 statutory town and 3,894 census towns.

**Rural:**

All the areas which are not characterised as urban area is called rural area. In which the populations very low compared to urban areas. Mainly they depend on agricultural activities. According to census 2011, there are 6, 40,867 villages in India. The area where more than 75% of male populations associated with agricultural activity is known as rural area.

## 2.2 DIFFERENT DEFINITIONS OF: RURAL AREA / VILLAGE

Rural areas have low population density and large amount of undeveloped land. Agricultural activities are more in rural areas.

Census rural refers to individuals living in the countryside outside centres of 1000 or more population.

Rural and small town refers to individuals in towns or municipalities outside the commuting zone of larger urban centres. These individuals may disaggregate into zones according to the degree of larger urban centre.

## 2.3 RURAL ISSUES AND CONCERNS

Following issues are concern with rural areas:

- People are directly or indirectly dependent on agriculture and a large number of landowners have small and medium-sized landholding.
- Economy of the people living in rural areas is low.
- The price the farmers get for their produces is less in relation to the work they put

in.

- ❖ People have to migrate to the urban areas due to unavailability of education.
- ❖ The other rural problems are due to the fact that since the rural people do not live in concentrated masses, the availability of specialised service to them is minimum.
- ❖ Very less people are employed in the rural areas.
- ❖ Lack of physical facilities in rural areas.
- ❖ Lack of recreation facilities.
- ❖ Farmers are not having market area for selling their goods directly to the market.

## 2.4 VARIOUS MEASURES FOR RURAL DEVELOPMENT

Rural development is the national necessity and it has following measures:

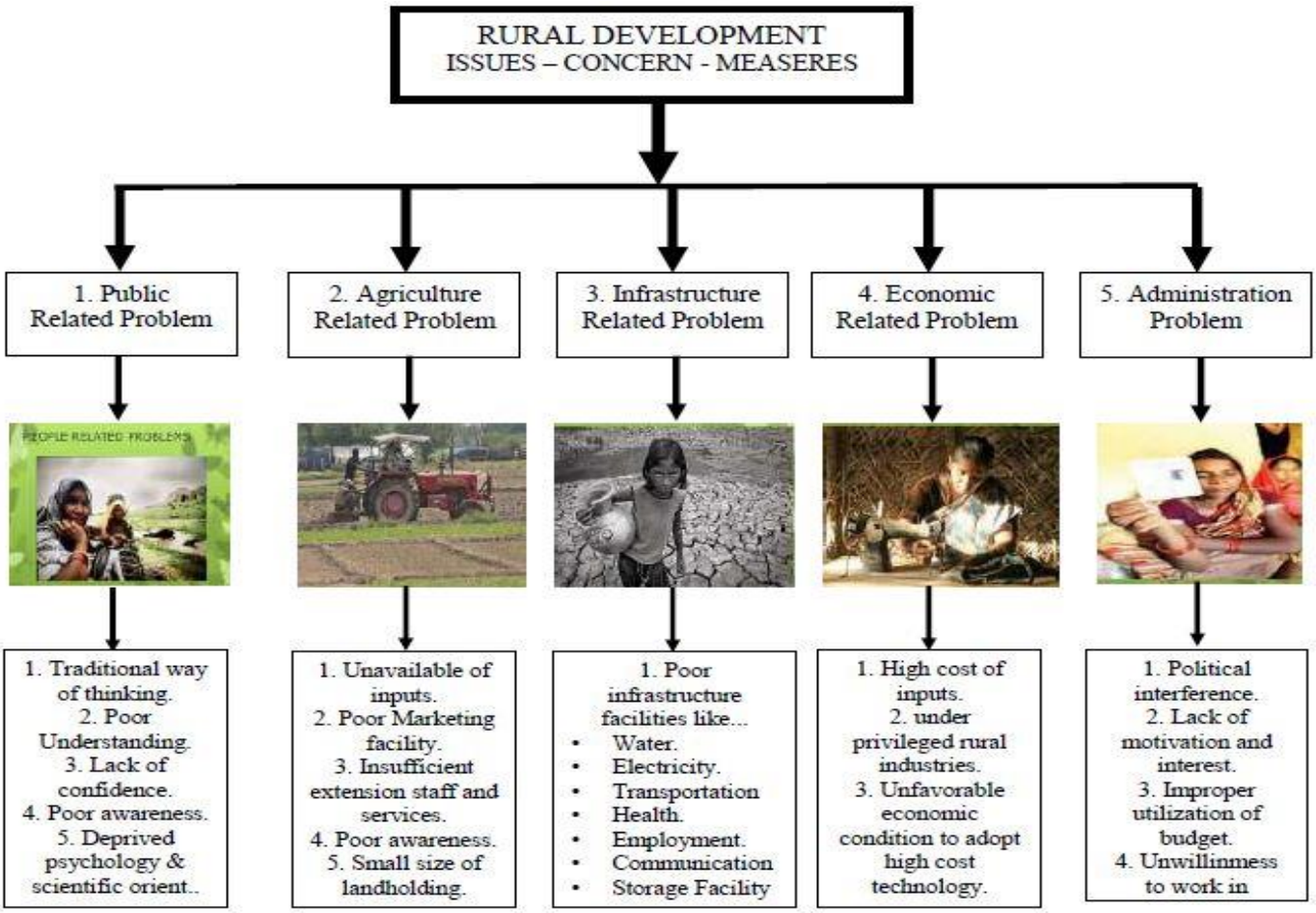
- To develop rural area as whole in terms of culture, society, economy, technology and health.
- To develop living slandered of rural mass.
- To develop rural youths, children and women.
- To develop and empower human resource of rural area in terms of their psychology, skill, knowledge, attitude and other abilities.
- To develop infrastructure facility of rural area.
- To provide minimum facility to rural mass in terms of drinking water, education, transport, electricity and communication.
- To develop rural institutions like Panchayat, cooperatives, post, banking and credit.
- To provide financial assist to develop the artisans in the rural areas, farmers and agrarian unskilledlabour, small and big rural entrepreneurs to improve their economy.
- To develop rural industries through the development of handicrafts, small scaled industries, village industries, rural crafts, cottage industries and other related economic operations in the rural sector.
- To develop agriculture, animal husbandry and other agricultural related areas.

## 2.5 THE IDEA OF MODEL OR SMART VILLAGE

The idea of an "Adders Gram" or model village has been explored earlier as well, most notably through the PradhanmantriAdders Gram Yojana, launched by the Central Government in 2009-10. The scheme was implemented in pilot mode in 1000 villages of Assam, Bihar, HimachalPradesh, Rajasthan and Tamil Nadu, with an allocation of Rs 10 lakh per village. This limit was later raised to Rs 20 lakh per village. The target villages under the scheme were those with more than 50% of the population belonging to Scheduled Castes (SCs). Additionally, State

governments have also taken steps in this direction. Himachal Pradesh launched a MushyMantriAdarsh Gram Yojana along similar lines in 2011, with the allocation of Rs 10 lakh per village.

## 2.6 Rural Development Issues – Concerns – Measures



## 2.7 Other Projects / Schemes In Other Projects For The Development Of The Rural Area Is The Public Private Partnership (PPP).

Public-Private-Partnership -The Concept: - Public–private-partnership (PPP, 3P, or P3) is a cooperative agreement between two or more public and private sectors, characteristically of a long-term nature. In other words, it involves government and business that work mutually to complete a project and/or to provide services to the population. Public–private partnerships have been implemented in multiple countries, are primarily used for infrastructure projects, such as the building and equipping of schools, hospitals, transport systems, and water and sewerage systems.

## 2.8 Ancient / Existing Electrical concept study as a Literature Review for village development

- **Civil Review**

Rural electrification is the process of bringing electrical power to rural and remote areas. Rural communities are suffering from colossal market failures as the national grids fall short of their demand for electricity. As of 2017, over 1 billion people worldwide lack household electric power – 14% of the global population. Electrification typically begins in cities and towns and gradually extends to rural areas, however, this process often runs into obstacles in developing nations. Expanding the national grid is expensive and countries consistently lack the capital to grow their current infrastructure. Additionally, amortizing capital costs to reduce the unit cost of each hook-up is harder to do in lightly populated areas (yielding higher per capita share of the expense). If countries are able to overcome these obstacles and reach nationwide electrification, rural communities will be able to reap considerable amounts of economic and social development.

This graph shows the world rural electrification rate along with the electrification growth rate. This graph shows the world rural electrification rate along with the electrification growth rate from 1990-2016 and synthesizes data from the World Bank.

❖ **Electrical Review**


The need for extension of the electricity system to rural areas was felt quite early, just after the independence of the country. Rural Electrification programme in India was launched with two distinct dimensions i.e. (1) Village Electrification. (2) Irrigation Pump set Energization. The former enhances consumer satisfaction and the latter optimises crop yield. The area of focus was certainly maximising farm output, which did result in the Green Revolution in the mid-1960s. Accordingly, the indicator of electrification was not based on the percentage of households or population with access to electricity but merely extension of electricity lines to a particular area. By this definition, almost 86% of the villages have access to electricity. In 2004, the programme has been refocused to provide electricity access to rural households. The First Five Year Plan emphasized to support for projects that ensure irrigation potential. During this period, only one in 200 villages was connected to grid supply across the country. The Second Plan named rural electrification as an area of special interest, and proposed to cover all towns with a population of 10,000 or more. Only 350 out of a total of 856 of were eventually electrified. The Third Plan for the first time raised the issue of efficiency in the sector. The REC (Rural Electrification Corporation) was created in 1969 with renewed focus on poverty alleviation. The target based approach of rural electrification was developed in the Fourth and Fifth Plan periods, with focus on pump set energization and guidelines for village grid connectivity for all villages with a population of at least 5000.

# Chapter-3 Smart (Cities/ Village) Concept Idea and Its Visit

## 3.1 Introduction: Concepts Definitions and Practice

**Concept:-**

Creating a "smart village" is essential to solve the problems of urban population increase and rapid urbanization. The basic concept of smart village is to collect society efforts and strength of people from various streams and incorporate it with information technology to provide profit to the rural community.

**Definition:-**

Smart village means all the amenities like; sanitation systems, drainage system, electricity, transportation facilities, are obtainable in the village.

**Practice:-**

Practice is the act of rehearsing a behaviour over and over, or engaging in an activity repeatedly, for the purpose of improving or mastering it.

## 3.2 Vision-Goals, Standards and Performance Measurement Indicators

This paper identifies seven attributes of robust performance measurement systems by analyzing five performance measurement frameworks and their use of transportation system performance indicators. The attributes are then used to examine three case studies from Europe and the United States to demonstrate the value of performance measurement frameworks for developing and improving sustainable transportation strategies and indicators. The case studies point to important considerations in formulating a robust sustainable transportation strategy at different levels of governance and also indicate the importance of ensuring alignment in an agency's vision, objectives, and monitoring systems. The characteristics of an effective framework for the development of sustainable transportation strategies include a comprehensive sustainability objective, a good connection to the goals and objectives of an agency, and vertical and horizontal integration. In addition, a framework should capture the interactions among variables, reflect stakeholder perspectives, and consider the capabilities and constraints of the agency and should be flexible to foster self-learning.

## 3.3 Technological Options

1. Smart Buildings
2. Smart Mobility
3. Smart Governance
4. Smart Healthcare
5. Smart Society
6. Smart Infrastructure

7. Smart Energy
8. Smart Public Services
9. Smart Farming
10. Smart Education
11. Smart Business

A smart city is an urban area that uses different types of electronic methods and sensors to collect data. Insights gained from that data are used to manage assets, resources and services efficiently; in return, that data is used to improve the operations across the city. This includes data collected from citizens, devices, buildings and assets that is then processed and analysed to monitor and manage traffic and transportation systems, power plants, utilities, water supply networks, waste, crime detection, information systems, schools, libraries, hospitals, and other community services.

## 3.4 Road Map and Safe Guards

A road map, route map, or street map is a map that primarily displays roads and transport links rather than natural geographical information. It is a type of navigational map that commonly includes political boundaries and labels, making it also a type of political map. In addition to roads and boundaries, road maps often include points of interest, such as prominent businesses or buildings, tourism sites, parks and recreational facilities, hotels and restaurants, as well as airports and train stations. A road map may also document non-automotive transit routes, although often these are found only on transit maps.

A safeguard is a law, rule, or measure intended to prevent someone or something from being harmed. Many people took second jobs as a safeguard against unemployment. A system like ours lacks adequate safeguards for civil liberties. Synonyms: protection, security, defence, guard More Synonyms of safeguard.

## 3.5 Issues & Challenges

- There are certain technologies that are a part of the project and it is exclusive to use them. This hinders the achievement of smart city project. Another challenge is the need for a standard that can bring skill users and creators together to take on faster platforms.
- For making smart village the major challenge is to have money. It was determined that each Smart City will obtain 500 Crore over the period of 5 years by Central Government. But this amount won't be adequate. There are many private firms that are as long as funding but it requires being in proper procedure.

## 3.6 Smart Infrastructure Intelligent Traffic Management

- Smart Infrastructures Include Several Operators From Different Domains Of Activity, Such As Energy, Public Transport And Public Safety.
- Smart Infrastructure Has Many Apparatus Like Digital Management Of Infrastructure,

Sensor Networks, Digital Water And Waste Management, Institutional, Physical, Social, Economic Infrastructure, and Smart Electricity (Like, Solar Power).

- Economic Infrastructure Includes Developing Proper Infrastructure That Generates Employment Opportunities And Magnetize Investments.
- Economic Infrastructure Refers To The Amenities, Actions And Services Which Support Operation And Development Of Other Sectors Of The Economy.
- Smart Information And Communications Technology (Smart Ict) Has The Probable To Transform The Way We Plan And Handle Infrastructure.
- Smart infrastructure intelligently connects energy systems, buildings and industries to adapt and evolve the way we live and work.
- Intelligent grid control and education to smart storage solutions, from building automation And control systems to switches, valves and sensors.

## 3.7 Cyber Security or any other concept as per the

- Cyber security refers to the body of technologies, processes, and practices designed to protect networks, devices, programs, and data from attack, damage, or unauthorized access. Cyber security may also be referred to as information technology security.
- Cyber security is important because government, military, corporate, financial, and medical organizations collect, process, and store unprecedented amounts of data on computers and other devices

**Elements of cyber encompass all of the following:-**

- Application security
- Endpoint security
- Data security
- Identity management
- Database and infrastructure security
- Cloud security
- Mobile security
- Disaster recovery

## 3.8 Retrofitting- Redevelopment- Greenfield Development District Cooling:-

- **Green Building**

- Green building is the practice of increasing the effectiveness with which buildings and their sites use energy, water, and materials, and of falling impacts on human health and the environment for the entire life-cycle of a building.

- Green building is the perform of creating structures and using processes that are environmentally dependable and resource-efficient throughout a building's life-cycle from sitting to design, construction, operation, preservation, renovation and deconstruction.
- Pollution's devastating effects on the environment have become more understandable inrecent years, sparking a movement to encourage energy efficiency, less reliance on fossil fuels, and a decrease in air and water pollution.
- Green building brings mutually a huge collection of practices, techniques, and skills to reduce and ultimately eliminate the impacts of buildings on the environment and human health.
- The United States of America (USA) and Canada have developed demonstration projects on a large scale for DH (district heating) or DC (district cooling).

## 3.9 Strategic Options for Fast Development

The main objective of the approaches and strategies that are necessary to bring about development of rural communities. In rural communities, there are number of aspects that need to be developed. These include, education, employment opportunities, agriculture and farming practices, administration and management, infrastructure, civic amenities, health care and medical and environmental conditions. When improvements would take place in these areas, then rural individuals would be able to secure better livelihoods opportunities. Furthermore, when approaches and strategies are formulated by the Government, organizations and other agencies, then it is vital to generate awareness among rural individuals and help them in acquiring benefits of these measures and approaches in an appropriate manner. The main areas that have been taken into account in this research paper include, development objectives of rural areas, components of rural development policy, approaches for rural development, strategies of rural development and other strategies promoting rural development.

**Conclusion:-**

The primary objective of acquiring understanding in terms of rural development approaches and strategies is to recognize the effective contributions that they make towards leading to effective growth and progression of rural communities. Generating information in terms of rural development objectives is the first and foremost aspect. These are, improvement of economic capabilities, improvement of human capabilities, improvement of protective capabilities and improvement of political capabilities. The components of rural development policy are, environmental conditions, ecological settings, technology, infrastructure, self-reliance, law and order, education, training programs, distributive justice and medical and health care. When the rural development

policies are initiated, then they have the major objective of ensuring that the components are taken into account in an appropriate manner. The main purpose of approaches is to promote development of various areas. These include, education, training programs, employment opportunities, skills development programs, technology, modern and innovative methods, management and administration and housing.

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

The global urban population is expected to nearly double to 6.4 billion by 2050, with about 90% of the growth in low-income countries. The predicted increase in the number of urban slum dwellers is to 2 billion in the next 30 years (Global Water Partnership, 2013). In India, the number of people living in urban areas is expected to more than double and grow to around 800 million by 2050. This will pose unprecedented challenges for water management in urban India. The Indian economy and society already face daunting challenges in the water sector, as we move into the second decade of the 21st century. The demands of a rapidly industrializing economy and urbanizing society come at a time when the potential for augmenting supply is limited, water tables are falling and water quality issues have increasingly come to the fore. As we drill deeper for water, our groundwater gets contaminated with fluoride and arsenic. Both our rivers and our groundwater are polluted by untreated effluents and sewage, continuing to be dumped into them. Many urban stretches of rivers and lakes are overstrained and overburdened by industrial waste, sewage and agricultural runoff. These wastewaters are overloading rivers and lakes with toxic chemicals and wastes, consequently poisoning water resources and supplies. These toxins are finding their way into plants and animals, causing severe ecological toxicity at various trophic levels. In the developing cities, it is estimated that more than 90 percent of sewage is discharged directly into rivers, lakes, and coastal waters, without treatment of any kind. In India, cities produce nearly 40,000 million liters of sewage every day and barely 20 percent of it is treated. Central Pollution Control Board's 2011 survey states that only 2% towns have both sewerage systems and sewage treatment plants. Climate change poses fresh challenges with its impacts on the hydrologic cycle. More extreme rates of precipitation and evapo-transpiration will exacerbate impacts of floods and droughts. More intense, extreme and variable rainfall, combined with lack of proper drainage, will mean that every spell of rain becomes an urban nightmare as roads flood and dirty water enters homes and adds to filth and disease. Conflicts across competing uses and users of water – agriculture and industry, town and country are growing by the day. The water shares across agriculture, industry and households in rich, industrialized countries are significantly different from those in India. Rich, industrialized nations use some 86% of water resources for industry and domestic uses, whereas 82% of water resources are used in agriculture in India (Narain, 2012). And water use efficiency in agriculture, which consumes around 80% of our water resources, continues to be among the lowest in the world. At 25-35 percent, this compares poorly with 40-45

percent in Malaysia and Morocco, 50-60 percent in Israel, Japan, China and Taiwan. Thus, even as this paper addresses the issues surrounding urban water, it is useful to keep in mind, that we face very real challenges in managing water in the economy as a whole and especially in the farm sector. The 12th Plan has proposed a paradigm shift in water management to enable a movement forward in this direction (Shah, 2013). Such reforms are crucial so that more water is released for rapidly growing urban India. In the next three sections, this paper outlines the problems facing urban India in the water sector. After which, the paper will shift focus to possible solutions and conclude by providing a framework for possible work in the cities of Indore and Nagpur.

### 3.11 Initiatives in village development by local self-government

Local government in India refers to governmental jurisdictions below the level of the state. India is a federal republic with three spheres of government: central, state and local. The 73rd and 74th constitutional amendments give recognition and protection to local governments and in addition each state has its own local government legislation. Since 1992, local government in India takes place in two very distinct forms. Urban localities, covered in the 74th amendment to the Constitution, have Nagar Palika but derive their powers from the individual state governments, while the powers of rural localities have been formalized under the Panchayat raj system, under the 73rd amendment to the Constitution. Within the Administrative setup of India, the democratically elected Local self-governance bodies are called the "municipalities" in urban areas and the "Panchayat Raj Institutes (PRI)" in rural areas. There are 3 types of municipalities based on the population, Municipal Corporation (Nagar Nigam) with more than 1 million population, Municipal Councils (Nagar Palika) with more than 25,000 and less than 1 million population, and Municipal Committee (Nagar Panchayat) with more than 10,000 and less than 25,000 population. PRIs in rural areas have 3 hierarchies of Panchayat, Gram Panchayat at village level, Mandal or block Panchayat at block level, and Zillah Panchayat at district level. Panchayat cover about 96% of India's more than 5.8 lakh (580,000) villages and nearly 99.6% of the rural population. As of 2020, there were about 3 million elected representatives at all levels of the panchayat, nearly 1.3 million are women. These members represent more than 2.4 lakh (240,000) gram Panchayat, about over 6,672 were intermediate level panchayat samitis at the block level and more than 500 zila parishads at district level. Following the 2013 local election, 37.1% of councilors were women, and in 2015/16 local government expenditure was 16.3% of total government expenditure.

### 3.12 Smart Initiatives by District Municipal Corporation

Smart city Mission was launched by Prime Minister Shri Narendra Modi on 25 June, 2015. Surat city was selected among 100 cities to be developed as smart city in India due to various achievements, initiatives and all inclusive approach. Accordingly Surat city had submitted “Smart City Proposal” (SCP) for Surat City in the given format on 15 December, 2015 to Ministry of Urban Development, Government of India with required consent of Government of Gujarat and statutory authority of Surat Municipal

Corporation. Till deadline for submission total 97 cities had submitted their smart city proposal to Government of India. As per the already given plan, 20 cities were to be selected in round-1 (current year) on merit of their submitted proposal. Government of India had constituted 3 teams with expert members of World Bank, ADB and other independent members for evaluation and marking of all the submitted smart city proposals from 97 smart cities and to select final list of top 20 cities based on marking.

On 28 January, Shri M.Venkaiah Naidu, Minister of Urban Development Government of India announced the much awaited 20 winners of the Smart City Challenge competition for round-1 in current financial year at a press conference. It is a matter of pride for citizens of Surat that our city is selected among 20 winning cities at Rank No.4. Shri M.Venkaiah Naidu said that the winners were from 11 States and the Union Territory of Delhi and the selection was totally objective and transparent based on standardized processes. Shri Naidu further said that Smart City Mission marks a paradigm shift towards urban development in the country since it is based on 'bottom up' approach with the involvement of citizens in formulation of city vision and smart city plans and the Urban Local Bodies and State Governments piloting the mission with little say for the Ministry of Urban Development. He also observed that it was for the first time in the country and even in the world that investments in urban sector are being made based on competition based selection of cities. Informing that 1.52 crore citizens participated in shaping smart city plans of 97 cities and towns in the first round of competition, Shri Naidu said that this enthusiastic participation of people is a major positive outcome.

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

The Smart Cities Mission is an innovative and new initiative by the Government of India to drive economic growth and improve the quality of life of people by enabling local development and harnessing technology as a means to create smart outcomes for citizens.

- **Features:-**

Smart parking, intelligent transport system, Telecare, Traffic management, Smart grids, Smart urban lighting, Waste management, Smart city maintenance, Smart taxi, Digital-signage.

- **Smart City Budget :-**

In the 2014-15 Budget Session, the Finance Minister of India Mr Arun Jaitely is allotted the 7,060 Crores of Rupees for the 100 Smart Cities. The Indian Prime Minister Mr. Narendra Modi is going to develop the 100 Smart Cities as Satellite Towns of Larger

Cities by modernizing the present Cities.

**Top 10 Smart Cities In World**

| | | |
|---|---|---|
| **Vienna** | **London** | **Hong Kong** |
| **Toronto** | **Tokyo** | **Barcelona** |
| **Paris** | **Berlin** | |
| **New York** | **Copenhagen** | |

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

Over recent years, the challenges arising from the social and economic, but also wider changes of people's communities—rural and urban—have been increasingly addressed through the lenses of technological developments and digitalization. In this paper, we have focused on the applications of the Smart Village concept and the importance of digital transformation for rural areas, always drawing parallels between the findings and insights from different regions. We aim to use these new insights in developing the framework of the international project Smart digital transformation of villages in the Alpine Space.

According to an ESPON Policy brief on shrinking rural regions in Europe EU territory is experiencing depopulation of rural areas. The demographic challenges were especially addressed in the cases of Hungary and Italy, as the regions under consideration are characterized by agricultural activities and high rates of unemployment. Smart development solutions were therefore mainly addressing the ways to create opportunities for local employment and alleviate the living conditions. On the other hand, the role of transition to circular economy has been accelerated in the case of Lapland where the main issue to address was to stop the outflow of the money especially in connection to the energy and food self-sufficiency. In the case of German Smart Villages, the digital transformation was at the forefront. The region is one of the richest in the country and does not suffer from the depopulation of the area. To invest in digital connectivity within the villages and also within the broader regional community was therefore also to improve opportunities for local/regional and circular economy and to enhance the sustainable development of the area. All of the project cases/initiatives show how important it is to look for strategies and solutions based on local or regional knowledge, even more so when striving for a sustainable future.

## 3.15 Electrical concept

For all building construction or remodeling build- ing projects, the owner or occupant must first have a concept for the new design, and then the architect or designer can produce a set of building plans. These plans convey all the required

information to the local inspection authority and associated build- ing trades so that the construction or remodeling can take place. Because commercial and industrial buildings contain a number of electrical systems, these plans include specific electrical designs and additional documentation to verify that the design conforms to all required building codes

- **The Design Process**

An electrical design goes through several impor- tant stages of development. First, the designer must understand the scope of the project. Then, the de- signer defines and designs each component (such as general office areas, specialized machinery, and power distribution equipment) to recognized in- dustry standards. Finally, these individual compo- nents are compiled to form the final presentation for the design.

- **Understanding the Project**

Scope every electrical design has unique requirements, depending on the scope of the project. The proj- ect scope is determined by the customers' require- ments and the type of structure that the customer will occupy. For example, if the project requires new electrical systems for an existing building, then the electrical designer works to incorporate all the new electrical wiring into the existing system. The de- signer must evaluate the existing electrical system to ensure that existing electrical systems can accom- modate new additional electrical loads that will be imposed on them. When the design is for a new pro- posed facility, then the scope of the project is much greater. Electrical designs for these types of projects require an entirely new electrical system design.

# Chapter-4 About (Antaliya VILLAGE)

## 4.1 Introduction

Antaliya village is located in Lilia Taluka in Amreli district of Gujarat state. It is a small village consisting population of 1077 (2011) only. Sarpanch of the village Lilia is Manubhai Kikani. Total area of the village is 885.09 hectares. It includes 620 hectares land for agricultural purpose and 285.93 hectares land for Residential area.

The nearest town to the Antaliya is Amreli which is 21 km away from village. The other nearest town is the Lilia that is 7 km away from the village. The village has bus station, Gram Panchayat, Primary School and Primary Health Centre (PHC) etc.

### 4.1.1 Introduction About Antaliya Village details

- Village Antaliya situated in Amreli district.
- Main language spoken in village is pure Gujarati.

### 4.1.2 Justification/ need of the study

- To progress of village compare to the city area in the basic facility to wanted for people and their amenities and to study Full village. For growth the basic needed and their requirement. It should development Anganwadi, road, drainage, school, hospital, Bank, PHC, Public toilet, overhead tank etc….
- To Amreli oration the living standard of rural people by providing amenities and better infrastructure.
- To subtract migration from rural to urban areas.

### 4.1.3 Study Area

Antaliya is the village located in LiliaTaluka from Amreli district in state Gujarat. It is located about 19 km from Amreli.

### 4.1.4 Objectives of the Study

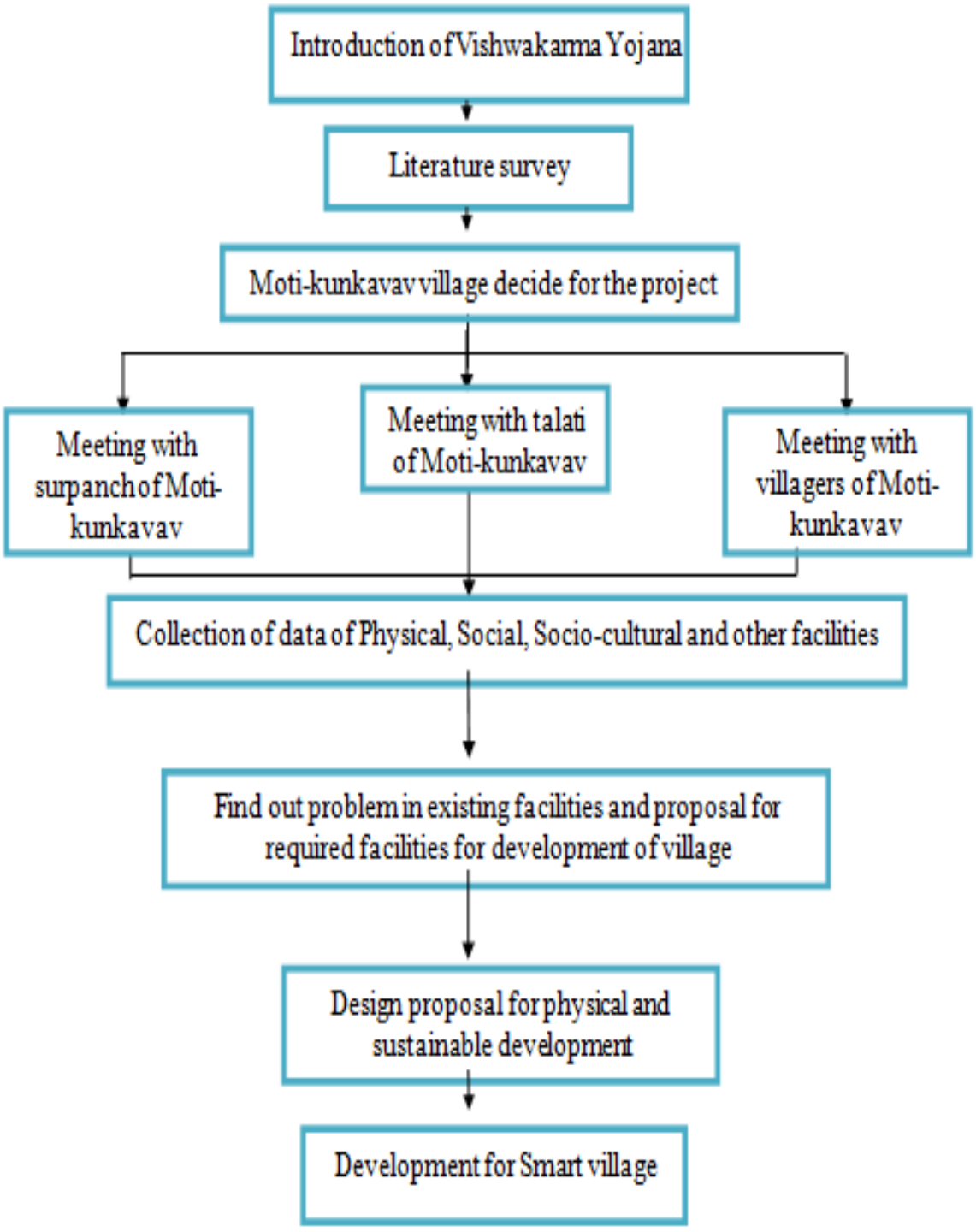
- To consider the current condition
- To afford basic amenities in the village, like transportation, sanitation, educational (higher education), better health care facilities.
- To gather social-economic data through technical-economic survey.
- To provide public toilet for public utilize.
- To purpose the inclusive planning suited for ideal village.
- To decrease migration from rural (village) to urban (city).

### 4.1.5 Scope of the Study

- By the analyzing the current conditions we can improve the basic services and facilities like more road connectivity (transportation), rebuild overhead tank, public toilet facility, higher education facility.
- To get better life style and living standard.

- From the Gap investigation, development tactics for village development will be proposed and planning suggestions for physical infrastructure, social infrastructure and renewable energy and also provide smart security like CCTV camera.

### 4.1.6 Methodology Frame Work for development of your village



### 4.1.7 Available Methodology for development of related to Civil/Electrical

**Civil :-**

As part of the planning process, Trans Global Contracting Inc. will conduct a hydrology study with storm water and flood calculations, and provide a review of the owner-supplied project studies, requesting additional data as necessary. We will assess the status of the topographic, boundary, and geotechnical data and determine what is sufficient for design and what still needs to be conducted for project success. Trans Global Contracting Inc. can assist in managing any sub consultants necessary for project completion, as well as pick up where developers left off in terms of preliminary engineering and project study creation. Any way the client would like to handle it, Trans Global Contracting Inc. will accommodate and assist along the way.

Trans Global Contracting Inc. considers the SWPPP a necessary and sound environmental practice. SWPPPs are required for developments that disturb an acre or more of soil, which means that any solar project expected to generate 200 kilowatts or more will require one of these plans. The SWPPP is a comprehensive document, containing Best Management Practices (BMPs) for protecting the site from erosion and sedimentation. Use of silt fences, gravel entrances, and wash-out pits are some of the measures typically taken to protect adjacent sites from polluted stormwater and sediment transport. The EPA and local quality control boards are the governing bodies for the SWPPP process and we ensure thoughtful compliance across the United States.

**Electrical:-**

As part of the initial preparation for roof-top projects Trans Global Contracting Inc. will perform a detailed roof survey as the basis for an as-built roof plan. Our team will locate the exact coordinates of all rooftop obstructions, and identify surrounding objects—such as trees and power lines—that could potentially shade the solar array and impact annual energy production. The process concludes with a complete CAD as-built site plan for the design engineering team.

To lay the groundwork for interconnection, Trans Global Contracting Inc. will have an arc-flash certified electrician survey the site's existing electrical system. This includes a switchgear inspection for load-side or line-side taps and documentation of existing switchgear specifications, such as model numbers, BIL ratings and breaker sizes. The electrician will also survey the area for equipment pad locations, wall-mounted equipment locations, and conduit penetrations.

## 4.2 Antaliya Study Area Profile

### 4.2.1 Study Area Location with brief History land use details

The Total Population of Antaliya 1513 as per census 2011. There are 773 male in the village and 740females are there. Literacy rate for male in the village is 62.4% and that for female is 26.7%.

| | |
|---|---|
| **Village name** | Antaliya |
| **Taluka name** | Lilia |
| **District** | Amreli |
| **State** | Gujarat |
| **Country** | India |
| **Continent** | Asia |
| **Language** | Gujarati,Hindi |
| **Time zone** | IST ( UTC + 05:30) |

### 4.2.2 Base Location map, Land Map, Gram Tal Map


**Location map/Gramtl map**


**Land Map**

| | |
|---|---|
| **Gram Panchayat** | **Antaliya** |
| **Block / Tehsil** | **Antaliya** |
| **District** | **Amreli** |
| **State** | **Gujarat** |
| **Telephone Code / Std Code:** | **02792** |
| **Nearest Town** | **Amreli** |

### 4.2.3 Physical & Demographical Growth

The expected slowdown in population growth and labor force participation rates will have implications for long-run economic growth and the composition of growth. The key determinants of the economy's longer-run growth rate are labor force growth and structural productivity growth how effectively the economy combines its labor and capital inputs to create output. Demographics suggest that labor force growth will be considerably slower than it has been in recent decades, and this will weigh on long-run economic growth.

### 4.2.4 Economic Generation Profile/Bank

No facilities

### 4.2.5 Actual Problem Faced By Villagers and Smart Solution

One most burning problem like no public toilet in village so we plan and provide community public toilet in village at all main near main road.

### 4.2.6 Social scenario -Preservation of traditions, Festivals, Cuisine

We have that found that all villagers of this village are not connected with today technology and environment. Major occupation in this village is farming and husbandry and local business. There are no other job opportunities. The major population is get income through the farming.

### 4.2.7 Migration Reasons / Trends

Largest component of internal migration in India is rural-urban migration, which means migration from rural areas to urban cities. Villagers move to cities to earn money to support their living.

- Better job market: Where there are more people, there are more jobs. This is the main reason so many people leave country towns to live in big cities.
- Educational opportunities: All major and affluent colleges/universities are located in or near a big city.

People migrate for many reasons, ranging from security, demography and human rights to poverty and climate change.

**Major Causes of Migration in India**

- Marriage: Marriage is a very important social factor of migration.
- Employment: ADVERTISEMENTS.
- Education.
- Lack of Security.

## 4.3 Data Collection of Antaliya

### 4.3.1 Describe Methods for data collection

Data compilation of village is the most main important for growth of any village. Without data we cannot recognize or any idea to development of village in prospect. A complete baseline survey was undertaken which involved household census survey, Bio- physical survey and Village level data collection from Sarpanch. This gave in the details of the demographic profile and physical profile of the village, the literacy percentage, current population, cattle population, average milk production of the cattle

and various schemes running in current time and their profit. Technical & Bio-physical survey was undertaken to recognize various natural resources available in the village.

### 4.3.2 Primary Details of Survey Details

Antaliya village is in Lilia Taluka in Amreli district of Gujarat state. It village consisting inhabitants of 1513 as per census 2011. There are 773 male in the village and 740females are there.

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

In Antaliya average 4 persons in each household. The approx ratio of houses is 45% pucca houses and 55% kuccha houses.

### 4.3.4 No of Human being in One House

In Antaliya village each house approximately 6 person in one house as it is not exact but it is an average number taken from the survey.

### 4.3.5 Material available locally in the village and Material Out Sourced by the villagers

- For building of houses mainly bricks, wood and cement are used as they are low cost and are without difficulty available.
- Major money-making option of the village is farming so there are no more locally material available like standard bricks, aggregates, concrete and reinforcements. So, this material is brought from nearest city for construction of the houses.
- Second major economic option of the village is dairy udhyog.

### 4.3.6 Geographical Detail

Antaliya 1513 as per census 2011. There are 773 male in the village and 740females are there. Literacy rate for male in the village is 62.4% and that for female is 26.7%.

### 4.3.7 Demographical Detail - Cast Wise Population Details / Which ID proof using by villagers

Antaliya is a medium size village located in LiliaTaluka of Amreli district, Gujarat with total 221 families residing. The Antaliya village has population of 1105 of which 562are males while 543are females as per Population Census 2011.

Antaliya village has lower literacy rate compared to Gujarat. In 2011, literacy rate of Antaliya village was 70.60 % compared to 78.03 % of Gujarat. In Antaliya Male literacy stands at 80.46 % while female literacy rate was 60.68 %.

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

### 4.3.8 Occupational Detail – OccupationWise Details / Majority Business

- In this village 65 to 70% people linked with agriculture actions, it's the villages major source of income.
- Other are doing husbandry, local business labor work for wealth.

### 4.3.9 Agricultural Details / Organic Farming / Fishery

Agriculture is the art and science of cultivating the soil, growing crops and raising livestock. It includes the preparation of plant and animal products for people to use and their distribution to markets. ... Cotton, wool, and leather are all agricultural products.

Organic farming is defined as production of crop, animal, and other products without the use of synthetic chemical fertilizers and pesticides, transgenic species, or antibiotics and growth-enhancing steroids, or other chemicals.

1. The occupation, industry, or season of taking fish or other sea animals (such as sponges, shrimp, or seals) : fishing.
2. a place for catching fish or taking other sea animals.
3. a fishing establishment also : its fishermen.
4. the legal right to take fish at a particular place or in particular waters.

### 4.3.10 Physical Infrastructure Details

- Underground Drainage
- Underground Sump
- Pakka village approach road
- Pakka main Road(bitumen road)
- Govt Electricity Distribute
- Municipal water supply

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

Antaliya is known for the shrine of Mahadev called the Antaleshvar. The linga is similar to swayambhu, which is a natural shape protruding from the ground and not a carved stone placed on the ground. This symbol of Mahadev is especially sacred. The community makes grain offerings to the shrine.

A celebrated sati's paliyo is there, dated Samvat 1681 (1900 ) Shaka Samvat 1516. The inscription says that "Bai Jatna, wife of Samatji, took shelter with Ragnunathji on the seventh of the light half of the month of Chaitra." The paliyo is built into the temple well, but the inscription has rapidly defaced as people washed clothes and beat them dry on the stone. This monument is said to be in memory of the wife of Samat Khuman, great-uncle of Loma Khuman, of Kherdi State. Several other monumental stones of the Khumans are there.

The village was conquered by Thakor Vakhatsinghji of Bhavnagar State along with the rest of the Lilia and Kharapat district near the end of the eighteenth century.

## 4.4 Infrastructure Details

### 4.4.1 Drinking Water / Water Management Facilities

For drinking purpose ground water tank, tube well, tap water available and municipal water connection is also accessible in village.

### 4.4.2 Drainage And Sanitation Network:

- Underground Drainage

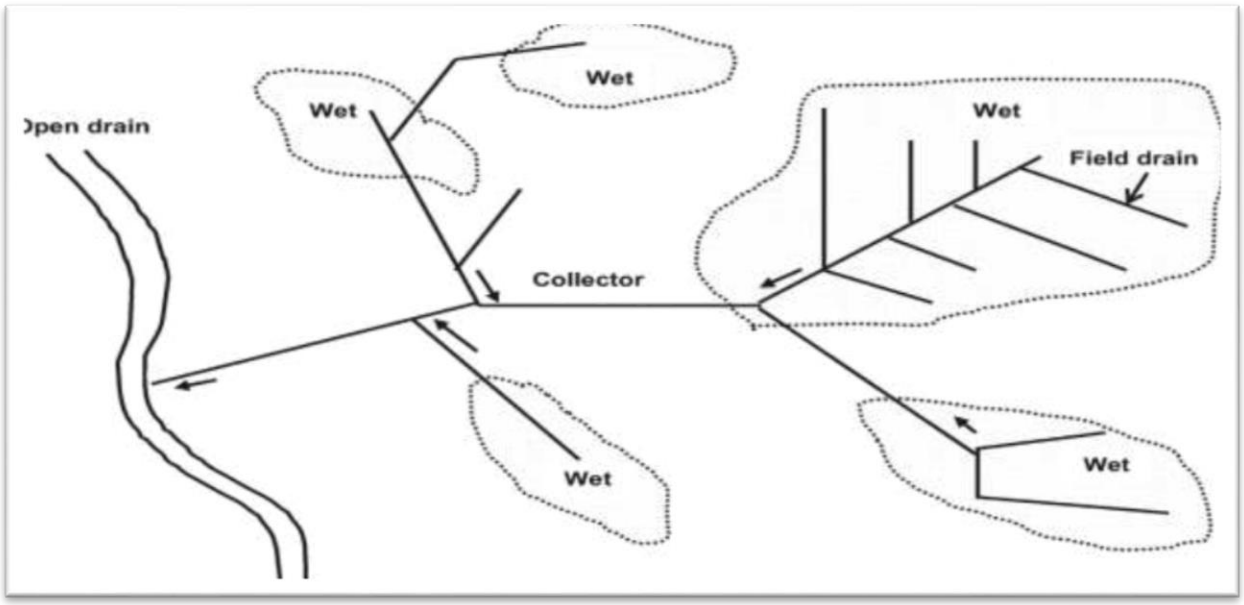
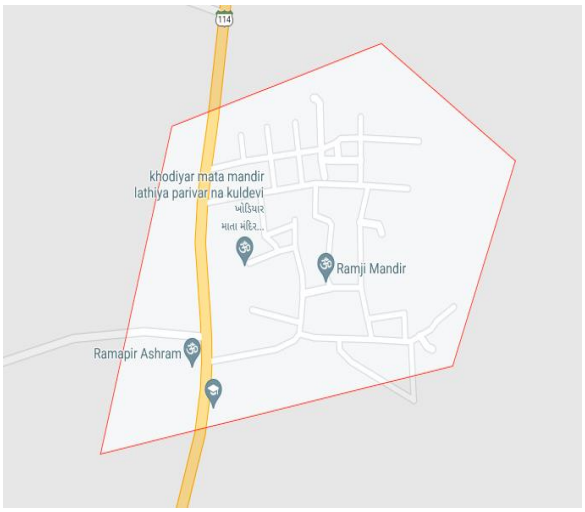



**Fig :-4.6Sub-surface Drainage System**

### 4.4.3 TRANSPORTATION & ROAD NETWORK




### 4.4.4 Housing Condition

There are houses in the village 60% households are kutcha and 40% are pucca.

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

- Bus stand
- Primary School
- High school
- Post-office
- Panchayat
- Over headed Water tank

**Health Facility:-**

There is availability of PHC Antaliya in village, two privet clinic available for health facility. There is no availability of CHC in Antaliya.

**Education Facility:-**

For Education Purpose Primary School, high school, Anganwadi and secondary school is not available. For college education students go to Ahmedabad and Bhavnagar type metro city.

### 4.4.6 Existing Condition of Public Buildings & Maintenance of existing Public Infrastructures

In the current situation, the condition of the public item is good, but to make it better, it needs to be renovated.

### 4.4.7 Technology Mobile / Wifi /Internet Usage Details (In %)

Antaliya village is not a Wi-Fi village. An approximately only 30-40 % person uses technology or mobile or internet.

### 4.4.8 Sport Activity as Gram Panchayat

There is no Any Sport Activity as Gram Panchayat.

### 4.4.9 Socio-Cultural Facilities, Public Garden /Park/Playground /Pond/ Other

**Recreation Facilities:-**

There is no availability of any socio-cultural facility like public library, public garden, cinema hall etc. inside the village so Socio-cultural Facility is required. There is only few temples available in Antaliya.

**Community Hall:-**

In Antaliya community hall is not available

**Public Library:-**

In Antaliya village public library is not available.

**Public Garden/Park/Playground:-**

There is no playground, park and public garden in the Antaliya village.

**Village Pond/Lake:-**

There is pond near the Antaliaya village.

### 4.4.10 Other Facilities

In the village, none recreational facilities available like there is no cinema hall or theatre or park.

**Sustainable Infrastructure Facilities:-**

There are no sustainable facilities available in the village like bio – gas plant, solid waste management plant.

### 4.4.11 Any Other Details

In the village, the road facility needs maintenance. Water logging problem occurs every monsoon. Also water logging problem in farm occurs every heavy monsoon.

## 4.5 Electrical Concept

### 4.5.1 Renewable Energy Source Planning Particularly For Villages

In Antaliay village there are many homes use renewable energy like solar energy,

- Solar water heater
- Solar light, etc…

### 4.5.2 Irrigation Facilities

There are many types of irrigation technique utilize in farming.

- Furrow irrigation system
- Sprinkler irrigation system
- Drip irrigation system

### 4.5.3 Electricity Facilities with Area

In part of living area government provide 24*7 electricity provided and other part of village like farming area in six hours day electricity provided.

## 4.6 Existing Institution Like – Village Administration – Detail Profile

### 4.6.1 Bachatmandali

In Antaliay Nagarik-sahakari co-operative mandala and bank are available.

### 4.6.2 Dudh mandali

In Antaliya private and government both dudhmandalis are available. In this village the total milk accumulates rate is 950-1000 Litre/day.

### 4.6.3 Mahila forum

The Consumer Protection Act,1986 (COPRA) was an Act of the Parliament of India enacted in 1986 to protect the interests of consumers in India. It was replaced by the Consumer Protection Act, 2019. It was made for the establishment of consumer councils and other authorities for the settlement of consumer's grievances and matters connected with it. The act was passed in Assembly in October 1986 and came into force on December 24, 1986. The statute on the right was made before this COPRA act.

### 4.6.4 Plantation for the Air Pollution

In Antaliya very environment day in village, Sarpanch and other villagers plant trees together on the day and protects them throughout the year.

### 4.6.5 Rain Water Harvesting - Waste Water Recycling

In Antaliya there are many people in the village who irrigation with rain water use rain water harvesting method.

There is no any recycling system available for waste water.

### 4.6.6 Agricultural Development

Antaliya villagers there are uses many technique of irrigation system for farming like, drip irrigation method, furrow method, sprinkler irrigation method.

In Antaliya there 60 to 70% farmers now use tractors instead of plows to plowing the land.

There are many agro-agencies available in Antaliya.

### 4.6.7 Any other

There is a limited institute which works for the development of the village.

## Chapter 5: Technical Options with Case Studies

## 5.1 Concept (Electric Engineering)

### 5.1.1 Programmable load shedding

**I. INTRODUCTION**

It is an elementary case of „power economics", electric load demand versus generation supply. As we know , when a power system is stable at normal frequency the total mechanical power input from the prime movers to the generators is equal to the sum of all running load and all real power losses in the power system.

The frequency conditions of the overall power system will directly depend on the amount of active power that the generator could deliver to the system. Also, the prime mover's stored energy plays an important role on the system behaviour. This stored energy varies drastically from thermal, to hydro units.

For gradual increases in electric load, or sudden but mild overloads, unit governors will sense speed change and therefore increase power input to the generator. Extra load is handled by the unused capacity of all accessible generators functioning and synchronized to the system. If all generators are operating at their maximum capacities and the spinning reserve is zero, then the governors may be powerless to relieve overloads.

So it is necessary to shed the load of a particular geographical region. Load shedding is an intentionally- engineered electrical power outage where electricity supply is stopped for non-overlapping periods of time over a particular zone. For manually maintaining Load shedding times, some man power may be employed or by using computer it can be controlled efficiently. Detaching of power is done to minimize the consumer load provided through several substations, Which are connected to the main power station. And the main station instructs the sub-stations to cut some of the feeders for a certain period of time & thus the shedding procedure continues.

**II. METHODOLOGY**

The main purpose of electric power system is to accord the power structure to consumer's loads. An electric power system consists three parts:

1. Power generation

2 .Transmission system

3. Distribution system

Electric power is generated at 11kv, 50Hz in a power generating station. For transmitting over long distances, it is stepped-up to 400kv, 220 kv as it is necessary to reduce power losses while transmitting power. Power is carried through a high voltage lines of transmission network. Usually, these voltage lines run into hundreds of kilometers and it deliver to grid.

These load centers (cities) are connected to grid through a sub-transmission network of ordinarily 33kV (or sometimes 66kV) lines. These lines dismiss into a 33kV (or 66kV) at substation, where the voltage is to be stepped-down to 11kV for power distribution to loadpoints over a distribution network of lines at 11kV and lower.

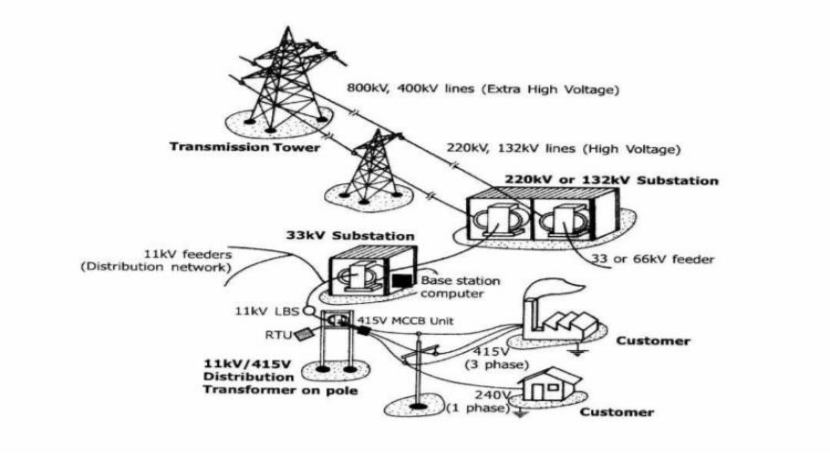



**Fig 5.1 Power system network**

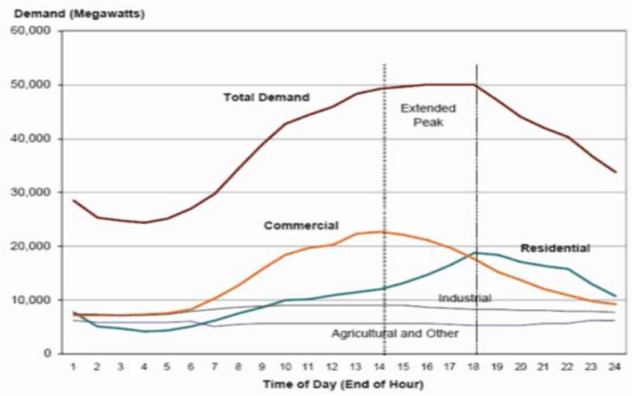
This section depicts a review of a number of effective load shedding techniques which are:

## 1. Manual load shedding technique

In manual load shedding technique the power supply is cut by electrician engaged at substation for certain period of time to control shortage of electrical energy used by locality .In this way the load shedding done by manually at substation to cut of the power.

## 2. Programmable load shedding

According to the data from the different chronological demand curves (fig 5.2) the demand of electricity is regularly varies throughout a day. It is very difficult to match generating capacity to such a peaky demand. So when demand exceeds the supply we need an effective load shedding technique for power system.



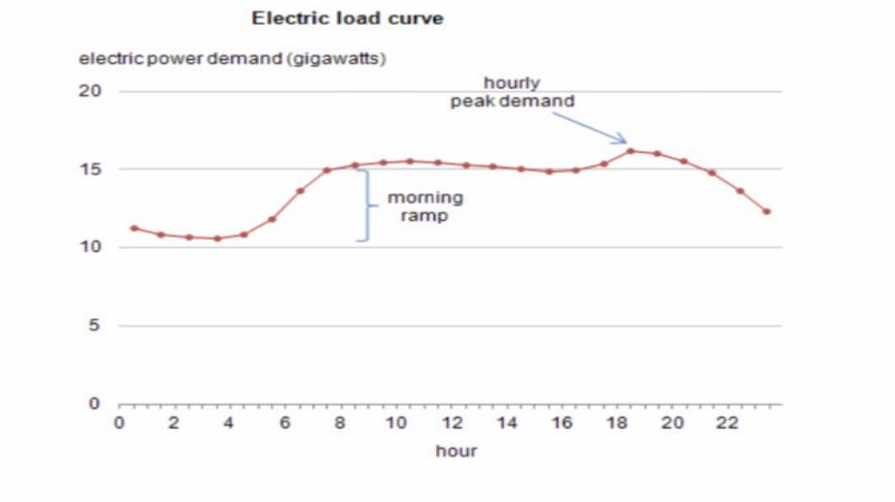



**Fig5. 2 – Electricity Load curve**

"The Programmable load shedding time management system" is a reliable technique that takes over the manual task of switch ON/OFF the electrical supply with respect to time. It practices real time clock (RTC) interfaced to a 8051 microcontroller .When the set time equals to the real time, then microcontroller gives command to the corresponding relay to turn ON the electric load and then another command to switch OFF the load as per the program. Multiple ON/OFF time entries is the biggest advantage of this project. A matrix keypad helps entering the time. A LCD display time which is interfaced to the microcontroller.

## 3 .RELATED WORK

So In this project "The Programmable load shedding time management system" we are connecting three loads operating through microcontroller using relay circuits. Here 230V AC supply is rectified to 12V DC which is then converted into input circuit supply of 5V DC with the help of voltage regulator.

As we know that in power system relays are used to trip the circuit at a time of any fault or disturbance. So to shed the particular load, relay receives the command from microcontroller.

Input load shedding time is provided through input matrix keypad. When real time clock (RTC) set time come equal to the input load shedding time the microcontroller gives command to the relay to shed the particular load from the system and finally the shed time is displayed on the LCD display.

## III. ADVANCEMENT& FUTURE SCOPE

This project can be advanced in which the distribution point monitored by one central location. The relays are used to cut off supply of concerned geographical region through circuit breaker. In this system user can send commands to concerned DP to read the remote electrical parameters. This system can repeatedly send the real time electrical parameter data like active power, reactive power, voltage, current, frequency etc., periodically in the form of SMS to the user. It can be designed to send SMS alerts when relay trips. In this power system micro- controller are being used to effectively

communicate with the sensors. The microcontroller has internal memory to hold the assembly code. .This internal memory is used to dump some set of assembly instructions into the controller. The operation of the micro-controller is completely dependent on these assembly instructions.

The proposed system will overcome manual efforts for controlling the load shedding time break in a systematic way by sending SMS. Central unit can cut off power supply of specific zone by just sending an SMS to the concerned Distribution Point. These relay gets activated whenever the electrical parameters overdo the predefined values. The proposed system is designed to Load Monitoring.

### 5.1.2 Railway security system using IoT

We wanted to be apart of our surrounding with some change and advancement so that it can bring the better life of the middle class and lower class people to travel in high secutity and advanced locomotions .the train is one and only most widely used transportion,and not only for this they are used for goods transportion also .Indian railways are not able to facilate the customer properly due to crowded amount of people. Statistics show that the leading cause of death by injury in railways traffic accidents(two train collision each other). There are number of causes for which an accident can occur, some of them are; lack of training for driving or less experinessed, use of mobile phone while driving, unskilled drivers, driving while intoxicated, bad railway tack condition, overloading in tain and negligence traffic management. In this survey paper, we briefly review selected railway accidents detection techniques and propose a solution. Rear end crashes occur mainly due to obstracle and crack in tracks.According to recent statistics, a major percentage of train accident happen due to not proper survillance of railway track.

### 5.1.3 Management through energy harvesting concept

Energy harvesting (also known as power harvesting or energy scavenging) is the process in which energy is captured from a system's environment and converted into usable electric power. Energy harvesting allows electronics to operate where there's no conventional power source, eliminating the need to run wires or make frequent visits to replace batteries.
An energy harvesting system generally includes circuitry to charge an energy storage cell, and manage the power, providing regulation and protection.

Energy source examples include light (captured by photovoltaic cells), vibration or pressure (captured by a piezoelectric element), temperature differentials (captured by a thermo-electric generator) radio energy (captured by an antenna); and even biochemically produced energy (such as cells that extract energy from blood sugar).

### 5.1.4 Moisture monitoring system

Soil-based methods of irrigation scheduling assume that the soil moisture content largely determines the moisture status of the plant. If there is less water in the soil, and the water is held at a greater tension, it will be more difficult for the plant's roots to take up that water. The result is that the plant will be under greater stress. Thus, irrigation scheduling is done by monitoring and maintaining the soil moisture within acceptable limits that do not adversely affect plant growth.

### 5.1.5 Home Automation using IoT / Any other methodology

The term, Internet of Things (IoT) has been lingering over almost every industry for many years now. This topic of conversation has shifted from what once was a buzzword into what is now, without a doubt, a reality. A plethora of new and exciting IoT devices and business applications are emerging at an exponential rate each day. Although this may be the case, very few businesses understand how they can benefit from the Internet of Things.

The lack of enthusiasm to delve into the connected world may be caused by a number of factors. Some business owners have concerns around the security of IoT, and some are simply set in their ways. But we found that the most common reason for not giving IoT a second look is the lack of education. If you do a quick search for "examples of IoT" you'll find the same example across the board, the connected coffee scenario.

The connected coffee example simply explains how your morning alarm or mobile phone can trigger your coffee machine. Although it's a satisfying gimmick to wake up to a steaming cup of coffee, it won't cause any business owner to invest their time and money into this growing technology. Admittedly we're guilty of using this example too, but decision makers deserve to understand the business benefits of utilising IoT. That's why we've taken the time to collate some of the main advantages for companies around the world.

### 5.1.6 PC based electrical load control

Automation system is mostly depending upon the power systems in industrial, residential or commercial, which needs remote controlling and monitoring. By employing wireless technologies, it is more competent to execute a suitable technology depending upon the requirements of the proposed system like speed, cost, and distance.

For distant controlling and monitoring of different loads and by means of efficient power usage through real time power spending with the help of a PC based graphical user interface application. The progress of technology equipments is becoming simpler and easier for us. Automated systems have more benefits over manual system. PC based electrical load controlled systems are highly reliable, precise and time conserving systems. They give number of features like rapid data storage, transfer data and data securities.

### 5.1.7 Electrical parameters measurement

Electrical measurements are the methods, devices and calculations used to measure electrical quantities. Measurement of electrical quantities may be done to measure electrical parameters of a system. Using transducers, physical properties such as temperature, pressure, flow, force, and many others can be converted into electrical signals, which can then be conveniently measured and recorded. High-precision laboratory measurements of electrical quantities are used in experiments to determine fundamental physical properties such as the charge of the electron or the speed of light, and in the definition of the units for electrical measurements, with precision in some

cases on the order of a few parts per million. Less precise measurements are required every day in industrial practice. Electrical measurements are a branch of the science of metrology.

## 5.2 Concept (civil Engineering)

### 5.2.1 Rainwater harvesting

Rainwater harvesting (RWH) is the collection and storage of rain, rather than allowing it to run off. Rainwater is collected from a roof-like surface and redirected to a tank, cistern, deep pit (well, shaft, or borehole), aquifer, or a reservoir with percolation. Dew and fog can also be collected with nets or other tools. Rainwater harvesting differs from storm water harvesting as the runoff is collected from roofs, rather than creeks, drains, roads, or any other land surfaces. Its uses include watering gardens, livestock, irrigation, domestic use with proper treatment, and domestic heating. The harvested water can also be committed to longer-term storage or groundwater recharge.

Rainwater harvesting is one of the simplest and oldest methods of self-supply of water for households, and residential and household-scale projects, usually financed by the user. However, larger systems for schools, hospitals, and other facilities can run up costs only able to be financed by owners, organizations, and governmental units.

### 5.2.2 Agriculture

In regards to Urban agriculture, rainwater harvesting in urban areas reduces the impact of runoff and flooding. The combination of urban 'green' rooftops with rainwater catchments has been found to reduce building temperatures by more than 1.3 degrees Celsius. Rainwater harvesting in conjunction with urban agriculture would be a viable way to help meet the United Nations Sustainable Development Goals for cleaner and sustainable cities, health and wellbeing, and food and water security. The technology is available, however, it needs to be remodelled in order to use water more efficiently, especially in an urban setting.

Kenya has already been successfully harvesting rainwater for toilets, laundry, and irrigation and areas in Australia use harvested rainwater for cooking and drinking. Studies done by Stout et al researching the feasibility in India found RWH was most beneficial used for small-scale irrigation, which provides income with the sales of produce, and overflow used for groundwater recharge.

Missions to five Caribbean countries have shown that the capture and storage of rainwater runoff for later use is able to significantly reduce the risk of losing some or all of the year's harvest because of soil or water scarcity. In addition, the risks associated with flooding and soil erosion during high rainfall seasons would decrease. Small farmers, especially those farming on hillsides, could benefit the most from rainwater harvesting because they are able to capture runoff and decrease the effects of soil erosion.

Many countries, especially those with arid environments, use rainwater harvesting as a cheap and reliable source of clean water. To enhance irrigation in arid environments, ridges of soil are constructed to trap and prevent rainwater from running down hills and slopes. Even in periods of low rainfall, enough water is collected

for crops to grow. Water can be collected from roofs, dams and ponds can be constructed to hold large quantities of rainwater so that even on days when little to no rainfall occurs, enough is available to irrigate crops.

### 5.2.3 Public Toilet

The overall goal of the policy is to transform urban India into sanitised, healthy and liveable cities and towns.
Particular focus is given to improvement of hygienic conditions for the urban poor and women through cost-efficient technologies.

### 5.2.4 Automatic Street Light

Quebec. Paris. Beijing. Oslo. Jakarta. Dublin. The street scenes vary, but cities worldwide share an imperative to improve the efficiency, costs, and operations of their streetlights. Echelon outdoor lighting control solutions are helping these cities, and others, do more with their strategic but costly lighting assets.

**The challenge**
It's estimated that as much as 40% of city energy budgets are spent on outdoor lighting, and that a single street light can emit 200 kg of CO 2 each year. Increasingly, cities need to save energy or do more with less energy, reduce carbon emissions, lower operating and maintenance costs, and comply with tighter government regulations. In addition, many are exploring Smart City applications and the use of lighting to boost safety for both drivers and pedestrians.

### 5.2.5 Community hall

Case Studies Local Case Study

Agha Khani Sect – Agha Khani Community

- Agha Khani's believe in the improvement of their community through unity amongst themselves.
- There are no fixed community centers for the Agha Khani community.
- They gather in their jammatkhannas everyday after prayers.
- The jammatkhannas serve as a community hall for them.
- Several issues are discussed in the presence of an elderly, respectful person who makes the decision.
- Case Studies Local Case Study Agha Khani Sect – Agha Khani Community
- On the first Friday of every month, every individual earner contributes 10 % of his total earnings for their Agha Khani community.
- The money collected is then used for the betterment and welfare of their own community.
- The poor benefits from the money plus part of the money is also used for the support of their famous hospital, Agha Khan Hospital.

### 5.2.6 public library

Opening the Book's experienced designers provide space planning and design services for all sizes of libraries. Browse through the example case studies below ... it's always great to learn from the way that others go about tackling their challenges.

### 5.2.7 Animal Water Pond

A pond is an area filled with water, either natural or artificial, that is smaller than a lake.[1] Ponds may arise naturally in floodplains as part of a river system or can simply be an isolated depression (such as a kettle, vernal pool, or prairie pothole) that filled with runoff, groundwater, or precipitation.[2] As such, ponds may be freshwater, saltwater, or brackish in nature.

Many ponds contain shallow water ecosystems, often termed pond life, with varying abundances of aquatic plants and animals. Certain characteristic such as depth, seasonal water level, nutrients fluxes, solar radiation, degree of inlets and outlets, local organisms, and salinity may affect the types of ecosystems present within a pond

### 5.2.8 Waste Water Treatment

Industrial wastewater treatment describes the processes used for treating wastewater that is produced by industries as an undesirable by-product. After treatment, the treated industrial wastewater (or effluent) may be reused or released to a sanitary sewer or to a surface water in the environment.

Most industries produce some wastewater. Recent trends have been to minimize such production or to recycle treated wastewater within the production process.

### 5.2.9 Advanced Wireless Power Transfer System

Electrical engineering is an engineering discipline concerned with the study, design and application of equipment, devices and systems which use electricity, electronics, and electromagnetism. It emerged as an identifiable occupation in the latter half of the 19th century after commercialization of the electric telegraph, the telephone, and electrical power generation, distribution and use.

Electrical engineering is now divided into a wide range of fields, including computer engineering, systems engineering, power engineering, telecommunications, radio-frequency engineering, signal processing, instrumentation, electronics, and optics and photonics. Many of these disciplines overlap with other engineering branches, spanning a huge number of specializations including hardware engineering, power electronics, electromagnetics and waves, microwave engineering, nanotechnology, electrochemistry, renewable energies, mechatronics, and electrical materials science.

# Chapter-6 Swachh Bharat Abhiyan (Clean India)

**What is Swachh Bharat Abhiyan?**

Swachh Bharat Abhiyan is a massive mass movement that seeks to create a Clean India by 2019. The father of our nation Mr Mahatma Gandhi always puts the emphasis on swachhta as swachhta leads to healthy and prosperous life. Keeping this in mind, the Indian government has decided to launch the swachhbharat mission on October 2; 2014.The mission will cover all rural and urban areas. The urban component of the mission will be implemented by the Ministry of Urban Development, and the rural component by the Ministry of Drinking Water and Sanitation.


**Fig:-6.1Swachh Bharat Abhiyan**

## 6.1 Swachhta Needed In Allocated Village – Existing Situation with Photograph

- Our village is facing problems regarding the Swachhta as there are not any facilities available in village for excretion of waste.
- There are no facilities given by government for management of waste.
- No facility is available for the management of solid waste as well.

**Types of Swachhta needed in Antaliya village:-**

- Biogas plant is required for the treatment of biological waste.
- Dustbins should be distributed in whole village so the villagers throw garbage in dustbins.
- Government should provide facilities like garbage vans like urban areas so that waste is deposited and directly treated in treatment plants.
- Water treatment plant is also necessary for the treatment of waste water from houses and agricultural fields.

**Fig:-6.2 Real Scenario of Village aboutSwachhta**

## 6.2 Guidelines – Implementation In Allocated Village With Photograph

- Implementation of SBM (G) is proposed with 'District 'as the base unit, with the goal of creating ODF GPs.
- A project proposal shall be prepared by a District, and scrutinized and consolidated by the State Government into a State Plan.
- Funds are to be made available for these preliminary IEC works including for triggering behaviour change. This will endeavour to reach every household in every community and shall disseminate information regarding the need for safe sanitation, and the ill effects of open defecation getting the population oriented towards satisfying their felt-needs.
- The proliferation of educational facilities in the rural areas provides the opportunity to utilize an approach that should essentially include an element that involves school and college children as potential agents of change in homes.
- The built-in flexibility in the menu of options is to give the poor and the disadvantaged families' opportunity for subsequent up gradation of their toilets depending upon their requirements and financial position.
- The provision of Incentives for individual household latrine units to the rural households is available to States which wish to provide the same this may also be used to maximize coverage so as to attain community outcomes.
- The Scheme shall aim to saturate coverage in the first instance the States/ Districts/ GPs in all major river basins of India e.g. Sutlej , Ravi, Beas, Ganga, Yamuna, Godavari, Narmada, Tapti, Kaveri, Brahmaputra. This will ensure the outcomes required for pollution free rivers, in addition to ODF communities.
- A robust Monitoring arrangement has to be put in place to monitor open defecation status of a village, the implementation of Solid and Liquid Waste Management projects as well as the construction and us of Household, Schools, Anganwadi toilets and Community Sanitary Complexes. The monitoring has inter-alia also to use a robust community led system, like Social Audit.
- To accelerate coverage in Gram Panchayat selected under the SansadAdarsh Gram


**Fig:-6.3 Swachh Bharat Abhiyan**

## 6.3 Activities Done By Students for Allocated Village with Photograph

Our group of the Vishwakarma Yojana had visited our allocated village after this we mate Sarpanch another Panchayat member and selected one small area for cleaning purpose. Then Villagers join with claning and clean Gram Panchayat, bus stop, main chow etc.


**Fig 6.4:- Activity done by Student and Villagers for Swachhta**

# Chapter: 7 Village Condition due to Covid-19

## 7.1 Taken Steps in Allocated Village Related To Existing Situation With Photograph

- Vegetables and ration kit are being distributed by Panchayat and some local group among the vulnerable communities.
- During lockdown village's main entry get was locked by gram Panchayat.
- Sanitization is being done in the AntaliyaGram Panchayat. Villagers are maintaining social distancing while receiving ration and essentials from the Gram Panchayat in Antaliya Gram Panchayat.
- Gram Panchayat sprayed pesticides and distributed homeopathic medicine in every house in the village in lock down.
- Disinfectant was sprayed in every house of Antaliya village.
- The gram Panchayat took preventive actions against COVID- 19 proactively before the lockdown in the entire country.
- Every villagers are strictly obeyed the decision of the government and the gram Panchayat.


**Fig 7.1 During Lock-down entry gate locked**

## 7.2 Activities Done By Students For Allocated Village With Photograph

- In Village when we are visited then we distributed mask

**Fig 7.2 Activities done by students**

## 7.3 Activities Done By Students For Allocated Village With Photograph

- In Village when we are visited then we distributed sanitizer.
- We informed the entire villagers about covid-19.

**Fig 7.3 Activities done by students**

# Chapter-8 Sustainable Design Planning Proposal (Prototype Design) Part-1

(Scenario / Existing Situation / Proposed Design in Auto Cad / Recapitulation Sheet / Measurement Sheet / Abstract Sheet / Sustainability of Proposal)

**Design Selection**

- Design Of Public Toilet Block (Social Infrastructure)
- Design Of Water Harvesting System (Rain Water Harvesting Structures)
- Design Community Hall (Social Infrastructure)
- Design Of Public Library (Social Infrastructure)
- Animal Water Pond {Avado} (Physical Design)
- Waste Water Treatment (Sustainable Design)
- Automatic Street Light Control ( Electricity )
- Electricity Facilities With Area (Electricity )
- Advance Wireless Power Transfer System ( Electricity )

## 8.1 Design Proposals

### 8.1.1 Public Toilet Block

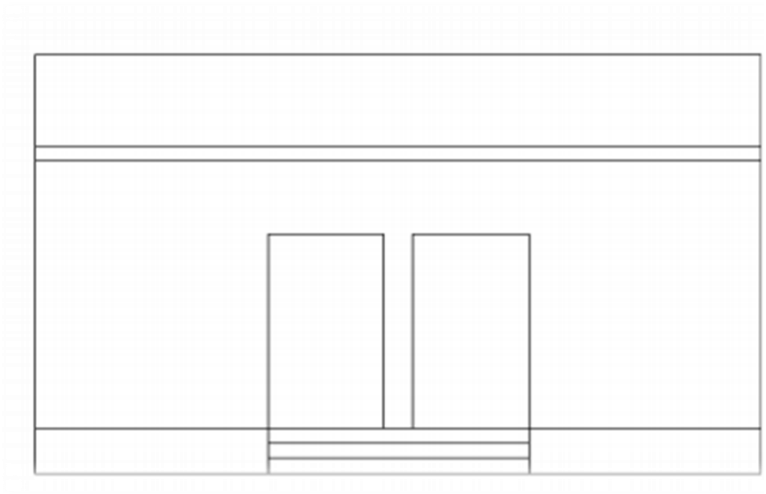
❖ **Scenario**

In our village no toilet blocks. So we have designed public toilet block.

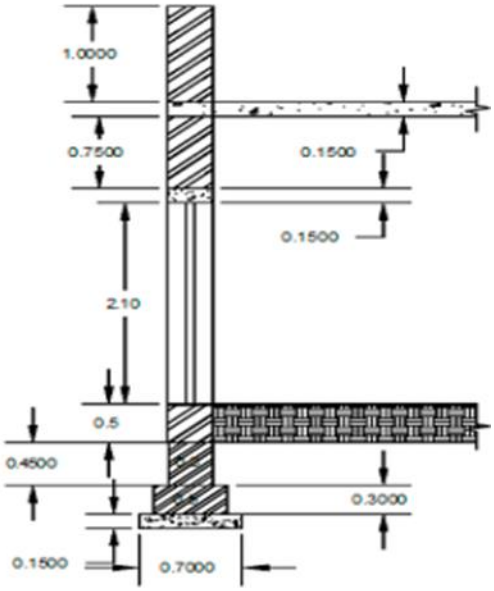
❖ **Existing Situation**


This village no W/C, so we have to design Public Toilet Block.

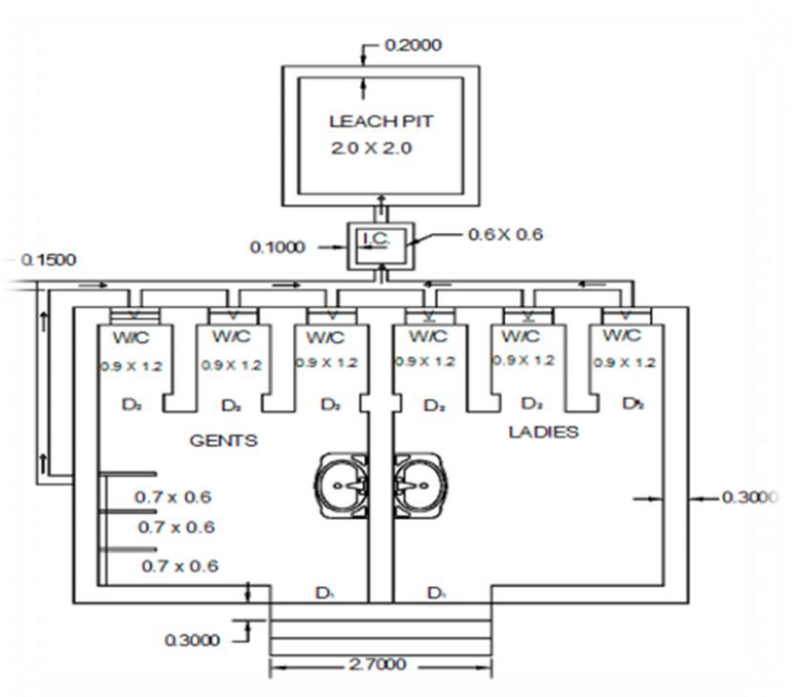
**Fig:-8.1 Toilet**



ELEVATION




SECTIONZ




PLAN

**Table no 3**

| SCHEDUL OF DOORS AND WINDOWS | | |
|---|---|---|
| **DOOR 1** | D 1 | 1.2 X 2.1 |
| **DOOR 2** | D2 | 0.8 X 2.1 |
| **DOOR 3** | V | 0.6 X 0.6 |

**Fig: 8.2 :- details of public toilet block**

**Slab Design (design for single block)**

GIVEN DATA

LY=4500mm, LX=3300mm

Fy=415 N/mm$^2$,fck=20 N/mm$^2$

Assume live load =3.0 KN/M$^2$

Effective depth

Shorter span (3.3m) < 3.5m

Live load = 3..0 2 < 3.0 KN/M$^2${IS-456-2000,P-39}

L/D= 35 x0.8x M.F

Assume 0.4% steel

Fy = 415 N/M$^2$

M.F = 1.3

3000/d =35 x 1.3 x0.8

d =90mm say 100mm

Assume 10 mm Ø bars

D = 100 + 5 + 20

= 125 mm

Effective span

Shorter span :

(1) Clear span + d = 3300+100=3400mm

(2) c/c of supports =3300+150+150=3600mm

Whichever is less

Effective span=lx=3400mm

As it is ly=4590

1) Load Calculation

Dead load of slab= (0.125x 25) =3.12 2 KN/ M2

floor finish load =1.0 2 KN/ M2

live load = 3.0 2 Total =7.12 2KN/ M2

TOTAL :-7.12 KN/M2

Factored load =1.5 x 7.12

w=10.68KN/ M2

2) Mid span moment

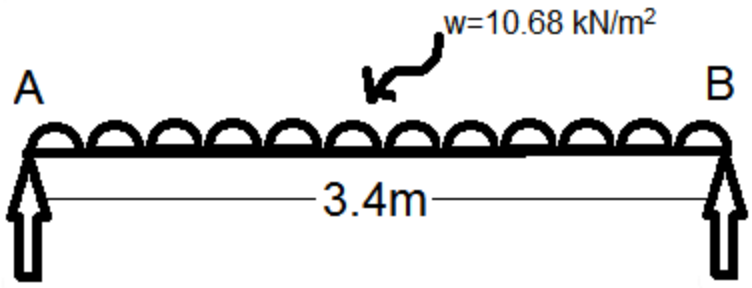
Hear, corner are held down {Is – 456:2000 page no.90}

**MX=αX wlx²**

**My=αy wlx²**

Hear ,**LY/LX** = (4590/3400)

= 1.35




lX= 0.093

ly=0.055 {Is – 456:2000 page no.91 T-27}

MX = αX wlx²

= 0.093x10.68x3.42

MX = 11.47kn/m

My = αy wlx²

= 0.055x10.68x3.42

=6.79kn/m

3) Effective Depth for Flexure

Mu = 0.138 x fck x b x $d^2$

11.48 x 106 = 0.138 x 20 x 1000 x $d^2$

d = 64.49 mm < d pro (100mm) ----------ok

4) Main Steel fck=20 N/M $M^2$

Fy=415 N/$MM^2$ Pt =0.343

Ast= 0.343/100 x1000x 125

= 428 mm2

Provide 10 mm Ø @ 180mm c/c (436 M $M^2$)

Along $l_Y$ (d=90mm)

Fy=415 $N/MM^2$

fck=20 $N/MM^2$

Pt =0.248

Ast= 0.248/100x1000x 125

= 310 mm2

Provide 10 mm Ø @ 125mm c/c (314 $N/MM^2$)

5) Check for cracking

Along lx

(a) 3 d = 3x100 =300mm

(b) 300mm

180mm < 300mm----------ok

Along ly

(a) 3 d = 3x90 =270mm

(b) 300mm

250mm <270mm----------ok

6) Check for development length

Usually bond is critical along long direction

Ld< 1.3 M1/v + Lo {IS-456-2000,P-44}

for Lo

(a) d= 90mm

(b) 12 Ø =12x10 =120mm whichever is greater

Lo = 120mm

At supported 50% steel is bent up

Ast= 312/2

= 157 mm2

M1=0.87 fyAst d [1-fy x ast/fck x b x d ]

=0.87 x 415 x157 x90 [1-415 x 157 /20 x 100 x 90 ]

=4.90 x $10^6$ $n/mm^2$

S.F. AT Support = Vu= wlx/2

= 18.16KN

= 1.3 + LO +m1/v

= 1.3 +120

= 470.77mm

For M-20 , Fe-415 , 10 Ø bars , tension

Ld= 470mm {sp-16 ,page: 184, T-65}

470mm< 477.77mm----------ok

# PROPOSED CONSTRUCTION WORK OF PUBLIC TOILET BLOCK AT, ANTALIYA

# ESTIMATE

## CONSTRUCTION WORK OF PUBLIC TOILET BLOCK

| CONSTRUCTION WORK OF TOILET<br>AT, ANTALIYA, DIST:- AMRELI | | |
|---|---|---|
| RECAPITULATION SHEET | | |
| NO. | DESCRIB | AMOUNT |
| 1 | PUBLIC TOILLOCKET BLOCK | 344000.00 |

| MEASUREMENT SHEET | | | | | | | |
|---|---|---|---|---|---|---|---|
| ITEM | DESCRIPTION | NO | L | B/W | H/D | QUANTITY | UNITS |
| | **ITEM NO.:- 1** | | | | | | |
| | Excavation for foundation | | | | | | |
| | L=42 –14*(0.7/2) | | | | | | |
| | =37.1 | 1 | 37.1 | 0.7 | 0.9 | 23.37 | Cu.m |
| | | | | | | | |
| | **ITEM NO.:- 2** | | | | | | |
| | P.C.C. for foundation | | | | | | |
| | L=42 –14*(0.7/2) | | | | | | |
| | =37.1 | 1 | 37.1 | 0.7 | 0.15 | 3.89 | Cu.m |
| | | | | | | | |
| | **ITEM NO.:- 3** | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Brick work in foundation | | | | | | |
| | L=37.1m | | | | | | |
| | | | | | | | |
| | **Step no:1** | | | | | | |
| | L=42 –14*(0.5/2) | | | | | | |
| | =38.5m | 1 | 38.5 | 0.5 | 0.30 | 5.77 | Cu.m |
| | **Step no; 2 ( up to p.l.)** | | | | | | |
| | L=42 –14*(0.3/2) | | | | | | |
| | =39.9m | 1 | 39.9 | 0.3 | 0.95 | 11.37 | Cu.m |
| **Total** | | | | | | 17.14 | Cu.m |
| **ITEM NO.:- 4** | | | | | | | |
| | Earth filling work | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **For toilet** | **6** | **0.9** | **1.2** | **0.45** | **2.916** | **Cu.m** |
| | For open space | 2 | 3.3 | 3.0 | 0.45 | 8.190 | Cu.m |
| | | | Total | | | 11.11 | Cu.m |
| ITEM NO.:- 5 | | | | | | | |
| | Brick masonary work in super structure | | | | | | |
| | L =39.9m | 1 | 39.9 | 0.3 | 3.0 | 35.91 | Cu.m |
| | Deduction for door & ventilator | | | | | | |
| | Door 1 | 2 | 1.2 | 0.3 | 2.1 | 1.512 | Cu.m |
| | Door 2 | 6 | 0.9 | 0.3 | 2.1 | 3.40 | Cu.m |
| | Ventilator | 6 | 0.6 | 0.3 | 0.5 | 0.54 | Cu.m |
| | Lintal work | | | | | | |
| | (1)Vantilator | 6 | 0.9 | 0.3 | 0.15 | 0.243 | Cu.m |
| | (2)Door:1 | 2 | 1.5 | 0.3 | 0.15 | 0.135 | Cu.m |
| | (3)Doo :2 | 6 | 1.2 | 0.3 | 0.15 | 0.320 | Cu.m |
| | | Total | | | | 6.148 | Cu.m |
| | Total brick work in s.s = (35.91-6.148) | | | | | 29.762 | Cu.m |
| ITEM NO.:- 6 | | | | | | | |
| | Brick masonary work in step | | | | | | |
| | Step :1 | 1 | 2.7 | 0.6 | 0.25 | 0.40 | Cu.m |
| | Step:2 | 1 | 2.7 | 0.3 | 0.25 | 0.20 | Cu.m |
| | Total | | | | | 0.60 | Cu.m |
| | | | | | | Total 113.4 | 113.4 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **ITEM NO.:- 7** | | | | | | | |
| | Internal plaster work | | | | | | |
| | For open space | 2 | 3.3 | - | 3.0 | 19.8 | Sq.m |
| | | 2 | - | 3.0 | 3.0 | 18 | Sq.m |
| | For toilet | 2X6 | 0.9 | - | 3.0 | 32.4 | Sq.m |
| | | 2X6 | - | 1.2 | 3.0 | 43.2 | Sq.m |
| | | | | Total | | 113.4 | Sq.m |
| | Deduction | | | | | | |
| | Door 1 | 0.5X2 | 1.2 | - | 2.1 | 2.52 | Sq.m |
| | Door 2 | 6 | 0.9 | - | 2.1 | 11.34 | Sq.m |
| | Vantilation | 0.5X6 | 0.6 | - | 0.5 | 0.9 | Sq.m |
| | total | | | | | total | total |
| | 14.76 | | | | | 14.76 | 14.76 |
| | ITEM NO.:- 8 | | | | | | |
| | External plaster work | | | | | | |
| | Side :1 | 2 | 7.5 | - | 4.5 | 67.5 | Sq.m |
| | Side:2 | 2 | 5.1 | - | 4.5 | 45.9 | Sq.m |
| | total | | | | | 113.5 | Sq.m |
| | Deduction | | | | | | |
| | Door :1 | 0.5X2 | 1.2 | - | 2.1 | 2.52 | Sq.m |
| | Door :2 | 0.5X6 | 0.6 | - | 0.5 | 0.9 | Sq.m |
| | Total | | | | | 3.42 | Sq.m |
| | Total=(113.4-3.42) | | | | | 109.98 | Sq.m |
| | ITEM NO.:- 9 | | | | | | |
| | Dedo work | | | | | | |
| Side :1 | 2X6 | 0.9 | - | 1.0 | 10.8 | Sq.m | Side :1 |
| Side:2 | 2X6 | 1.2 | - | 1.0 | 14.4 | Sq.m | Side:2 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | For open space | 2 | 3.3 | 3.0 | - | 19.8 | Sq.m |
| | For toilet | 6 | 0.9 | 1.2 | - | 6.48 | Sq.m |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | For door sill | | | | | | |
| | Door :1 | 2 | 1.2 | 0.3 | - | 0.72 | Sq.m |
| | Door :2 | 2 | 0.9 | 0.3 | - | 0.54 | Sq.m |
| | | | | | Total flooring work | 27.54 | Sq.m |
| | | | | | | | |
| **ITEM NO.:- 11** | | | | | | | |
| | For R.C.C. slab | | | | | | |
| | | 1 | 7.5 | 5.1 | 0.125 | 4.781 | Cu.m |
| | | | | | | | |
| **ITEM NO.:- 12** | | | | | | | |
| | For lintel work | | | | | | |
| | (1)Vantilator | 6 | 0.9 | 0.3 | 0.15 | 0.243 | Cu.m |
| | (2)Door:1 | 2 | 1.5 | 0.3 | 0.15 | 0.135 | Cu.m |
| | (3)Doo :2 | 6 | 1.2 | 0.3 | 0.15 | 0.320 | Cu.m |
| | | | | | Total | 0.698 | Cu.m |
| | | | | | | | |
| **ITEM NO.:- 13** | | | | | | | |
| | Internal white wash | | | | | | |
| | =(internal P.L.-Dedo work) | | | | | | |
| | =(98.64-30.8) | | | | | 67.84 | sq.m |
| **ITEM NO.:- 14** | | | | | | | |
| | External white wash (as per external plaster work) | | | | | | |
| | | | | | | 109.98 | sq.m |
| | | | | | | | |
| **ITEM NO.:- 15** | | | | | | | |
| | Excavation work for leach pit | | | | | | |
| | | 1 | 2.4 | 2.4 | 2.5 | 14.4 | Cu.m |
| | | | | | | | |
| **ITEM NO.:- 16** | | | | | | | |
| | Brick work in leach pit | | | | | | |
| | L=4(0.20+2.0+0.20) | | | | | | |
| | =8.8m | 1 | 8.8 | 0.20 | 2.5 | 4.4 | Cu.m |
| | | | | | | | |
| **ITEM NO.:- 17** | | | | | | | |
| | Internal plaster work in leach pit | | | | | | |
| | Side:1 | 2 | 2.0 | - | 2.5 | 10 | Sq.m |
| | Side:2 | 2 | 2.0 | - | 2.5 | 10 | Sq.m |
| | | | | | total | 20 | Sq.m |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| **ITEM NO.:- 18** | | | | | | | |
| | Celling of leach pit(precast cover) | | | | | | |
| | | 1 | 2.4 | 2.4 | 0.15 | 0.864 | cu.m |
| | | | | | | | |
| **ITEM NO.:- 19** | | | | | | | |
| | Excavation work in inspection chamber | | | | | | |
| | | 1 | 0.8 | 0.8 | 0.7 | 0.448 | Cu.m |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| **ITEM NO.:- 20** | | | | | | | |
| | Brick work in inspection chamber | | | | | | |
| | | 1 | 2.8 | 0.10 | 0.7 | 0.20 | Cu.m |
| | | | | | | | |
| **ITEM NO.:- 21** | | | | | | | |
| | Internal plaster work in inspection chamber | | | | | | |
| | Side :1 | 2 | 0.6 | - | 0.7 | 0.42 | Sq.m |
| | Side :2 | 2 | 0.6 | - | 0.7 | 0.42 | Sq.m |
| | | | | | Total | 0.84 | Sq.m |
| | | | | | | | |
| **ITEM NO.:- 22** | | | | | | | |
| | R.C.C.cover for inspection chamber( precast cover) | | | | | | |
| | | 1 | 0.8 | 0.8 | 0.10 | 0.064 | Cu.m |
| | | | | | | | |
| **ITEM NO.:- 23** | | | | | | | |
| | **CALCULATION OF WEIGHT OF BAR** | | | | | | |
| | (1)10mm Ø @180mm c/c (along $L_x$) | | | | | | |
| | L=3.9+(18x0.01)-(2x0.05) | | | | | | |
| | =3.98m | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| =0.10m | | | | | | |
| | | | | | | |
| Total length= L+0.45X | | | | | | |
| =5.18+(0.45x0.10) | | | | | | |
| =5.22m | | | | | | |
| | | | | | | |
| No. of bar | | | | | | |
| =[3.9-(2x0.05)/0.125]+1 | | | | | | |
| =32 nos | | 2 x2 | 5.22 | 0.62 kg/m | 2 | kg |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ITEM NO.:- 24 | | | | | | | |
| | | | | | | | |
| | Binding wire | 1 | | | | 2.10 | Kg |
| ITEM NO.:- 25 | | | | | | | |
| | PVC pipe 150mm dia. | | | | | | |
| | L=15.5m | 1 | 15.5 | | | | Rmt |

| ABSTRACT SHEET | | | | | |
|---|---|---|---|---|---|
| **ITEM** | **DESCRIPTION** | **QUANTITY** | **RATE** | **PER** | **AMOUNT** |
| ITEM NO.:- 1 | | | | | |
| | Excavation for foundation up to 1.5 M Depth including sorting out and stacking of useful materials and disposing of the excavated stuff up to 50 meter lead.<br>(c) Dense or Hard soil<br>{(S.O.R. Page No.- 35 ( 04001C ) } | 38.22 | 147.00 | Cu.m | 5618.34 |
| ITEM NO.:- 2 | | | | | |
| | Providing and laying cement concrete 1 : 4 : 8 ( 1- Cement : 4- Course sand : 8- Hand broken stone aggregate 40 mm nominal size ) and curing complete<br>including cost of form work in : Foundation and plinth<br>{(S.O.R. Page No.- 41 ( 5004 ) } | 3.986 | 1987.00 | Cu.m. | 7920.18 |
| ITEM NO.:- 3 | | | | | |
| | Filling in Foundation and Plinth with Murrum or selected soil in layers of 20 cm thickness<br>including watering Ramming and consolidating etc. comp.<br>{(S.O.R. Page No.- 37 ( 4009 ) } | 11.11 | 452.00 | Cu.m | 5021.72 |
| ITEM NO.:- 4 | | | | | |
| | Brick work using common burnt | | | | |
| | clay building bricks having | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | crushing not less than 35 kg / Sq. cm. in Cement Mortar 1 : 6 ( 1- Cement : 6 - Fine sand ) in Foundation And plinth in cement mortar 1:5 ( 1-cement : 5 – fine sand) ( A) modular<br>{(S.O.R.Page No. - 63 ( 06001A) )} | 22.00 | 3188.00 | Cu.m | 70136.00 |
| ITEM NO.:- 5 | | | | | |
| | brick work in super structure above plinth level up to floor two level (A) Modular<br>{(S.O.R.Page No. - 63 ( 06001A) )} | 30.36 | 3342.00 | Cu.m | 101463.12 |
| ITEM NO.:- 6 | | | | | |
| | Providing 10 mm thick cement plaster in Single coat on brick/concrete walls for interior plastering up to floor two level<br>And funished even and smooth in (iii) cement mortar 1:6 ( 1-cement : 6-sand)<br>{(S.O.R.Page No. - 127 ( 17001C ))} | 118.88 | 68.50 | Sq.m | 8143.28 |
| ITEM NO.:- 7 | | | | | |
| | Providing 15 mm thick cement plaster in Single coat on rough side of single or half brick walls for external plastering up to G.L to<br>level and finish even and smooth in (ii)cement mortar 1:4 ( 1 - cement : 4 – sand)<br>{(S.O.R.Page No. - 127 ( 17002B) )} | 109.98 | 103.00 | Sq.m | 11327.94 |

| | | | | | |
|---|---|---|---|---|---|
| **ITEM NO.:- 8** | | | | | |
| | White washing with lime on wall surface all two coat) to give an even shade including (thoroughly booming the surface to remove dirt, dust mortar drops and other foreingn matter | 177.68 | 7.60 | Sq.m | 1350.37 |

| | | | | | |
|---|---|---|---|---|---|
| | {(S.O.R.Page No. - 130 ( 18001 ) )} | | | | |
| | | | | | |
| **ITEM NO.:- 9** | | | | | |
| | Colour washing with lime on wall surface all two coat) to give an even shade including(thoroughly booming the surface to remove dirt, dust mortar drops and other foreingn matter | 98.64 | 7.70 | Sq.m | 759.52 |
| | {(S.O.R.Page No. - 130 ( 18007 ) )} | | | | |
| | | | | | |
| **ITEM NO.:- 10** | | | | | |
| | Providing and laying 40 mm thick marbel Chips flooring rubbed and polished to thick granolithic finish with under layer 30 mmcement concrete 1:2:4 ( 1- cement: 2 – coarse sand : 4- graded stone aggregate 10mm and down gauge) and top layer 10 mm thick with white , black or white and blackmarbel chips of required size from 1 mm o 4 mm nominal size laid in cement marbel powder mix 3:1 ( 3- cement: 1- marbel powder by weight ) in proportion of 4:7 ( 4-cement : 7- marbel chips by volume) ( A) dark shed pigment with ordinary cement ( in top layer only) | | | | |
| | {(S.O.R.Page No. - 111 ( 14001A) )} | | | | |
| | | 27.54 | 460.00 | Sq.m | 12668.00 |
| | | | | | |
| | | | | | |
| ITEM NO.:- 11 | | | | | |
| | Providing and laying ceramic tiles 6mm thick in skirting risers of steps | 30.80 | 613.00 | Sq,m. | 18880.40 |
| | And dedo on 10 mm thick cement Plaster 1:3 (1-cement :3-coarse sand) and jointed with white cement Slurry (up to 10 ton) {(S.O.R.Page No. - 117 ( 14009 B ) )} | | | | |

| | | | | |
|---|---|---|---|---|
| | | | | |
| ITEM NO.:- 12 | | | | |
| Providing and laying cement concrete work) 1:2:4 ( 1- cement : 2- coarse sand : 4-graded stone aggregate 20 mm nominal size and curing complete excluding cost of formwork and reinforcement for reinforced concrete work in (B) slabs, landing, shelves, balconis, lintels, beams, gurder and cantilever up to floor two level {(S.O.R.Page No. - 43 ( 05011B ) )} | 5.478 | 3141.00 | Cu.m | 17206.39 |
| | | | | |
| ITEM NO.:- 13 | | | | |
| Providing formwork of ordinary timber etc. in planking so as to give a roof finish including centering shuttering strutting and propping Height of proppind and centering below supporting floor to ceiling not exceeding 4 m.and removal of the same for in situ reinforced concrete and plain concrete work (B) Flat surface such as soffits of suspended floors slabs landings and the like. (1) Floors etc. upto 200 mm in thickness. {(S.O.R.Page No. - 77 ( 09001B1 )}} | 31.05 | 160.00 | Sqmt. | 4968.00 |
| | | | | |
| ITEM NO.:- 14 | | | | |
| PVC pipes 10 kg/sq.cm 150mm dia. (market rate) | 15.5 | 350.00 | Rmt | 5425.00 |
| | | | | |
| ITEM NO.:- 15 | | | | |
| Gully trap (150mmx100mm size) (market rate) | 6 | 64.00 | NOS | 384.00 |
| | | | | |
| ITEM NO.:- 16 | | | | |
| Urinal flat back | 3 | 437.00 | NOS | 1311.00 |
| | | | | |
| ITEM NO.:- 17 | | | | |

| | | | | |
|---|---|---|---|---|
| W/C pan | 6 | 320.00 | NOS | 1920.00 |
| | | | | |
| ITEM NO.:- 18 | | | | |
| Wash besin | 2 | 1114.00 | NOS | 2228.00 |
| | | | | |
| ITEM NO.:- 19 | | | | |
| Elbow | 3 | 20.00 | NOS | 60.00 |
| T- pipe | 7 | 24.00 | NOS | 168.00 |
| | | | | |
| ITEM NO.:- 20 | | | | |
| Pre-cast R.C.C slab (For leach pit | 1.00 | 3000.00 | Cu.m | 3000.00 |
| And inspection chamber) | | | | |
| | | | | |
| ITEM NO.:- 21 | | | | |
| Providing H.Y.S.D Bar reinforcement For R.C.C work including bending, Binding and placing in position Complete up to floor two level {(S.O.R.Page No. - 45 ( 05014A ) )} | 210 | 41.10 | Kg | 8631.00 |
| | | | | |
| Total Rupees | | | | |
| Conti……..05.00% Rupees | | | | 14429.48 |
| 10% contractor charges | | | | 28858.96 |
| 2% water charges | | | | 5771.79 |
| 2% unexpected site situation | | | | 5771.79 |
| Total Amount Rupees | | | | 343421.65 |
| Say Rupees | | | | 344000.00 |
| (THREE LAC FOURTY FOUR THOUSAND ONLY) | | | | |

# Existing institution like-village administration – detail profile (Rain Water Harvesting System)

## 8.1.2 Components of Rain Harvesting System

**Fig. 8.3 :- Elements of Rain water harvesting system**

A rainwater harvesting system comprises components of various stages - transporting rainwater through pipes or drains, filtration, and storage in tanks for reuse or recharge. The common components of a rainwater harvesting system involved in these stages are illustrated here.

### 8.1.2.1 Catchment

The catchment of a water harvesting system is the surface which directly receives the rainfall and provides water to the system. It can be a paved area like a terrace or courtyard of a building, or an unpaved area like a lawn or open ground. A roof made of reinforced cement concrete (RCC), galvanised iron or corrugated sheets can also be used for water harvesting.

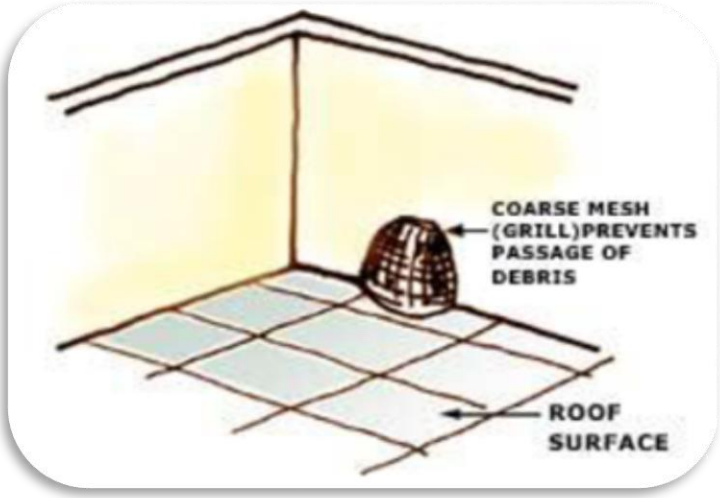



**Fig. 8.4 :- Catchment**

### 8.1.2.2 COARSE MESH

At the roof to prevent the passage of debris.

### 8.1.2.3 GUTTER

Channels all around the edge of a sloping roof to collect and transport rainwater to the storage tank. Gutters can be semi-circular or rectangular and could be made using:

- Locally available material such as plain galvanised iron sheet (20 to 22 gauge), folded to required shapes.
- Semi-circular gutters of PVC material can be readily prepared by cutting those pipes into two equal semi-circular channels.
- Bamboo or betel trunks cut vertically in half.

**Fig.8.5:- Gutter**

the size of the gutter should be according to the flow during the highest intensity rain. It is advisable to make them 10 to 15 per cent oversize.

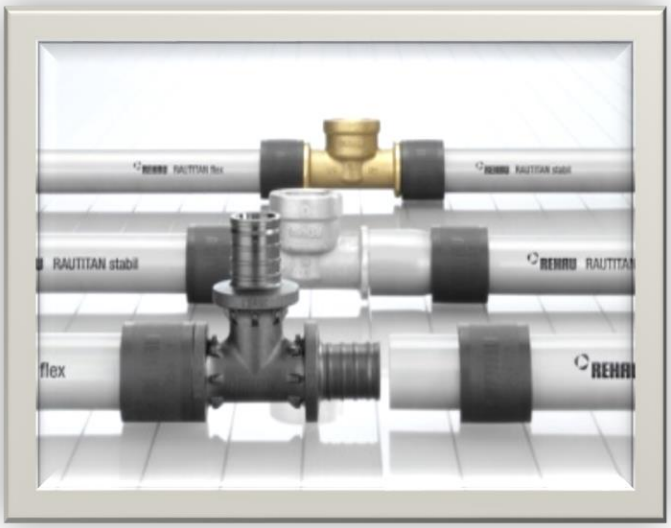
Gutters need to be supported so they do not sag or fall off when loaded with water. The way in which gutters are fixed depends on the construction of the house; it is possible to fix iron or timber brackets into the walls, but for houses having wider eaves, some method of attachment to the rafters is necessary.

### 8.1.2.4 Conduits

Conduits are pipelines or drains that carry rainwater from the catchment or rooftop area to the harvesting system. Conduits can be of any material like polyvinyl chloride (PVC) or galvanized iron (GI), materials that are commonly available.

### 8.1.2.5 Downpipes And Transmission Pipes

Downpipes and transmission pipes are predominantly constructed from lengths of PVC pipe jointed using solvent welding. This is a suitable method for this purpose and the construction and maintenance of such systems is relatively straightforward. The required skills are readily available in most communities.




It is important to have a good connection to the gutter. This is more easily ensured by providing pre-fabricated gutter outlets at the top of downpipes. Gutter outlets should be riveted or screwed to both the gutter and the downpipe and the joint sealed. Transmission pipes, laid underground, are much less susceptible to failure than hanging downpipes. Hanging downpipes can be suitable on small buildings, but it is essential to ensure that the downpipe is very well secured or supported as this is the most common source of failure of rainwater harvesting systems. Where hanging downpipes are utilized, it is best to secure them to walls with correctly sized brackets to reduce the probability of failure. Where this is not possible route transmission pipes underground

**Fig. 8.6**

**Above ground downpipe secured tightly to building wall with brackets**.

**Well supported downpipe to underground transmission pipe**

**Fig.8.7:- Downpipe with 45º connection to underground transmission pipe.**

Where a number of downpipes (greater than 4) are provided for a roof catchment which feed into underground transmission pipes, increase the underground transmission pipe.

**Fig.8.8:-Location of end cap at transmission pipe corner to allow future rodding or flushing access - before end cap installation.**

Underground transmission pipes should be installed with end caps at suitable locations to enable rodding of flushing in future to remove blockages.

### 8.1.2.6 First-Flushing

A first flush device is a valve that ensures that runoff from the first spell of rain is flushed out and does not enter the system. This needs to be done since the first spell of rain carries a relatively larger amount of pollutants from the air and catchment surface.

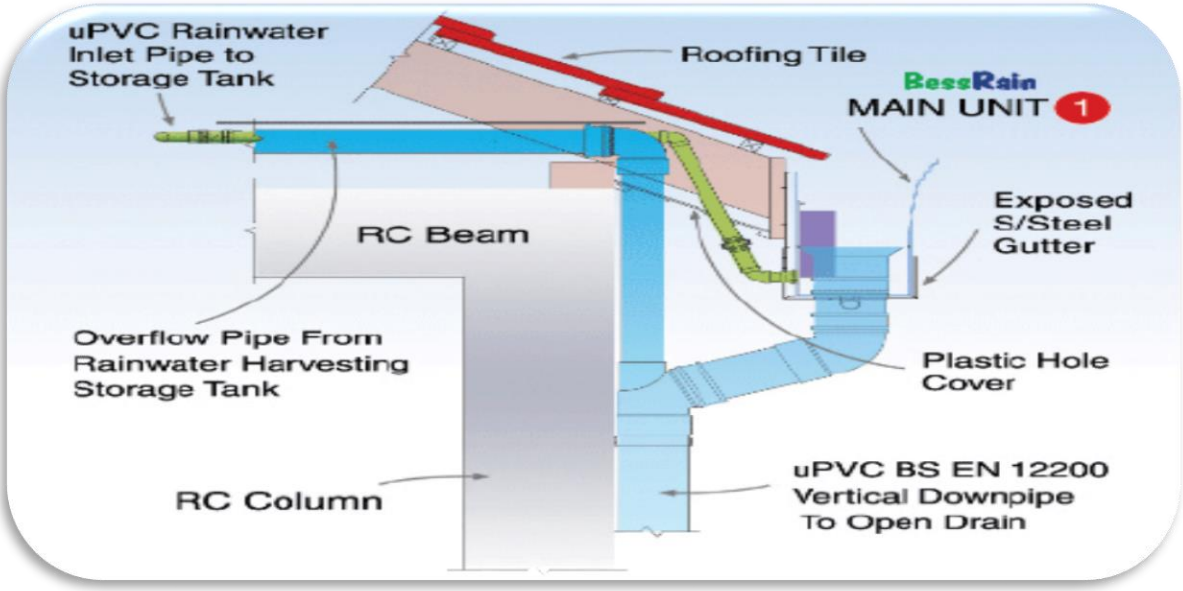



**Fig. 8.9:- First flushing system**

### 8..1.2.7 FILTER

The filter is used to remove suspended pollutants from rainwater collected over roof. A filter unit is chambers filled with filtering media such as fibre, coarse sand and gravel layers to remove debris and dirt from water before it enters the storage tank or recharge structure. Charcoal can be added for additional filtration.

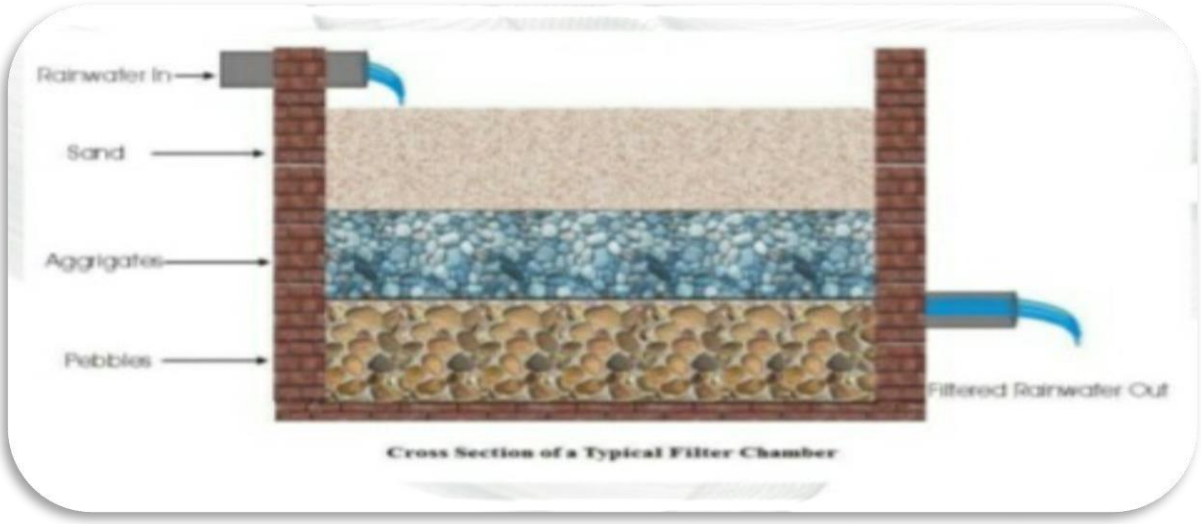



**Fig.8.10:- Filter**

A simple charcoal filter can be made in a drum or an earthen pot. The filter is made of gravel, sand and charcoal, all of which are easily available.

- **Sand filters**

Sand filters have commonly available sand as filter media. Sand filters are easy

and inexpensive to construct. These filters can be employed for treatment of water to effectively remove turbidity (suspended particles like silt and clay), colouand microorganisms.

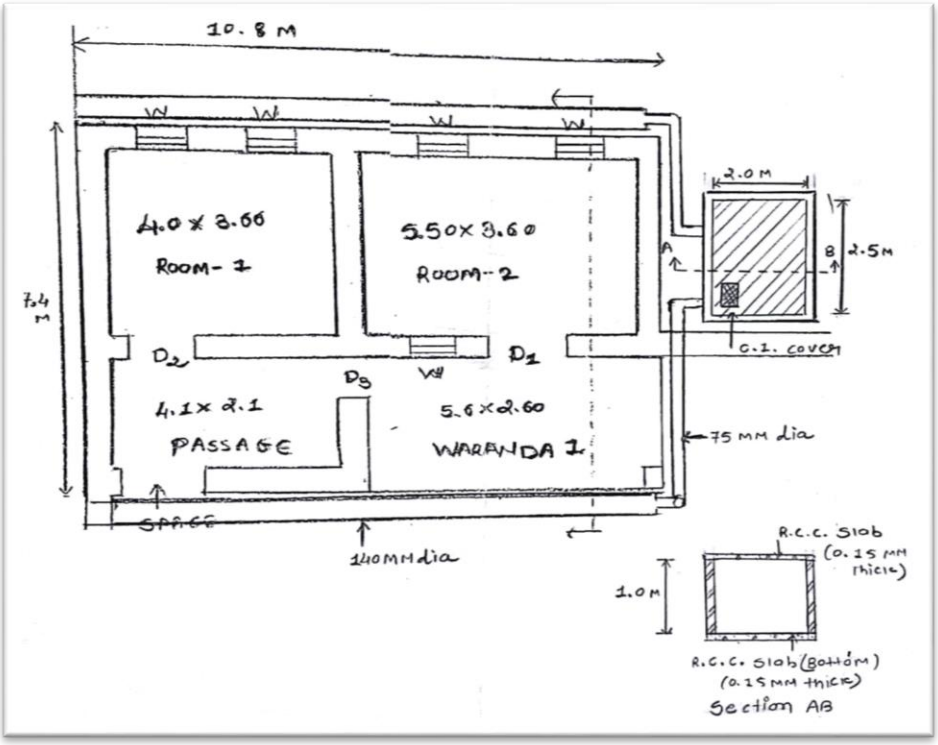



**Fig: 8.11 plan of rain water harvesting system**

**Fig: - 8.12 Components of Rain Water Harvesting**

# PROPOSED CONSTRUCTION WORK OFRAINWATER HARVESTING TANK IN ANTALIYA
# ESTIMATE

## RAIN WATER HARVESTING

### Measurement Sheet

| Sr No | Particular | Nos. | L | B | H | Quantity | Total Quantity |
|---|---|---|---|---|---|---|---|
| 1 | Excavation for Foundation for depth more than 3.3m including sorting out and stacking of useful material and disposing off the excavated stuff up to 50 m lead | **1** | **17.5** | **17.5** | **3.5** | **1071.8 $m^3$** | **1071.8 m3** |
| 2 | Providing and laying Cement Concrete 1:3:6 ( 1 cement : 3coarse sand : 6 stone aggregate40 mm nominal size) and curing complete excluding cost of formwork in foundation | **1** | **17.5** | **17.5** | **0.10** | **30.625 $m^3$** | **30.625 m3** |
| 3 | Providing and laying controlled cement concrete M15 for curing complete excluding the cost of formwork & reinforcement including curing<br>Walls<br>Slabs | **4**<br>**2** | **17.5**<br>**17.5** | | **0.10**<br>**0.10** | **24.50$m^3$**<br>**61.25$m^3$** | **85.75$m^3$** |
| 4 | Deduction of Manholes from the top slab | **2** | **0.60** | **0.60** | **0.10** | **0.072$m^3$** | **61.25-0.072 =61.178 $m^3$** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5 | Providing H.Y.S.D bar reinforcement for R.C.C. work including bending binding and placing in position | **85.67 $m^3$** | | **70 $kg/m^3$** | | **6000kg** | **6000 kg** |

**Table no: - 4**

## Abstract Sheet

| Sr No | Particular Or Item | Quantity | Rate | Per | Amount |
|---|---|---|---|---|---|
| **1** | **For Excavation Of Foundation** | **1071.8** | **124.00** | **Cum** | **132903.20** |
| **2** | **Providing And Laying P.C.C(1:3:6) Excluding Cost Of formwork** | **30.625** | **2932.00** | **Cum** | **89792.50** |
| **3** | **Providing And Laying controlled Cement Concretem15 For The Walls Excluding cost Of Reinforcement** | **24.50** | **4077.00** | **Cum** | **99886.50** |
| **4** | **Providing And Laying concrete And Finishing smooth Curing Including The cost Of Formwork But excluding The Cost Of reinforcement In R.C.C Slab** | **61.25** | **5927.00** | **Cum** | **363028.75** |
| **5** | **Reinforcement** | **6000** | **40.00** | **Kg** | **24000.00** |
| | | | | **Total Rs** | **709613.95** |
| | | | | **Say Rs** | **709614.00** |

**Table no: - 5**

# Electricity Facilities with Area
## (AUTOMATIC STREET LIGHT CONTROL)

### 8.1.3 AUTOMATIC STREET LIGHT CONTROL


**Fig :-8.13 Automatic Street Light**

### 8.1.1 Introduction

- Sometime street light is remain on when the sun light is available due to many energy loss.
- Sometime street light is remain off when the sun light is not available due to this people do not get enough light.
- We require person for on-off the street light.

### 8.1.2 Basic Concept and overview

- This circuit uses popular timer I.C 555. It is connected as comparator with 6 pin connected with positive rail, the output goes high(1) when the trigger pin2 is lower than 1/3rd the level of the supply voltage. Conversely the output goeslow(0) when

it is above 1/3rd level. So small change in the voltage pin of pin -2 is enough to change the level of output (pin 3) from 1 to 0 and from 0 to 1.

- The output has only two states high and low and cannot remain in any intermediate state. Its is powered by a 9v battery for portable use.
- The circuit is economical in power consumption. Pin 4,6 and 8 is connected to the positive and pin 1 is grounded.
- To detect the present of an object we have used LDR which is a special type of resistance whose value depends upon the brightness of light which is falling on it. It has a resistance of about 1M ohms when in total darkness; but a resistance of only about 5 K ohms when illuminated. It responds to a large part of light spectrum.
- We have made a potential divider circuit with LDR and a 50K variable resistance connected in series.
- We know that voltage is directly proportional to conductance, so more voltage we get from this divider when LDR gets light and low voltage In darkness. This divided voltage is given to Pin 2 of the I.C 555.
- Variable resistance is so adjusted that it crosses potential of 1/3rd in brightness and falls below 1/3rd of the supply voltage in darkness. Sensitiveness can be adjusted by this variable resistance.
- As soon as LDR gets dark, the voltage of PIN 2 drops 1/3rd of the supply voltage and pin 3 gets high and LED which is connected to the output gets activated.

### 8.1.3 COMPONENTS USED

1. 9V Battery with strip
2. Switch
3. LDR (Light Depending Resistance)
4. IC N.E 555 with base.
5. LED
6. Variable resistance of 50 kohms
7. PCB
8. IC 555

### 8.1.4 Explanation of components

1) Battery: For 9v power supply we can use 6 pcs dry cell or 6F22 single piece battery.
2) Switch: Any general purpose switch can be used as circuit breaker.
3) L.D.R : It is a special type of resistance whose value depends upon the brightness of light which falls on it. It has a resistance of about 1 M ohm when in total darkness, but a resistance of about 5K ohms when brightness is applied. It responds to a large part of energy spectrum.
4) LED: A diode is a component that only allows electricity to flow one way. It can be thought as a sort of one way street for electrons. Because of this characteristic diode are used to transform of rectify Ac to Dc. Diode has two connections: Anode and cathode. The cathode is the end on the schematic with the point of the triangle pointing towards a line. In other words, the triangle points towards that cathode. The anode of course is at the opposite end. Current flows from the anode to the cathode. Light emitting diodes or LEDS differ from regular diodes in that when a

voltage is applied, they emit light. This light can be Red, Green, Yellow, Orange, Blue of infrared. LEDs are used as indicator, transmitter etc. The Led never burns out like a regular lamp. And requires many times less current

5) Variable resistance: A resistance is one of the most common electronics components. A resistance is a device that limits current. The current limiting ability or resistance is measured in ohms. With variable resistors, you adjust a resistance by adjusting a shaft. This shaft moves a wiper across the actual resistance element. By changing the amount of resistance in between the wiper connection and the connections to the resistor element, you can change the resistance. Resistors ar rated by their power handling capacity. This is the amount of heat the resistance can take before it is destroyed.

6) PCB: With the help of a Printed Circuit Board, it is easy to assemble circuits with neat and clean end products. PCB is made up of backlight with surface pasted with copper track lay out. For each components leg, hole is made. Connection pin is passed through the hole and is soldered.

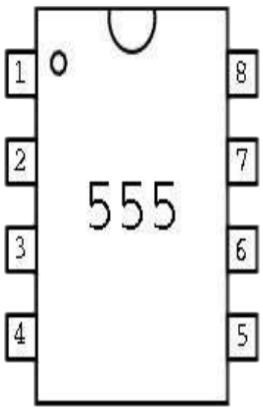



**Fig NO 8.14:- IC 555**

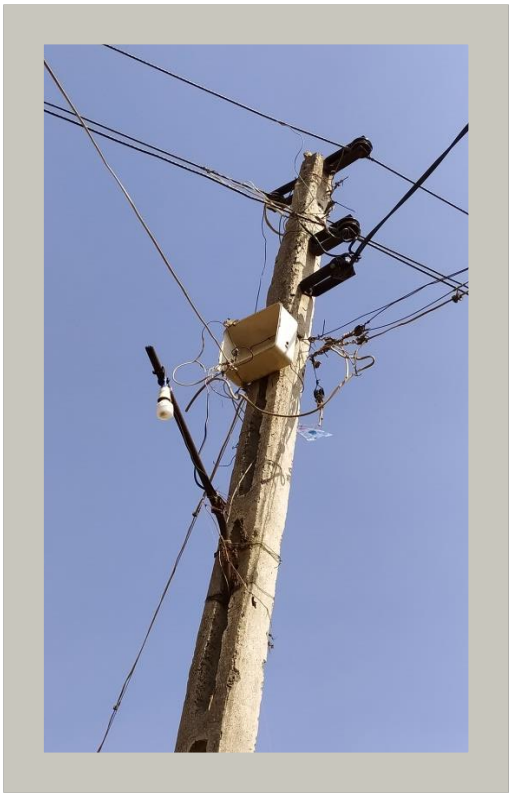


**Fig 8.13 strict light**

| Pin | Name | Purpose |
|---|---|---|
| 1. | GND | Ground, Low Level ( 0 V ) |
| 2. | TRIG | Out Rises And Interval Start, When This Input Falls Below ½ Of Ctrl Voltage. |
| 3. | OUT | This Output Is Given To Approx. 1.7v Below +Vcc Or GND |
| 4. | RESET | A Timing Interval May Be Reset By Driving This Input To The Ground. But The Timing Does Not Begin Again Until RESET Rises Above Appox. 0.7 V. Overrides TRIG Which Overrides THR |
| 5. | CTRL | "Control " Access To Internal Voltage Driver( By Default 2/3Vcc |
| 6. | THR | The Internal Ends When The Voltage At THR Is Greater Than At CTRL |
| 7. | DIS | Open Collector Output May Discharge A Capacitor Between Intervals .In Phase With Output |
| 8. | VCC | Positive Supply Voltage Is Usually Between 3 And 15 Volts. |

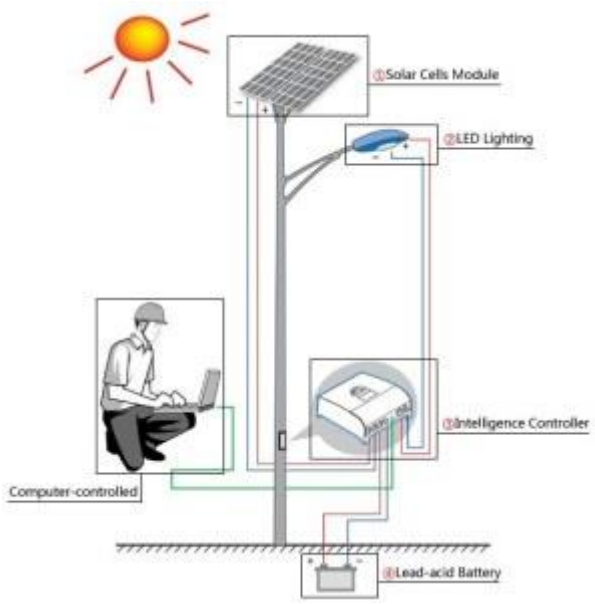
**TABLE NO 6**

### 8.1.6 Working

- When light falls on the LDR then its resistance decrease which results in increase of the voltage at pin 2 of the IC 555 .
- IC 555 has got comparator inbuilt, which compares between the input voltage from pin2 and 1/3 Rd of the power supply voltage.
- When input falls below 1/3rd then output is set high otherwise it is set low. Since in brightness, input voltage rises so we obtain no positive voltage at output of pin 3 to drive or LED, besides in poor light condition we get output to energize

### 8.1.7 Advantages of automatic street light control

1) Reduce the power loss.
2) Quick operation.
3) High performance.
4) Reliability.
5) Extra person not required.
6) Circuit is very simple.
7) Life of lamp is increase



### 8.1.4 community hall

- Scenario

In our village one community hall. But community hall is very poor condition . So we have designed new building of —Community Hall.

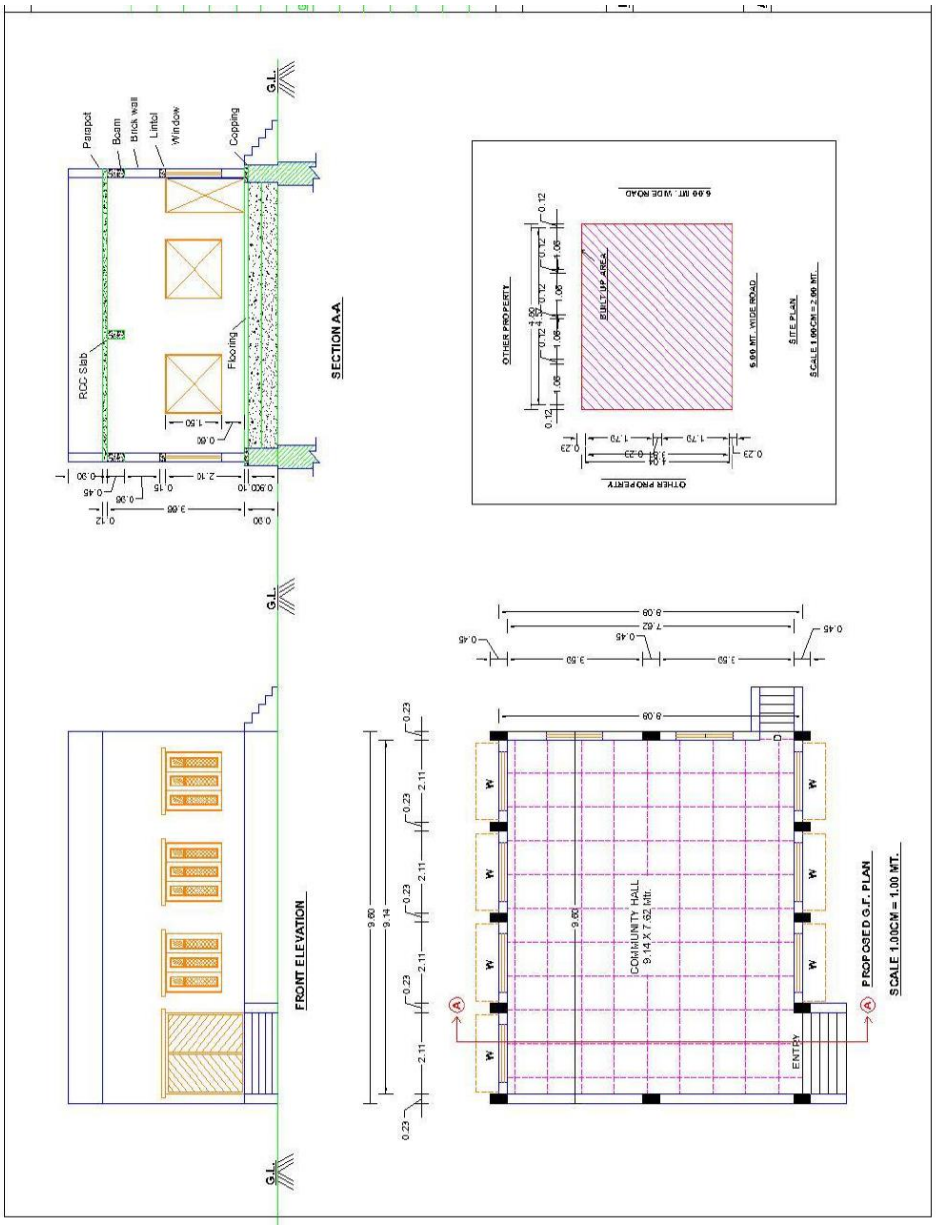



**fig:-8.16 Detail of community hall**

**PROPOSED CONSTRUCTION WORK OF COMMUNITY HALL**

# ESTIMATE

# COMMUNITY HALL

| Recapitulation sheet | | |
|---|---|---|
| No. | Describ | Amount (Lakh) |
| 1 | COMMUNITI HALL | 833000.00 |

| MEASUREMENT SHEET | | | | | | | |
|---|---|---|---|---|---|---|---|
| **ITEM** | **DESCRIPTION** | **NO** | **L** | **B/W** | **H/D** | **QUANTITY** | **UNITS** |
| **ITEM NO.:- 1** | | | | | | | |
| **Excavation for foundation** | | | | | | | |
| **( b ) Dense or Hard soil** | | | | | | | |
| **L/W – 1** | | **8** | **2.11** | **0.60** | **0.90** | **9.12** | |
| **S/W – 1** | | **4** | **3.59** | **0.60** | **0.90** | **7.75** | |
| **Column (RCC)** | | **12** | **1.52** | **1.22** | **0.90** | **20.03** | |
| **Front side Ottah** | | **1** | **9.60** | **0.60** | **0.60** | **3.46** | |
| | | | | | | | **40.35Cumt.** |
| **( c ) Hard Murrum.** | | | | | | | |
| **L/W – 1** | | **8** | **2.11** | **0.60** | **0.30** | **3.04** | |
| **S/W – 1** | | **4** | **3.59** | **0.60** | **0.30** | **2.58** | |
| **Column (RCC)** | | **12** | **1.52** | **1.22** | **0.60** | **13.35** | |
| | | | | | | | **18.97Cumt.** |
| **ITEM NO.:- 2** | | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **P/L Cement Concrete 1 : 4 : 8 in Foundation & Flooring Bedding** | | | | | |
| **L/W – 1** | **8** | **2.11** | **0.60** | **0.15** | **1.52** |
| **S/W – 1** | **4** | **3.59** | **0.60** | **0.15** | **1.29** |
| **Column (RCC)** | **12** | **1.52** | **1.22** | **0.15** | **3.34** |
| **Front side Ottah** | **1** | **9.60** | **0.60** | **0.15** | **0.86** |
| **Flooring Bedding :** | | | | | |
| **Godown** | **1** | **9.14** | **7.62** | **0.15** | **10.45** |
| | | | | | **17.46Cumt.** |

| | | | | | |
|---|---|---|---|---|---|
| **ITEM NO.:- 3** | | | | | |
| **U.C.R. Masonary in c.m.1:6 in Foundation and Plinth.** | | | | | |
| **Foundation** | | | | | |
| **L/W – 1** | **8** | **2.11** | **0.60** | **1.05** | **10.63** |
| **S/W – 1** | **4** | **3.59** | **0.60** | **1.05** | **9.05** |
| **Front side Ottah** | **1** | **9.60** | **0.60** | **0.45** | **2.59** |
| **Plinth** | | | | | |
| **L/W :-1** | **8** | **2.11** | **0.45** | **0.63** | **4.79** |
| **S/W :-1** | **4** | **3.59** | **0.45** | **0.63** | **4.07** |
| **Front side Ottah** | **1** | **9.60** | **0.45** | **0.63** | **2.72** |
| | | | | | **33.85Cumt.** |

| | | | | | |
|---|---|---|---|---|---|
| **ITEM NO.:- 4** | | | | | |
| P/L C.C. 1:3:6 for R.C.C. Work in Copping. | | | | | |
| L/W :-1 | 8 | 2.11 | 0.45 | 0.15 | 1.14 |
| S/W :-1 | 4 | 3.59 | 0.45 | 0.15 | 0.97 |
| Front side Ottah | 1 | 9.60 | 0.45 | 0.15 | 0.65 |

| | | | | | |
|---|---|---|---|---|---|
| **2.76 Cum.** | | | | | |
| **ITEM NO.:- 5** | | | | | |
| Filling in foundation & plinth | | | | | |
| Godown | 1 | 9.14 | 7.62 | 0.57 | 39.70 |
| Front side Ottah | 1 | 9.60 | 1.00 | 0.57 | 5.47 |
| | | | | | **45.17Cum.** |
| **ITEM NO.:- 6** | | | | | |
| Brick Masonary in super structure in c.m. 1:6 | | | | | |
| **L/W – 1** | **8** | **2.11** | **0.23** | **3.66** | **14.21** |
| **S/W – 1** | **4** | **3.59** | **0.23** | **3.66** | **12.09** |
| **Total Parapet** | **1** | **35.00** | **0.23** | **0.90** | **7.25** |
| **33.54 Cum.** | | | | | |
| **Deduction** | | | | | |
| **Main Door** | **1** | **2.11** | **0.23** | **2.10** | **1.02** |
| **Door's** | **2** | **0.90** | **0.23** | **2.10** | **0.87** |
| **Window's** | **7** | **1.52** | **0.23** | **1.50** | **3.67** |
| **5.56 Cum.** | | | | | |
| **Net Quantity after deduction** | | | | | |
| **33.54** | **-** | **5.56** | **27.98** | **Cum.** | |

| | | | | | |
|---|---|---|---|---|---|
| **ITEM NO.:- 7** | | | | | |
| **P/L Cement Concrete 1 : 2 : 4 for R.C.C. Work in Columns** | | | | | |
| | | | | | |
| | | | | | |
| **(B) COLUMNS** | | | | | |
| **(ii) Having Cross Sectional area 0.085 to 0.12 Sqm.** | | | | | |
| **Columns** | **12** | **0.45** | **0.23** | **6.81** | **8.46** |
| **ITEM NO.:- 8** | | | | | |
| **P/L Cement Concrete 1 : 2 : 4 for R.C.C. Work in Beam** | | | | | |
| **(A) BEAMS** | | | | | |
| | | | | | |
| | | | | | |
| **(ii) Having Cross Sectional area 0.085 to 0.12 Sqm.** | | | | | |
| **Slab beam** | **3** | **8.52** | **0.23** | **0.45** | **2.65** |
| **Slab beam** | **1** | **9.60** | **0.23** | **0.30** | **0.66** |

| | | | | |
|---|---|---|---|---|
| **2** | **8.52** | **0.23** | **0.30** | **1.18** |
| 2 | 9.60 | 0.23 | 0.30 | 1.32 |
| Door beam | 1 | 2.11 | 0.23 | 0.30 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **ITEM** | **DESCRIPTI** | **NO** | **L** | **B/W** | **H/D** | **QUANTITY** | **UNITS** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | ON | | | | | | |
| ITEM NO.:- 9 | | | | | | | |
| P/L Cement Concrete 1 : 2 : 4 for R.C.C. Lintel | | | | | | | |
| 2 | 9.60 | 0.15 | 0.23 | 0.66 | | | |
| 2 | 8.52 | 0.15 | 0.23 | 0.59 | | | |
| 1.25 Cum. | | | | | | | |
| ITEM NO.:- 10 | | | | | | | |
| P/L Cement Concrete 1 : 2 : 4 for R.C.C. Work in Chajja | | | | | | | |
| Door's & Window's | 8 | 1.98 | 0.60 | 0.12 | 1.14 | | |
| 1.14 | Cum. | | | | | | |
| ITEM NO.:- 11 | | | | | | | |
| P/L Cement Concrete 1 : 2 : 4 for R.C.C. Work in Slab | | | | | | | |
| Slab | 1 | 9.60 | 9.12 | 0.12 | 10.51 | | |
| 10.51 Cum. | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| ITEM NO.:- 12 | | | | | | | |
| Providing Steel Reinforcement for R. C. C. work. | | | | | | | |
| (a) Copping | 2.76 | X | 80.00 | 220.54 | | | |
| (b) Beam | 5.95 | X | 200.00 | 1190.80 | | | |
| (c) Column | 8.46 | X | 250.00 | 2114.51 | | | |
| (d) Lintel | 1.25 | X | 100.00 | 125.03 | | | |
| e) Chajja&Chhajli | 1.14 | X | 60.00 | 68.43 | | | |
| (f) Slab | 10.51 | X | 180.00 | 1891.12 | | | |
| 5610.42 | Kgs. | | | | | | |
| Say | 5610.00 | Kgs. | | | | | |
| ( A ) Providing Mild Steel 20 % of total Steel. | | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 5610.00 | X | 0.20 | 1122.00 | Kgs. | |
| ( B ) Providing Cold twisted Steel 80 % of total Steel. | | | | | |
| 5610.00 | X | 0.80 | 4488.00 | Kgs. | |
| ITEM NO.:- 13 | | | | | |
| 10 mm thick interior cement plaster | | | | | |
| Hall Wall | 2 | 9.14 | - | 3.66 | 66.90 |
| Hall Wall | 2 | - | 7.62 | 3.66 | 55.78 |
| Beam Sides | 3 | 7.62 | - | 1.13 | 25.83 |
| Beam Sides | 4 | 2.11 | - | 0.83 | 7.01 |
| Ceilling | 8 | 2.11 | 3.59 | - | 60.60 |
| Chhaja Bottom | 8 | 1.98 | 0.60 | - | 9.50 |
| 225.62 | | | Sqm. | | |
| Deduction | | | | | |
| Main Door | 1 | 2.11 | - | 2.10 | 4.43 |
| Door's | 2 | 0.90 | - | 2.10 | 3.78 |
| Window's | 7 | 1.52 | - | 1.50 | 15.96 |
| 24.17 | | | Sqm. | | |
| Net Quantity after deduction | | | | | |
| 225.62 | - | 24.17 | 201.45 | Sqm | |

| | | | | | |
|---|---|---|---|---|---|
| ITEM NO.:- 14 | | | | | |
| 15 mm thick Sand Faced cement plaster. | | | | | |
| Front & Back Sides | 2 | 9.60 | - | 4.68 | 89.86 |
| Building Sides | 2 | 8.52 | - | 4.68 | 79.75 |
| Parapet in &Out side wall | 1 | 35.00 | - | 2.03 | 71.05 |

| | | | | | |
|---|---|---|---|---|---|
| Chhaja top | 8 | 1.98 | 0.60 | - | 9.50 |
| 250.16 Sqm. | | | | | |
| Deduction | | | | | |
| Main Door | 1 | 2.11 | - | 2.10 | 4.43 |
| Door's | 2 | 0.90 | - | 2.10 | 3.78 |
| Window's | 7 | 1.52 | - | 1.50 | 15.96 |
| 24.17 Sqm. | | | | | |
| Net Quantity after deduction | | | | | |
| 250.16 | - | 24.17 | 225.99 | Sqm. | |
| ITEM NO.:- 15 | | | | | |
| Providing and Fixing 35 mm thick door's& Window's. | | | | | |
| Main Door | 1 | 2.11 | - | 2.10 | 4.43 |
| Door's | 2 | 0.90 | - | 2.10 | 3.78 |
| Window's | 7 | 1.52 | - | 1.50 | 15.96 |
| 4.43 | | | Sqm. | | |
| ITEM NO.:- 16 | | | . | | |
| Providing and laying Polished Kota Stone 20mm avrage Thick. | | | | | |
| Hall | 1 | 9.14 | - | 7.62 | 69.65 |
| Front side Ottah | 1 | 9.60 | - | 1.45 | 13.92 |
| 69.65 | | | Sqm | | |
| | | | | | |
| | | | | | |
| | | | | | |

**ABSTRACT SHEET**

| ITEM | DESCRIPTION | QUANTITY | RATE | PER | AMOUNT |
|---|---|---|---|---|---|
| **ITEM NO.:- 1** | | | | | |
| Excavation for foundation up to 1.5 M Depth including sorting out and stacking of useful materials and disposing of the excavated stuff up to 50 meter lead. | | | | | |
| **(B) Dense or Hard soil** | **40.35** | **78.00** | **Cum.** | **3147.54** | |
| **(C) Hard Murrum.** | **18.97** | **131.00** | **Cum.** | **2485.71** | |
| **{(S.O.R. Page No.- 17 ( I. 1. 0. 0 ) }** | | | | | |
| **ITEM NO.:- 2** | | | | | |
| Providing and laying cement concrete 1 : 4 : 8 ( 1- Cement : 4- Course sand : 8- Hand broken stone aggregate 40 mm nominal size ) and curing complete | | | | | |
| **including cost of form work in :** | | | | | |
| **(A) Foundation and plinth** | **17.46** | **1992.00** | **Cum.** | **34781.40** | |
| **{(S.O.R. Page No.- 20 ( I. 4. 5. 3. 3 ) }** | | | | | |
| **ITEM NO.:- 3** | | | | | |
| Uncoursed rubble masonry with hard | | | | | |
| stone of approved quality in foundation | | | | | |
| and plinth in cement mortar 1 : 6 ( 1- cement : 6- course sand ) Including | | | | | |
| **leveling up etc. complete** | **33.85** | **1850.00** | **Cum.** | **62624.98** | |
| **{(S.O.R. Page No.- 36 ( I. 1. 7. 6 ) }** | | | | | |
| **ITEM NO.:- 4** | | | | | |
| Providing and laying cement Concrate 1:3:6 | | | | | |
| (1- Cement : 3 - Coarse Sand : 6 - Cruched | | | | | |
| Stone Aggregates 20 mm nominal size) and | | | | | |

| | | | | |
|---|---|---|---|---|
| **curing complete including cost of formwork in** | **2.76** | **2905.00** | **Cum.** | **8008.21** |
| **(A) Wall Caps / Coping.** | | | | |
| **{(S.O.R. Page No.- 21 ( I. 5. 5.3.14 ) }** | | | | |
| **ramming and consolidating etc. comp.** | **45.17** | **307.00** | **Cum.** | **13867.40** |
| **{(S.O.R. Page No.- 19 ( I. 8. 0. 0 ) }** | | | | |
| **ITEM NO.:- 6** | | | | |
| Brick work using common burnt clay | | | | |
| building bricks having crushing not less | | | | |
| than 35 kg / Sq. cm. in Cement Mortar 1 : 6 | | | | |
| ( 1- Cement : 6 - Fine sand ) in Foundation | | | | |
| and plinth and in Super structure above | | | | |
| plinth level up to floor two level. | | | | |
| **(B) Conventional.** | **27.98** | **2717.00** | **Cum.** | **76031.17** |
| {( S.O.R.Page No. - 32 ( I. 2. 6. 13 ) ( B )} | | | | |
| {( S.O.R.Page No. - 33 ( I. 6. 6. 19 ) ( B )} | | | | |
| ITEM NO.:- 7 | | | | |
| Providing and laying ordinary cement | | | | |
| concrete 1 : 2 : 4 ( 1- cement : 2- coarse | | | | |
| sand : 4- graded stone aggregate 20 mm | | | | |
| nominal size ) and finishing smooth with | | | | |
| curing etc. complete including the cost | | | | |
| of form work but excluding the cost of | | | | |
| reinforcement for RCC work in: | | | | |
| **(B) COLUMNS** | | | | |
| **(iI) Having cross-sectional area more than** | | | | |

| | | | | |
|---|---|---|---|---|
| 0.085 Sqm. and up to 0.12 Sqm. | 8.46 | 6032.00 | Cum. | 51018.78 |
| {( S.O.R. Page No. - 28 ( I. 31. 0. 0 )} | | | | |
| **ITEM NO.:- 8** | | | | |
| Providing and laying ordinary cement | | | | |
| concrete 1 : 2 : 4 ( 1- cement : 2- coarse | | | | |
| sand : 4- graded stone aggregate 20 mm | | | | |
| nominal size ) and finishing smooth with | | | | |
| curing etc. complete including the cost | | | | |
| of form work but excluding the cost of | | | | |
| reinforcement for RCC work in: | | | | |
| (A) BEAMS | | | | |
| (il) Having cross-sectional area more than | | | | |
| 0.085 Sqm. and up to 0.12 Sqm. | 5.95 | 5106.00 | Cum. | 30401.18 |
| {( S.O.R. Page No. - 28 ( I. 31. 0. 0 )} | | | | |
| ITEM NO.:- 9 | | | | |
| Providing and laying ordinary cement | | | | |
| concrete 1: 2 : 4 ( 1- cement : 2- coarse | | | | |
| sand : 4- graded stone aggregate 20 mm | | | | |
| nominal size ) for RCC Lintel including | | | | |
| finishing smooth with curing etc. comp. | | | | |
| including the cost of form work but | | | | |
| excluding the cost of reinforcement. | 1.25 | 4985.00 | Cum. | 6232.65 |

| | | | | |
|---|---|---|---|---|
| {( S.O.R. Page No. - 28 ( I. 30. 0. 0 )} | | | | |
| **ITEM NO.:- 10** | | | | |
| Providing and laying cement concrete | | | | |
| 1 : 2 : 4 ( 1- cement : 2- coarse sand : 4- | | | | |
| graded stone aggregate 20 mm nominal | | | | |
| size ) for reinforced concrete chajjas | | | | |
| not exceeding 10 CM thickness up to | | | | |
| floor two level including finishing the | | | | |
| exposed surfaces with cement mortar | | | | |
| 1 : 3 ( 1- cement : 3- fine sand ) to | | | | |
| a smooth and even surface centering | | | | |
| and formwork and curing complete | | | | |
| excluding cost of reinforcement. | 1.14 | 5519.00 | Cum. | 6294.31 |
| {( S.O.R.Page No. - 22 ( I. 12. 5. 4. 4 )} | | | | |
| **ITEM NO.:- 11** | | | | |
| Providing and laying ordinary cement | | | | |
| concrete 1 : 2 : 4 ( 1- cement : 2- coarse | | | | |
| sand : 4- graded stone aggregate 20mm | | | | |
| nominal size) exposed work with curing | | | | |
| etc. complete including the cost of form | | | | |
| work but excluding the cost of | | | | |
| reinforcement for R C C work in: | | | | |
| (iii) Slabs having more than 10 cm | | | | |
| and up to 13 cm thickness. | 10.51 | 4623.00 | Cum. | 48570.35 |
| {( S.O.R. Page No. - 26 ( I. 26. 0. 0 )} | | | | |

| | | | | |
|---|---|---|---|---|
| **ITEM NO.:- 12 (A)** | | | | |
| Providing mild steel reinforcement for | | | | |
| RCC. work including bending, binding | | | | |
| and placing in position complete up to | | | | |
| floor two level. | 1122.00 | 45.00 | Kgs. | 50490.00 |
| {( S.O.R. Page No. - 23 ( I. 13. 5. 4. 10 )} | | | | |
| ITEM NO.:- 12 (B) | | | | |
| Cold twisted steel reinforcement for | | | | |
| RCC work including bending, binding | | | | |
| and placing in position complete up | | | | |
| to floor two level. | 4488.00 | 45.00 | Kgs. | 201960.00 |
| {( S.O.R.Page No. - 23 ( I. 14. 5. 4. 11 )} | | | | |
| **ITEM NO.:- 13** | | | | |
| 10 mm thick cement plaster in single coat | | | | |
| on brick / concrete walls far interior | | | | |
| plastering up to floor two level and finished | | | | |
| even and smooth in | | | | |
| (I) Cement mortar 1:3 ( 1cement : 3 Sand) | 201.45 | 81.00 | Sqm. | 16317.64 |
| {( S.O.R. Page No. - 71 ( I. 1. 17. 58 )} | | | | |
| **ITEM NO.:- 14** | | | | |
| 15 mm thick singal coat sand faced | | | | |
| cement plaster on walls upto height | | | | |
| 10 meters above ground level consisting | | | | |
| of C. M. 1 : 3 ( 1- cement : 3- sand ) etc. | | | | |

| | | | | |
|---|---|---|---|---|
| {( S.O.R. Page No. - 71 ( I. 1. 17. 60 )} | | | | |
| ITEM NO.:- 15 | | | | |
| Providing and Fixing 35 mm thick | | | | |
| shutters for Door, Windows and | | | | |
| clearestory Windows Incl. Anodised | | | | |
| aluminium but hinges with nece- | | | | |
| ssary screws. | | | | |
| (A) Indian teak wood. | | | | |
| (3) Partly Panelled and partly Glazed. | | | | |
| {( S.O.R.Page No. - 43 ( I. 4. 10. 12 )} | 4.43 | 2481.00 | Sqm. | 10993.31 |
| **ITEM NO.:- 16** | | | | |
| Providing and laying polished kota stone | | | | |
| slab flooring over 20mm (Average) thick base | | | | |
| of cement mortar 1:6 or L. M. 1: 1.5 laid over | | | | |
| and jointed with grey cement slurry including | | | | |
| rubbing and polishing etc. completed. | | | | |
| (B) 30 mm thick. | 69.65 | 722.00 | Sqm. | 50284.99 |
| (S. O. R. Page No. 63 ( I. 12. 14.43 | | | | |

| | |
|---|---|
| Total Rupees | 699272.04 |
| Conti……..05.00% Rupees | 34963.60 |
| 10% contractor charges | 69927.20 |
| 2% water charges | 13985.44 |
| 2% unexpected site situation | 13985.44 |
| Total Amount Rupees | 832133.72 |
| Say Rupees | 833000.00 |

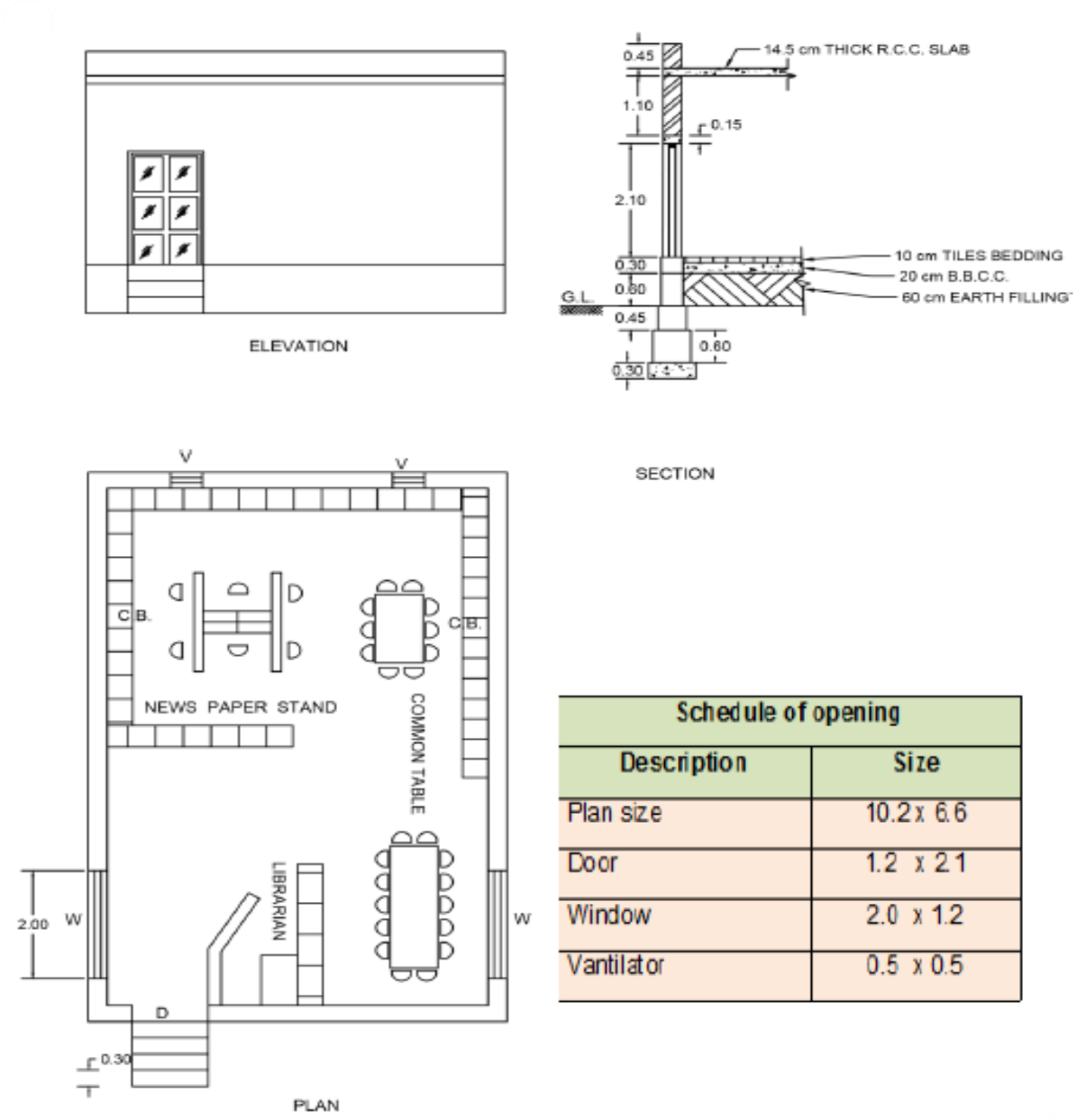
### 8.1.5 Design of public library building

- **Scenario**

In our village no public library.So requirement of new public library building. So we have Design of —PUBLIC LIBRAR.

- **Existing Situation**

In village no Public Library, So We have to Design Public Library**.**




| Schedule of opening | |
|---|---|
| Description | Size |
| Plan size | 10.2 x 6.6 |
| Door | 1.2 x 2.1 |
| Window | 2.0 x 1.2 |
| Vantilator | 0.5 x 0.5 |

**Fig :-8.17 public library building**

| ABSTRACT SHEET | | | | | |
|---|---|---|---|---|---|
| ITEM | DESCRIPTION | QUANTITY | RATE | PER | AMOUNT |
| ITEM NO.:- 1 | | | | | |
| Excavation for foundation up to 1.5 M Depth including sorting out and stacking of useful materials and disposing of the excavated stuff up to 50 meter lead.<br>(c) Dense or Hard soil<br>{(S.O.R. Page No.- 35 ( 04001C ) } | | | | | |
| 32.805 | 147.00 | | Cu.m | | 4822.33 |
| ITEM NO.:- 2 | | | | | |
| Providing and laying cement concrete 1 : 4 : 8 ( 1- Cement : 4- Course sand : 8-Hand broken stone aggregate 40 mm nominal size ) and curing complete<br>including cost of form work in :<br>Foundation and plinth<br>{(S.O.R. Page No.- 41 ( 5004 ) } | | | | | |
| 7.29 | 1987.00 | | Cu.m | | 14485.23 |
| ITEM NO.:- 3 | | | | | |
| Filling in Foundation and Plinth with Murrum or selected soil in layers of 20 cm thickness including watering Ramming and consolidating etc. comp.<br>{(S.O.R. Page No.- 37 ( 4009 ) } | | | | | |
| 25.92 | 452.00 | | Cu.m | | 11715.84 |
| ITEM NO.:- 4 | | | | | |
| Brick work using common burnt clay building bricks having crushing not less than 35 kg / Sq. cm. in Cement Mortar 1 : 6 ( 1- Cement : 6 - Fine sand ) in Foundation And plinth in cement mortar 1:5 ( 1-cement : 5 – fine sand) ( A) modular<br>{(S.O.R.Page No. - 63 ( 06001A) )} | | | | | |
| 28.43 | 3188.00 | | Cu.m | | 90634.84 |

| | | | |
|---|---|---|---|
| ITEM NO.:- 5 | | | |
| Extra for brick work in super structure above plinth level up to floor two level (A) Modular<br><br>{(S.O.R.Page No. - 63 ( 06001A) )} | | | |
| 31.086 | 3342.00 | Cu.m | 103889.41 |
| ITEM NO.:- 6 | | | |
| Providing 10 mm thick cement plaster in Single coat on brick/concrete walls for interior plastering up to floor two level<br><br>And funished even and smooth in (iii) cement mortar 1:6 ( 1- cement : 6-sand)<br><br>{(S.O.R.Page No. - 127 ( 17001C ))} | | | |
| 158.21 | 68.50 | Sqm | 10837.38 |
| ITEM NO.:- 7 | | | |
| Providing 15 mm thick cement plaster in Single coat on rough side of single or half brick walls for external plastering up to G.L to<br><br>level and finish even and smooth in (ii)cement mortar 1:4 ( 1 - cement : 4 – sand)<br><br>{(S.O.R.Page No. - 127 ( 17002B) )} | | | |
| 179.94 | 103.00 | Sqm | 18533.82 |
| ITEM NO.:- 8 | | | |
| White washing with lime on wall surface all two coat) to give an even shade including (thoroughly booming the surface to remove dirt, dust mortar drops and other foreingn<br><br>matter<br><br>{(S.O.R.Page No. - 130 ( 18001 ) )} | | | |
| 179.94 | 7.60 | Sqm | 1367.544 |
| ITEM NO.:- 9 | | | |

| | | | |
|---|---|---|---|
| Colour washing with lime on wall surface all two coat) to give an even shade including(thoroughly booming the surface to remove dirt, dust mortar drops and other foreingn<br><br>matter<br><br>{(S.O.R.Page No. - 130 ( 18007 ) )} | | | |
| 158.21 | 7.70 | Sqm | 1218.22 |
| ITEM NO.:- 10 | | | |
| Providing and laying 40 mm thick marbel Chips flooring rubbed and polished to thick granolithic finish with under layer 30 mmcement concrete 1:2:4 ( 1- cement: 2 –coarse sand : 4- graded stone aggregate 10mm and down gauge) and top layer 10 mm thick with white , black or white and blackmarbel chips of required size from 1 mm o 4<br><br>mm nominal size laid in cement marbel powder mix 3:1 ( 3- cement: 1- marbel powder by weight ) in proportion of 4:7 ( 4-cement : 7- marbel chips by volume) ( A)<br><br>dark shed pigment with ordinary | | | |
| cement ( in top layer only)<br>{(S.O.R.Page No. - 111 ( 14001A) )} | | | |
| 57.96 | 460.00 | Sqm | 26661.60 |
| ITEM NO.:- 11 | | | |
| Providing and fixing 50 mm internal or external skrting of glazed tiles<br>{(S.O.R.Page No. - 117 ( 14010 ) )} | | | |
| 31.20 | 61.50 | Rmt | 1918.8 |
| ITEM NO.:- 12 | | | |
| Providing and laying cement concrete work) 1:2:4 ( 1- cement : 2- coarse sand : 4-graded stone aggregate 20 mm nominal size<br>and curing complete excluding cost offormwork and reinforcement for reinforced concrete work in (B) slabs, landing, shelves,balconis, lintels, beams, gurder and cantiever up to floor two level<br>{(S.O.R.Page No. - 43 ( 05011B ) )} | | | |
| 16.412 | 3141.00 | Cu.m | 51550.092 |
| ITEM NO.:- 13 | | | |
| Providing formwork of ordinary timber etc. in planking so as to give a roof finish including centering shuttering strutting and propping<br>Height of proppind and centering below supporting floor to ceiling not exceeding 4 m.and removal of the same for in situ reinforced concrete and plain concrete work (B) Flat | | | |
| surface such as soffits of suspended<br>floors slabs landings and the like. (1) Floors etc. upto 200 mm in thickness.<br>{(S.O.R.Page No. - 77 ( 09001B1 ))} | | | |

| | | | |
|---|---|---|---|
| 59.04 | 160.00 | Sqm | 9446.40 |
| ITEM NO.:- 14 | | | |
| Providing formwork of ordinary timber not in planking so as to give a rough finishincludingcentering shuttering strutting and propping etc. height of propping and centering below supporting floor to ceiling<br>exceeding 4m. and removal of the same for situ reinforced concrete and plain concrete work in (H) (1) sides and soffits of beam beams haunchings cantilevers girders bressumers and lintels not exceeding 1 m in depth.<br>{(S.O.R.Page No. - 78 ( 09001H1 ) )} | | | |
| 31.2 | 123.00 | Sqm | 3837.6 |
| ITEM NO.:- 15 | | | |
| Providing H.Y.S.D Bar reinforcement<br>For R.C.C work including bending,<br>Binding and placing in position<br>Complete up to floor two level<br>{(S.O.R.Page No. - 45 ( 05014A ) )} | | | |
| 302.36 | 41.10 | kg | 12427.00 |
| ITEM NO.:- 16 | | | |
| Providing Mild steel Bar reinforcement For R.C.C work including bending, Binding and | | | |

| | | | | |
|---|---|---|---|---|
| placing in position<br>Complete up to floor two level<br>{(S.O.R.Page No. - 45 ( 5013 ) )} | 197.45 | 39.60 | kg | 7819.02 |
| Total Rupees | 372065.13 | | | |
| | | | | Conti……..05.00% Rupees, 18603.26 |
| | | | | 10% contractor charges ,37206.51 |
| | | | | 2% water charges ,7141.30 |
| | | | | 2% unexpected site situation ,7441.30 |
| | | | | Total Amount Rupees ,442757.50 |
| | | | | Say Rupees ,443000.00 |
| | | | | (FOUR FORTY THREE THOUSAND ONLY |

### 8.1.6 Animal Water Pond {Avedo} (Physical Design)

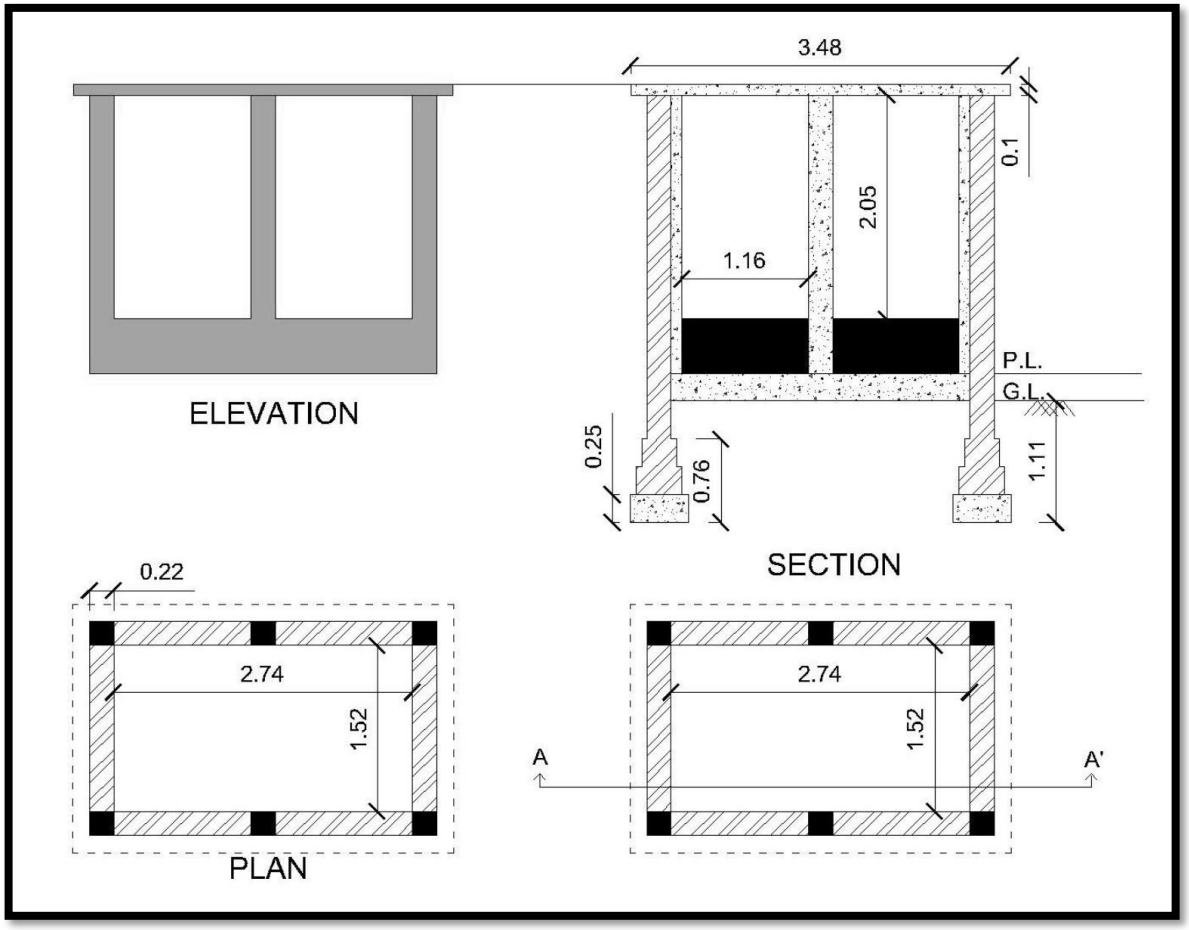



**Fig: 8.18 Plan, Section and Elevation of Design of Animal Water Pond {Avedo}**

- **All the dimensions are in meter.**
- The area of Avedo is 2.74 x 1.52 m.
- Total Numbers of bricks are 3,400 nos. use in this Avedo.
- 2.5 cm mortar bed is used.
- 7.5 cm BBCC is used above earth filling.
- Earth filling thickness is about 0.6 m.
- The step footing below the ground level is about 0.9 m.
- Column Size is 0.5m x 0.3m.
- Beam Size is 0.3m x 0.3m

## Measurement Sheet Of Animal Water Pond {Avedo}

| SrNo | ITEM DESCRIPTION | No | LENGTH | BREADTH | HEIGHT | QUANTITY |
|---|---|---|---|---|---|---|
| | | | | | | |
| 1 | Excavation in foundation Size of Footing = 1.5*1.5m | 6 | 1.5 | 0.9 | 1.5 | 12.15 |
| | | | | Total quantity = | | 12.15 $M^3$ |
| 2 | Plain cement concrete in foundation(1:2:4) Size of Footing = 1.5*1.5m | 6 | 1.5 | 0.9 | 0.3 | 2.43 |
| | | | | Total quantity = | | 2.43 $M^3$ |
| 3 | Concreting in Footing and plinth in C.M(1:6) Column | | | | | |
| Step :1 | 1.5+0.6 =2.1m | 6 | 2.1 | 0.6 | 0.2 | 1.51 |
| Step :2 | 1.5+0.5 =2.0m | 6 | 2 | 0.5 | 0.2 | 1.20 |
| Step :3 | 1.5+0.4 =1.9m | 6 | 1.9 | 0.4 | 0.2 | 0.91 |
| Step :4 | 1.5+0.3 =1.8m | 6 | 1.8 | 0.6 | 0.6 | 1.94 |
| | | | | | | 5.57 |
| | Column | | | | | |
| Step :1 | 1.5-0.6 =0.9m | 6 | 0.9 | 0.6 | 0.2 | 0.65 |
| Step :2 | 1.5-0.5 =1.0m | 6 | 1 | 0.5 | 0.2 | 0.60 |
| Step :3 | 1.5-0.4 =1.1m | 6 | 1.1 | 0.4 | 0.2 | 0.53 |
| Step :4 | 1.5-0.3 =1.2m | 6 | 1.2 | 0.3 | 0.6 | 1.30 |
| | | | | Total quantity= | | 14.21 $m^3$ |
| 4 | Concreting in Column in Foundation Height =0.7 | 6 | 0.5 | 0.3 | 0.7 | 0.63 |
| | | | | Total quantity | | 0.63$m^3$ |
| 5 | Sand Filling up to GL 9.09 | | | | | 9.09 $m^3$ |
| 6 | Concreting in Beam Size of Beam=0.3*0.3m | 4 | 2.75 | 0.3 | 0.3 | 3.30$m^3$ |
| | | 2 | 3.4 | 0.3 | 0.3 | 2.04$m^3$ |
| | | | | Total quantity | | 5.34 $m^3$ |
| 7 | Sand filling in space plinth between | 1 | 6.4 | 3.4 | 0.9 | 19.58$m^3$ |
| | | | | Total quantity | | 19.58$m^3$ |

| | | | | | | |
|---|---|---|---|---|---|---|
| **8** | **PCC in space between Plinth beam** | 1 | 6.4 | 3.4 | 0.3 | 1.92 $m^3$ |
| | | | | Total Quantity = | | 1.92 $M^3$ |
| **9** | **Concreting in colume** | 6 | 0.5 | 0.3 | 2.5 | 7.50 $m^3$ |
| | | | | Total quantity= | | 7.50 $m^3$ |
| **10** | **Brick Masonry above plinth up To slab level L = 13.3 m** | | | | | |
| | | | | | | |
| | | | | | | |
| | | 1 | 13.3 | 0.3 | 0.5 | 6.65 $m^3$ |
| | | | | Total quantity= | | 6.55 $m^3$ |
| **11** | **Concreting in Beam below slab Level Size of Beam=0.3*0.3m** | | | | | |
| | | | | | | |
| | | 4 | 2.75 | 0.3 | 0.3 | 3.30$m^3$ |
| | | 2 | 3.4 | 0.3 | 0.3 | 2.04 $m^3$ |
| | | | | Total quantity= | | 1.40 $m^3$ |
| **12** | **Concreting for slab** | 1 | 9.3 | 6 | 0.15 | 1.40 |
| | | | | Total quantity= | | 1.40 $m^3$ |
| **13** | **Plaster** | | | | | |
| | **For wall** | 5 | 8.3 | | 0.6 | 19.92 |
| | **4 5 0.6 2.40** | 4 | | 5 | 0.6 | 2.40 |
| | **For Column 6 1.6 2 19.20** | 6 | 1.6 | | 2 | 19.20 |
| | **For Beam** | 4 | 2.75 | | 0.3 | 3.30 |
| | | 2 | 3.4 | | 0.3 | 2.04 |
| | **For slab** | 1 | 9.3 | | 6 | 55.80 |
| | | | | Total quantity= | | 102.66 $m^3$ |

## Abstract Sheet Of Animal Water Pond {Avedo}

| Sr. No | Paticulars Of Item | Quantity | Rate | Per | Amount |
|---|---|---|---|---|---|
| 1 | Excavation In Foundation | 12.15 $M^3$ | 85 | $M^3$ | 1032.75 |
| 2 | Plain Cement Concrete In Foundation | 2.43 | 3200 | $M^3$ | 7776 |
| 3 | Concreting In Footing And Plinth In C.M(1:6) | 14.21 | 3000 | $M^3$ | 42624 |
| 4 | Concreting In Column In Foundation | 0.63 | 3500 | $M^3$ | 2205 |
| 5 | Sand Filling Up To Gl | 9.09 | 900 | $M^3$ | 8181 |
| 6 | Concreting In Beam | 5.34 | 3500 | $M^3$ | 18690 |
| 7 | Sand Filling In Space Between Plinth Beam | 19.58 | 900 | $M^3$ | 17625.60 |
| 8 | Pcc In Space Between Plinth Beam | 1.92 | 3200 | $M^3$ | 6144 |
| 9 | Concreting In Column | 7.50 | 3200 | $M^3$ | 26250 |
| 10 | Brick Masonry Above Plinth Up To SlabLevel | 6.65 | 2800 | $M^3$ | 18620 |
| 11 | Concreting In Beam Below Slab Level | 5.34 | 3500 | $M^3$ | 18690 |
| 12 | Concreting For Slab | 1.40 | 3500 | $M^3$ | 4884.50 |
| 13 | Plaster | 102.66 | 260 | $M^3$ | 26691.60 |
| | | | Total Rs. | | 199412.45 |

## 8.1.7 Sustainable Design (Waste Water Treatment)

**Introduction**

- Water scarcity has become a major issue in today's world. The present scenario demands the need of conserving water resources. In addition, there is lot of advanced technologies developed in purifying and recycling wastewater produced. The recycled water is stored in the tank and used whenever the need arises.
- The underground water table is low and reducing because of poor rainfall. The rate of natural recharging in the aquifer has become slow due to the low amount of rainfall. In addition, the water in the borehole is diminishing very fast and need for boreholes are increasing. Hence, the process of Purifying and recycling water is the need of the present. Activated charcoal is increasingly used for purifying water. The recycled water can be used for multi purposes.

**Objective**

- The main objective of this Activated charcoal filtering tank is to meet the water needs of the Manvad village people. Charcoal is used to remove contaminants and impurities, using chemical adsorption active. Charcoal carbon filters are most effective at removing chlorine, sediment, volatile organic compounds (VOCs), taste and odor from water. The purified water is stored in underground tank. The water is pumped and stored in overhead tanks.
- The recycled water is used to meet the water needs of the Manvad village people. Thewastewater generated from the village including water from the bathrooms, kitchen sinksand the laundry is recycled and used for cleaning and other purposes.

**Data Collection**

- **Capacity of tank = 70000 liters**
- **Size of filtration tank = 5.5 m X 2.6 m X 4 m**
- **Size of storage tank = 7.6 m X 4.5 m X 2 m**

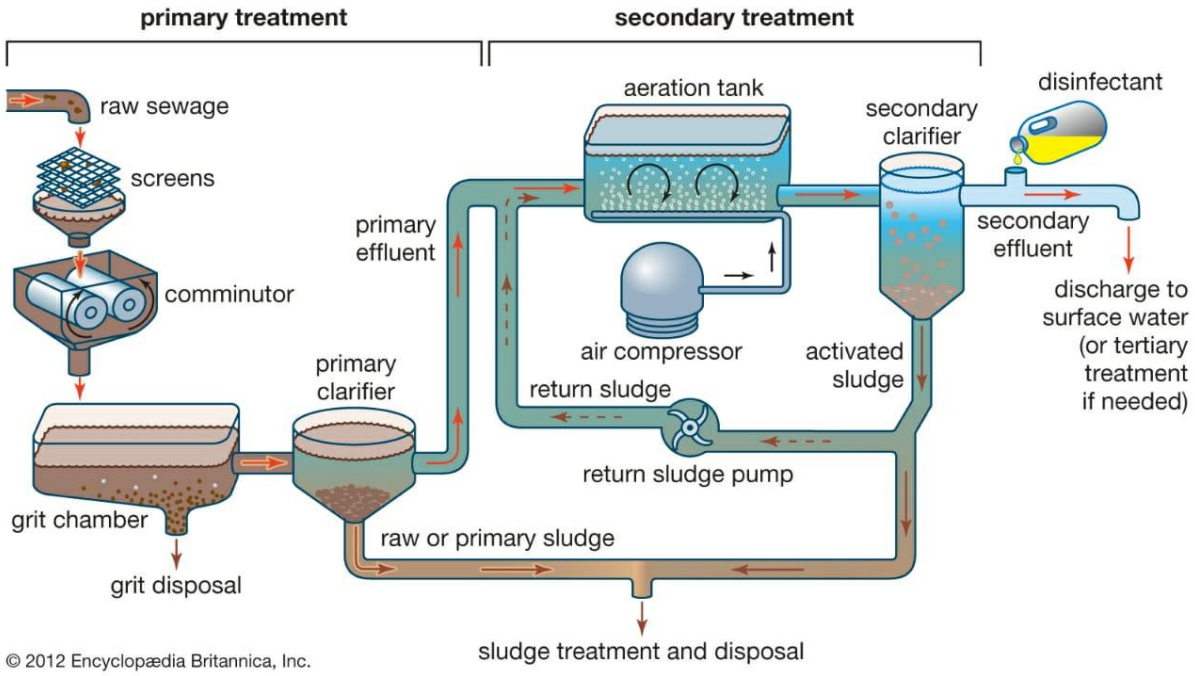



**Fig: 8.19 Waste water filtration unit**

- **Analysis of waste water outflow**
  - Average waste water outflow = 15000 lit/day (assume)
  - Factor of safety = 1.5
  - Total amount of waste water flow outflow = 15000 X 1.5 = 22500 lit/day
- **Filtration Unit Details**
  - Materials: Activated charcoal, coarse aggregate, Fine aggregate.
  - Top Layer: Activated Charcoal,
  - Middle Layer: Fine Aggregate,
  - Bottom Layer: Coarse Aggregate.
- **PROCESS OF MODEL FILTRATION UNIT**
- **Collection of Materials**
  - Sand
  - Aggregate
  - Charcoal
- **Cleaning of Materials -** Clean sand and aggregate
- **Filing the Materials in Model Filtration Unit**
  - Top Layer: Activated Charcoal
  - Middle layer: Fine Aggregate
  - Bottom layer: Coarse Aggregate
  - **PhValue - 6.5 to 7.5**

**Abstract SHEET FOR Waste Water Treatment**

| Sr. No | Particulars Of Item | Quantity | Rate | Per | Amount |
|---|---|---|---|---|---|
| 1 | SAND | 2 ton | 1500 | Ton | 3000 |
| 2 | Aggregate | 1.5 ton | 700 | Ton | 1100 |
| 3 | Activated charcoal | 215 kg. | 60 | Kg | 12900 |
| 4 | Pipe (40mm dia.) | 100 m | 410 | M | 41000 |
| 5 | Other plumbing item | | | | 5000 |
| 6 | Other construction and labour cost | | | | 15000 |
| | | | | **Total Amount** | 78000 |
| | | | | **Add 3% contingencies Rs** | 2340 |
| | | | | **Add 2% charged establishment Rs.** | 1560 |
| | | | | **Grand total** | 81900 |
| | | | | **For 1 Sq. Mt** | 8190.00 |

## BACKGROUNG OF THE STUDY

### 8.1.8 WHAT IS A TEMPERATURE CONTROL SYSTEM?

**Temperature:** This is the degree of hotness or coldness of a body or an environment.

**Control System:** A control system is a device or set of devices that manage, command, direct or regulate the behaviour of other devices or systems.

Thus we can literally say that a Temperature Control System is a device or set of devices that manage, command, direct or regulate the behaviour of other devices or systems in order to influence the degree of hotness or coldness of a body or an environment.

A Temperature Control System is a more like a **programmable thermostat** that can keep the environment (home or office) at a desired temperature regardless of fluctuating exterior weather conditions. The advantage of having a temperature control system over a common thermostat is that it saves energy and money by automatically maintaining different temperatures at different times of the day and night. It is usually a feedback system having a control loop, including sensors, control algorithms and actuators/effectors, and is arranged in such a fashion as to try to regulate a variable at a set point or reference value. An example of this may increase the fuel supply to a furnace when a measured temperature drops.

A programmable thermostat is a digital device that replaces the regular (automatic) thermostat located in older homes and apartments. A thermostat measures the temperature of a room, turning the heating / cooling unit on or off in order to maintain the setting indicated on the thermostat. One of the drawbacks of the traditional thermostat is that it is commonly left at a single setting out of sheer convenience. This translates to higher energy bills because the home is kept warmer than required when people are tucked away in bed, or even off at work (when it is not needed). What would be far more efficient is to have a thermostat that knows when you need it and when you don't, so that it could vary the temperature and save energy. This is exactly what a Temperature Control System offers.

A temperature control system consists of a small programmable digital logic controller device, wired to a heating and/or cooling system. About the size of a typical wall-mounted thermostat, a temperature control system contains a small circuit board and a memory chip(s). After setting the temperature control system to a desired temperature, known as a **set point**, the system will utilize the heater and/or air conditioning unit (as needed) as **effectors,** to maintain that setting for the duration programmed.

A Programmable Logic Controller (Micro-controller) is an electronic device used for automation of industrial processes, such as control of machinery on factory assembly lines. It is an example of a real time system since output results must be produced in response to input conditions within a bounded time. It can thus be said to be a collection of relays in series.

Let's consider this instance. In winter months you might like your home heated to 71 degrees Fahrenheit (21.6 Celsius) in the mornings when rising. If the house is empty during the day there is no need to maintain this temperature and the temperature control system can be set to allow it to naturally fall to another preset temperature. It can be preset to kick back on about 30 minutes before you or other family members normally arrive home. When the household sleeps, the temperature control system can maintain a cooler setting, warming up just before the hous|435©ehold awakens. All of these various temperatures and times or set points are preset by the user to automate the process without having to manually adjust the thermostat.

### 8.1.8.1 HISTORY OF TEMPERATURE CONTROL SYSTEMS

The use of Automatic Temperature Control Systems began way back in the 18th Century. The idea was conceived by Warren S. Johnson while he was teaching at Norman School, Oklahoma. Before then, Janitors had to enter each classroom to determine if it was too hot or too cold, and then adjust the dampers in the basement accordingly. Johnson sought a way to end, or at least minimize the classroom interruptions of the janitors and increase the comfort level of the students. The Automatic Temperature Control System was to meet this very need.

In 1883 Warren Johnson gave up teaching to fully devote his time to researching and developing his ideas. He moved to Milwaukee and formed the Johnson Electric Service Company in 1885. In 1895, Johnson patented the pneumatic temperature control system. This allowed for temperature control on a room by room basis in buildings and homes. It was the first such device of its kind. By the early 20th century the Automatic Temperature Control System was being used in many notable places including the New York Stock Exchange, Palaces of Spain and Japan, West Point, the Smithsonian, the US Capitol Building, and the home of Andrew Carnegie. The use of this system has increased continuously to this day.

### 8.1.8.2 WHY DO WE NEED A TEMPERATURE CONTROL SYSTEM?

The 21st Century was greeted with very unpredictable and unfavourable temperature conditions. The Green House effect has left our world exposed and this resulted in a lot of uncertainties in our weather conditions and climate generally. There has been a growing need for the temperature of certain areas to be kept within a certain range. This has necessitated the need for Temperature Control Systems:

IN THE HOMES: In many modern day homes, the wastage margin of food stuff has increased greatly. This is due to the fact that the temperature of the storage area of the home rose above or fell below a certain allowable maximum or minimum value respectively, leading to the accelerated decay of the food materials.

In addition to this, some areas of the home have to be regulated within certain habitable temperatures (i.e. not too high and not too low). This ensures that life processes can be carried out by people conveniently in those areas.

IN THE INDUSTRIES: Many Industries (especially Manufacturing and Pharmaceutical Industries) have growing concerns for the need to store certain production materials within a specific temperature range. Some of these materials could be highly

inflammable or explosive at certain extreme temperatures. This necessitates the need for a Temperature Control system. IN MORGUES: In morgues and mortuaries, dead bodies have to be preserved at a certain temperature to prevent them from accelerated decay. This temperature must be monitored and maintained regardless of the presence/absence of mortuary staff, and it also has to be managed in such an efficient manner that it doesn't generate enormous energy bills for the management. This problem also necessitates the need for a Temperature Control System.

IN JETS AND AIRCRAFTS: Aircrafts are an important area where safety of passengers is mainly guaranteed by the efficient management and regulation of weather elements such as temperature, air pressure and humidity. These elements must be kept at a certain quantity / degree within the aircraft in order to sustain its weight. Practically, such weather elements as pressure and humidity are factors of adequate temperature. This also necessitates the need for a Temperature Control System.

NATIONAL ENERGY SUPPLY: In developed countries, the dream to conserve enough energy for future use has gradually become a nightmare owing to a decline in the use or lack of use of Temperature Control Systems. In many homes, offices and industries, many heating and cooling devices are accidentally left functioning even when there is no need of them. Occasionally, these mistakes have resulted in municipal infernos that have destroyed lots of lives and properties. In underdeveloped countries the governments are being buried beneath extreme debts of energy bills because of wastage of energy resources.

By using a Temperature Control System you never have to worry about wasting money or electrical energy by forgetting to turn the air conditioning or heating unit off. This greatly optimizes the cost of production in Industrial processes and the cost of living in Homes. Also, you never have to worry about the temperature at which your living or storage area must be maintained. Just let the Temperature Control System worry about that for you. Programming the system only takes a few minutes, and weekends can have separate set points to accommodate alternate schedules (in more deluxe systems). It's also easy to override the set point with the touch of a button, in case you want the area to temporarily be warmer or cooler at any time.

### 8.1.8.3 SCOPE OF THE PROJECT

Owing to inevitable constraints of time and finance, the scope of the project for the purpose of this research work would be limited to its home application only. The Temperature Control System would detect the temperature changes within the home environment and regulate it by triggering the appropriate equipments to influence the temperature. To successfully implement a Temperature Control System of this Capacity, knowledge about the following is needed:

1. Knowledge about the output voltages from the temperature sensor and how to convert them to byte values.
2. The particular formula that will be used to convert the byte values to Centigrade scalar (for LCD display).
3. The programming of the Micro-controller and development of the Control Program.
4. Driver circuit operation and function of each component

### 8.1.8.4 TEMPERATURE CONTROL SYSTEM TERMINOLOGIES

1. Controlled Variable: This refers to what is being controlled by the Control System. In this case, it is the temperature.
2. Sensor: This is the device or unit that measures/detects the temperature of the environment at a given time.
3. Effectors: These refer to the output/control element and related devices or units that are used to affect the temperature of the environment (It could be a heating/cooling unit). In this case, it is the alarm unit.
4. Controller: The Controller is the device that processes the temperature reading from the sensor and uses the results generated to activate the appropriate effectors. In this case, it is a microcontroller.
5. Set-point: This is used as a reference point for the Controller. It is set or input by an external operator. The Controller compares the readings received from the sensor with this reference point in order to determine which effector is appropriate.
6. Thermostat Function: The processes that involves comparing the current temperature status received by the sensor with the set-point VII. Temperature Breach: Any instance in which the set-point has been compromised.

### 8.1.8.5 HOW DOES IT WORK?

To enable us successfully understand how a Temperature Control System Works, let's go back to the roots by taking a look at the first ever and the certified "most efficient" Temperature Control System that was ever made – The Human Body Temperature Control System.

The body regulates its temperature continuously. It may increase or decrease its temperature when it finds that it is too cold or too hot. In this case, temperature is being regulated by a control system, and the control is called homeostasis. Somewhere in the brain, perhaps the Hypothalamus, the optimum temperature of the body (set point) is stored (about 37°C). That information is continuously available to some structure, we call the comparator. The comparator sends signals to:

1. Heat gain mechanisms in the pre-optic area or anterior hypothalamus leading to:
    - Shivering
    - increased thyroid hormone output
    - increased activity in the sympathetic nervous system
    - piloerection
    - cutaneous vasoconstriction
2. Heat loss mechanisms in the posterior hypothalamus leading to:
    - decreased thyroid hormone output
    - sweating
    - cutaneous vasodilation

The output of these mechanisms will end as either a net increase or a net decrease in body temperature. The body temperature is sensed by thermal receptors (thermo-receptors) in the brain and peripherally in the body, and the value is sent to the comparator where it iscompared with the set point. If the value is less than the set point, then signals go mainly to the heat gain mechanisms; if it is greater than the set point, then they go mainly to the heat

loss mechanisms. In this way, body temperature is constantly sensed and maintained constant (i.e., homeostasis). The block diagram of the system for the control of body temperature is given below:

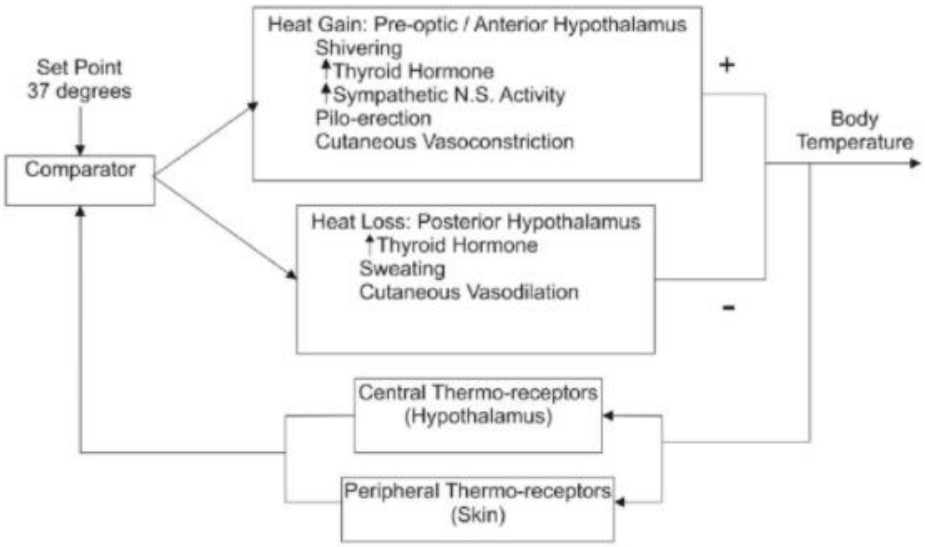



**Fig 8.20 DIAGRAM SHOWING THE PROCESS OF HOMEOSTASIS**

From this we can deduce that in order to accurately control process temperature without extensive operator involvement, a temperature control system relies upon a Control Unit, which accepts the reading of a temperature sensor such as a thermocouple or RTD as input. The set point is programmed into the Control Unit using the Menu/Function Unit, and the start button is pressed. Once the start button is pressed, the Thermostat Function is initiated. The Sensor monitors the current external temperature status and sends its reading to the Control Unit. The temperature reading is also displayed on the Display Unit. In the Control Unit, the control program constantly compares the temperature reading with the set-point to ensure that the reading doesn't breach the set-point. In the event of a Temperature breach, the Control Unit sends off a signal to trigger on the Alarm and inform the individuals present of the breach. Depending on the complexity and robustness of the system, the Control Unit with the aid of the Control Program/Algorithm then determines which sequence of actions would be most appropriate to correct the breach; these are then sent off as interrupts to the appropriate effectors. Sequence of Actions in this case would include either turning on/off the heater or turning on/off the cooling system or other installed control elements. However, the Control Unit/Controller is just one part of the entire control system; in selecting an appropriate controller, the following items should be considered:

- Type of input temperature sensor (thermocouple, thermistor, RTD) and temperature range
- Type of output required (electromechanical relay, SSR, or analog output)
- Control Algorithm (On/Off, proportional, or PID (proportional–integral–derivative)) The number and type of outputs (heating system, cooling system, alarm system and limit)

There are three types of Controller / Control Algorithms for use in the construction and design of most Temperature Control Systems. These include:

A. The On/Off Control – an on/off controller is the simplest form of temperature control device. The output from the device is either on or off, with no middle state. An on-off controller will switch the output only when the temperature crosses the set-point. For heating control, the output is on when the temperature is below the set-point and off above the set-point. Since the temperature crosses the set-point to change the output state, the process temperature will be cycling continually, going from below the set-point to above, and back below. In cases where this cycling occurs rapidly, and to prevent damage to contactors and valves, and on-off differential, or "hysteresis" is added to the controller operations. This differential requires that the temperature exceed the set-point by a certain amount before the output will turn off or on again. On-off differential prevents the output from "chattering" or making fast, continual switches if the cycling above and below the set-point occurs very rapidly. On-off control is usually used where a precise control is not necessary such as in systems which cannot handle having the energy turned on and off frequently, where the mass of the system is so great that temperatures change extremely slowly, or for a temperature alarm. One special type of on-off control used for alarm is a limit controller. This controller uses a latching relay, which can be manually reset, and is used to shut down a process when a certain temperature is reached.

B. Proportional Control – proportional controls are designed to eliminate the cycling associated with the on/off control. A proportional controller decreases the average power supplied to the effector as the temperature approaches the set-point. This has the effect of slowing down the heater/cooler so that it will not overshoot the set-point, but will approach the set-point and maintain a stable temperature. This proportioning action can be accomplished by turning the effectors on/off for short time intervals. This "time proportioning" varies the ratio of "on" to "off" time to control the temperature. The proportioning action occurs within a "proportional band" around the set-point temperature. Outside this band, the controller functions as an on-off unit, with the output either fully on (below the band) or fully off (above the band). However, within the band, the output is turned on and off in the ratio of themeasurement difference from the set-point. At the set-point (the midpoint of the proportional band), the output on: off ratio is 1:1; that is, the on-time and the off-time are equal. If the temperature is further from the set-point, the on-and-off times vary in proportion to the temperature difference. However, if the temperature is below the set-point, the output will be on longer; if the temperature is too high, the output will be off longer.

C. PID Control (proportional–integral–derivative controller) – The third controller type provides proportional with integral and derivative control, or PID. This controller combines proportional control with two additional adjustments, which helps the unit to automatically compensate for changes in the system. These adjustments, integral and derivative, are expressed in time-based units; they are also referred to by their reciprocals, RESET and RATE, respectively. The proportional, integral and derivative terms must be individually adjusted or "tuned" to a particular system using trial and error. It provides the most accurate and stable control of the three controller types, and

is best used in systems which have a relatively small mass, those which react quickly to changes in the energy added to the process. It is recommended in systems where the load changes often and the controller is expected to compensate automatically due to frequent changes in the set-point, the amount of energy available, or the mass to be controlled. Some other controllers exist which are designed to automatically tune themselves. These are known as auto-tune controllers.

### 8.1.8.6 PROJECT METHODOLOGY

The research methodology included the following steps: I. Study of previous literatures on the project to better understand the concept and functionality of the project. II. Understanding the whole system of hardware and software sequences. III. Designing the system circuit and developing the control algorithm. IV. Testing the functionality of the various sections of the system. V. Combining the both hardware and software components of the system. VI. Documenting the Research/Project The steps above are further explained using the flowchart below.

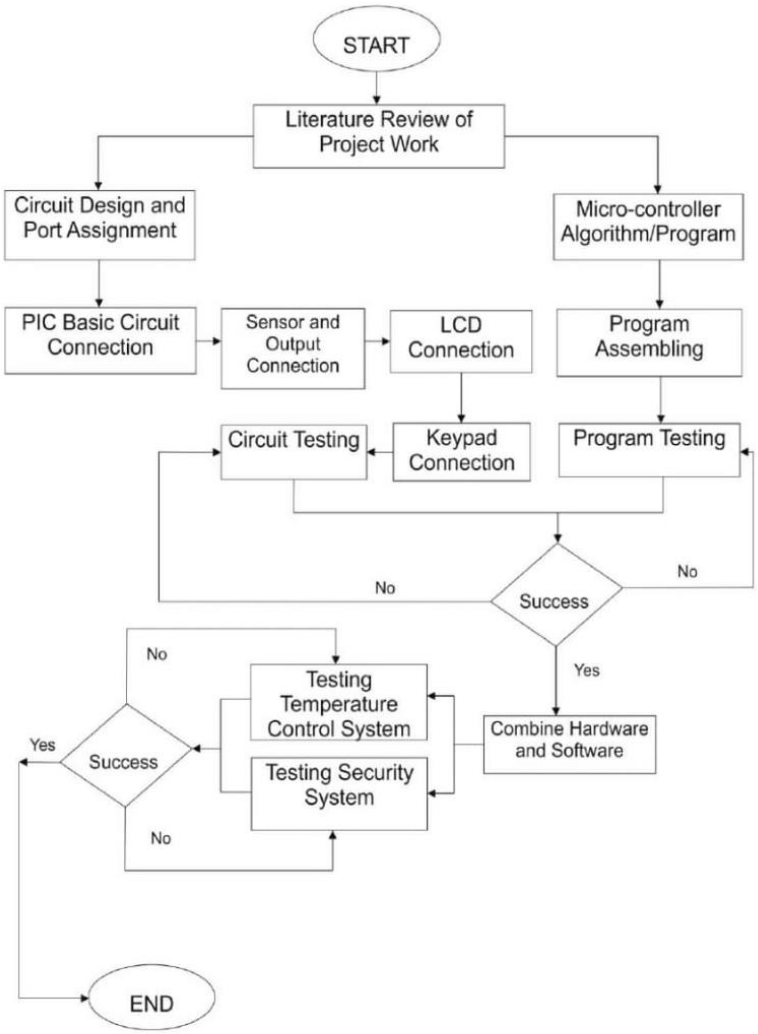
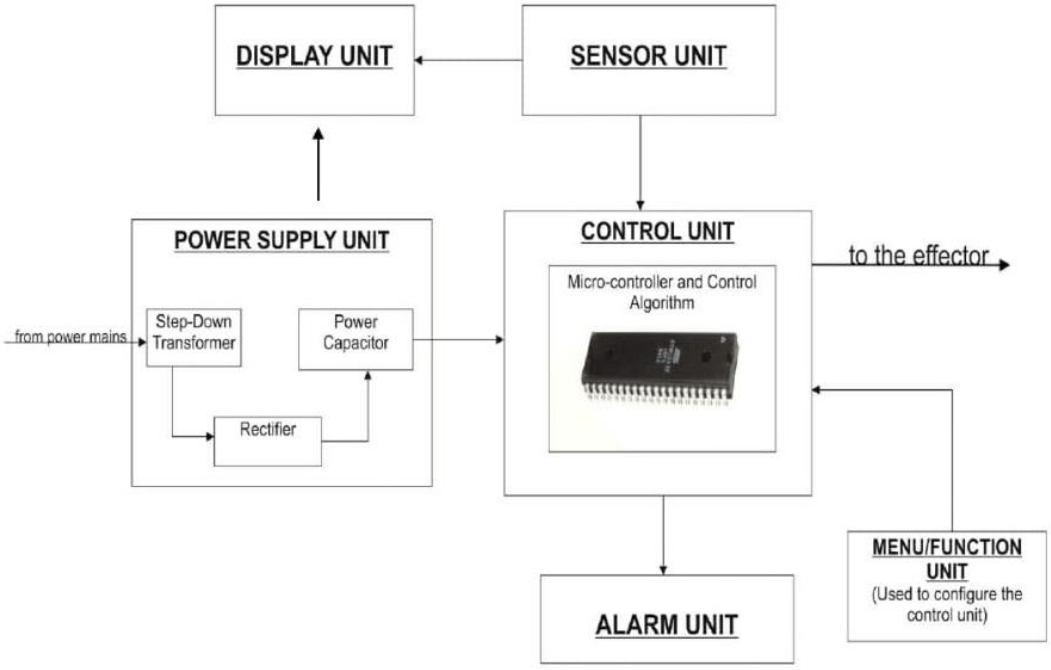
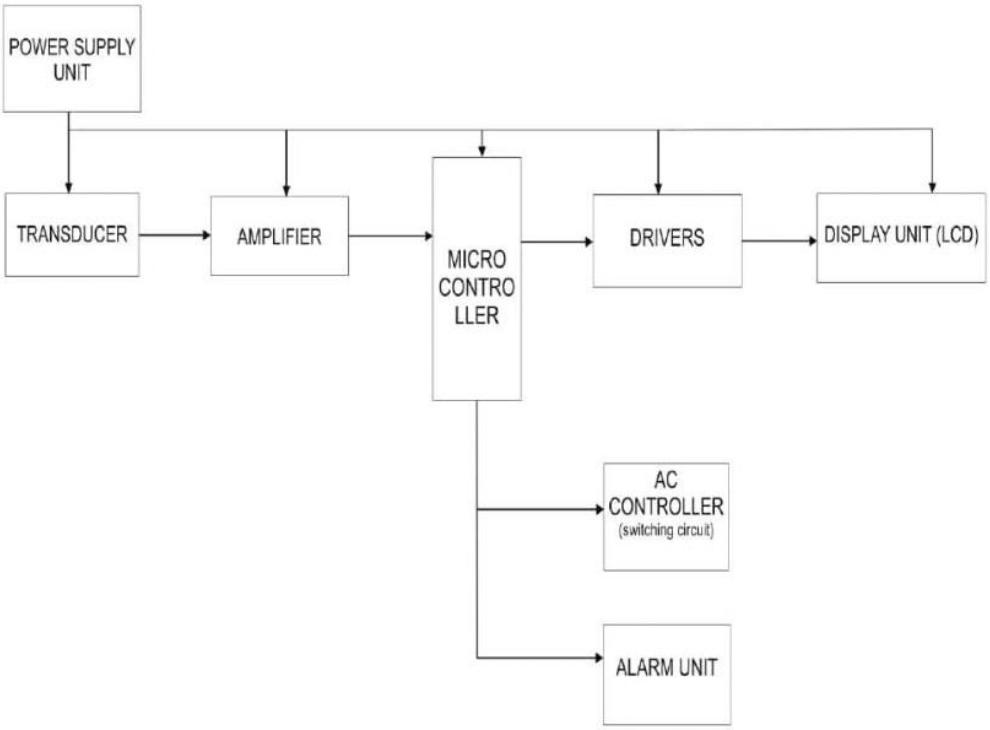



**Fig 8.21 FLOWCHART OF PROJECT METHODOLOGY**




**8.22 PROJECT CHANNEL FOR A TYPICAL TEMPERATURE CONTROL SYSTEM**




**8.23 BLOCK DIAGRAM OF THE TEMPERATURE CONTROL SYSTEM**

## 8.1.9Advanced Wireless Power Transfer System

### 8.1.9.1 INTRODUCTION

The Transfer of electrical power in reliable and efficient way is always challenging for the designers and engineers. Presently all electrical power from the generating stations to the distribution station is transferred by the uses of wires and underground cables. One of the major issues in these types of systems is the losses due to resistance of the material. Generally the percentage of loss of power during the transmission and distribution is 26%.

In modern technology the use of portable device has increased such as mobile robots and electric vehicle. Mobility is the main concern of these equipment i.e. they are not connected to the main source of power.

All these problems are the main motivation for researchers. Nikola Tesla was the first who introduce the concept of wireless power transfer.But this technology from the time of Tesla is underdeveloped due to lack of funding and technology .But research from past few years has always going on and recent development has been observed in the field .

Wireless power transfer can be achieved by several methods (discussed later). Here we discussed few methods such as induction coupling, resonating coupling, LASER technology for electrical power transfer.

### 8.1.9.2 LITERATURE REVIEW

- After the immense research in electromagnetic field by many pioneers and development of electromagnetic induction law by Michael Faraday which gives the basis of wireless power transfer.
- In 1891 Nikola Tesla was the first pioneer who started working on wireless power transfer system in his “experimental station” at Colorado, by using Tesla coils.
- Tesla want to develop a wireless power system that is capable of transmmitting power over long distances. He proposed many such systems.
- Nikola Tesla successfully lighted a small incandescent lamp by means of a resonant circuit grounded on one end. The lamp is lighted by the current induced in the coil.
- Wardenclyffe tower was also designed by Tesla for Trans-Atlantic wireless telephone and also for demonstrating wireless electrical power transmission .
- In 2008 the wireless power consortium was established to connect all manufactures its Qi inductive power standard enable wireless power charging and powering of portable devices of capacity up to 5W with separation distance 4cm .
- In recent years the research on microwave and LASER wireless power transmission system such as solar power satellite has increased.
- Energy harvesting also called power harvesting which is the conversion of ambient energy from environment to electric power which mainly used to power mini watts wireless electronic devices .The ambient energy is produce from stray electric or magnetic field or radio waves.

### 8.1.9.3 INDUCTIVECOUPLING

This type of WPT is simply based on inductive coupling between two coils. This is a type of near field technique measuring with appliance near the source. It is generally based on the principle of mutual induction, where two coils are placed vicinity to each other and there is no physical connection between these two coils. The simplest example is transformer where the transfer of energy takes place due to electromagnetic coupling. Each of these coils connected without wires and it has been an important and popular technology to transfer power without wires because of its simplicity and reliability. Based on this technology there are various application device has been already made including electric brush and charging pad for cell phones or laptop. But this kind of method also have some limitation i.e. the range can be very less up to few cm and separation distance is very less than the coil diameter.

### 8.1.9.4 MAGNETIC RESONANCE COUPLING WPT

This is also one of the important method for transferring power based on near field technique. It generally overcome the disadvantage of up to some extent which arise in no resonant inductive coupling. This type of coupling used the concept of resonance. At resonance we know that natural frequency and excitation frequency are same. This leads to the maximum amplitude, that means a maximum amount of energy is transferred between two coils. Here the receiver and transmitter coils are tuned to be at same resonant frequency .This allow us to transfer significant amount of power by increasing distance between coils .These type of system are used for building mid-range power transfer. Mid-range can be specified by distance up to 10 times the diameter of the transmitting coil. Magnetic resonance coupling have several advantage such as efficiency increases with decrease in the radiation and power loss and range can be increase up to some meter and it is directional. The mainly disadvantage is that selection of resonance frequency which tunes with the natural frequency and it cannot be used for long range application.

### 8.1.9.5 MICROWAVE WPT

This is one of the type of far-field technique of WPT which have range upto KM, with power transfer upto MW. This method uses microwave frequency ranging from 1GHZ to 1000GHZ generated from the microwave generator. First the microwave is generated by microwave generator which pass through the coax-waveguide adapter to the waveguide circulator .Then a tuner and directional coupler are used to separate wave according to their propagation direction. Then they are transmitted through antenna. At the receiver terminal, a receiver antenna receives which pass through a low pass filter to finally produce DC power. Based on microwave WPT system the present application is solar power satellite. Advantages of microwave WPT are that it is used for several KM range with transferring high amount of power. Disadvantage are generally that the radiation effect to human beings from the microwave electromagnetic radiation

### 8.1.9.6 ADVANTAGES AND DISADVANTAGES

- **ADVANTAGE**

  - It gives the human comfort as there is no chording or wiring problem, so mobility is easier.
  - There is no problem of power failure and extensive heating.
  - Cost of overall system decreases due to no uses of wires.
  - Overall efficiency increases due to decrease in the power loss.
  - It offers no corrosion as there is no exposure to the atmosphere which is Eco-friendly
  - It offers ranges of power levels and separationdistance between coils.
  - It offers convenient, reliability, high efficiency, lowcost at the same time.

- **DISADVANTAGE**

  - WPT methods use the electromagnetic radiation for power transfer and the main effect of electromagnetic wave is its biological impact which harms human beings and animal.
  - Biological impact of inductive coupling and resonance coupling is far less than compared to microwave power transmission technique
  - There is also a limitation of separation distance and power capacity.
  - Interference of microwave with other communication system.
  - Initial cost is very high for implementing WPT system

## Chapter-9 Proposing Designs For Future Development Of The Village For The PART-II

- The study is aimed to know the basic scenario of village through techno economic survey and gap analysis done.
- Through our study we will try to make a master development plan of the village.
- Our master development plan might be including provisions of all the facilities suggest by us, and then we focus on the improvement in the existing facilities. Our aim is to work according to new upcoming T.P. scheme in Antaliya Village.
- In next part we will design public latrine block, bio gas plant, public library, dairy, Sport complex and rishi sever Kendra.
- One this all basic facilities is available in Antaliya Village, then we should focus on making the village smarter by adopting various technology.
- In new designs proposed by as, we should focus on regular maintenance of these facilities. Because due to lack of maintenance peoples will avoid to use and hence it become obsolete. For maintenance purpose we should provide a maintenance plan which iseconomical and effective. It can be done by villagers them self.
- The main intention of technical economic survey and is for study of all villages' basic scenario and gap analysis.
- In our project work our first target to survey basic facilities and if there is not available any basic facilities than provide and after that we may plan to improve the existing facilities of village.
- Our main aim is to work according to the new upcoming town planning scheme in Motikunkavav village.
- Based on these plans, our next target will be to provide regular maintenance program, which helps in sustaining the structure for longer duration.
- Obtaining information related to the ongoing schemes in the village and the government work that has been completed and the work that is still going on.
- Also, due to lack in maintenance, villagers avoid consuming it and which make the structures obsolete.

## Chapter-10 Conclusion of the Entire Village Activities of the Project

- We discuss with Amreli ,village authorities and dwellers of village and filled different types of survey form and analyse it. Using techno-economic survey we get existing condition of village like demographical details, geographical details, occupational detail, physical infrastructure details, social infrastructure details, socio-cultural facilities, sustainable infrastructure facilities, and other facilities.
- By use of Gap Analysis we compare all the available facilities and required facilities in Amreli village. We observe available amenities in village like, road network, drinking water facility, educational facility, sanitation facility, transportation facility, and renewable source facility. We also observe which facilities are required for batter growth of village by interaction with different authorities of ideal village and smart village.
- By providing this required facility to village, development and growth of village can be possible. So ultimately migration rate and urban city pressure can be reduce and livelihood of village dweller will increase.
- An approach that will be used successfully when planning for the future of a community involves preceding the planning process with an exercise designed to develop vision of the future for the "Vishwakarma Yojana". By developing Rural India, the future scenario for urbanization can be change in Sustainable manner.
- And lastly this project is helped us to understand our skills and make it even batter. We got deep knowledge about development of village and various infrastructure facility design of village. Lastly we enjoyed the informational as well as practical journey of civil work.
- We are proposing a design base on our survey, knowledge and Gap analysis to village for its development. Following are all design we propose for a village are:-

- Design Of Public Toilet Block (Social Infrastructure)
- Design Of Water Harvesting System (Rain Water Harvesting Structures)
- Design Community Hall (Social Infrastructure)
- Design Of Public Library (Social Infrastructure)
- Animal Water Pond {Avado} (Physical Design)
- Waste Water Treatment (Sustainable Design)
- Automatic Street Light Control ( Electricity )
- Electricity Facilities With Area (Electricity )
- Advance Wireless Power Transfer System ( Electricity )

We are highly indented to Gujarat Technological University, Ahmadabad for providing us such opportunity to work under Vishwakarma Yojna to get real work experience and applying our technical knowledge in the development of Villages. We wish to express our deep sense of Humble Vice Chancellor, Gujarat Technological University-Ahmedabad, for his encouragement and support during project work.

In this semester, we completed our Literature Review and our Ideal Village Visit. From there we got an idea about how the smart village should be.

## Chapter 11 Reference

In This COVID 19 Situation We Cannot Visit Any Site Of Antaliya Village. But We Manage This Situation And Complete Our Work. We Collect The Images Of Antaliya Village At Social Media And Website. We Collect All Information Different Websites.

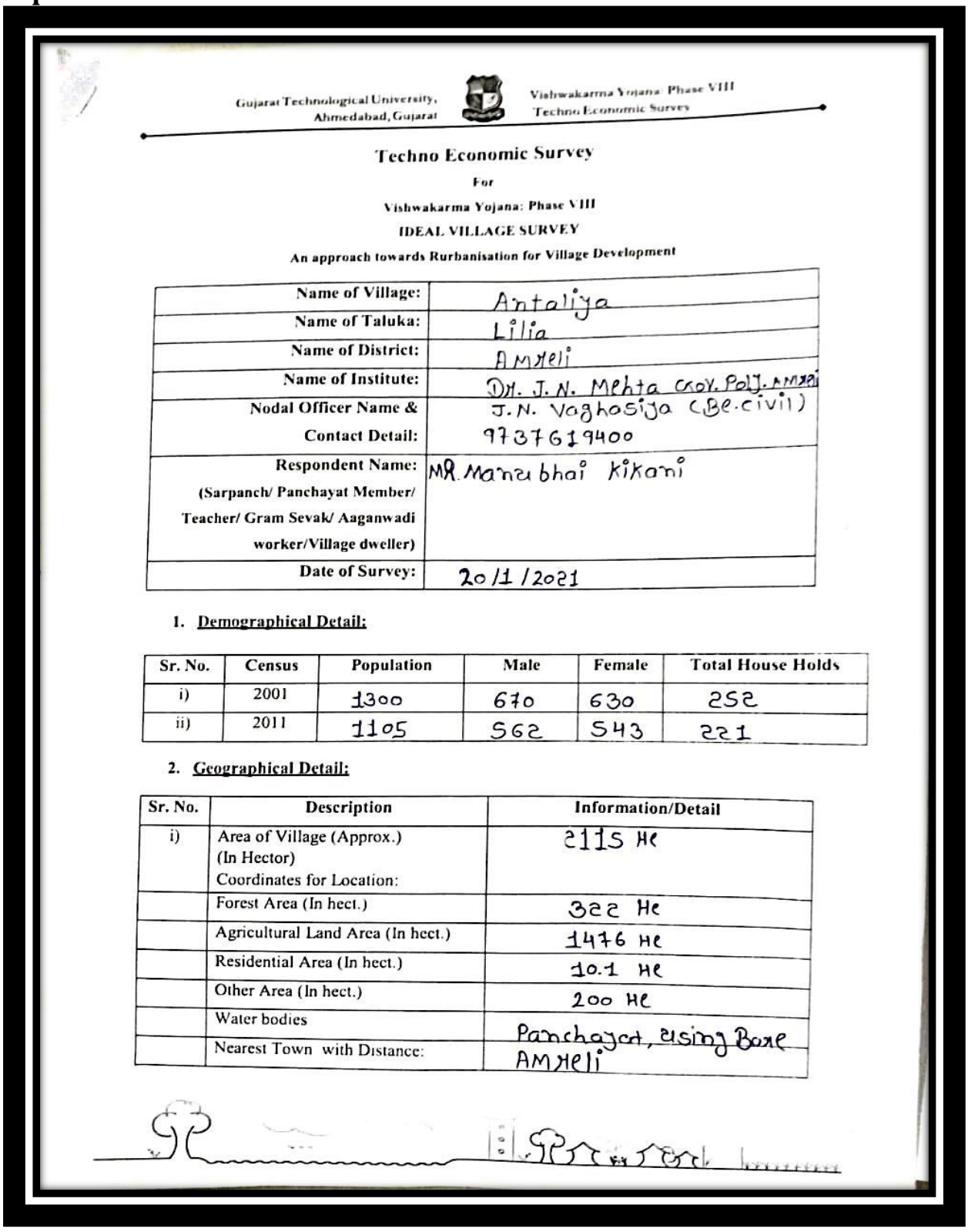
Website Name: Wikipedia, Google, Antaliya Village, Amreli District Etc....


- Standard Schedule Of Rates (Sor) Amreli District. Year 2015-16.
- Is 456 : 2000 Plain And Reinforced Concrete-Code Of Practice.
- Sp16 : 1980 Design Aids For Reinforced Concrete To Is. 456:1978.
- Is 1893-1 : 2002 Criteria For Earthquake Resistant Design For Structure.
- Is 1200 (Part-1) : 1992 Methods Of Measurement Of Building And Civil Engineering Work.
- Sp 27 : 1987 Handbook Of Method Of Measurement Of Building Works (Ced 44 Method Of Measurement Of Works Of Civil Engineering)
- Is 13828 : 1993 Improving Earthquake Resistance Of Low Strength Masonry Building-Guidance

- IS 875: 1987 (Load calculation for Slab).
- SP 16 (design of steel as per IS 456)
- Census of India(www.censusindia.gov.in)
- UDPFI norms 2014(www.mohua.gov.in)
- Swachhbharat Mission (www.swachhbharatmission.gov.in)
- Vishwakarma Yojana(www.vyojana.gtu.ac.in)
- Google Map(www.google.com/maps/ )
- Other Website
- www.rural.nic.in
- www.saanjhi.gov.in
- www.swaniti.in
- https://panchayat.gujarat.gov.in
- www.giftgujarat.in

# Chapter-12 Annexure

## 12.1Survey 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: | Antaliya |
| Name of Taluka: | Lilia |
| Name of District: | Amreli |
| Name of Institute: | Dr. J. N. Mehta Gov. Poly. Amreli |
| Nodal Officer Name & Contact Detail: | J. N. Vaghasija (Be. civil) 9737619400 |
| Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller) | MR. Manu bhai Kikani |
| Date of Survey: | 20/1/2021 |

1. Demographical Detail:

| Sr. No. | Census | Population | Male | Female | Total House Holds |
|---|---|---|---|---|---|
| i) | 2001 | 1300 | 670 | 630 | 252 |
| ii) | 2011 | 1105 | 562 | 543 | 221 |

2. Geographical Detail:

| Sr. No. | Description | Information/Detail |
|---|---|---|
| i) | Area of Village (Approx.) (In Hector) Coordinates for Location: | 2115 He |
| | Forest Area (In hect.) | 322 He |
| | Agricultural Land Area (In hect.) | 1476 He |
| | Residential Area (In hect.) | 10.1 He |
| | Other Area (In hect.) | 200 He |
| | Water bodies | Panchayat, using Bore |
| | Nearest Town with Distance: | Amreli |

3. **Occupational Details:**

| | |
|---|---|
| Name of Three Major Occupation groups in Village | 1. Farmer<br>2. Business<br>3. other |

4. **Physical Infrastructure Facilities:**

| Sr. No. | Descriptions | Detail | Adequate | Inadequate | Remarks |
|---|---|---|---|---|---|
| A. | **Main Source of Drinking water** | | | | |
| | • Tap Water (Treated/ Untreated) | Treated | | ✓ | Require |
| | • RO Water | Yes | ✓ | | |
| | • Well (Covered/ Uncovered) | Uncovered | ✓ | | |
| | • Hand pumps | 5 Nos | | ✓ | Require |
| | • Tube well/ Borehole | Tubewell | ✓ | | |
| | • River/ Canal/ Spring/ Lake/ Pond | Karadiya River | | | |
| Suggestions if any: | | | | | |
| B. | **Water Tank Facility** | | | | |
| | Overhead Tank | Capacity: 11000 | ✓ | | |
| | Underground Sump | Capacity: 1 lac lit | ✓ | | |
| 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 | | | | |
| | Whether drain water is discharged directly in to Water bodies/ Sewer plants | | | | |
| Suggestions if any: | | | | | |

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

| | | | | | |
|---|---|---|---|---|---|
| **E.** | **Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM** | | | | |
| | Village approach road | All weather | | ✓ | Repaire |
| | Main road | All weather | ✓ | | |
| | Internal streets | Kutchcha | | ✓ | Repaire |
| | Nearest NH/SH/MDR/ODR Dist. in kms. | MDR | | | |
| Suggestions if any: | | | | | |
| **F.** | **Transport Facility** | | | | |
| | Railway Station (Y/N) (If No than Nearest Rly Station---Kms) | | | | |
| | Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms) | yes | | ✓ | Remarks |
| | Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other) | All Vehicles | ✓ | | |
| Suggestions if any: | | | | | |
| **G.** | **Electricity Distribution** | | | | |
| | (Y/N ) Govt./ Private (Less than 6 hrs./ More Than 6 hrs) | P.G.V.C.L | ✓ | | |
| | Power supply for Domestic Use | yes | ✓ | | |
| | Power supply for Agricultural Use | yes | ✓ | | |
| | Power supply for Commercial Use | yes | ✓ | | |
| | Road/ Street Lights | yes | ✓ | | |

| | | | | | |
|---|---|---|---|---|---|
| | Electrification in Government Buildings/ Schools/ Hospitals | Yes | ✓ | | |
| | Renewable Energy Source Facilities (Y/ N) | No | | ✓ | |
| | LED Facilities | No | | ✓ | |
| Suggestions if any: | | | | | |
| **H.** | **Sanitation Facility** | | | | |
| | Public Latrine Blocks If available than Nos. | No | | ✓ | |
| | Location Condition | No | | ✓ | |
| | Community Toilet (With bath/ without bath facilities) | No | | ✓ | |
| | Solid & liquid waste Disposal system available | No | | ✓ | |
| | Any facility for Waste collection from road | No | | ✓ | |
| Suggestions if any: | | | | | |
| **I.** | **Irrigation Facility:** | | | | |
| | Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other) | well - Tribe, well, other | ✓ | | |
| Suggestions if any: | | | | | |
| **J.** | **Housing Condition:** | | | | |
| | Kutchha/Pucca (Approx. ratio) | K - 20%. P - 75%. | | | |

5. **Social Infrastructural Facilities:**

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

| K. | Health Facilities: | | | | |
|---|---|---|---|---|---|
| | Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition: | No | | ✓ | Required |
| | Private Clinic/Private Hospital/ Nursing Home | No | | ✓ | Required |
| | If any of the above Facility is not available in village than approx. distance from village: ..19....kms. | | | | |
| Suggestions if any: | | | | | |

| L. | Education Facilities: | | | | |
|---|---|---|---|---|---|
| | Aaganwadi/ Play group | 1 No | | | Required |
| | Primary School | 1 No | | | |
| | Secondary school | No | | | |
| | 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: ..19....kms. | | | | |
| Suggestions if any: | | | | | |

| M. | Socio- Culture Facilities | | | | |
|---|---|---|---|---|---|
| | Community Hall (With or without TV) Location: | Yes | | ✓ | Required |

| | | | | | |
|---|---|---|---|---|---|
| | Condition: | | | | |
| | Public Library (With daily newspaper supply: Y/N) Location: Condition: | No | | ✓ | ગામમાં |
| | Public Garden Location: Condition: | No | | ✓ | ગામમાં |
| | Village Pond Location: Condition: | No | | ✓ | ગામમાં |
| | Recreation Center Location: Condition: | No | | ✓ | ગામમાં |
| | Cinema/ Video Hall Location: Condition: | No | | ✓ | ગામમાં |
| | Assembly Polling Station Location: Condition: | No | | ✓ | ગામમાં |
| | Birth & Death Registration Office Location: Condition: | Yes gram-Panchayat | | | |
| **If any of the above Facility is not available in village than approx. distance from village: ..19...kms.** | | | | | |
| Suggestions if any: | | | | | |
| **N.** | **Other Facilities** | | | | |
| | Post-office | No | | | |
| | Telecommunication Network/ STD booth | No | | ✓ | ગામમાં |

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

6. **Sustainable /Green Infrastructure Facilities:**

| Sr. No. | Descriptions | Information/ Details | Adequate | Inadequate | Remarks |
|---|---|---|---|---|---|
| O. | Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources | No | | ✓ | |
| P. | Bio-Gas Plant<br>Solar Street Lights<br>Rain Water Harvesting System | No | | ✓ | Require |
| Q. | Any Other | No | | ✓ | |

7. **Data Collection From Village**

| | |
|---|---|
| Village Base Map<br>Available: Hard Copy/Soft Copy | Soft Copy |

| | |
|---|---|
| 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) | Anganwadi, Bus stop | Required, Repair & Building |
| 2. | Additional Information/ Requirement | Solar Street light | Required |
| | Dust been | No | Required |
| | Toilet | No | Required |

9. Smart Village Proposal Design

| Sr. No. | Descriptions | Information/ Detail | Remarks |
|---|---|---|---|
| 1. | Led Display Panchayat - Wifi | | Required |

**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**

સરપંચશ્રી
અંટાળીયા ગ્રામ પંચાયત

## 12.2 Survey form of Smart 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

## Vishwakarma Yojana: Phase VIII

## SMART VILLAGE SURVEY

An approach towards **"Rurbanisation for Village Development"**

| | |
|---|---|
| **Name of District:** | Amreli |
| **Name of Taluka:** | Amreli |
| **Name of Village:** | ઈંટાળીયા |
| **Name of Institute:** | ડૉ. જે.એન. મેઘાણી ગ્રા. પોલીટેકનીક-અમરેલી |
| **Nodal Officer Name & Contact Detail:** | જે. એન. વઘાસીયા |
| **Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)** | મગનભાઈ ભુંડિયા 9979240278 |
| **Date of Survey:** | 4/3/2021 |

### I. DEMOGRAPHICAL DETAIL:

| Sr. No. | Census | Population | Male | Female | Total Number of House Holds |
|---|---|---|---|---|---|
| 1. | 2001 | 1632 | 997 | 635 | 294 |
| 2. | 2011 | 1952 | 1001 | 941 | 376 |

### II. GEOGRAPHICAL DETAIL:

| Sr. No. | Description | Information/Detail |
|---|---|---|
| 1. | Area of Village (Approx.) (In Hector)Coordinates for Location: | 791 ha |
| 2. | Forest Area (In hect.) | — |
| 3. | Agricultural Land Area (In hect.) | 754 ha. |
| 4. | Residential Area (In hect.) | 29.2 ha |
| 5. | Other Area (In hect.) | 8 ha. |
| 6. | Distance to the nearest railway station (in kilometers): | Ameeli (4.8Km) |

| | | |
|---|---|---|
| 7. | Name of Nearest Town with Distance: | Amreli (5 km) |
| 8. | Distance to the nearest bus station (in kilometers): | Amreli (5.4 km) |
| 9. | Whether village is connected to all road for the any facility or town or City? | MDR |

## III. OCCUPATIONAL DETAILS:

| | |
|---|---|
| Name of Three Major Occupation groups in Village | 1. KP ~~Group~~ Farming<br>2. Business<br>3. Job |
| Major crops grown in the village: | 1. Cotton<br>2. Peanut's<br>3. Sesame |

## IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

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| | | | | | |
|---|---|---|---|---|---|
| | Power supply for Domestic Use | Yes | ✓ | | 24 hrs. |
| | Power supply for Agricultural Use | Yes | ✓ | | 8 hrs |
| | Power supply for Commercial Use | Yes | ✓ | | |
| | Road/ Street Lights | Yes | ✓ | | |
| | Electrification in Government Buildings/ Schools/ Hospitals | Yes | ✓ | | |
| | Renewable Energy Source Facilities (Y/ N) | Yes | ✓ | | Solar |
| | LED Facilities | Yes | ✓ | | |
| **Suggestions if any:** | | | | | |
| **G.** | **Sanitation Facility** | | | | |
| | Public Latrine Blocks If available than Nos. | Yes | ✓ | | |
| | Location Condition | Good | | | |
| | Community Toilet (With bath/ without bath facilities) | Yes | | ✓ | Without Bath |
| | Solid & liquid waste Disposal system available | Yes | | | |
| | Any facility for Waste collection from road | Yes | ✓ | | |
| **Suggestions if any:** | | | | | |
| **H.** | **Main Source of Irrigation Facility:** | | | | |
| | TANK/POND | ✓ | ✓ | | |
| | STREAM/RIVER | | | | |
| | CANAL | | | | |
| | WELL | ✓ | ✓ | | |
| | TUBE WELL | ✓ | ✓ | | |
| | OTHER (SPECIFY) | | | | |
| **Suggestions if any:** | | | | | |
| **I.** | **Housing Condition:** | | | | |
| | Kutchha/Pucca (Approx. ratio) | Yes | ✓ | | 75% Pucca 25% Kutchha |

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## V. SOCIAL INFRASTRUCTURAL FACILITIES:

| Sr. No. | Descriptions | Information/ Detail | Adequate | Inadequate | Remarks |
|---|---|---|---|---|---|
| J. | **Health Facilities:** | | | | |
| | ICDS (Anganwadi) | Yes | ✓ | | |
| | Sub-Centre | Yes | ✓ | | |
| | PHC | Yes | ✓ | | |
| | BLOCK PHC | Yes | ✓ | | |
| | CHC/RH | | | | |
| | District/ Govt. Hospital | Yes | ✓ | | |
| | Govt. Dispensary | | | | |
| | Private Clinic | | | | |
| | Private Hospital/ Nursing Home | Yes | ✓ | | |
| | AYUSH Health Facility | | | | |
| | sonography /ultrasound facility | | | | |
| | If any of the above Facility is not available in village than approx. distance from village: 4.8...kms. | | | | |
| **Suggestions if any:** | | | | | |
| K. | **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: 4.8....kms. | | | | |

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**Suggestions if any:**

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

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| | | | | | |
|---|---|---|---|---|---|
| | **Credit Cooperative Society**<br>Agricultural Cooperative Society<br>Milk Cooperative Society<br>Fishermen's Cooperative Society<br>Computer Kiosk/ e-chaupal /<br>Mills / Small Scale Industries | Good | | Yes | |
| | Other Facility | | | | |

**Suggestions if any:**

| N. | Other Facilities | Condition | | Available (YES) | Available (NO) |
|---|---|---|---|---|---|
| | 1. Have these programme implemented the village? | | | | No |
| | 2. Are there any beneficiaries in the village from the following programme? | | | | No |
| | 3. Janani Suraksha Yojana | Working | | ✓ | |
| | 4. Kishori Shakti Yojana | Working | | ✓ | |
| | 5. Balika Samriddhi Yojana | | | | |
| | 6. Mid-day Meal Programme | | | | |
| | 7. Intergrated Child Development Scheme (ICDS) | | | | |
| | 8. Mahila Mandal Protsahan Yojana (MMPY) | Working | | ✓ | |
| | 9. National Food for work Programme (NFFWP) | | | | |
| | 10. National Social Assistance Programme | | | | |
| | 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) | | | | |
| | 17. Prime Minister Rojgar Yojana (PMRY) | Working | | ✓ | |
| | 18. Jawahar Rozgar Yojana (JRY) | | | | |
| | 19. Indira Awas Yaojna (IAY) | | | | |
| | 20. Samagra Awas Yojana (SAY) | | | | |
| | 21. Sanjay Gandhi Niradhar Yojana (SGNY) | | | | |
| | 22. Jawahar Gram Samridhi Yojana (JGSY) | Working | | ✓ | |
| | 23. Other (SPECIFY) | | | | |

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## VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

## VII. DATA COLLECTION FROM VILLAGE

| Sr. No. | Descriptions | Information/ Details | Adequate | Inadequate | Remarks |
|---|---|---|---|---|---|
| 1. | Village Base Map Available: Hard Copy/Soft Copy | Yes | ✓ | | |
| 2. | Recent Projects going on for Development of Village | No | | | |
| 3. | Any NGO working for village development | No | ✓ | | |
| 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 |
|---|---|---|---|

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| | | | |
|---|---|---|---|
| 1. | Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other | yes | maintenance |
| 2. | Additional Information/ Requirement | | |
| 3. | During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village? | cleaning daily Fogging in one month | |

**IX. Smart Village / Heritage Details**

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

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

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

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## 12.3 Survey form of Allocated 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

**Vishwakarma Yojana: Phase VIII**

**ALLOCATED VILLAGE SURVEY**

An approach towards **"Rurbanisation for Village Development"**

| | |
|---|---|
| Name of District: | Amreli |
| Name of Taluka: | ~~Amreli~~ Liliya |
| Name of Village: | Antaliya |
| Name of Institute: | Dr. J.N. Mehta Gov. Poly.-Amreli |
| Nodal Officer Name & Contact Detail: | J.N. Vaghasiya (Be. Civil) 9737619400 |
| Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller) | Mr. Manubhai kikani |
| Date of Survey: | 20/1/2021 |

**I. DEMOGRAPHICAL DETAIL:**

| Sr. No. | Census | Population | Male | Female | Total Number of House Holds |
|---|---|---|---|---|---|
| 1. | 2001 | 1300 | 670 | 630 | 252 |
| 2. | 2011 | 1105 | 562 | 543 | 221 |

**II. GEOGRAPHICAL DETAIL:**

| Sr. No. | Description | Information/Detail |
|---|---|---|
| 1. | Area of Village (Approx.) (In Hector)Coordinates for Location: | 2115 HC. |
| 2. | Forest Area (In hect.) | 322 HC |
| 3. | Agricultural Land Area (In hect.) | 1476 HC. |
| 4. | Residential Area (In hect.) | 104 HC. |
| 5. | Other Area (In hect.) | 200 HC. |
| 6. | Distance to the nearest railway station (in kilometers): | 19 km. liliya. |

Gujarat Technological University, Ahmedabad, Gujarat

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Techno Economic Survey

| | | |
|---|---|---|
| 7. | Name of Nearest Town with Distance: | 18 k.m. |
| 8. | Distance to the nearest bus station (in kilometers): | 1 km. |
| 9. | Whether village is connected to all road for the any facility or town or City? | yes |

## III. OCCUPATIONAL DETAILS:

| | |
|---|---|
| Name of Three Major Occupation groups in Village | 1. Farmer<br>2. Business<br>3. other |
| Major crops grown in the village: | 1. Kapas<br>2. Ghau<br>3. Mugfali |

## IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

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Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

| | | | | | |
|---|---|---|---|---|---|
| | Other(Specify)Lake/ Pond | | | ✓ | |
| Suggestions if any: | | | | | |
| B. | **Water Tank Facility** | | | | |
| | Overhead Tank | Capacity: | ✓11000 | ✓ | |
| | Underground Sump | Capacity: | ✓1 lakh | ✓ | |
| Suggestions if any: | | | | | |
| C. | **The Type of Drainage Facility** | | | | |
| | A. UNDERGROUND DRAINAGE 1 | | | ✓ | Required |
| Suggestions if any: | | | | | |
| D. | **Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM** | | | | |
| | Village approach road | All Weather | | ✓ | Required |
| | Main road | All Weather | ✓ | | |
| | Internal streets | kutchcha | | ✓ | Required |
| | Nearest NH/SH/MDR/ODR Dist. in kms. | MDR | | | |
| Suggestions if any: | | | | | |
| E. | **Transport Facility** | | | | |
| | Railway Station (Y/N) (If No than Nearest Rly Station---Kms) | | | | |
| | Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms) | Yes | | ✓ | Remarks |
| | Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other) | All vehicles | ✓ | | |
| Suggestions if any: | | | | | |
| F. | **Electricity Distribution** | | | | |
| | (Y/N ) Govt./ Private (Less than 6 hrs./ More Than 6 hrs) | P.G.V.C.L. | ✓ | | |

3

| | | | | | |
|---|---|---|---|---|---|
| | Power supply for Domestic Use | Yes | ✓ | | |
| | Power supply for Agricultural Use | Yes | ✓ | | |
| | Power supply for Commercial Use | Yes | ✓ | | |
| | Road/ Street Lights | Yes | ✓ | | |
| | Electrification in Government Buildings/ Schools/ Hospitals | Yes | ✓ | | |
| | Renewable Energy Source Facilities (Y/ N) | No | | ✓ | |
| | LED Facilities | No | | ✓ | |
| Suggestions if any: | | | | | |
| **G.** | **Sanitation Facility** | | | | |
| | Public Latrine Blocks If available than Nos. | NO | | ✓ | |
| | Location Condition | No | | ✓ | |
| | Community Toilet (With bath/ without bath facilities) | NO | | ✓ | |
| | Solid & liquid waste Disposal system available | No | | ✓ | |
| | Any facility for Waste collection from road | NO | | ✓ | |
| Suggestions if any: | | | | | |
| **H.** | **Main Source of Irrigation Facility:** | | | | |
| | TANK/POND | Yes | ✓ | | |
| | STREAM/RIVER | NO | | ✓ | |
| | CANAL | No | | ✓ | |
| | WELL | Yes | ✓ | | |
| | TUBE WELL | Yes | ✓ | | |
| | OTHER (SPECIFY) | NO | | ✓ | |
| Suggestions if any: | | | | | |
| **I.** | **Housing Condition:** | | | | |
| | Kutchha/Pucca (Approx. ratio) | K - 20%. P - 75%. | | | |

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## V. SOCIAL INFRASTRUCTURAL FACILITIES:

| Sr. No. | Descriptions | Information/ Detail | Adequate | Inadequate | Remarks |
|---|---|---|---|---|---|
| J. | **Health Facilities:** | | | | |
| | ICDS (Anganwadi)<br>Sub-Centre<br>PHC<br>BLOCK PHC<br>CHC/RH<br>District/ Govt. Hospital<br>Govt. Dispensary<br>Private Clinic<br>Private Hospital/<br>Nursing Home<br>AYUSH Health Facility<br>sonography /ultrasound facility | No | | V | Required |
| | If any of the above Facility is not available in village than approx. distance from village: ..19...kms. | | | | |
| **Suggestions if any:** | | | | | |
| K. | **Education Facilities:** | | | | |
| | Aaganwadi/ Play group | 1 No | | | Require |
| | Primary School | 1 No | | | |
| | Secondary school | No | | | |
| | 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: 19 ...kms.

Suggestions if any:

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

If any of the above Facility is not available in village than approx. distance from village: ...19...kms.

Suggestions if any:

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

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| | | | | | |
|---|---|---|---|---|---|
| | Credit Cooperative Society | | | | |
| | Agricultural Cooperative Society | YES | ✓ | | |
| | Milk Cooperative Society | YES | ✓ | | |
| | Fishermen's Cooperative Society | NO | | ✓ | |
| | Computer Kiosk/ e-chaupal / | NO | | ✓ | |
| | Mills / Small Scale Industries | NO | | ✓ | |
| | 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) | | | ✓ | |
| | 10. National Social Assistance Programme | | | | ✓ |
| | 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) | | | | ✓ |
| | 17. Prime Minister Rojgar Yojana (PMRY) | | | ✓ | |
| | 18. Jawahar Rozgar Yojana (JRY) | | | | ✓ |
| | 19. Indira Awas Yaojna (IAY) | | | | ✓ |
| | 20. Samagra Awas Yojana (SAY) | | | ✓ | |
| | 21. Sanjay Gandhi Niradhar Yojana (SGNY) | | | ✓ | |
| | 22. Jawahar Gram Samridhi Yojana (JGSY) | | | | ✓ |
| | 23. Other (SPECIFY) | | | | ✓ |

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## VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

## 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 | No | | | |
| 3. | Any NGO working for village development | No | | | |
| 4. | Any natural calamity in the village during the last one year: EARTHQUAKES FLOODS CYCLONE DROUGHT LANDSLIDES AVALANCHE OTHER (SPECIFY) | No | | | |

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
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## 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 | Anganwadi, Bus stop | Require, Repair & Buildup |
| 2. | Additional Information/ Requirement | Solar street light | Require |
| 3. | During the last six months how many times CLEANING ....Weekly..... FOGGING.....Monthly..... Drive was undertaken in the village? | | |

## IX. Smart Village / Heritage Details

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

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

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

આગમાદ પ્રમાણમાં
સરપંચશ્રી
અંટાળીયા ગ્રામ પંચાયત

16

## 12.4 Gap Analysis of the Allocated Village

| Vishwakarma Yojana: Phase III | | | | |
|---|---|---|---|---|
| Facilities | Planning Commission/UDPFI Norms | Village Name: | Antaliya | |
| | | Population: | | 1300 (2011) |
| | | Existing | Required as per Norms | Gap |
| Social Infrastructure Facilities | | | | |
| Education | | | | |
| Anganwadi | Each or Per 2500 population | 1 | 0 | **1** |
| Primary School | Each Per 2500 population | 1 | 1 | **0** |
| Secondary School | Per 7,500 population | 0 | 1 | **-1** |
| Higher Secondary School | Per 15,000 Population | – | – | **-** |
| College | Per 125,000 Population | – | – | **-** |
| Tech. Training Institute | Per 100000 Population | – | – | **-** |
| Agriculture Research Centre | Per 100000 Population | - | - | **-** |
| Health Facility | | | | |
| Govt/Panchyat Dispensary or Sub PHC or Health Centre | Each Village | 1 | 1 | **0** |
| PHC & CHC | Per 20,000 population | 0 | 1 | **-1** |
| Child Welfare and Maternity Home | Per 10,000 population | – | – | **-** |
| Hospital | Per 100000 Population | - | - | **-** |
| **Public Latrines** | 1 for 50 families (if toilet is not there in home, specially for slum pockets & kutcha house) | 2 | 3 | **-1** |
| | | | | |
| | | | | |

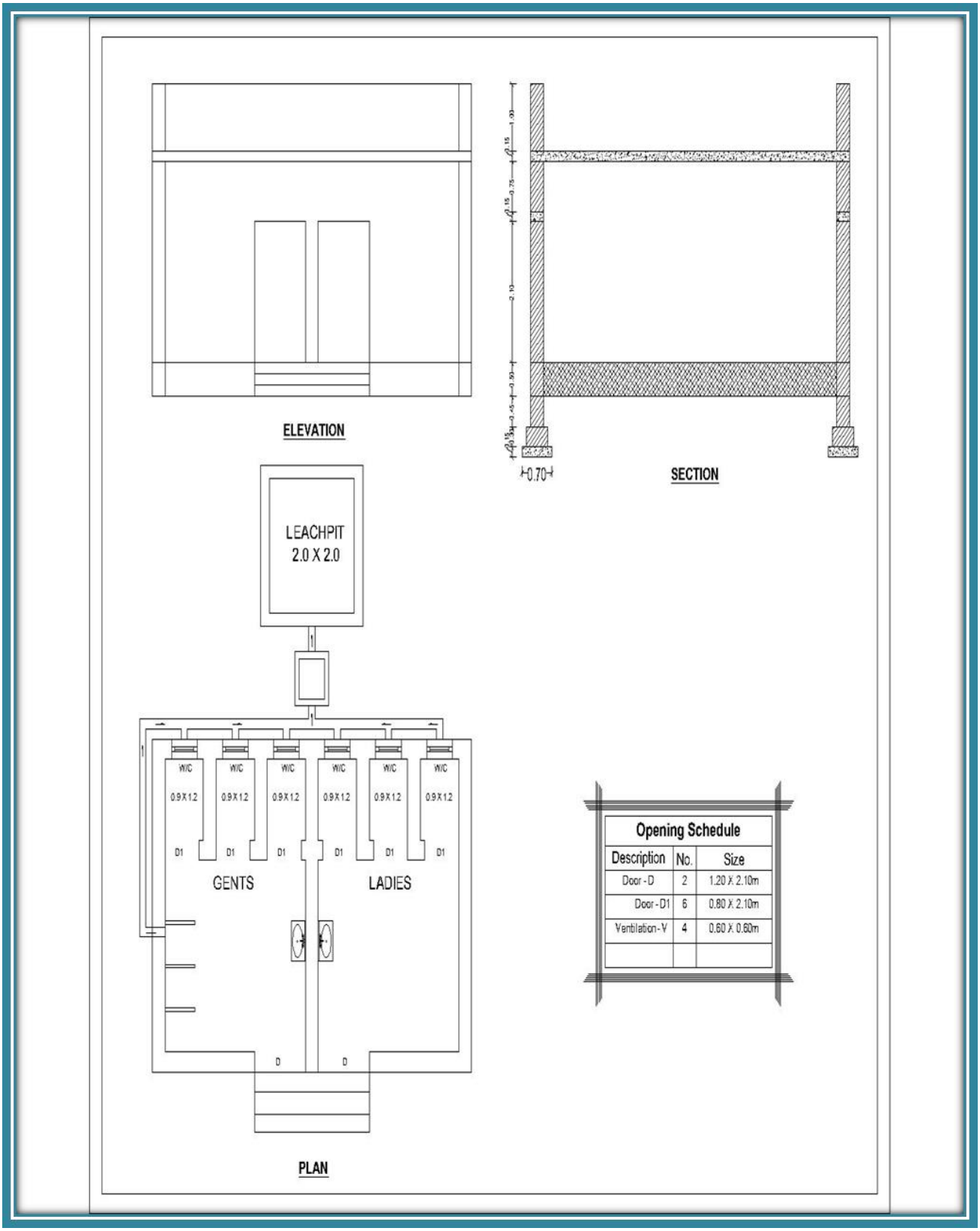
| Physical Infrastructure Facilities | | | | |
|---|---|---|---|---|
| **Transportation** | | **Adequate** | **Inadequate** | |
| Pucca Village Approach Road | Each village | | √ | All weather road Req.. |
| Bus/Auto Stand provision | All Villages connected by PT (ST Bus or Auto) | √ | - | **-** |
| **Drinking Water (Minimum 70 lpcd)** | | **Adequate** | **Inadequate** | |
| Over Head Tank | 1/3 of Total Demand | √ | | 11000 liter req. |
| U/G Sump | 2/3 of Total Demand | √ | | 1 Lack liter req. |
| **Drainage Network** | | **Adequate** | **Inadequate** | |
| open | | - | - | **-** |
| cover | | | √ | Req..(50%) |
| **Waste Management System** | | **Adequate** | **Inadequate** | Inadequate |
| **Electricity Network** | | **Adequate** | **Inadequate** | Adequate |
| | | | | |
| **Socio- Cultural Infrastructure Facilities** | | | | |
| **Community Hall** | Per 10000 Population | 1 | 0 | **1** |
| **community hall cum Public Library** | Per 15000 Population | 0 | 1 | **-1** |
| **Cremation Ground** | Per 20,000 population | – | – | **-** |
| **Post Office** | Per 10,000 population | - | - | **-** |
| **Gram Panchayat Building** | Each individual/group panchayat | 1 | 1 | **0** |
| **APMC** | Per 100000 Population | - | - | **-** |
| **Fire Station** | Per 100000 Population | - | - | **-** |
| **Public Garden** | Per village | 0 | 1 | **-1** |
| **Police post** | Per 40,000Population | - | 1 | **-1** |
| | | ESR cap | | |
| | | Sump cap | | |
| | | Lat | | |

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

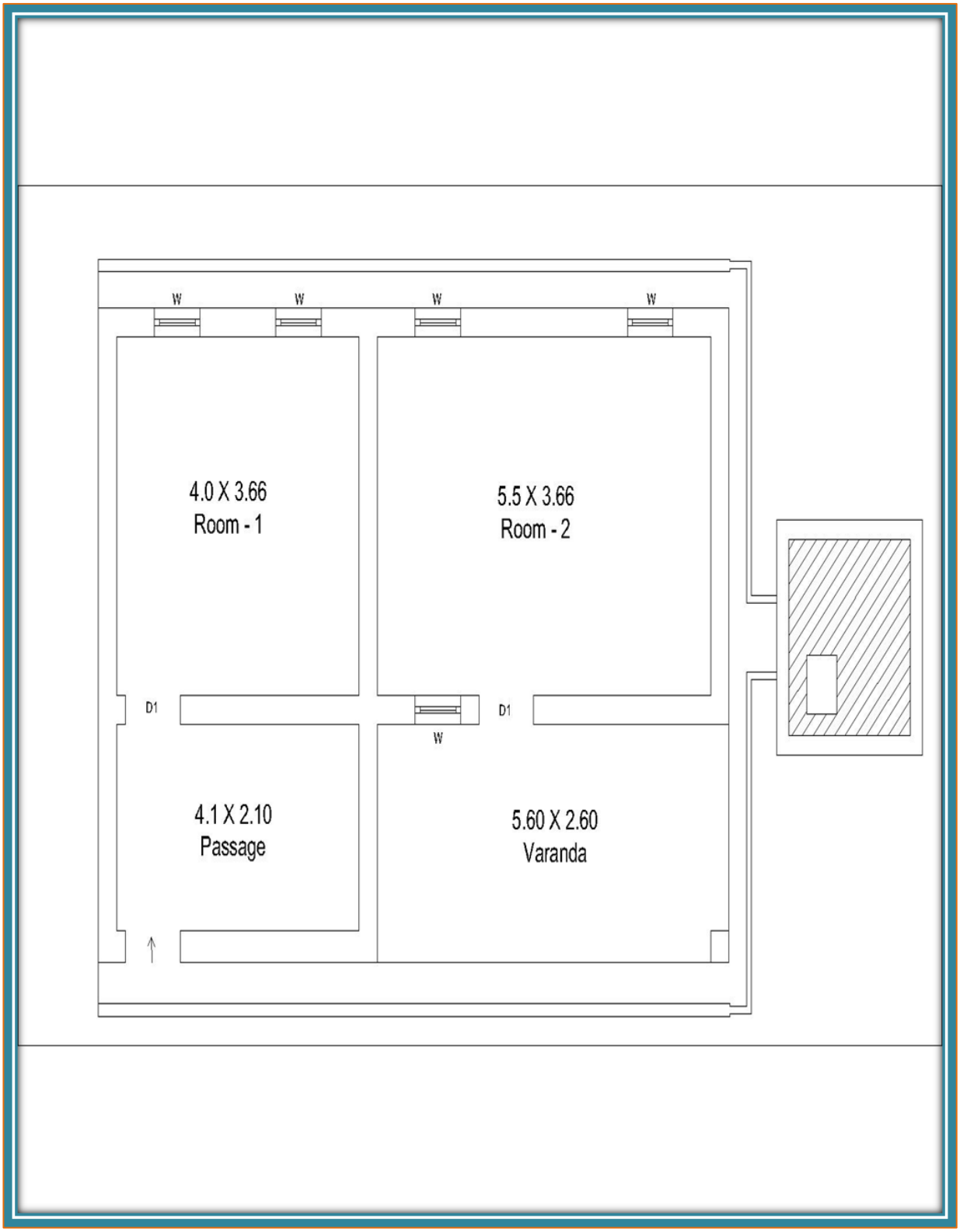
| Sr No | Village | Discipline | Part -1 | Part -2 |
|---|---|---|---|---|
| 1 | Antaliya | 1. Civil<br>2. Electrical | Design Of Public Toilet Block | Design Police Station |
| | | | Design Of Water Harvesting System | Medical Store |
| | | | Design Community Hall | Cctv Control Room |
| | | | Design Of Public Library | Pick Up Stand |
| | | | Animal Water Pond {Avado} | Washing Ghat |
| | | | Waste Water Treatment | W.B.M. With Paving Block Road |
| | | | Automatic Street Light Control | Designing Of Dc Motor Speed Control Unit |
| | | | Electricity Facilities With Area | Solar Energy Measurement System |
| | | | Advance Wireless Power Transfer System | Induction Motor Protection System |

**Summary Details Of All the Villages Designs As Part-I & Part-II**

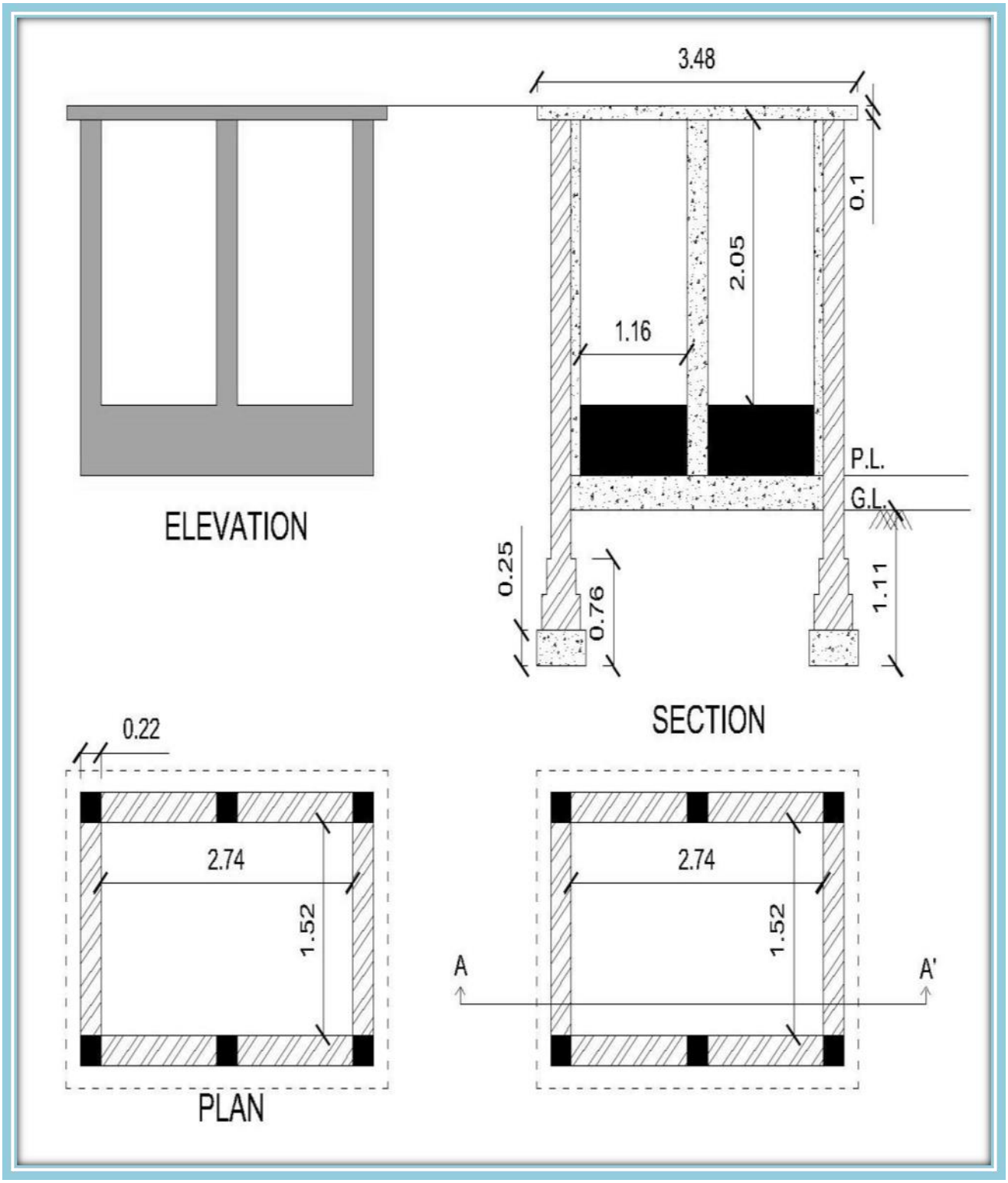
## 12.6 Drawings



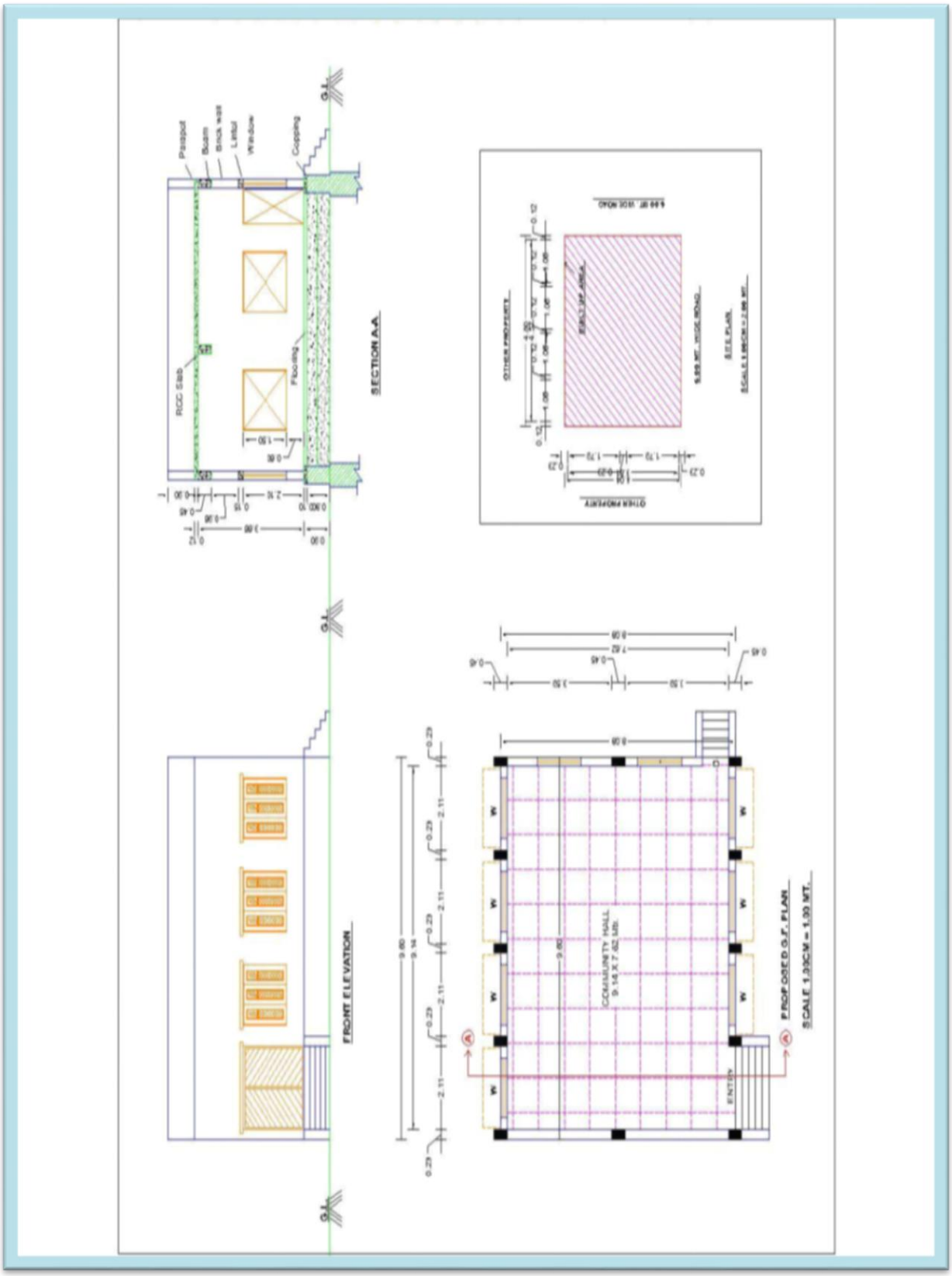

AutoCAD Design Of Public Toilet



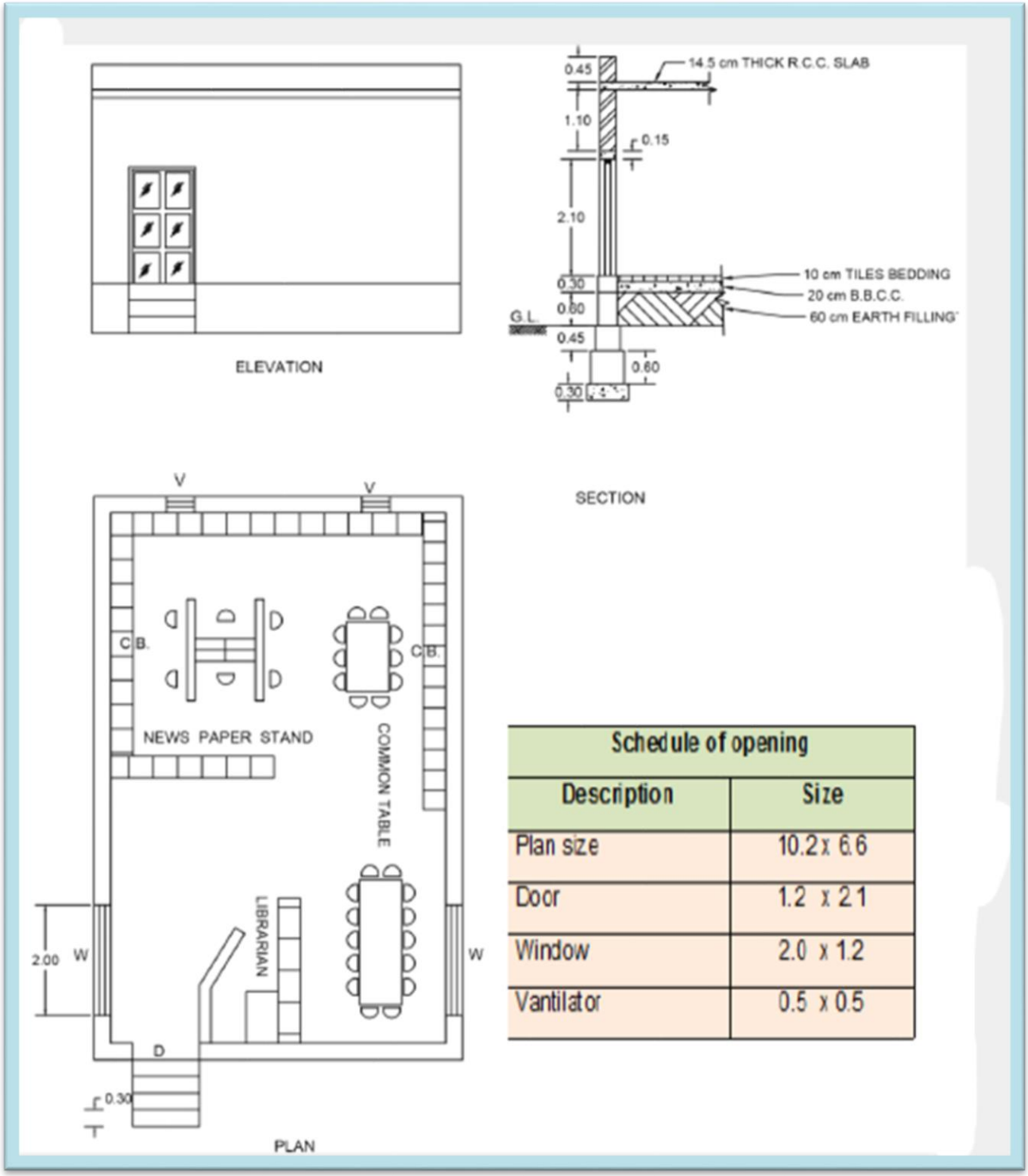

# AutoCAD Design Of Rain WATER HARVESTING SYSTEM




# AutoCAD Design Of Animal Water Pond {Avado}




AutoCAD Design Of Community hall




| Schedule of opening | |
|---|---|
| Description | Size |
| Plan size | 10.2 x 6.6 |
| Door | 1.2 x 2.1 |
| Window | 2.0 x 1.2 |
| Vantilator | 0.5 x 0.5 |

# AutoCAD Design Of Public library building

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






કોવિડ-૧૯ અવેરનેસ

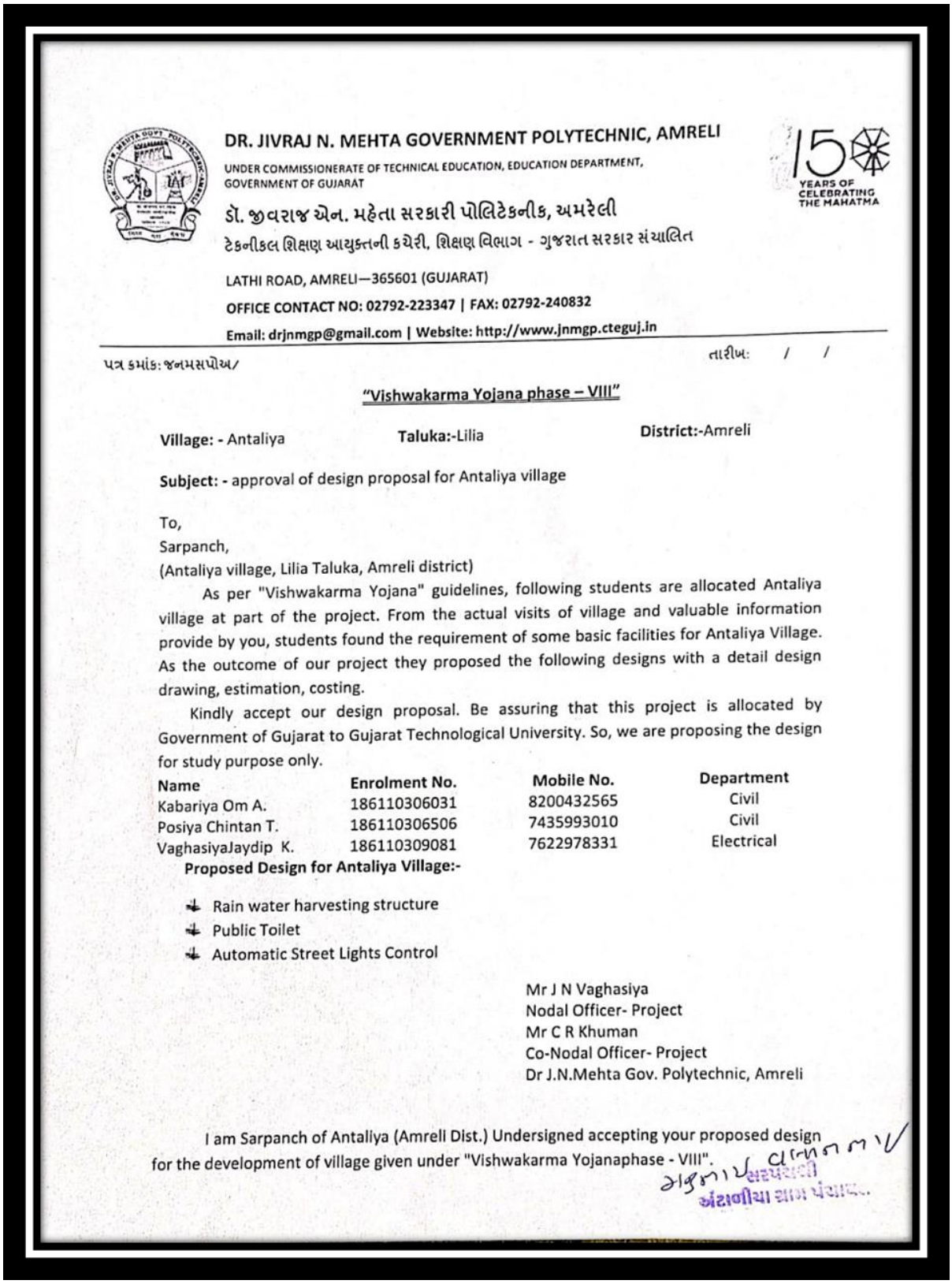

ઈશ્વરીયા


કોમ્યુનિટી હોલ

## 12.8 Village Interaction with Sarpanch Report

To know or to understand the actual necessities of village it's required to visit village and interact with Sarpanch, Talati and Other village dwellers. Techno economic survey forms give much information about village by interacting with Talati and Sarpanch. But interaction with village dwellers and observation of village condition is required. We visited allocated village Antaliya and also visited ideal village and Smart village pun sari. We meet to Sarpanch of Antaliya village. They are very dynamic person and gave us the detailed information and data whenever we required. We visited all the internal part of the village and interacted with villagers directly and ask them about the present situation of village. We conducted a Techno-economic survey of Antaliya village. After all, we analysed the gap analysis and provided the necessary facilities to village. We saw that as per UDPFI norms there are some non-adequate facilities. We provide Public library, Public toilet, for village at primary basis. We also send our design proposal to Gram Panchayat of Antaliya Village. In this way we approach to various problems faced by villagers and various criteria given by GTU.

## 12.9 Sarpanch Letter giving information about the village development



**DR. JIVRAJ N. MEHTA GOVERNMENT POLYTECHNIC, AMRELI**

UNDER COMMISSIONERATE OF TECHNICAL EDUCATION, EDUCATION DEPARTMENT, GOVERNMENT OF GUJARAT

ડૉ. જીવરાજ એન. મહેતા સરકારી પોલિટેકનીક, અમરેલી

ટેકનીકલ શિક્ષણ આયુક્તની કચેરી, શિક્ષણ વિભાગ - ગુજરાત સરકાર સંચાલિત

LATHI ROAD, AMRELI—365601 (GUJARAT)

OFFICE CONTACT NO: 02792-223347 | FAX: 02792-240832

Email: drjnmgp@gmail.com | Website: http://www.jnmgp.cteguj.in

15 YEARS OF CELEBRATING THE MAHATMA

પત્ર ક્રમાંક: જનમસપોએ/ તારીખ: / /

**"Vishwakarma Yojana phase – VIII"**

**Village: -** Antaliya **Taluka:-**Lilia **District:-**Amreli

**Subject: -** approval of design proposal for Antaliya village

To,
Sarpanch,
(Antaliya village, Lilia Taluka, Amreli district)

As per "Vishwakarma Yojana" guidelines, following students are allocated Antaliya village at part of the project. From the actual visits of village and valuable information provide by you, students found the requirement of some basic facilities for Antaliya Village. As the outcome of our project they proposed the following designs with a detail design drawing, estimation, costing.

Kindly accept our design proposal. Be assuring that this project is allocated by Government of Gujarat to Gujarat Technological University. So, we are proposing the design for study purpose only.

| Name | Enrolment No. | Mobile No. | Department |
|---|---|---|---|
| Kabariya Om A. | 186110306031 | 8200432565 | Civil |
| Posiya Chintan T. | 186110306506 | 7435993010 | Civil |
| VaghasiyaJaydip K. | 186110309081 | 7622978331 | Electrical |

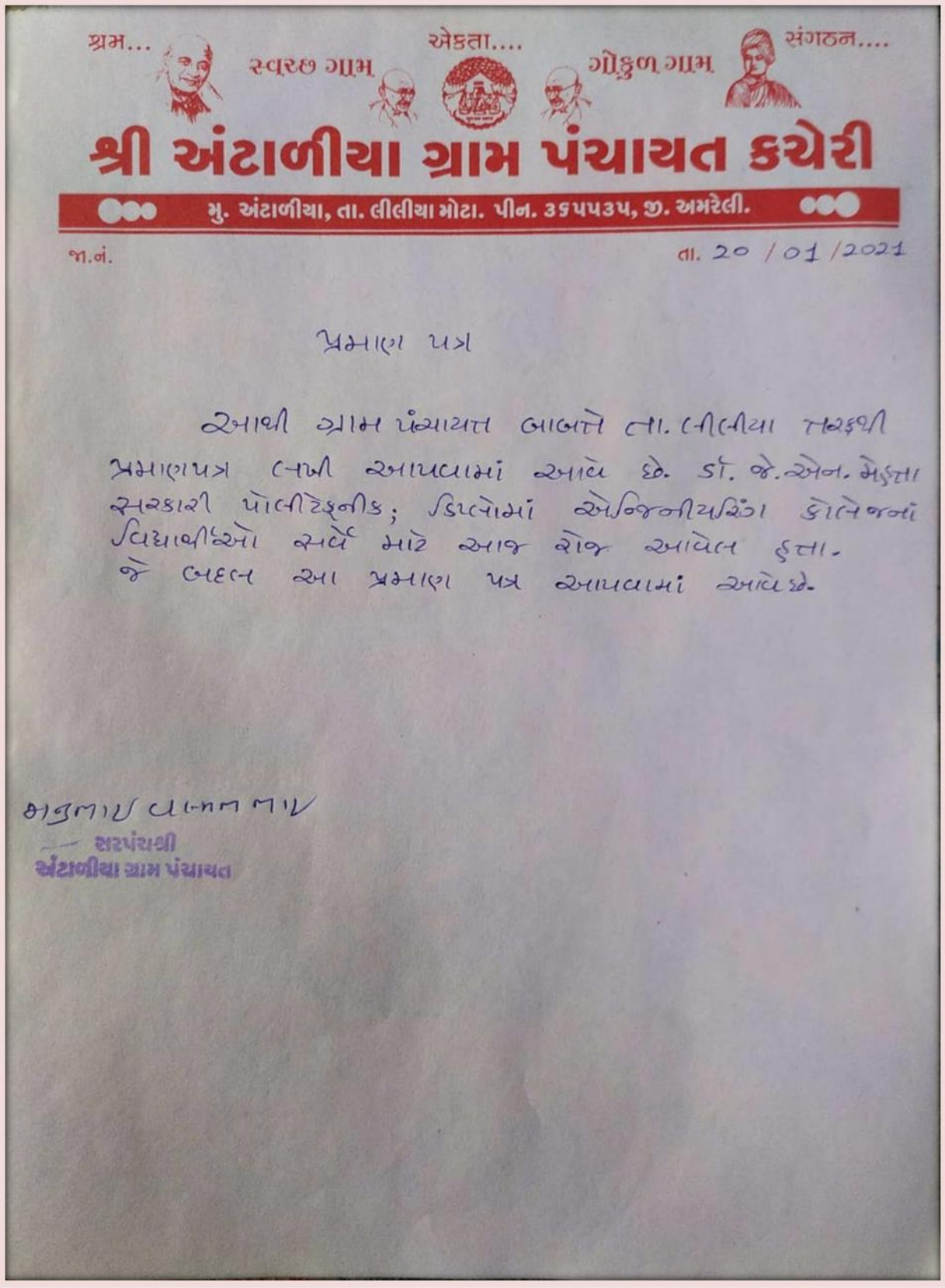
**Proposed Design for Antaliya Village:-**

- Rain water harvesting structure
- Public Toilet
- Automatic Street Lights Control

Mr J N Vaghasiya
Nodal Officer- Project
Mr C R Khuman
Co-Nodal Officer- Project
Dr J.N.Mehta Gov. Polytechnic, Amreli

I am Sarpanch of Antaliya (Amreli Dist.) Undersigned accepting your proposed design for the development of village given under "Vishwakarma Yojanaphase - VIII".

સરપંચશ્રી
અંટાળીયા ગ્રામ પંચાયત



શ્રમ... સ્વરછ ગ્રામ એકતા.... ગોકુળ ગ્રામ સંગઠન....

# શ્રી અંટાળીયા ગ્રામ પંચાયત કચેરી

મુ. અંટાળીયા, તા. લીલીયા મોટા. પીન. ૩૬૫૫૩૫, જી. અમરેલી.

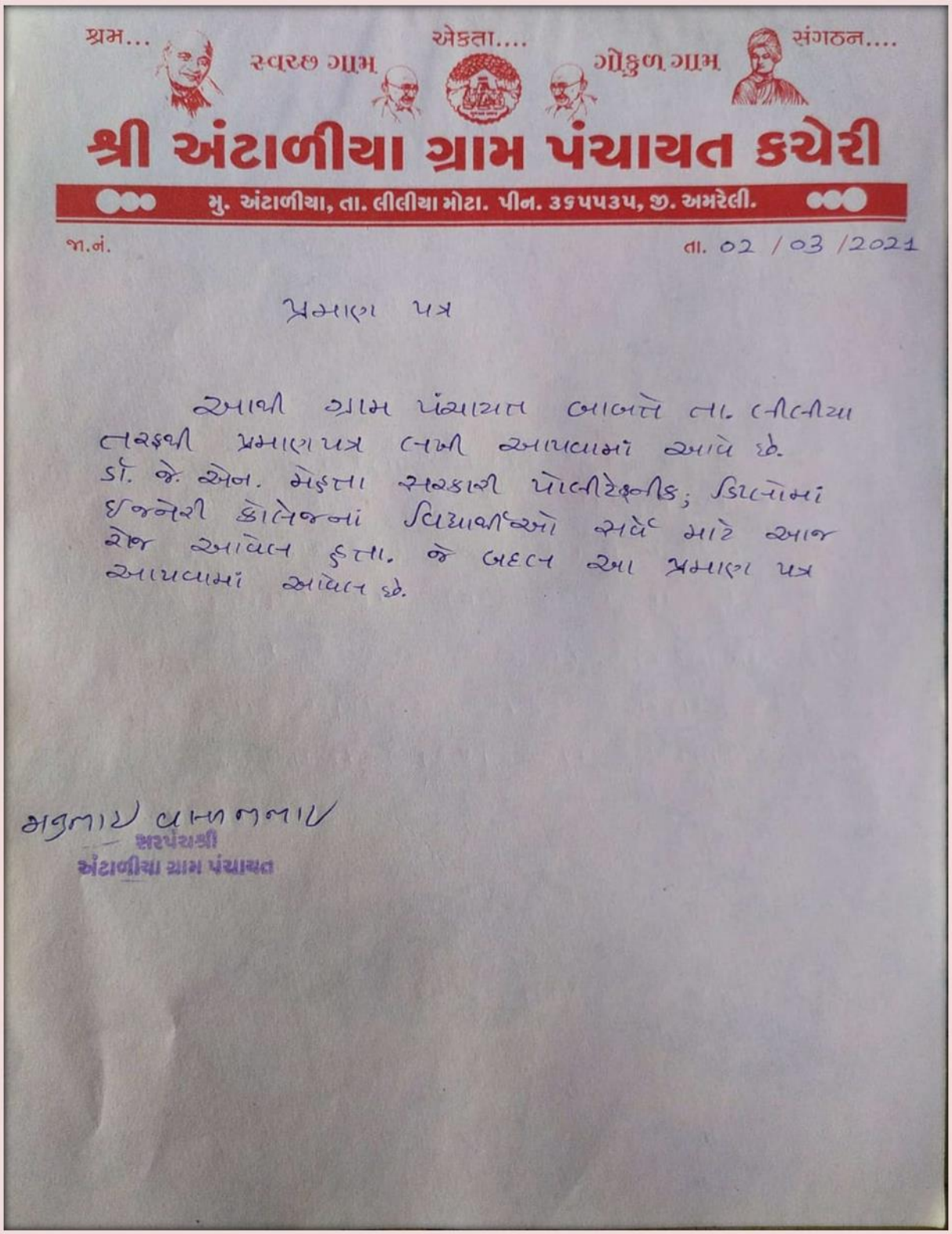
જા.નં. તા. 20 / 01 / 2021

પ્રમાણ પત્ર

આથી ગ્રામ પંચાયત બાબતે તા. લીલીયા તરફથી પ્રમાણપત્ર લખી આપવામાં આવે છે. ડૉ. જે.એન. મેડતા સરકારી પોલીટેક્નીક; ડિપ્લોમાં એન્જિનીયરિંગ કોલેજનાં વિદ્યાર્થીઓ સર્વે માટે આજ રોજ આવેલ હતા. જે બદલ આ પ્રમાણ પત્ર આપવામાં આવે છે.

ભનુભાઈ [illegible]

સરપંચશ્રી
અંટાળીયા ગ્રામ પંચાયત



શ્રમ... સ્વચ્છ ગ્રામ એકતા.... ગોકુળ ગ્રામ સંગઠન....

# શ્રી અંટાળીયા ગ્રામ પંચાયત કચેરી

મુ. અંટાળીયા, તા. લીલીયા મોટા. પીન. ૩૬૫૫૩૫, જી. અમરેલી.

જા.નં. તા. 02 /03 /2021

પ્રમાણ પત્ર

આથી ગ્રામ પંચાયત બાબતે તા. લીલીયા તરફથી પ્રમાણપત્ર તમો આપવામાં આવે છે. ડી. જે. એન. મેઇતા સરકારી પોલીટેક્નીક; કિલ્લોમાં ઇજનેરી કોલેજનાં વિદ્યાર્થીઓ સર્વે માટે આજ રોજ આવેલ હતા. જે બદલ આ પ્રમાણ પત્ર આપવામાં આવેલ છે.

મગનભાઈ વાનાણી
સરપંચશ્રી
અંટાળીયા ગ્રામ પંચાયત

# Chapter-13 Future Designs Of The Aspects

Feasibility, Construction, Operation and maintenance of various design options in Rural Areas along with cost with AutoCAD designs

## 13.1 Design Proposals :-

- In the Vishwakarma Yojana Phase-VIII Part – II we have given total six design according to the

Village need and useful for the villagers

- The design proposals are :-
  - Design Police Station
  - Medical Store
  - Cctv Control Room
  - Pick up stand
  - Washing ghat
  - W.B.M. With Paving Block Road
  - Designing Of Dc Motor Speed Control Unit
  - Solar Energy Measurement System
  - Induction Motor Protection System

### 13.1.1 Design police station

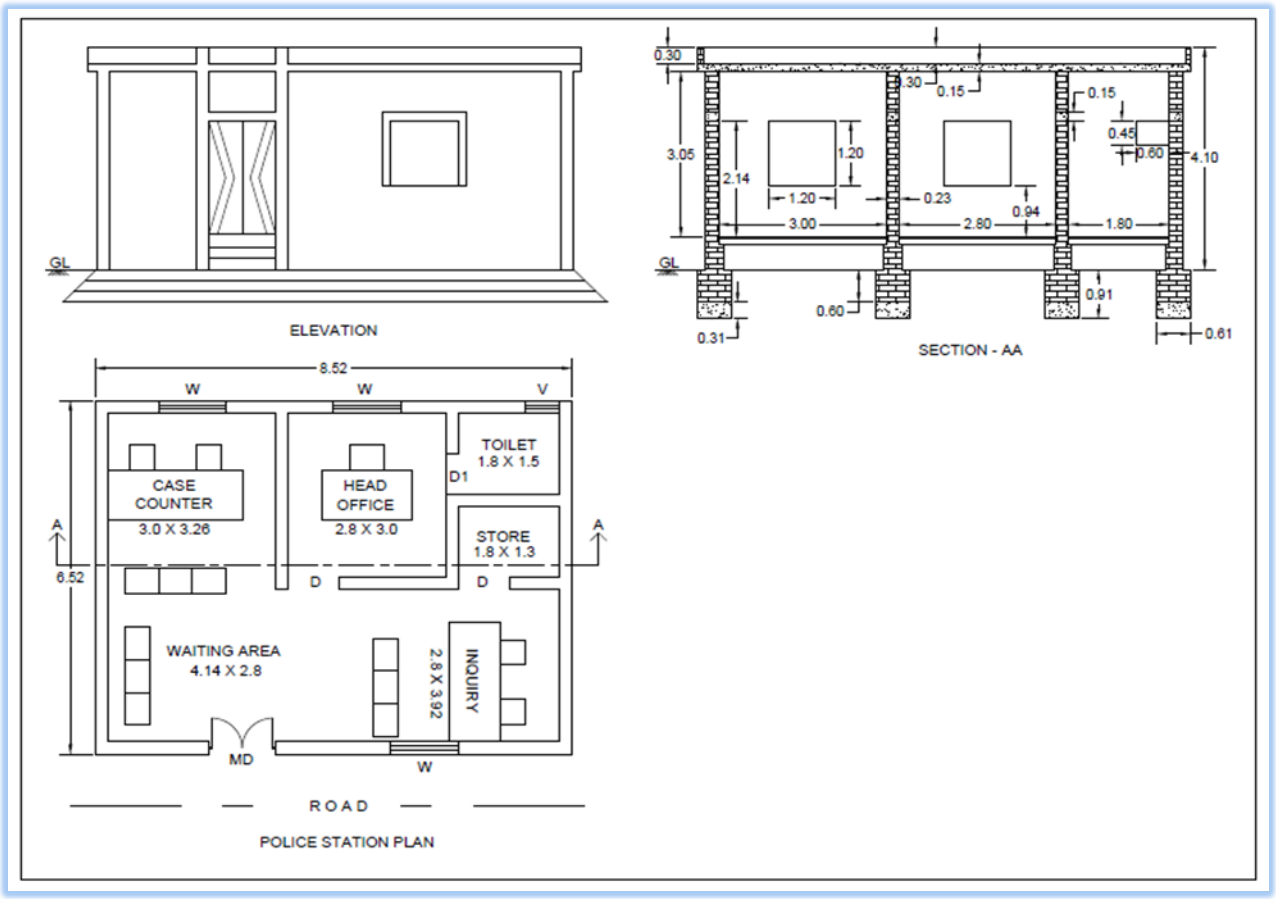



**Fig: - 13.1.1 police station**

## ❖ Abstract sheet

| Sr.No. | Particular items | Quantity | Rate | Per | Amount |
|---|---|---|---|---|---|
| 1. | Earthwork in excavation for foundation | 29.808 | 85 | m3 | 2,533.68 |
| 2. | P.C.C in foundation | 7.452 | 3200 | m3 | 23,846.4 |
| 3. | Brickwork in foundation | 11.40 | 3200 | m3 | 36,480 |
| 4. | Brickwork in superstructure | 28.25 | 3500 | m3 | 98,975 |
| 5. | Plaster | 196.3 | 150 | $M^2$ | 29,445 |
| Total = 1,91,181 | | | | | |

## ❖ MEASUREMENT SHEET

| Sr. No. | Description Of Items | No. | Length (M) | Breadth (M) | Ht. (M) | Total Qty. |
|---|---|---|---|---|---|---|
| 1 | Total Center Line | | | | | |
| | 32.2 | | | | | |
| | = 43.2m | | | | | |
| | Excavation For Foundation =(0.5*6*0.6)- 43.2 | 1 | 41.4 | 0.6 | 1.2 | |
| 2 | P.C.C Work In Foundation | 1 | 41.4 | 0.6 | 0.3 | 7.452 M3 |
| 3 | Brickwork In Foundation | | | | | |
| | Step-1 : (43.2–(0.5*6*0.4)) = 42 | 1 | 42 | 0.4 | 0.3 | 5.04 $M^3$ |
| | Step-2 : (43.2–(0.5*6*0.3)) = 42.3 | 1 | 42.3 | 0.3 | 0.3 | 3.80 $M^3$ |
| | Step-3 : (43.2–(0.5*6*0.2)) = 42.6 | 1 | 42.6 | 0.2 | 0.3 | 2.55$m^3$ |
| | | Total = 11.40 M3 | | | | |
| 4 | Brickwork In Super Structure | 1 | 42.6 | 0.2 | 3 | 25.56 M3 |
| | Perapet Wall :8.4 | 2 | 8.4 | 0.2 | 1 | 4.16 $M^3$ |
| | 6 | 2 | 6 | 0.2 | 1 | 2.4$m^3$ |
| | | Total = 31.32m3 | | | | |
| | Deduction: | | | | | |
| | D1 | 1 | 1.2 | 0.2 | 2.1 | 0.504$m^3$ |
| | D2 | 1 | 0.9 | 0.2 | 2.1 | 0.378 $M^3$ |
| | D3 | 2 | 0.6 | 0.2 | 2.1 | 0.504 $M^3$ |
| | W | 4 | 0.9 | 0.2 | 0.9 | 0.648$m^3$ |
| | V | 1 | 0.45 | 0.2 | 0.45 | 0.040 $M^3$ |
| | Deduction For | | | | | |
| | D1 | 1 | 1.5 | 0.2 | 0.5 | 0.15 $M^3$ |
| | D2 | 1 | 1.2 | 0.2 | 0.5 | 0.12 $M^3$ |
| | D3 | 2 | 0.9 | 0.2 | 0.5 | 0.18 $M^3$ |
| | W | 4 | 1.2 | 0.2 | 0.5 | 0.48 $M^3$ |
| | V | 1 | 0.75 | 0.2 | 0.5 | 0.07 $M^3$ |
| | | | | | | =-1.00$m^3$ |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Total =28.25 $M^3$ | | |
| 5 | Plaster | | | | | |
| | Slab: | | | | | |
| | Hall = (3*5.2) | 1 | 3 | 5.2 | - | 15.6$m^2$ |
| | = (6*2.8) | 1 | 6 | 2.8 | - | 16.8$m^2$ |
| | Main Office | 1 | 2.8 | 3 | - | 8.4 $M^2$ |
| | Toilet | 1 | 1.6 | 1.8 | - | 2.88 $M^2$ |
| | Store Room | 1 | 1 | 1.8 | - | 1.8 $M^2$ |
| | Wall: | | | | | |
| | Hall | 1 | 8 | - | 3 | 24 $M^2$ |
| | | 1 | 6 | - | 3 | 18 $M^2$ |
| | | 1 | 3 | - | 3 | 9 $M^2$ |
| | | 1 | 2.8 | - | 3 | 8.4 $M^2$ |
| | | 1 | 5.2 | - | 3 | 15.6 $M^2$ |
| | | 1 | 3 | - | 3 | 9 $M^2$ |
| | | 2 | 2.8 | - | 3 | 16.8 $M^2$ |
| | | 2 | 3 | - | 3 | 18 $M^2$ |
| | | 2 | 1.6 | - | 3 | 9.6 $M^2$ |
| | | 2 | 1.8 | - | 3 | 10.8 $M^2$ |
| | | 2 | 1 | - | 3 | 6 $M^2$ |
| | | 2 | 1.8 | - | 3 | 10.8 $M^2$ |
| | | | | | | = 201.48$m^2$ |
| | Deduction: | | | | | |
| | D1 | 0.5 | 1.2 | - | 2.1 | 1.26 $M^2$ |
| | D2 | 0.5 | 0.4 | - | 2.1 | 0.94 $M^2$ |
| | D3 | 1 | 0.6 | - | 2.1 | 1.26 $M^2$ |
| | W | 2 | 0.9 | - | 0.9 | 1.62 $M^2$ |
| | V | 0.5 | 0.45 | - | 0.45 | 0.10 $M^2$ |
| | | | | | | = (-5.18 $M^2$) |
| | | | | | | =196.3 $M^2$ |

### 13.1.2 Medical Store

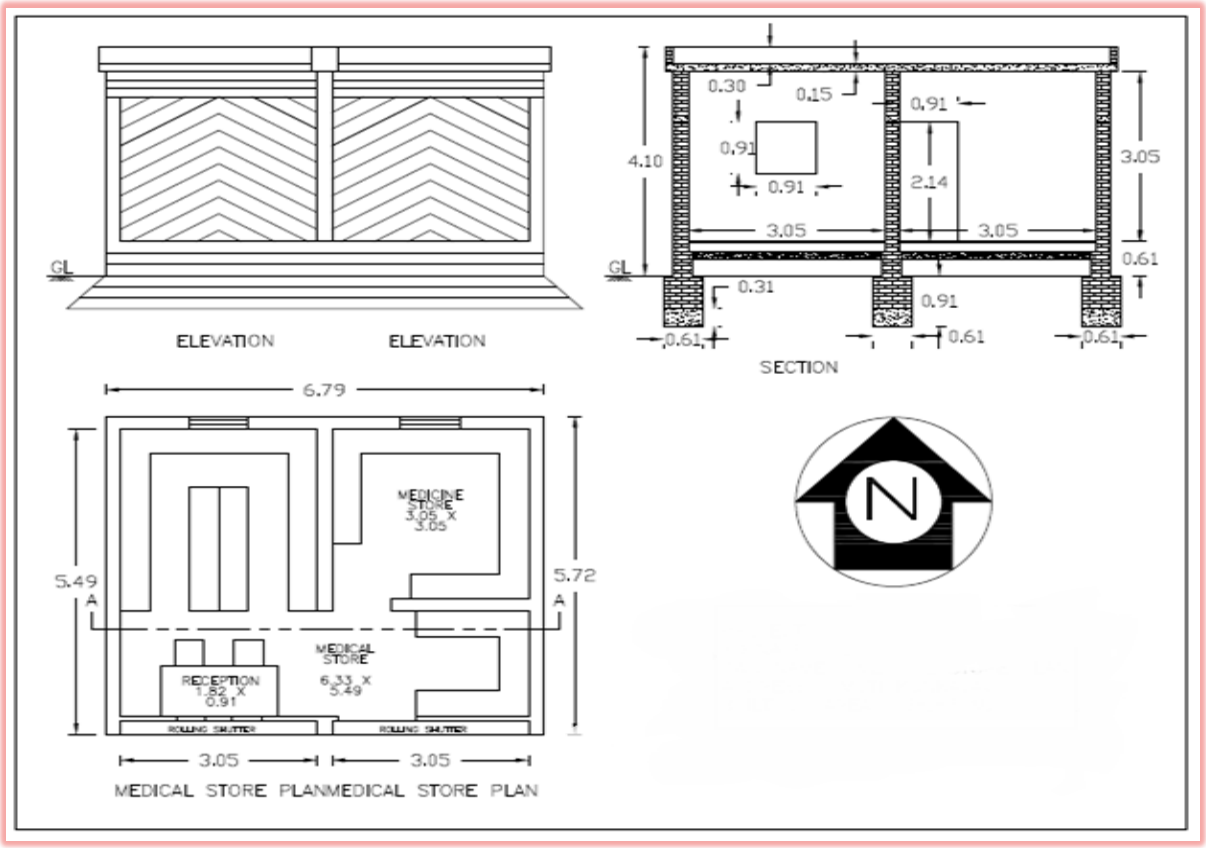



**Fig :- 13.1.2 Medical Store**

| ABSTRACT SHEET | | | | | | |
|---|---|---|---|---|---|---|
| **SR NO** | **DESCRIPTION** | **QTY** | **UNIT** | **RATE** | **PER UNIT** | **AMOUNT** |
| **1** | **EXCAVATION IN FOUNDATION** | 16.21 | CU.M | 85.90 | CU.M | **1392.439** |
| **2** | **PCC IN FOUNDATION** | 5.51 | CU.M | 2137.44 | CU.M | **11777.3** |
| **3** | **BRICK MAOSNARY IN FOUNDATION UPTO GROUND LEVEL** | 10.69 | CU.M | 3259.75 | CU.M | **34846.73** |
| **4** | **BRICK MAOSNARY IN FOUNDATION UPTO PLINTH** | 4.16 | CU.M | 3259.75 | CU.M | **13560.56** |
| **5** | **BRICK MAOSNARY ABOVE PLINTH UPTO LINTEL LEVEL** | 15.54 | CU.M | 3259.75 | CU.M | **50656.51** |
| **6** | **RCC LINTEL** | 0.82 | CU.M | 2137.44 | CU.M | **1752.7** |
| **7** | **BRICK MASONARY ABOVE LINTEL UPTO SLAB** | 5.52 | CU.M | 3259.75 | CU.M | **17993.82** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **8** | **RCC SLAB** | 3.88 | CU.M | 3818.93 | CU.M | **14817.45** |
| **9** | **BRICK MASONARY ABOVE SLAB IN PARAPET WALL** | 9.311 | SQ.M | 387.00 | SQ.M | **3603.357** |
| **10** | **EARTH FILLING UPTO PLINTH** | 12.61 | CU.M | 250.00 | CU.M | **3152.5** |
| **11** | **CC FLOORING** | 4.20 | CU.M | 2137.44 | CU.M | **8977.25** |
| **12** | **TILE FLOORING** | 37.28 | SQ.M | 453.00 | SQ.M | **16887.84** |
| **13** | **PLASTER** | 180.21 | SQ.M | 68.50 | SQ.M | **12344.385** |
| **14** | **PAINT** | 147.14 | SQ.M | 7.60 | SQ.M | **1118.264** |
| | **TOTAL AMOUNT** | | | | | **192881.16** |
| | **2% WATER CHARGES** | | | | | **2142.53** |
| | **5% COUNTIGENCIES** | | | | | **5356.31** |
| | **NET AMOUNT** | | | | | **200380.00** |
| | **SAY** | | | | | **200380.00** |

| **MEASUREMENT SHEET** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **SR NO** | **DESCRIPTION** | **NOS** | **LENTH** | **WIDTH** | **HEIGHT** | **QTY** | **UNIT** |
| 1 | EXCAVATION IN FOUNDATION | | | | | | |
| | LONG WALL | 2 | 6.94 | 0.61 | 0.91 | 7.70 | |
| | L = 6.33+0.61 | | | | | | |
| | SHORT WALL | 3 | 5.11 | 0.61 | 0.91 | 8.51 | |
| | L = 5.72-0.61 | | | | | | |
| | | | | | | **16.21** | **CU.M** |
| **2** | **PCC IN FOUNDATION** | | | | | | |
| | LONG WALL | 2 | 6.94 | 0.61 | 0.31 | 2.62 | |
| | L = 6.33+0.61 | | | | | | |
| | SHORT WALL | 3 | 5.11 | 0.61 | 0.31 | 2.89 | |
| | L = 5.72-0.61 | | | | | | |
| | | | | | | **5.51** | **CU.M** |
| **3** | **BRICK MAOSNARY IN FOUNDATION UPTO GROUND LEVEL** | | | | | | |
| | LONG WALL | 2 | 6.94 | 0.61 | 0.6 | 5.08 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | L = 6.33+0.61 | | | | | | |
| | SHORT WALL | 3 | 5.11 | 0.61 | 0.6 | 5.61 | |
| | L = 5.72-0.61 | | | | | | |
| | | | | | | **10.69** | **CU.M** |
| **4** | **BRICK MAOSNARY IN FOUNDATION UPTO PLINTH** | | | | | | |
| | LONG WALL | 2 | 6.79 | 0.31 | 0.45 | 1.89 | |
| | L = 6.79 | | | | | | |
| | SHORT WALL | 3 | 5.18 | 0.31 | 0.45 | 2.2 | |
| | L = 5.49-0.31 | | | | | | |
| | | | | | | **4.16** | **CU.M** |
| **5** | **BRICK MAOSNARY ABOVE PLINTH UPTO LINTEL LEVEL** | | | | | | |
| | LONG WALL | 2 | 6.79 | 0.23 | 2.32 | 7.25 | |
| | L = 6.79 | | | | | | |
| | SHORT WALL | 3 | 5.18 | 0.23 | 2.32 | 8.29 | |
| | L = 5.49-0.31 | | | | | | |
| | | | | | | **15.54** | **CU.M** |
| **6** | **RCC LINTEL** | | | | | | |
| | LONG WALL | 2 | 6.79 | 0.23 | 0.12 | 0.37 | |
| | L = 6.79 | | | | | | |
| | SHORT WALL | 3 | 5.49 | 0.23 | 0.12 | 0.45 | |
| | L = 5.49 | | | | | | |
| | | | | | | **0.82** | **CU.M** |
| **7** | **BRICK MASONARY ABOVE LINTEL UPTO SLAB** | | | | | | |
| | LONG WALL | 2 | 6.79 | 0.23 | 0.80 | 2.49 | |
| | L = 6.79 | | | | | | |
| | SHORT WALL | 3 | 5.49 | 0.23 | 0.80 | 3.03 | |
| | L = 5.49 | | | | | | |
| | | | | | | **5.52** | **CU.M** |
| **8** | **RCC SLAB** | 1 | 6.99 | 3.71 | 0.15 | **3.88** | **CU.M** |
| **9** | **BRICK MASONARY ABOVE SLAB IN PARAPET WALL** | | | | | | |
| | LONG WALL | 2 | 6.99 | | 0.30 | 4.19 | |
| | L = 6.79+2*0.1 | | | | | | |
| | SHORT WALL | 3 | 5.69 | | 0.30 | 5.121 | |
| | L = 5.49+2*0.1 | | | | | | |
| | | | | | | **9.311** | **SQ.M** |
| **10** | **EARTH FILLING UPTO PLINTH** | 1 | 5.73 | 4.89 | 0.45 | **12.61** | **CU.M** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **11** | **CC FLOORING** | 1 | 5.73 | 4.89 | 0.15 | **4.20** | **CU.M** |
| **12** | **TILE FLOORING** | 1 | 5.49 | 6.79 | | **37.28** | **SQ.M** |
| **13** | **PLASTER** | | | | | | |
| | **INTERNAL WALL** | | | | | | |
| | LONG WALL | 1 | 6.79 | | 2.14 | 14.53 | |
| | SHORT WALL | 4 | 5.72 | | 2.14 | 48.96 | |
| | | | | | | **63.49** | **SQ.M** |
| | **CEILING PLASTER** | 1 | 5.49 | 6.33 | | **34.75** | **SQ.M** |
| | **EXTERNAL WALL** | | | | | | |
| | LONG WALL | 1 | 6.79 | | 4.11 | 27.91 | |
| | SHORT WALL | 2 | 5.49 | | 4.11 | 45.13 | |
| | | | | | | **73.04** | **SQ.M** |
| | **PLASTER INSIDE PARAPET WALL** | | | | | | |
| | LONG WALL | 1 | 6.99 | | 0.30 | 2.1 | |
| | SHORT WALL | 4 | 5.69 | | 0.30 | 6.83 | |
| | | | | | | **8.93** | **SQ.M** |
| | **TOTAL PLASTER** | | | | | **180.21** | **SQ.M** |
| **14** | **PAINT** | | | | | | |
| | **INTERNAL WALL** | | | | | | |
| | LONG WALL | 2 | 6.79 | | 2.14 | 29.06 | |
| | SHORT WALL | 1 | 5.49 | | 2.14 | 11.75 | |
| | | | | | | **40.81** | **SQ.M** |
| | **CEILING PAINT** | 1 | 5.49 | 6.79 | | **37.28** | **SQ.M** |
| | **EXTERNAL WALL** | | | | | | |
| | LONG WALL | 2 | 6.79 | | 4.11 | 55.81 | |
| | SHORT WALL | 1 | 5.49 | | 4.11 | 22.56 | |
| | | | | | | **61.44** | **SQ.M** |
| | **PAINT INSIDE PARAPET WALL** | | | | | | |
| | LONG WALL | 2 | 6.99 | | 0.30 | 4.2 | |
| | SHORT WALL | 2 | 5.69 | | 0.30 | 3.41 | |
| | | | | | | **7.61** | **SQ.M** |
| | **TOTAL PAINT** | | | | | **147.14** | **SQ.M** |

### 13.1.3 Cctv Control Room

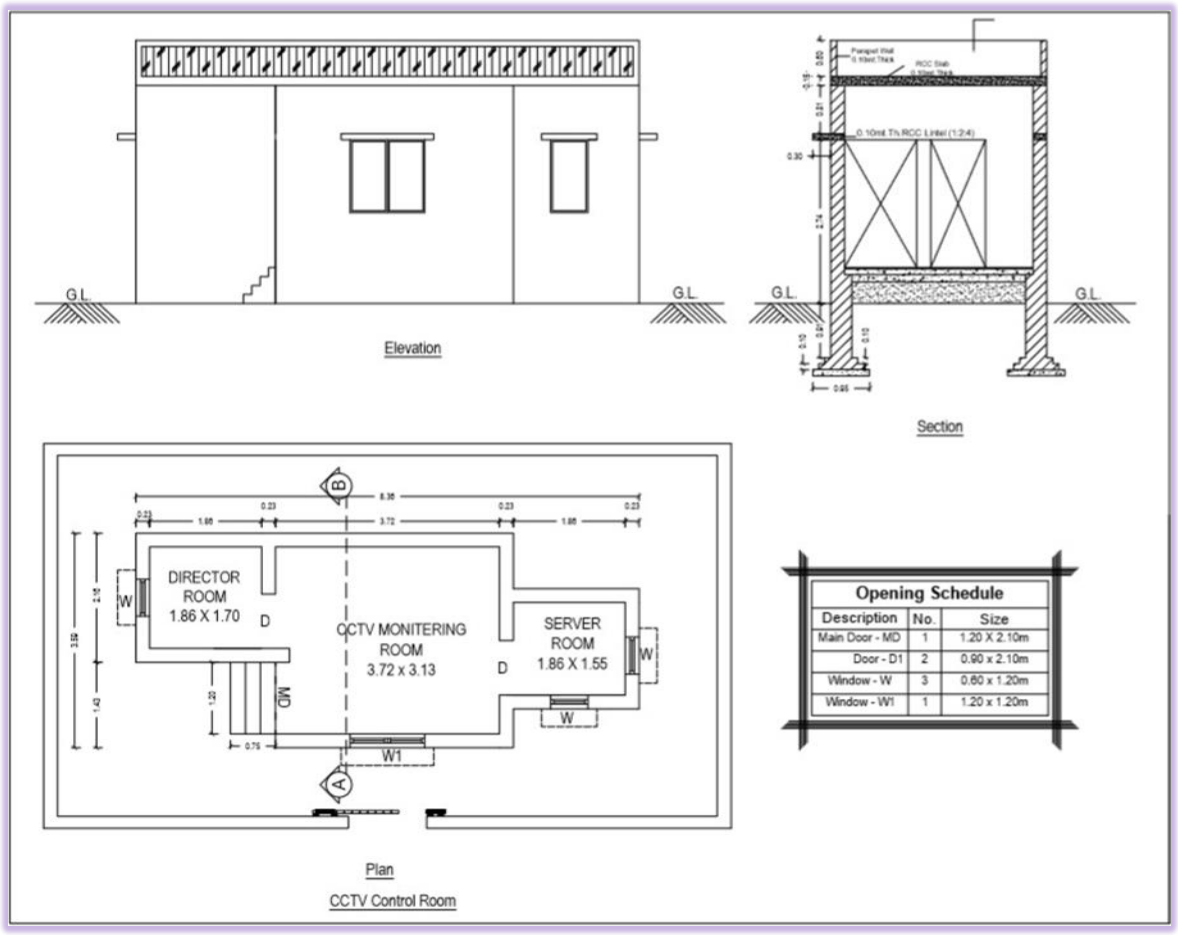



**Fig :-13.1.3 Cctv Control Room**

| Abstract Sheet | | | | |
|---|---|---|---|---|
| Total Estimated Cost Of Rs.314500.00 | | | | |
| **Item No. & Description** | **Total Qty.** | **Rate** | **Per** | **Amount** |
| **Item No. 1** | | | | |
| Foundation | | | | |
| | | 85.90 | | |
| | 20.60 | **85.90** | Cumt. | 1,769.54 |
| **Item No. 2** | | | | |
| Pcc | | | | |
| | | 2106.00 | | |
| | 2.60 | **2106.00** | Cumt. | 5,475.60 |
| **Item No. 3** | | | | |
| Foundation And Plinth | | | | |
| | | 1912.00 | | |
| | 25.70 | **1912.00** | Cumt. | 49,138.40 |
| **Item No. 4** | | | | |
| Copping | | | | |

| | | | | |
|---|---|---|---|---|
| | | 2712.00 | | |
| | 2.10 | **2712.00** | Cumt. | 5,695.20 |
| **Item No. 5** | | | | |
| Murrum Filling | | | | |
| | | 250.00 | | |
| | 10.50 | **250.00** | Cumt. | 2,625.00 |
| **Item No. 6** | | | | |
| Concrete Work In Foundation | | | | |
| | | 2758.00 | | |
| | 2.80 | **2758.00** | Cumt. | 7,722.40 |
| **Item No. 7** | | | | |
| Brick Work | | | | |
| | | 2549.00 | | |
| | 22.10 | **2549.00** | Cumt. | 56,332.90 |
| **Item No. 8** | | | | |
| Slab | | | | |
| (Iii) Slab Having More Than 10 Cm. And Up To 13 Cm. Thickness | | 4503.00 | | |
| | 3.60 | **4503.00** | Cumt. | 16,210.80 |
| **Item No. 9** | | | | |
| Lintel | | | | |
| | | 4868.00 | | |
| | 0.80 | **4868.00** | Cumt. | |
| | | | | 3,894.40 |
| **Item No. 10** | | | | |
| Tmt Bar | | | | |
| | | 45.00 | | |
| | 418.00 | **45.00** | Kg. | 18,810.00 |
| **Item No.11** | | | | |
| Aluminum Section | | | | |
| | | 2022.00 | | |
| | 3.60 | **2022.00** | Sqmt. | 7,279.20 |
| **Item No.12** | | | | |
| Door | | | | |
| | | 2671.00 | | |
| | 1% L.S. | 26.71 | | |
| | 7.60 | **2697.71** | Sqmt. | 20,502.60 |
| **Item No. 13** | | | | |

| | | | | |
|---|---|---|---|---|
| 15mm Thick Single Coat Cement Plaster | | | | |
| | | 103.00 | | |
| | 87.10 | **103.00** | Sqmt. | 8,971.30 |
| **Item No. 14** | | | | |
| 20mm Thick Single Coat Cement Plaster | | | | |
| | | 205.00 | | |
| | 138.50 | **205.00** | Sqmt. | 28,392.50 |
| **Item No. 15** | | | | |
| Vitrified Tile | | | | |
| | | 757.00 | | |
| | 17.70 | **757.00** | Sqmt. | 13,398.90 |
| **Item No. 16** | | | | |
| Door | | | | |
| | | 2131.00 | | |
| | 6.30 | **2131.00** | Sqmt. | 13,425.30 |
| **Item No. 17** | | | | |
| Wall Painting (Two Coats) | | | | |
| | | 49.60 | | |
| | 87.10 | **49.60** | Sqmt. | 4,320.16 |
| **Item No. 18** | | | | |
| Wether Proof Exterior Emulsion Paint | | | | |
| | | 72.00 | | |
| | 138.50 | **72.00** | 1.00 | 9,972.00 |
| **Item No. 19** | | | | |
| G.I. Rain Water Spout | | | | |
| | | 72.20 | | |
| | 2 | **72.20** | Each | |
| | | | | 144.40 |
| **Item No. 20** | | | | |
| Point Wiring | | | | |
| | 12 | **350.00** | No. | 4,200.00 |
| | | | **Total Amounts Rs.....** | **278,280.60** |
| | | | **Add 3% Contigency Charge Rs.....** | **8,348.42** |
| | | | **Add 10% Water And Draneige Charge Rs.....** | **27,828.06** |
| | | | **Net Amounts Rs.....** | **314,457.07** |
| | | | **Say Amounts Rs.....** | **314,500.00** |

### 13.1.4 Pick-up stand

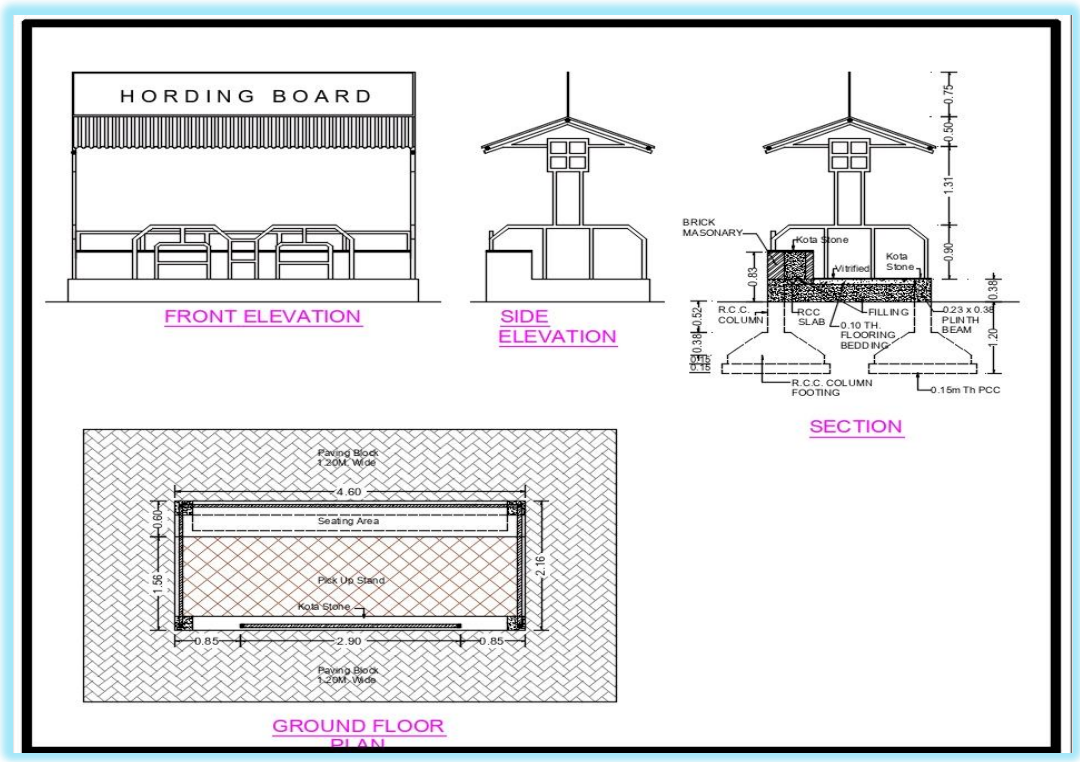



**Fig :-13.1.4 pickup stand**

| ESTIMATE FOR CONSTRUCTION & FABRICATION WORK OF PICK UP STAND | | | | |
|---|---|---|---|---|
| **ABSTRACT SHEET** | | | | |
| ***Estimated Cost Rs. 165600.00*** | | | | |
| **Item No. & Description** | **Quantity** | **Rate** | **Per** | **Amount** |
| **Item No. 1** | | | | |
| Excavation for foundation up to 1.5 mt. depth including sorting out and stacking of useful materials and disposing of the excavated stuff up to 50 mt. lead. (C) Hard murrum (P.No.35/It. No. 4001B) | | | | |
| | | | | |
| Total | **13.50** | **147.00** | Cumt. | 1,984.50 |
| **Item No. 2** | | | | |
| Providing and laying cement concrete 1:2:4 ( 1 cement : 2 coarse sand : 4 Machine Cut stone aggregate 20mm nominal size) and curring complate excluding cost of form work | | | | |

| | | | | |
|---|---|---|---|---|
| (A) Foundation and plinth (RA) | | | | |
| | | | | |
| Total | **1.35** | **2873.00** | Cumt. | 3,878.55 |
| **Item No. 3** | | | | |
| Providing and laying controlled cement concrete M-250 and curing complete incl. the cost of formwork but excl. the cost of reinforcement for reinforced concrete work in (A) Foundation footing base of column and mass concret | | | | |
| | | | | |
| Total | **3.41** | **3386.00** | Cumt. | 11,544.87 |
| **Item No. 4** | | | | |
| Providing and laying Controlled cement concrete M - 250 exposed work with curing etc. complete including the cost of formwork but excl. the cost of reinforcement for RCC work | | | | |
| (i) Having cross sectional area 0.05 to 0.085 Sqm. | | | | |
| | | | | |
| Total | **0.19** | **8077.00** | Cumt. | 1,538.18 |
| | | | | |
| **Item No. 5** | | | | |
| Providing and laying Controlled cement concrete M - 250 exposed work with curing etc. complete including the cost of formwork but excl. the cost of reinforcement for RCC work | | | | |
| (A) BEAM | | | | |
| (i) Having cross sectional area 0.05 to 0.08 Sqmt. | | | | |
| | | | | |
| Total | **1.02** | **6795.00** | Cumt. | 6,936.55 |
| | | | | |
| **Item No. 6** | | | | |
| Filling available excavated earth (excl. rock in trenches plinth, sides of foundation etc. in layer's not exceeding 20 cm. in depth consolidating each deposited layer by ramming and watering) (SOR P.No. 37/ It.No. 4006) | | | | |

| | | | | |
|---|---|---|---|---|
| | | | | |
| Total | **8.74** | **76.50** | Cumt. | 668.64 |
| **Item No. 7** | | | | |
| Filling in foundation and plinth with murrum or selected soil in layer of 20 cm. thickness including watering remming consolidating etc. complete. (SOR P. No. 37, I. No. 4008) | | | | |
| | | | | |
| Total | **1.42** | **287.00** | Cumt. | 406.95 |
| **Item No. 8** | | | | |
| Providing and laying cement concrete 1:2:4 ( 1 cement : 2 coarse sand : 4 Machine Cut stone aggregate 20mm nominal size) and curring complate excluding cost of form work (A) Foundation and plinth (P.No. 42/ 5010A) | | | | |
| | | | | |
| Total | **0.82** | **3020.00** | Cumt. | 2,463.05 |
| **Item No. 9** | | | | |
| Providing and Laying controlled cement concrete M.150 and finishing smooth with curing etc. complete including the cost of formwork but excluding the cost of reinforsement for R.C.C work in (iii) Slabs having more than 10 cm and upto 13 cm. thickness (P.No 52/ It.No 05027C) | | | | |
| | | | | |
| Total | **0.28** | **4600.00** | Cumt. | 1,269.60 |
| | | | | |
| **Item No. 10** | | | | |
| Providing and laying reinforcement for R.C.C. work and bending, binding and placing in position completed upto floor two level. Thermo Mechanical Treated Bars as per I.S. Standard. (SOR P. No. 32/ It.No. 36/ 5.4.11) | | | | |
| | | | | |
| Total | **573.96** | **44.30** | Kg. | 25,426.32 |
| **Item No. 11** | | | | |
| Brick work using common Brunt clay building bricks having crushing strength not less than 35 Kg./Sqcm. In foundation and plinth in cement mortar 1:5 (1cement : 5 fine sand) | | | | |

| | | | | |
|---|---|---|---|---|
| (b) Conventional (P.No. 63/It.No.1A/6.12} | | | | |
| | | | | |
| Total | **0.51** | **3349.00** | Cumt. | 1,691.51 |
| **Item No. 12** | | | | |
| (I) Half brick masonary in common brunt clay building brick having crushing strength not less than 35 Kg/Sqcm. in cement mortar 1:4 (1 cement : 4 coarse sand) in foundation and plinth (B) Conventional (SOR P. No. 67/ It.No. 8A1.6.3) | | | | |
| | | | | |
| Total | **1.86** | **391.00** | Sqmt. | 728.43 |
| **Item No. 13** | | | | |
| Providing 15 mm thick cement plaster single coat on brick / concrete wall for interior plastering up to floor two level finished even and smooth in (i) Cement mortar 1:3 ( 1 cement : 3 sand) (SOR P.No. 127 / 2A.17.60) | | | | |
| | | | | |
| Total | **2.07** | **117.00** | Sqmt. | 242.19 |
| **Item No. 14** | | | | |
| 20mm thick sand faced cement plaster on walls up to height 10 mtrs. above ground level consisting of 12mm thick backing coat of C.M. 1:3 (1 cement : 3 sand) and 8mm thick finishing coat of C.M. 1:1 (1 cement : 1 sand) etc. complete (SOR P.No. 128/ It.No. 9.17.95) | | | | |
| | | | | |
| Total | **5.72** | **205.00** | Sqmt. | 1,172.52 |
| **Item No. 15** | | | | |
| Providing and laying polished Kota stone slab flooring over 20mm average thick base of cement mortar 1:6 (1-cement : 6-coarse sand) or lime mortar 1:1.5 laid over and jointed with grey cement slurry including rubbing and polishing complete (A) 25mm thick (SOR P.No. 117/ It.No. 12A.14.43) | | | | |
| | | | | |
| Total | **4.14** | **760.00** | Sqmt. | 3,146.40 |

| | | | | |
|---|---|---|---|---|
| **Item No. 16** | | | | |
| P & L 24" x 24" vitrified 8 mm thick tile flooring over 20 mm (average) base of cement mortar 1:6 ( 1 cement: 6 coarse sand) on new surface or fixing on existing flooring by adhesive material including dismentaling of existing flooring and jointed with color cement slurry including finised with flush pointing & cleaning the surface etc. complete for antiskit (upto 10 ton) (P.No.119/ It.No. 14021) | | | | |
| | | | | |
| Total | **6.12** | **1019.00** | Sqmt. | 6,234.24 |
| **Item No. 17** | | | | |
| Finishing wall with weather proof exterior emulsion paint on wall surface (two coats) to give an required shape even shade after thoroughly brushing the surface to remove all dirt, and remains of loose powdered materials.etc complete (SOR P.No. 136/ It.No. 19031) | | | | |
| | | | | |
| Total | **7.79** | **72.00** | Sqmt. | 560.85 |
| **Item No. 18** | | | | |
| Steel work welded in built up sections, framed work including cutting, hosting, fixing in position and applying a priming coat or red lead paint. (D) In trusses and trussed purlins up to 25 m. span and 15m overall hight. (SOR P.No. 102/ I.No. 1.11.2) | | | | |
| | | | | |
| Total | **9.65** | **5976.00** | Qtl. | 57,668.40 |
| **Item No. 19** | | | | |
| Providing corrugated G.I. Sheet Roofing Fixed with galvanised iron J or I hooks bolts and nuts 8mm diameter with bitumin and g.I. Limpet washers, filled with white lead complete excluding the cost of purlins, rafters and trusses (1) 0.80mm thick sheet (SOR P.No. 121/ I.No. 1.15.1) | | | | |
| | | | | |

| | | | | |
|---|---|---|---|---|
| Total | **11.50** | **762.00** | Sqmt. | 8,763.00 |
| **Item No. 20** | | | | |
| Applying priming coat of over new steel and other metal surface after and including preparing the surface by thoroughly cleaning, oil grease, dirt and other foreign mater and scoured with brushes fine steel wool, scrapers and sand paper with ready mixed priming paint brushing red lead. (P.No. 133/ I.No.1.19.2) | | | | |
| | | | | |
| Total | **23.00** | **22.00** | Sqmt. | 506.00 |
| **Item No. 21** | | | | |
| Painting two coats (excluding priming coat) on new steel and other metal surface with enamel paint, brusing interior to give an even shade including cleaning the surface an even shade including cleaning the surface of all dirt, dust and other foreign matter. (P.No.133/I.No.2.19.7) | | | | |
| | | | | |
| Total | **23.00** | **55.20** | Sqmt. | 1,269.60 |
| **Item No. 22** | | | | |
| Point wiring for Light / Bell with 2-1.5 sq.mm & earthwire of 1.5 sq.mm (Green) both are of ISI marked 1.1 KV grade FRLS PVC insulated multistrand copper wires, in following type of pipe to be erected concealed in/ on surface on wall/ceiling complete with 6A Modular type switch/bell push & accessories and earth continuity of following type, erected on PVC/Metallic box, single mounting base frame covered with textured/metallic front plate modules erected on/in wall/ceiling as per pipe erected, with necessary Lamp holder/ceiling rose/ H.D.Connector as directed. (a) with medium class Rigid PVC pipe and accessories (Cat. I- Anchor, SG, Elleys) (Ele. SOR 2012-13/ Chapter-I/ It.No. 1.2.1) | | | | |
| | | | | |

| | | | | |
|---|---|---|---|---|
| | 25.00 | **350.00** | Point | 8,750.00 |
| **Item No. 23** | | | | |
| Box cutting the road surface to proper slope and camber for making a base for road work including ramming the excavated stuff and despositing on the road side slope as directed up to 2km. lead. (R.A) | | | | |
| | | | | |
| | 4.08 | **197.63** | Cumt | 806.33 |
| **Item No. 24** | | | | |
| Supplying of crushed stone aggregate Chipping etc.of hand stone of following nominal size free of disintegrated pieces deleterious and origanic matter ( for Bitumen surface dressing etc.) and grading as per I.R.C. code (ii) 40mm (R.A.) Lead From Place Near Bhurakhiya Quary at 35 Km. | | | | |
| | | | | |
| | 1.63 | **683.51** | Cumt | 1,115.49 |
| **Item No. 25** | | | | |
| Supplying of Stone Dust (R.A.) Lead From Place Near Bhurakhiya Quary at 35 Km. | | | | |
| | | | | |
| | | | | |
| | 0.41 | **441.57** | Cumt | 180.16 |
| **Item No. 26** | | | | |
| Spredding the stone aggregate for soiling and W.B.M. including filling the inter stice forming the surface to required camber and gradient (i) 40mm size aggregates (P.No.176,Code No.26018B ,I.No.26.2) | | | | |
| | | 157.00 | | |
| | | | | |
| | 1.63 | **157.00** | Cumt | 256.22 |
| **Item No. 27** | | | | |
| Spreading blindage or road crust filling the gaps in metal and leveling to camber and gradient as directed. (P.No.177,Code No.26020B,I.No.26.23) | | | | |
| | | | | |
| | 0.41 | **92.70** | Cumt | 37.82 |

| | | | | |
|---|---|---|---|---|
| **Item No. 28** | | | | |
| Providing and laying cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 Machine cut stone aggregate 40mm nominal size) and curring complete excluding cost of formwork in (a) Foundation and plinth (upto 10 tonne) | | | | |
| | | | | |
| | 1.63 | **2359.40** | Cumt | 3,850.54 |
| **Item No. 29** | | | | |
| Providing and fixing Pre-Cast Rubber Dye Inter locking concrete Block 60mm thick with grade of concrete M-250 pnumatic compressed by mechanically pressed and as per approved design including 75mm sand layer for levelling and filling the joint with sand in proper line and level. (SOR / P.No.113, It.No.14034) | | | | |
| | | | | |
| | 16.32 | **667.00** | Cumt | 10,885.44 |
| **Item No. 30** | | | | |
| Providing and casting in situ Ordinary cement concrete M-150 for kerb/kerb blocks including formwork curing and finishing complete .(P.No.250, I.No. 27092A) | | | | |
| | | | | |
| | 0.51 | **3067.00** | Sqmt | 1,564.17 |
| | | | | |
| **Total Amounts Rs……..** | | | | **1,65,546.55** |
| | | | | |
| Net Amounts Rs…… | | | | 1,65,546.55 |
| **Say Amounts Rs……..** | | | | **1,65,600.00** |

**ESTIMATE FOR CONSTRUCTION & FABRICATION WORK OF PICK UP STAND**

**MEASURMENT SHEETS**

| Item No. & Description | Nos. | Length | Width | Depth | Quantity | Total Qty. |
|---|---|---|---|---|---|---|
| **Item No. 1** | | | | | | |
| Excavation for foundation up to | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1.5 mt. depth including sorting out and stacking of useful materials and disposing of the excavated stuff up to 50 mt. lead. (C) Hard murrum **(P.No.35/It. No. 4001B)** | | | | | | |
| Columns | 4 | 1.50 | 1.50 | 1.50 | 13.50 | **13.50** |
| | | | | | | **Cumt.** |
| **Item No. 2** | | | | | | |
| Providing and laying cement concrete 1:2:4 ( 1 cement : 2 coarse sand : 4 Machine Cut stone aggregate 20mm nominal size) and curring complate excluding cost of form work (A) Foundation and plinth **(RA)** | | | | | | |
| For P.C.C. - Columns | 4 | 1.50 | 1.50 | 0.15 | 1.35 | **1.35** |
| | | | | | | **Cumt.** |
| **Item No. 3** | | | | | | |
| Providing and laying controlled cement concrete M-250 and curing complete incl. the cost of formwork but excl. the cost of reinforcement for reinforced concrete work in (A) Foundation footing base of column and mass concret | | | | | | |
| For Footing - **Flate Slab** | 4 | 1.30 | 1.30 | 0.30 | 2.03 | ...(A) |
| **Pyramid :** | h/3 | x | A + | a + | Sqrt( A x a) | |
| | | | | | | |
| h = | 0.45 | | **h/3** | = | 0.15 | |
| **A =** | 1.30 | x | 1.30 | = | 1.69 | |
| **a =** | 0.30 | x | 0.45 | = | 0.14 | |
| | | | | | | |
| **Pyramid :** | 0.15 | x | 1.69 | 0.14 | 0.48 | |
| **=** | 0.15 | x | 2.30 | | | |
| **=** | 0.35 | Per No. | | | | |
| | | | | | | |
| Piramid | 4 | 0.35 | | | 1.38 | ...(B) |
| | | Net (A+B):3.41 Cumt | | | | |
| | | | | | 3.41. | **Cumt.** |
| **Item No. 4** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Providing and laying Controlled cement concrete M - 250 exposed work with curing etc. complete including the cost of formwork but excl. the cost of reinforcement for RCC work | | | | | | |
| (i) Having cross sectional area 0.05 to 0.085 Sqm. | | | | | | |
| Column | 4 | 0.23 | 0.23 | 0.90 | 0.19 | **0.19** |
| | | | | | | **Cumt.** |
| **Item No. 5** | | | | | | |
| Providing and laying Controlled cement concrete M - 250 exposed work with curing etc. complete including the cost of formwork but excl. the cost of reinforcement for RCC work | | | | | | |
| **(A) BEAM** | | | | | | |
| (i) Having cross sectional area 0.05 to 0.08 Sqmt. | | | | | | |
| **Ground Beam** | | | | | | |
| | 2 | 4.14 | 0.23 | 0.38 | 0.72 | |
| Side | 2 | 1.70 | 0.23 | 0.38 | 0.30 | |
| | | | | Total : | 1.02 | **1.02** |
| | | | | | | **Cumt.** |
| **Item No. 6** | | | | | | |
| Filling available excavated earth (excl. rock in trenches plinth, sides of foundation etc. in layer's not exceeding 20 cm. in depth consolidating each deposited layer by ramming and watering) **(SOR P.No. 37/ It.No. 4006)** | | | | | | |
| Qty. as per Item No. 1 | | | | | 13.50 | .....(A) |
| **Deduction :** | | | | | | |
| P.C.C. | Qty. as per Item No. 2 | | | | 1.35 | |
| Footing | Qty. as per Item No. 3 | | | | 3.41 | |
| | | | | Total : | 4.76 | .....(B) |
| | | | Net : A - B | | 8.74 | **8.74** |
| | | | | | | **Cumt.** |
| **Item No. 7** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Filling in foundation and plinth with murrum or selected soil in layer of 20 cm. thickness including watering remming consolidating etc. complete. **(SOR P. No. 37, I. No. 4008)** | | | | | | |
| Bus Stand | 1 | 4.14 | 1.70 | 0.13 | 0.91 | |
| Seatting | 1 | 4.14 | 0.27 | 0.45 | 0.50 | |
| | | | | Total : | 1.42 | **1.42** |
| | | | | | | **Cumt.** |
| **Item No. 8** | | | | | | |
| Providing and laying cement concrete 1:2:4 ( 1 cement : 2 coarse sand : 4 Machine Cut stone aggregate 20mm nominal size) and curring complate excluding cost of form work (A) Foundation and plinth **(P.No. 42/ 5010A)** | | | | | | |
| For Flooring Bedding - Bus Stone | 1 | 4.14 | 1.70 | 0.10 | 0.70 | |
| Seatting | 1 | 4.14 | 0.27 | 0.10 | 0.11 | |
| | | | | Total : | 0.82 | **0.82** |
| | | | | | | **Cumt.** |
| **Item No. 9** | | | | | | |
| Providing and Laying controlled cement concrete M.150 and finishing smooth with curing etc. complete including the cost of formwork but excluding the cost of reinforsement for R.C.C work in (iii) Slabs having more than 10 cm and upto 13 cm. thickness **(P.No 52/ It.No 05027C)** | | | | | | |
| Seatting- Bottom Slab | 1 | 4.60 | 0.60 | 0.10 | 0.28 | **0.28** |
| | | | | | | **Cumt.** |
| **Item No. 10** | | | | | | |
| Providing and laying reinforcement for R.C.C. work and bending, binding and placing in position completed upto floor two level. Thermo Mechanical Treated Bars as per I.S. Standard. **(SOR P. No. 32/ It.No. 36/ 5.4.11)** | | | | | | |
| Footing | 3.41 | 90 Kg. / Cumt. | 306.86 | | | |
| Column | 0.19 | 200 Kg. / Cumt. | 38.09 | | | |
| Beams | 1.02 | 200 Kg. / Cumt. | 204.17 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Slab | 0.28 | 90 Kg. / Cumt. | 24.84 | | | |
| | | | | Total : | 573.96 | **573.96** |
| | | | | | | **Kg.** |
| **Item No. 11** | | | | | | |
| Brick work using common Brunt clay building bricks having crushing strength not less than 35 Kg./Sqcm. In foundation and plinth in cement mortar 1:5 (1cement : 5 fine sand) (b) Conventional **(P.No. 63/It.No.1A/6.12}** | | | | | | |
| Seating Back Side | 1 | 4.14 | 0.23 | 0.45 | 0.43 | |
| Side | 2 | 0.37 | 0.23 | 0.45 | 0.08 | |
| | | | | Total : | 0.51 | **0.51** |
| **Item No. 12** | | | | | | **Cumt.** |
| (I) Half brick masonary in common brunt clay building brick having crushing strength not less than 35 Kg/Sqcm. in cement mortar 1:4 (1 cement : 4 coarse sand) in foundation and plinth (B) Conventional **(SOR P. No. 67/ It.No. 8A1.6.3)** | | | | | | |
| Seating- Front Side | 1 | 4.14 | 0.45 | - | 1.86 | **1.86** |
| | | | | | | **Sqmt.** |
| **Item No. 13** | | | | | | |
| Providing 15 mm thick cement plaster single coat on brick / concrete wall for interior plastering up to floor two level finished even and smooth in (i) Cement mortar 1:3 ( 1 cement : 3 sand) **(SOR P.No. 127 / 2A.17.60)** | | | | | | |
| Inside - Front | 1 | 4.60 | 0.45 | - | 2.07 | **2.07** |
| | | | | | | **Sqmt.** |
| **Item No. 14** | | | | | | |
| 20mm thick sand faced cement plaster on walls up to height 10 mtrs. above ground level consisting of 12mm thick backing coat of C.M. 1:3 (1 cement : 3 sand) and 8mm thick finishing coat of C.M. 1:1 (1 cement : 1 sand) etc. complete **(SOR P.No. 128/ It.No. 9.17.95)** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Back Side | 1 | 4.60 | 0.68 | - | 3.13 | |
| Side | 2 | 0.60 | 0.68 | - | 0.82 | |
| | 2 | 1.56 | 0.23 | - | 0.72 | |
| Front | 1 | 4.60 | 0.23 | - | 1.06 | |
| | | | | Total : | 5.72 | **5.72** |
| | | | | | | **Sqmt.** |
| **Item No. 15** | | | | | | |
| Providing and laying polished Kota stone slab flooring over 20mm average thick base of cement mortar 1:6 (1-cement : 6-coarse sand) or lime mortar 1:1.5 laid over and jointed with grey cement slurry including rubbing and polishing complete (A) 25mm thick **(SOR P.No. 117/ It.No. 12A.14.43)** | | | | | | |
| Seatting | 1 | 4.60 | 0.60 | - | 2.76 | |
| Front | 1 | 4.60 | 0.30 | - | 1.38 | |
| | | | | | 4.14 | **4.14** |
| | | | | | | **Sqmt.** |
| **Item No. 16** | | | | | | |
| P & L 24" x 24" vitrified 8 mm thick tile flooring over 20 mm (average) base of cement mortar 1:6 ( 1 cement: 6 coarse sand) on new surface or fixing on existing flooring by adhesive material including dismentaling of existing flooring and jointed with color cement slurry including finised with flush pointing & cleaning the surface etc. complete for antiskit (upto 10 ton) **(P.No.119/ It.No. 14021)** | | | | | | |
| Floor | 1 | 4.60 | 1.33 | - | 6.12 | **6.12** |
| | | | | | | **Sqmt.** |
| **Item No. 17** | | | | | | |
| Finishing wall with weather proof exterior emulsion paint on wall surface (two coats) to give an required shape even shade after thoroughly brushing the surface to remove all dirt, and remains of loose powdered materials.etc complete **(SOR P.No. 136/ It.No. 19031)** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Qty. as per Item No. 14 | | 7.79 | | | **7.79** |
| | | | | | | **Sqmt.** |
| **Item No. 18** | | | | | | |
| Steel work welded in built up sections, framed work including cutting, hosting, fixing in position and applying a priming coat or red lead paint. (D) In trusses and trussed purlins up to 25 m. span and 15m overall hight. **(SOR P.No. 102/ I.No. 1.11.2)** | | | | | | |
| Total Weight | 1 | 965.00 | - | - | 965.00 | **965.00** |
| | | | | | | **Kg.** |
| | | | | | i.e. | **9.65** |
| | | | | | | **Qtl.** |
| **Item No. 19** | | | | | | |
| Providing corrugated G.I. Sheet Roofing Fixed with galvanised iron J or I hooks bolts and nuts 8mm diameter with bitumin and g.I. Limpet washers, filled with white lead complete excluding the cost of purlins, rafters and trusses (1) 0.80mm thick sheet **(SOR P.No. 121/ I.No. 1.15.1)** | | | | | | |
| Slope | 2 | 4.60 | 1.25 | - | 11.50 | **11.50** |
| | | | | | | **Sqmt.** |
| **Item No. 20** | | | | | | |
| Applying priming coat of over new steel and other metal surface after and including preparing the surface by thoroughly cleaning, oil grease, dirt and other foreign mater and scoured with brushes fine steel wool, scrapers and sand paper with ready mixed priming paint brushing red lead. **(P.No. 133/ I.No.1.19.2)** | | Sqmt | | | | |
| | 2 | 11.50 | | | 23.00 | **23.00** |
| | | | | | | **Sqmt.** |
| **Item No. 21** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Painting two coats (excluding priming coat) on new steel and other metal surface with enamel paint, brusing interior to give an even shade including cleaning the surface an even shade including cleaning the surface of all dirt, dust and other foreign matter. **(P.No.133/I.No.2.19.7)** | | | | | | |
| | Qty. As Per Item No. 20 | | | | 23.00 | **23.00** |
| | | | | | | **Sqmt.** |
| **Item No. 22** | | | | | | |
| Point wiring for Light / Bell with 2-1.5 sq.mm & earthwire of 1.5 sq.mm (Green) both are of ISI marked 1.1 KV grade FRLS PVC insulated multistrand copper wires, in following type of pipe to be erected concealed in/ on surface on wall/ceiling complete with 6A Modular type switch/bell push & accessories and earth continuity of following type, erected on PVC/Metallic box, single mounting base frame covered with textured/metallic front plate modules erected on/in wall/ceiling as per pipe erected, with necessary Lamp holder/ceiling rose/ H.D.Connector as directed. (a) with medium class Rigid PVC pipe and accessories (Cat. I- Anchor, SG, Elleys) **(Ele. SOR 2012-13/ Chapter-I/ It.No. 1.2.1)** | | | | | | |
| | 25 | - | - | - | 25 | **25** |
| | | | | | | **Point** |
| **Item No. 23** | | | | | | |
| Box cutting the road surface to proper slope and camber for making a base for road work including ramming the excavated stuff and despositing on the road side slope as directed up to 2km. lead. (R.A) | | | | | | |
| | 2 | 4.60 | 1.20 | 0.25 | 2.76 | |
| | 2 | 2.20 | 1.20 | 0.25 | 1.32 | |
| | | | | Total: | 4.08 | **4.08** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | Cumt | **Cumt** |
| **Item No. 24** | | | | | | |
| Supplying of crushed stone aggregate Chipping etc.of hand stone of following nominal size free of disintegrated pieces deleterious and origanic matter ( for Bitumen surface dressing etc.) and grading as per I.R.C. code (ii) 40mm (R.A.) Lead From Place Near Bhurakhiya Quary at 35 Km. | | | | | | |
| | 2 | 4.60 | 1.20 | 0.10 | 1.10 | |
| | 2 | 2.20 | 1.20 | 0.10 | 0.53 | |
| | | | | Total: | 1.63 | **1.63** |
| | | | | | Cumt | **Cumt** |
| **Item No. 25** | | | | | | |
| Supplying of Stone Dust (R.A.) Lead From Place Near Bhurakhiya Quary at 35 Km. | | | | | | |
| | 25% Qty of Item No. 24 | | | | 0.41 | **0.41** |
| | | | | | Cumt | **Cumt** |
| **Item No. 26** | | | | | | |
| Spredding the stone aggregate for soiling and W.B.M. including filling the inter stice forming the surface to required camber and gradient (i) 40mm size aggregates (P.No.176,Code No.26018B ,I.No.26.2) | | | | | | |
| | Qty. as per item no. 24 | | | | 1.63 | **1.63** |
| | | | | | Cumt | **Cumt** |
| **Item No. 27** | | | | | | |
| Spreading blindage or road crust filling the gaps in metal and leveling to camber and gradient as directed. (P.No.177,Code No.26020B,I.No.26.23) | | | | | | |
| (ii) Sand/Stone dust | Qty. as per item no. 25 | | | | 0.41 | **0.41** |
| | | | | | Cumt | **Cumt** |
| **Item No. 28** | | | | | | |
| Providing and laying cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 Machine cut stone aggregate 40mm nominal size) and curring complete excluding cost of formwork in (a) Foundation and plinth (upto 10 tonne) | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 2 | 4.60 | 1.20 | 0.10 | 1.10 | |
| | 2 | 2.20 | 1.20 | 0.10 | 0.53 | |
| | | | | Total: | 1.63 | **1.63** |
| | | | | | Cumt | **Cumt** |
| **Item No. 29** | | | | | | |
| Providing and fixing Pre-Cast Rubber Dye Inter locking concrete Block 60mm thick with grade of concrete M-250 pnumatic compressed by mechanically pressed and as per approved design including 75mm sand layer for levelling and filling the joint with sand in proper line and level. (SOR / P.No.113, It.No.14034) | | | | | | |
| | 2 | 4.60 | 1.20 | - | 11.04 | |
| | 2 | 2.20 | 1.20 | - | 5.28 | |
| | | | | Total: | 16.32 | **16.32** |
| | | | | | Sqmt | **Sqmt** |
| **Item No. 30** | | | | | | |
| Providing and casting in situ Ordinary cement concrete M-150 for kerb/kerb blocks including formwork curing and finishing complete .(P.No.250, I.No. 27092A) | | | | | | |
| Side Kerb Block | 2 | 4.60 | 0.15 | 0.25 | 0.35 | |
| | 2 | 2.20 | 0.15 | 0.25 | 0.17 | |
| | | | | Total: | 0.51 | **0.51** |
| | | | | | Cumt. | **Cumt.** |

## 13.1.5 WASHING GHAT

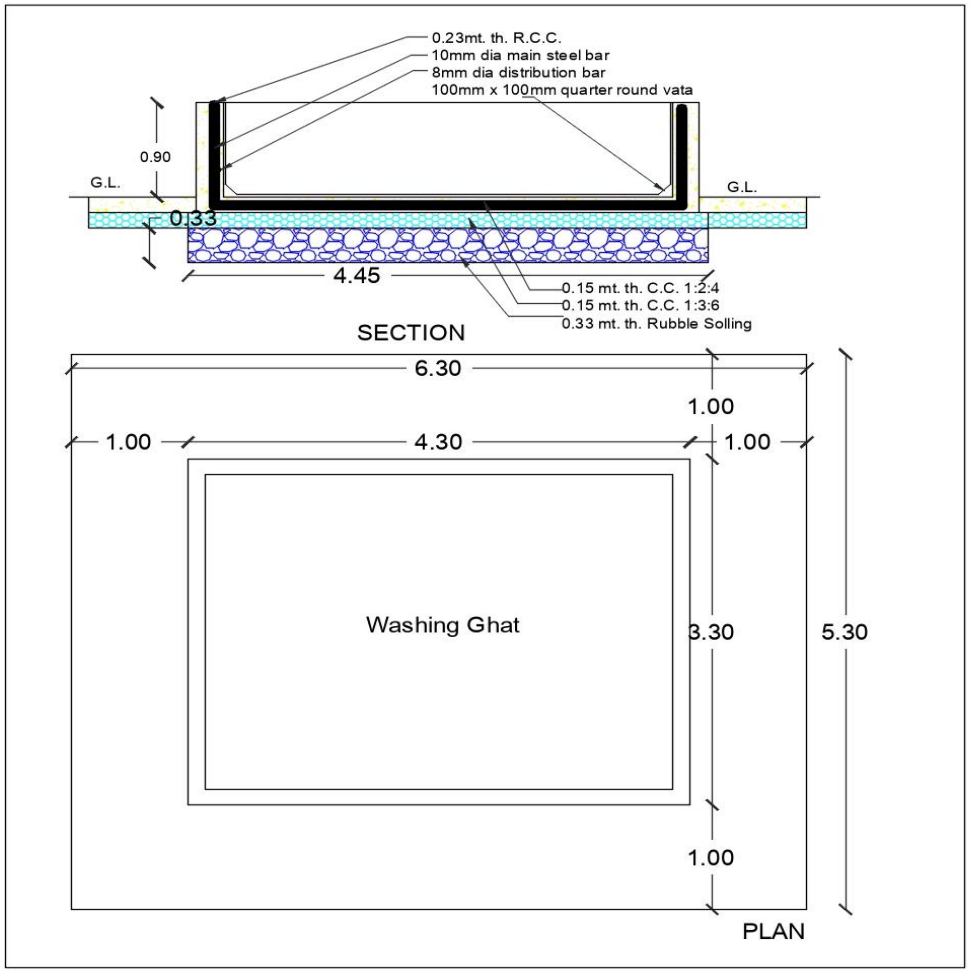



**Fig :- 13.1.5 washing ghat**

| NAME OF WORK : CONSTRUCTION WORK OF WASHING GHAT | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **ABSTRACT SHEET** | | | | | |
| **Estimated Cost Rs. 100250.00** | | | | | |
| **I. No.** | **Item Description** | **Qty.** | **Rate** | **Per** | **Amount** |
| **1** | Excavation for foundation upto 1.5m depth including sorting out and stacking of useful materials and disposing off the excavated stuff upto 50 Meter lead. (A) Loose or soft soil (Pg No. 39/ It Code 4B001A) | | | | |
| | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | Total Rs. | 14.31 | **119.00** | Cumt. | 1,702.89 |
| **2** | Supplying of crushed stone aggregates, chippings etc. of hard stone of 40mm size free of disintegrated pieces, deleterious and organic matter (for butumen surface dressing etc.) and grading as per I.R.C. Code. (R.A.) Lead From Place Bhurakhiya Quarry 55 Km. | | | | |
| | | | | | |
| | Total Rs. | 10.49 | **683.51** | Cumt. | 7,172.75 |
| | | | | | |
| **3** | Supplying of Stone Dust | | | | |
| | Total Rs. | 3.15 | **441.57** | Cumt. | 1,390.15 |
| | | | | | |
| **4** | Spreading the stone aggregate for rolling and W.B.M. including filling the interstices to required camber and gradient (excluding spreading of blindage) (iii) 25mm to 50mm size crushed stone (P.No.176,Code No.26018B ,I.No.26.2) | | | | |
| | Total Rs. | 10.49 | **157.00** | Cumt. | 1,647.56 |
| **5** | Spreading blindage or road crust filling the gap s in metal and leveling to camber and gradient as directed. (ii) Sand / Stone dust (P.No. 177, Code No. 26020B, I.No. 26.23) | | | | |
| | Total Rs. | 3.15 | **92.70** | Cumt. | 291.84 |
| **6** | Providing and laying cement concrete 1:3:6 (1 cement : 3 coarse sand : 6 Machine cut stone aggregate 40mm nominal size) and curring complete including cost of formwork in (a) Foundation and plinth (Upto 10 Tonne) (R.A) | | | | |
| | Total Rs. | 4.77 | **2359.40** | Cumt | 11,254.34 |
| **7** | Providing and laying cement concrete work 1:2:4 (1- Cement : 2- Coarse sand : 4- graded stone aggregates 20 mm nominal size) and curing complete excluding cost of formwork and reinforcement for reinforced concrete work in (A) Foundations, footings, Base or columns and Mass concrete (upto 10 ton)(Pg No. 43/ It Code 5011A/ It No. 5.4.1) | | | | |
| | Total Rs. | 4.77 | **3106.00** | Cumt | 14,815.62 |
| | (K)Vertical and Horizontial its upto | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | floor two level. | | | | |
| | | | | | |
| | Total Rs. | 3.73 | **3208.00** | Cumt | 11,953.01 |
| **8** | Providing formwork of ordinary timber planking so as to give a rough finish including centering shuttering strutting and propping etc. Height of propping and centering below supporting floor to ceiling not exceeding 4 M. and removal of the same for in situ reinforced concrete and plain concrete work in. (A) Foundations Footings Bases of Columns etc. and Mass concrete. (upto 10 ton) (Pg No. 77/ It Code. 9001A/ It No.9.1) | | | | |
| | | | | | |
| | Total Rs. | 16.20 | **110.00** | Cumt | 1,782.00 |
| **9** | Providing TMT Bar FE 415 reinforcement for R.C.C. work including bending, binding and placing in position complete upto floor two level (upto 10 ton) (Pg No. 45/ It Code 5014B/ It No. 5.4.1) | | | | |
| | Total Rs. | 913.00 | **44.30** | Kg. | 40,445.90 |
| **10** | 20mm thick sand faced cement plaster on walls upto height 10 metres above ground level consisting of 12mm thick backing coat of C.M. 1:3 (1-cement : 3-sand) and 8mm thick finishing coat of C.M. 1:1 (1-cement : 1-sand) etc. complete. (Pg No. 128/ It Code 17009/ It No. 17.95) | | | | |
| | Total Rs. | 36.60 | **205.00** | Sqmt. | 7,503.00 |
| **11** | Providing cement vata (10cm. x 10 cm. size) quarter round in cement mortar 1:1 including neat cement finishing, watering etc. complete. (Pg No. 129/ It Code 17015) | | | | |
| | Total Rs. | 16.00 | **18.40** | Rmt. | 294.40 |
| | **Total Amount Rs…….** | | | | **1,00,253.46** |
| | **Say Amount Rs…….** | | | | **1,00,250.00** |

## 13.1.6 W.B.M. With Paving Block Road

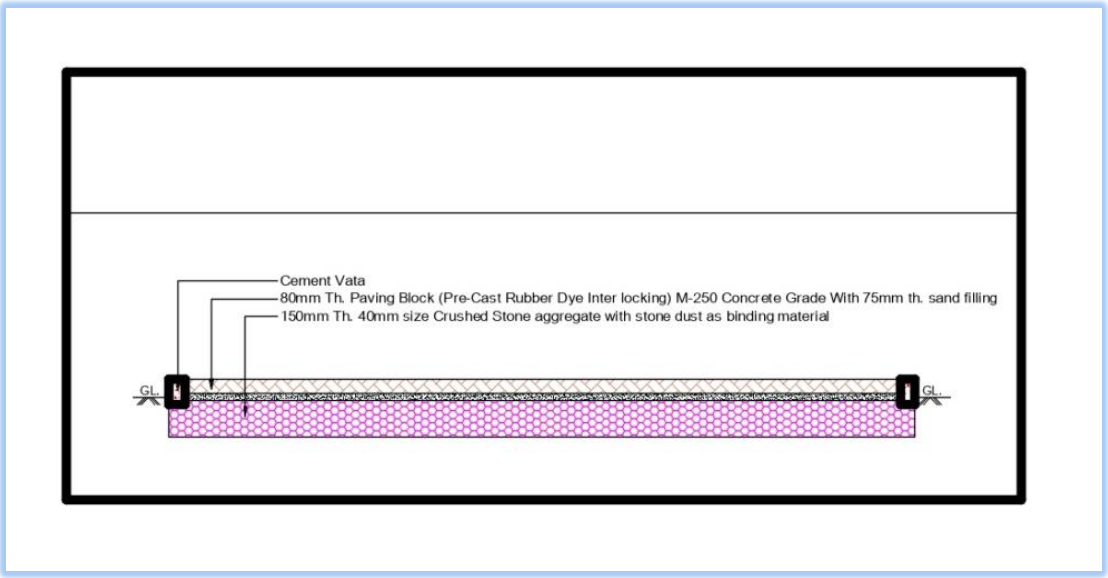



**Fig: - 13.1.6 W.B.M. With Paving Block Road**

| NAME OF WORK :CONSTRUCTION WORK OF W.B.M. WITH PAVING BLOCK ROAD | | | | |
|---|---|---|---|---|
| **ABSTRACT SHEET** | | | | |
| | | | | ***Total Estimated Cost of Rs. 596800.00*** |
| **Item No. & Description** | **Total Qty.** | **Rate** | **Per** | **Amount** |
| **Item No. 1** | | | | |
| Box cutting the road surface to proper slops and camber for making a base for road work including removing the excavated stuff and disposing on the road side slopes as directed up to 2km. lead. (R.A.) | | | | |
| Basic Rate | | #REF! | | |
| | | | | |
| Total Rs. | 195.30 | **165.79** | Cumt. | 32,378.79 |
| **Item No. 2** | | | | |
| Supplying of crushed stone aggregate Chipping ect.of hard stone of following niminal size free of disintegrated pieces deleterious and orianic mater ( for Bitumen surface dressing etc.) and grading as per I.R.C. code (ii) 40mm size (R.A.) | | | | |
| Basic Rate | | #REF! | | |
| | | | | |
| Total Rs. | 97.70 | **494.55** | Cumt. | 48,317.54 |
| **Item No. 3** | | | | |
| (i) Supplying of Stone Dust | | | | |

| | | | | |
|---|---|---|---|---|
| materials (R.A.) | | | | |
| Basic Rate | | #REF! | | |
| | | | | |
| Total Rs. | 24.50 | **266.44** | Cumt. | 6,527.78 |
| **Item No. 4** | | | | |
| Spredding the stone aggregate for soiling and W.B.M. including filling the interstice forming the surface to required camber and gradient (excluding spreading ogf Blindage) (iii) 25 to 50mm size Crushed Stone aggregate [MC] (Pg.No.176/it.Code-26018B/It.No.26.2) | | | | |
| Basic Rate | | 157.00 | | |
| | | | | |
| Total Rs. | 97.70 | **157.00** | Cumt. | 15,338.90 |
| **Item No. 5** | | | | |
| Spreading blindage or road crust filling the gaps in metal and leveling to camber and gradient as directed.(i) Murrum (Pg.No.177/It.Code No.26020A/It.No.26.23) | | | | |
| Basic Rate | | 92.70 | | |
| | | | | |
| Total Rs. | 24.50 | **92.70** | Cumt. | 2,271.15 |
| **Item No. 6** | | | | |
| Providing cement vata (10cm. x 10 cm. size) quarter round in cement mortar 1:1 including neat cement finishing, watering etc. complete. (P.No.129/It.Code-17015) | | | | |
| Basic Rate | | 18.40 | | |
| | | | | |
| Total Rs. | 205.40 | **18.40** | Rmt. | 3,779.36 |
| **Item No. 7** | | | | |
| Providing and fixing Pre-Cast Rubber Dye Inter locking concrete Block 80mm thick with grade of concrete M-250 pnumatic compressed by mechanically pressed and as per approved design including 75mm sand layer for levelling and filling the joint with sand in proper line and level. (R.A) | | | | |

| | | | | |
|---|---|---|---|---|
| Basic Rate | | #REF! | | |
| | | | | |
| Total Rs. | 650.80 | **726.40** | Sqmt. | 4,72,741.12 |
| **Item No. 8** | | | | |
| Tracing of old Manhole (SOR-GWSSB/Section D/P.No.103/I.No.11) | | | | |
| Basic Rate | | 1,248.00 | | |
| | | | | |
| Total Rs. | 2 | **1248.00** | No. | 2,496.00 |
| **Item No. 9** | | | | |
| RCC precast M.H. Frame & Cover Manufacture, supply & Delivery at store or at site of work precast RCC M.200 Frame & cover suitable to drainage M.H. and as per type design & Drawing including cost of reinforcement M.S. Angles or Flat, curing mold work etc.(SOR-GWSSB/Section-A/P.No.17/I.No.10.4C) | | | | |
| **Heavy Duty** | | | | |
| Frame Suitable for 50cm opening of MH | 2 | **1255.00** | No. | 2,510.00 |
| Cover Suitable for 50cm opening of MH | 2 | **1314.00** | No. | 2,628.00 |
| **House Connection chamber light duty** | | | | |
| Frame | 4 | **911.00** | No. | 3,644.00 |
| Cover | 4 | **1030.00** | No. | 4,120.00 |
| | | | | |
| **Total Amount Rs…….** | | | | **5,96,752.63** |
| | | | | |
| **Total Rs…….** | | | | **5,96,752.63** |
| **Say Rs…….** | | | | **5,96,800.00** |

### 13.1.7 Designing of Dc Motor Speed Control Unit

The speed of a DC motor is directly proportional to the voltage applied across its terminals.

The speed of a DC motor is directly proportional to the voltage applied across its terminals. This project uses the above principle to control the speed of the motor by varying the duty cycle of the pulse applied to it (popularly known as PWM control). A microcontroller is used to deliver the PWM pulses to the motor.

The project is designed to control the speed of a DC motor using an 8051 series microcontroller. The speed of DC motor is directly proportional to the voltage applied across its terminals. Hence, if voltage across motor terminal is varied, then speed can also be varied.

This project uses the above principle to control the speed of the motor by varying the duty cycle of the pulse applied to it (popularly known as PWM control). The project uses two input buttons interfaced to the microcontroller, which are used to control the speed of motor. PWM (Pulse Width Modulation) is generated at the output by the microcontroller as per the program. The program can be written in Assembly language or in Embedded C. The average voltage given or the average current flowing through the motor will change depending on the duty cycle (ON and OFF time of the pulses), so the speed of the motor will change. A motor driver IC is interfaced to the microcontroller for receiving PWM signals and delivering desired output for speed control of a small DC motor.

Further the project can be enhanced by using power electronic devices such as IGBTs to achieve speed control higher capacity industrial motors.

The speed of DC motor is directly proportional to the voltage applied across its terminals. Hence, if voltage across motor terminal is varied, then speed can also be varied. This project uses the above principle to control the speed of the motor.

What Is a DC Motor Controller?

The intended use of a motor controller is to manage the performance of an electrical motor. Irrespective of the motor type, this electronic device can fulfill the following functions:

- start/stop the motor
- change the rotation direction
- control the speed and torque
- provide overload protection
- Prevent electrical faults.

The specifics of a DC motor controller depend on the motor type (brushed, brushless, stepper) and functionality of the device that uses this motor. For example, an electric vehicle DC motor controller for a brushless DC (BLDC) motor has different design and working principles compared to an industrial DC motor controller of a brushed motor.

The two core components of any DC motor are a stator and an armature, orrotor. There can also be other components that perform critical functions. Thus, a brushed DC motor comprises the following units:

a stator with windings or permanent magnets;

an armature, or rotor with windings;

A controller of a brushed DC motor manages the speed and torque of the motor by regulating the current and voltage injected into it. The major design and working principles of BDC motor controllers can differ between their types.

A commentator or collector with brushes connecting the armature with a DC power supply.

The current flowing through the armature gives rise to the electromagnetic field that makes it rotate. As the armature rotates, the similar poles of the magnetic fields created around the stator and rotor repel each other and provide a unidirectional motion.

As soon as the opposite poles meet, the commentator switches the current supplied to the armature. This creates the reverse polarity of the magnetic field, and the armature keeps rotating.

❖ **Type of Power Regulation**

A BDC motor controller regulates the speed and torque by changing the power supplied to the motor. This can be achieved with the help of either a linear or switching voltage regulator. It can be a part of a controller or a separate system.

The basic idea of a linear regulator is to provide stable output voltage. It keeps its magnitude constant, irrespective of the input voltage supplied by a power source. A switching regulator uses the pulse-width modulation (PWM) method.

A PWM DC motor controller makes it possible to supply voltage in pulses, changing its duty cycle (the ratio of the pulse to the pulse period). Thus, you can regulate the speed of the motor by adjusting various duty cycles. A switching regulator has higher efficiency and less power loss., and PWM is widely used in speed controller design for DC motors.

❖ **DC Motor's Working Principle**

A simple DC motor works on the principle that when a current-carrying conductor is placed in a magnetic field, it experiences a mechanical force. In a practical DC motor, the armature is the current-carrying the conductor and the field provides a magnetic field.

When the conductor (armature) is supplied with a current, it produces its own magnetic flux. The magnetic flux either adds up to the magnetic flux due to the field windings in one direction or cancels the magnetic flux due to field windings. The accumulation of magnetic flux in one direction compared to the other exerts a force on the conductor, and therefore, it starts rotating.

According to Faraday's law of electromagnetic induction, the rotating action of the conductor produces an EMF. This EMF, according to Lenz's law, tends to oppose the cause, i.e., the supplied voltage. Thus, a DC motor has a very special characteristic of adjusting its torque in case of varying load due to the back EMF.

❖ Why DC Motor Speed Control is Important?

Speed control in the machine shows an impact on the speed of rotation of the motor where this direct influence on the machine functionality and is so important for the performance and outcome of the performance. At the time of drilling, every kind of material has its own rotational speed and it changes based on drill size too.

In the scenario of pump installations, there will be a change in the throughput rate and so a conveyor belt needs to be in sync with the functional speed of the device. These factors come are either directly or indirectly dependent on the speed of the motor. Because of this, one should consider DC motor speed and observe various types of speed control methods.

DC Motor speed control is done either done manually by the worker or by using any automatic controlling tool. This seems to be in contrast to speed limitation where there has to be speed regulation opposing the natural variation in the speed because of the variation in the shaft load.

The Principle of Speed Control

From the above figure, the voltage equation of a simple DC motor is

$V = Eb + IaRa$

V is the supplied voltage, Eb is the back EMF, Ia is the armature current, and Ra is the armature resistance.

We already know that

Eb = (PøNZ)/60A.

P – number of poles,

A – constant

Z – number of conductors

N- the speed of the motor

Substituting the value of Eb in the voltage equation, we get

V = ((PøNZ)/60A) + IaRa

Or, V – IaRa = (PøNZ)/60A

i.e., N = (PZ/60A) (V – IaRa)/ ø

The above equation can also be written as:

N = K (V – IaRa)/ ø, K is a constant

**This implies three things:**

1. The speed of the motor is directly proportional to supply voltage.
2. The speed of the motor is inversely proportional to the armature voltage drop.
3. Speed of the motor is inversely proportional to the flux due to the field findings

Thus, the speed of a DC motor can be controlled in three ways:

• By varying the supply voltage

• By varying the flux, and by varying the current through the field winding

• By varying the armature voltage, and by varying the armature resistance

❖ **Multiple Techniques of DC Motor Speed Control**

As there are two types of DC motors, here we will clearly discuss the speed controlling methods of both DC series and shunt motors.

**It can be categorized into two types and those are:**

- Field controlled technique
- Armature controlled technique
- Speed control of dc motor using PWM

Apart from these two techniques, the most widely used technique is the speed control of dc motor using PWM to achieve speed control of a DC motor. PWM involves the application of varying width pulses to the motor driver to control the voltage applied to the motor. This method proves to be very efficient as the power loss is kept at a minimum, and it doesn't involve the use of any complex equipment.

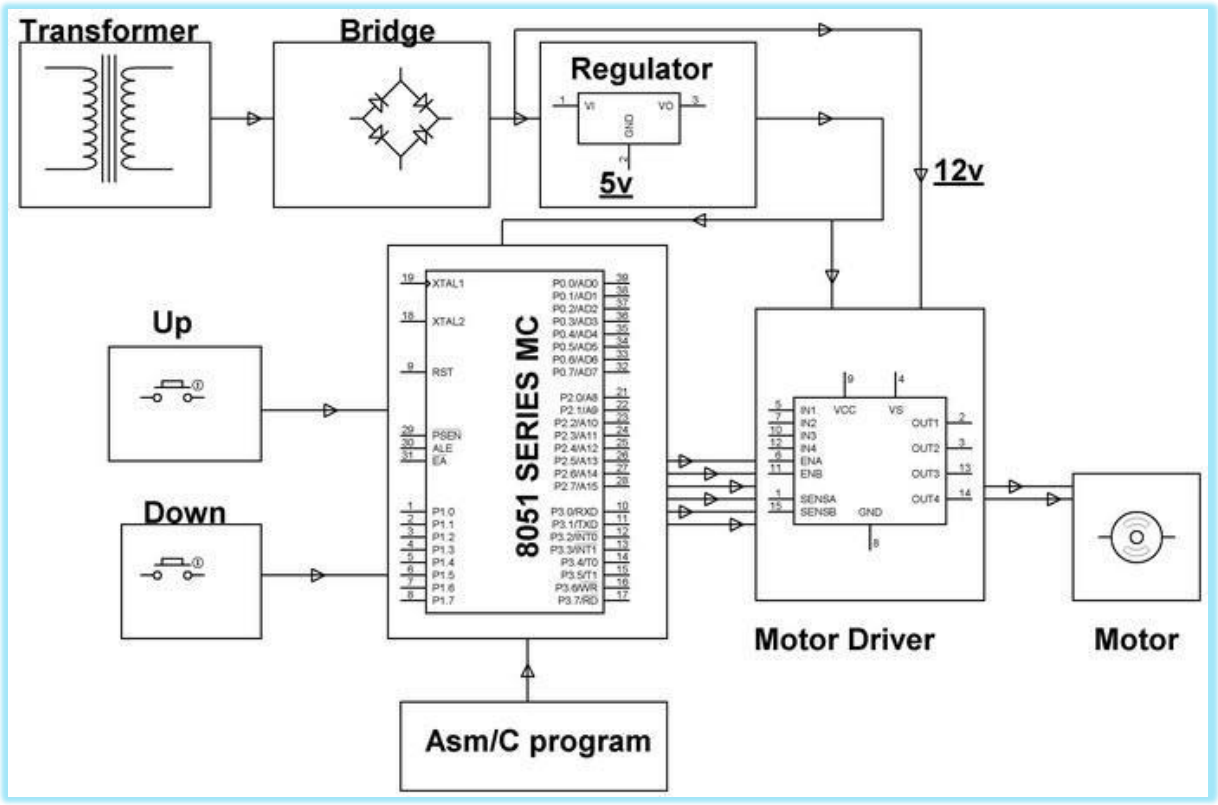



**Fig: - 13.1.7 Voltage Control Method**

The above block diagram represents a simple electric motor speed controller. As depicted in the above block diagram, a microcontroller is used to feed PWM signals to the motor driver. The motor driver is an L293D IC which consists of H-bridge circuits to drive the motor.

PWM is achieved by varying the pulses applied to the enable pin of the motor driver IC to control the applied voltage of the motor. The variation of pulses is done by the microcontroller, with the input signal from the pushbuttons. Here, two pushbuttons are provided, each for decreasing and increasing the duty cycle of pulses.

So, this article has given a detailed explanation of various techniques of DC motor speed control and how speed control is most important to be observed. It is furthermore recommended to know about the 12v dc motor speed controller.

### 13.1.8 Solar Energy Measurement System

**Introduction**

The solar-energy market is one of the most rapidly expanding renewable energy markets in the United States. Presently we have seen a signi□cant increase in requests for remote monitoring and control equipment for solar-energy applications. Whether you are assessing a site's potential for solar power generation, monitoring performance of existing solar installations, or advanced solar monitoring, reliable and accurate measurements are crucial. They aid in decision making, product development, system maintenance and in many other ways. Common meteorological measurements including wind speed, wind direction, relative humidity, barometric pressure and precipitation, all have their use in solar applications. Of course, solar-radiation measurements are especially important and sensors are available for measuring all aspects of solar radiation.

Solar energy is used as an efficient energy source in modern days. Solar panels are used to convert solar energy into electricity to power house lighting, appliances, etc. Solar panels are selected on the basis of a house's needs and also depending upon the position of the sun and weather conditions.

When a house uses solar panels to derive energy from the sun, it is measured in kWh. In this system kWh refers to the amount of energy that is produced by the solar panels. The amount of solar energy produced is represented as kWh per square meter of the surface of solar panels. The amount of energy generated by a system entirely depends upon the amount of solar rays that reached the solar panel.

Solar energy is measured by using different parameters, such as the intensity of light, voltage, current and the temperature. Different components are used to measure these parameters of the solar cells.

The intensity of the light is measured by using an LDR sensor (Light dependent resistor); voltage is measured by using voltage divider; current by using a current sensor and temperature by using a temperature sensor. The sensors that are used to measure different parameters for calculating solar energy are regulated by a PIC microcontroller (Programmable Interface Controllers) which has an in-built multi-channel ADC (Application delivery controller). The energy output of solar panels is greatly affected by factors such as shading and temperature. If a small portion of the solar panels is shaded and the rest is exposed to sunlight, it decreases the efficiency of the solar panels greatly. Similarly, high temperature reduces the efficiency of the solar panel system greatly. To avoid this wastage of energy sensors are attached to the system to make an efficient use of energy.

The main objective of this project is to design a solar energy measurement system for measuring solar cell parameters such as voltage, current, temperature and light intensity through multiple sensors.

The light intensity is monitored using a LDR sensor, voltage by voltage divider principle, current by series resistor and temperature by temperature sensor. All these data are displayed on a 16X2 LCD interfaced to PIC microcontroller and is also sent to a remote PC hyperterminalfordisplayusinga2.4GHzseriallink. Theproposed system uses a PIC16F series family microcontroller and a recti□ed- power supply. In this work, a solar panel is used to keep a track on monitoring the sunlight. In this system, number of sensors are connected to the microcontroller with an 8-channel in-built ADC device for monitoring the parameter of the solar panel like voltage, current, temperature and light intensity. A 16x2 LCD display is connected to the microcontroller for displaying the information. The solar panel is fed to the microcontroller through a potential divider to measure voltage – a small load through which current is measured. The temperature and light intensity is monitored through corresponding sensors. All these parameters are displayed on the 16x2 LCD interfaced to the PIC microcontroller.

The light intensity is monitored using an LDR sensor, voltage by voltage divider principle, current by series resistor and temperature by temperature sensor. All these data are displayed on a 16X2 LCD interfaced to PIC microcontroller and is also sent to a remote PC hyper terminal for display using a 2.4 GHz serial link.

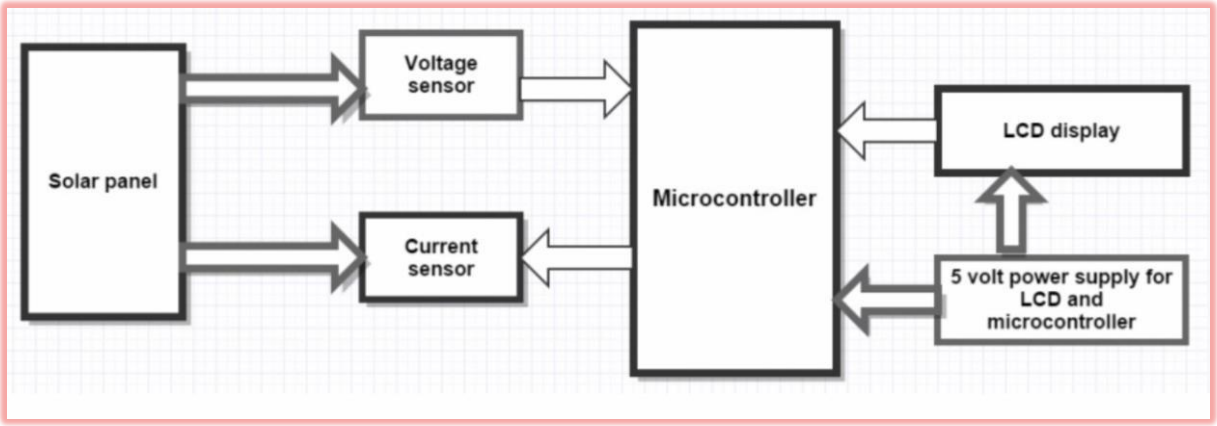



**Fig:-13.1.8.1 Block Diagram Of Solar Energy Measurement System**

In the block diagram, voltage sensor and current sensor are used to measure voltage and current flowing to load from solar panel. As we know, solar panels are dc power sources. Liquid crystal display is used to display the value of current, voltage and power of solar panel. 5 volt dc power is used to provide operating voltages to microcontroller and liquid crystal display

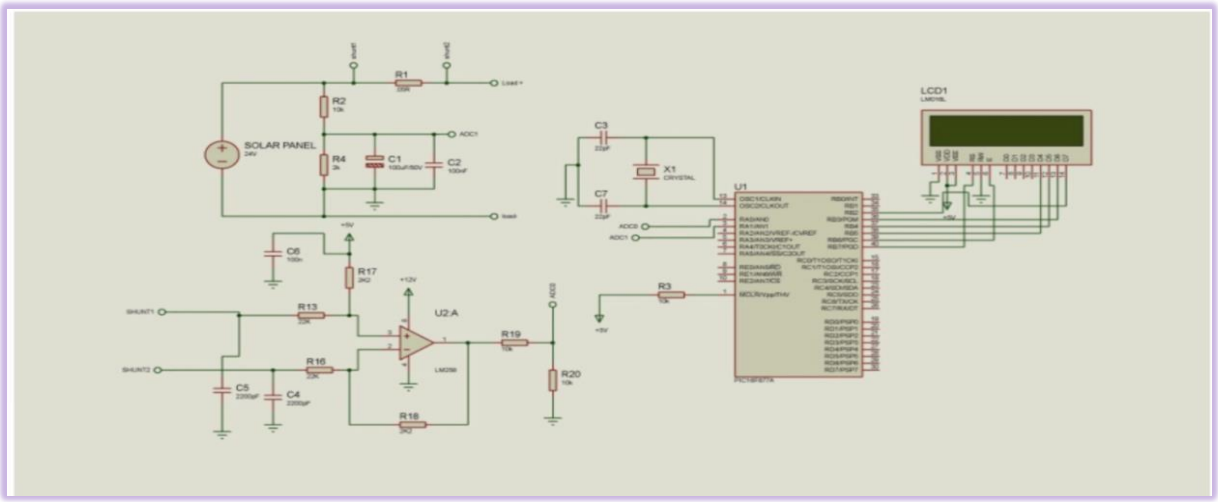



**fig:-13.1.8.2 Circuit diagram for solar energy measurement system**

As shown in Fig13.1.8.2.Circuit diagram, the voltage divider is used to divide voltage to lower than 5 volt. Because microcontroller cannot read voltage more than 5 volt. Therefore voltage divider is used to lower voltage less than 5 volt. Polar and nonpolar capacitors are used to remove harmonics and to provide constant voltage to ADC pin of microcontroller. Polar capacitor is used to avoid voltage fluctuation and non-polar capacitor is used to remove harmonics.

We can use LM35 temperature sensor which is calibrated in Celsius over kelvin because in kelvin calibrated sensor there is a requirement of subtract a constant voltage from its output to is easy. The temperature sensor LM35 can be used with single power supply. The temperature range for operating is -55 to +150 Celsius. The LM35 sensor is suitable for remote applications. Operating voltage such sensor is varies from 4 to 30 V. When the intensity of light is increases then the resistance of LDR is decreases. This is also known as photoconductor.

A LDR (light dependent resistor) is made of a high resistance semiconductor when the falling light on the device is of enough frequency then the photons absorbed by the semiconductor. Thus in resulting free electron conduct electricity thereby resistance is decreases. IV IN4007-The IN4007 is used in reciter to convert AC to DC. The Important factor is that IN4007 have maximum reverse bias voltage capacity.

A shunt resistor of .05 ohm is used in series to load. Voltage drop across shunt resistor used to measure current. Here shunt resistor is used as a transducers which converts current into voltage, as microcontroller cannot read current directly. Output of shunt resistor is fed to difference ampler. Difference ampler step up the voltage. In case of very low current, small voltage will appear across shunt resistor and microcontroller cannot read voltage less than its resolution. Followings are the main parts: Current sensor, voltage sensor, PIC16F877A microcontroller, LCD display, Power supply.

**I] AC VOLTAGE MEASUREMENT UNIT:**

According to voltage sensor formula ,for solar panel of 24 volt values of voltage divider resistors are R2 = 10K and R4 = 2K. The reason I have used voltage divider because the maximum input voltage to Analog to digital converter can never be greater than 5 volt. But I calculated these resistor values according to 4 volt to increase

accuracy of measurement and to insure protection of ADC in case of greater voltage fluctuation.

**II] Current sensor circuit diagram:**

Below is a circuit diagram of current measurement circuit. I have used difference amplifer to amplify voltage appearing across shunt resistor. Because current value may be too high and too low in different timings and different voltage will generate across shunt resistor. So it is not possible to use voltage divider as we don't know the values of current. A current sensor is a device that detects and converts current to an easily measured output voltage, which is proportional to the current through the measured path.When a current fows through a wire or in a circuit, voltage drop occurs. Also, a magnetic Feld is generated surrounding the current carrying conductor. Both of these phenomena are made use of in the design of current sensors. Thus, there are two types of current sensing: direct and indirect. Direct sensing is based on Ohm's law, while indirect sensing is based on Faraday's and Ampere's law. PASSIVE ELEMENT BASED CURRENT SENSING TECHNIQUES: -Sense Resistors -Low value in order to minimize power losses. -Low inductance because of high di/dt.

**WORKING**

The power supply which is =5 v is connected to pin no.11 and 32 of microcontroller and GND is connected to its pin no. 12 and 31. Pin no. 2 of microcontroller is connected to LDR sensor. Pin no. 3 of microcontroller is connected to pin no. 2 of LM35 temperature sensor. Pin no. 4 of microcontroller is connected to voltage sensing circuit, Pin no. 5 of microcontroller is connected to current sensing circuit. Solar power parameter calculator is the device to calculate the intensity, temperature, current and voltage represent them on the LCD screen.

We can use LM35 temperature sensor which is calibrated in Celsius over kelvin because in kelvin calibrated sensor there is a require- ment of subtract a constant voltage from its output to is easy. The temperature sensor LM35 can be used with single power supply. The temperature range for operating is -55 to +150 Celsius. The LM35 sensor is suitable for remote applications. Operating voltage such sensor is varies from 4 to 30 V. When the intensity of light is increases then the resistance of LDR is decreases. This is also known as photoconductor. The LDR(light dependent resistor) is made of a high resistance semiconductor when the falling light on the device is of enough frequency then the photons absorbed by the semiconductor. Thus in resulting free electron conduct electricity thereby resistance is decreases. IV IN4007-The IN4007 is used in reciter to convert AC to DC.

- **Comparative Study Of Power–Voltage Characteristics:**

Pooja Sharma, Siddhartha P. Duttagupta, and Vivek Agarwal established the Contrast of Power– Voltage Characteristics for Flat and-FPV Modules.[1],where adaptable photovoltaic (FPV) modules is portrayed. The information were gathered for FPV modules introduced at different bend edges. (a)– (c) demonstrates the records of the power– voltage attributes for three instances of bend edges (0◦ , 15◦ ,and 22◦ ) with the time and for a scope of sun powered light conditions. The fundamental perceptions of the accounts are abridged here.

- **Definition of ESA:**

The assessed sun oriented edge (ESA) is equivalent to the hour edge, which fluctuates from 0 ◦ to 180 ◦ from dawn to nightfall, as shownin In this way, contingent on the length of the day (180◦ Regarding edge), which shifts consistently, ESA canbe

determined on an every moment premise, as given in the accompanying equation:

ESA = (tP −tR) ×60 ×180 tL ,

Where tR is the sunrise time,

TP is the present instant of time for which ESA is calculated, and tL is the length of the day, which

Is given by:

tL = (tR −tS) ×60 (min)

Where tS is the sunset time.

1) At the beginning of the day, multiple peaks are visible in the power–voltage characteristics of the FPV modules curved at 15◦ and 22◦ . The FPV module

without curving (θc = 0◦ ) shows single-peak characteristics.

2) The manifold peaks vanish by around 9:30 A.M. for the FPV module curved at θc = 15◦ and a little later by about 10:30 A.M. for θc = 22◦ . The next 4–5 h are dominated by single-peak characteristics with the power yield of the curved modules remaining close to the flat (θc = 0◦ ) units.

3) Multiple peaks start appearing again after around3:00 P.M. and are chief experiential in FPV units curved atθc = 22◦ . Multiple peaks for the 15◦ curving case appears short while later after around 4:00 P.M. [see Fig. 4(c)] [1]. It is also experiential in power–voltage characteristics that the power change between the flat unit (θc =0◦ ) and the curved FPV module is important during low solar angle positions. For high solar angle positions, this difference is insignificant.

### 13.1.9 Induction Motor Protection System

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

**Types of Protections Needed for Induction Motor**

Three-phase induction motors are accountable for 85 percent of the installed capacity of the industrial driving systems. Therefore, the protection of these motors is necessary for the reliable operation of loads. Motor failures are mainly divided into three groups: electrical, mechanical, and environmental. Mechanical stresses cause overheating resulting in the rotor bearings' wear and tear, whereas the over mechanical load causes heavy currents to draw, and thus results in increasing temperatures. Electrical failures are caused by various faults like Phase-to-phase and phase-to-ground faults, single phasing, over and under-voltage, voltage and current unbalance, under frequency, etc.

In addition to the motor protection systems for the above-mentioned faults, it is also necessary to use a three-phase motor starter to limit the staring current of the induction motor. As we know – in every electrical machine, when supply is provided, there is opposition to this supply by an induced EMF – which is called back EMF. This limits the current drawing by the machine, but at the beginning, the EMF is zero because it is directly proportional to the speed of the motor. And therefore, the zero back EMF's huge current will be drawn by the motor at the start, and this will be 8-12 times the full-load current .

To protect the motor from the high-staring current, there are different staring methods available like the reduced voltage, rotor resistance, DOL, star-delta starter, autotransformer, soft starter, etc. And, for protecting the motor from the above-discussed faults; various protection equipment like relays, circuit breakers, contactors and various drives are implemented. These are some of the protection systems for three-phase induction motors against starting inrush currents, overheating, and single phasing faults with theuse of a microcontroller for low-level applications for better understanding of the students.

**Induction Motor Protection System Circuit**

The main goal of this project is to design an induction motor protection system for guarding the motors against any faults happening from single phasing and over-voltage conditions.

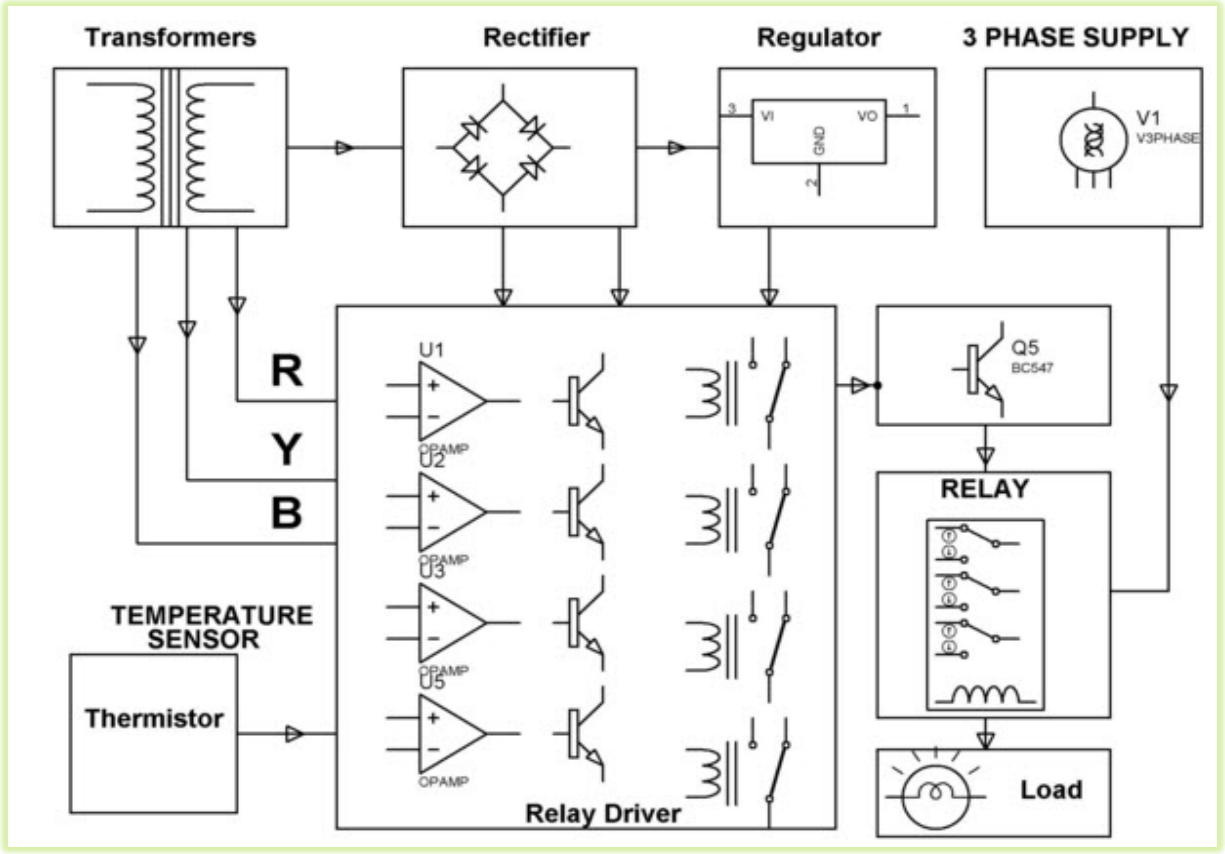



**Fig :-13.1.9 Induction Motor Protection System Circuit**

The induction motor is an essential device in various industrial applications. These motors work on 3-phase supply and a standard temperature to keep the loads at preferred conditions. But; if any phase goes lost or there is a growth in the temperature of the windings it harms the motor. Thus, the proposed system helps to give protection to the motors in the industries by eliminating the power to the electric motor immediately if any of the phases misses out of the 3-phases, or if the motor's temperature exceeds the threshold value.

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

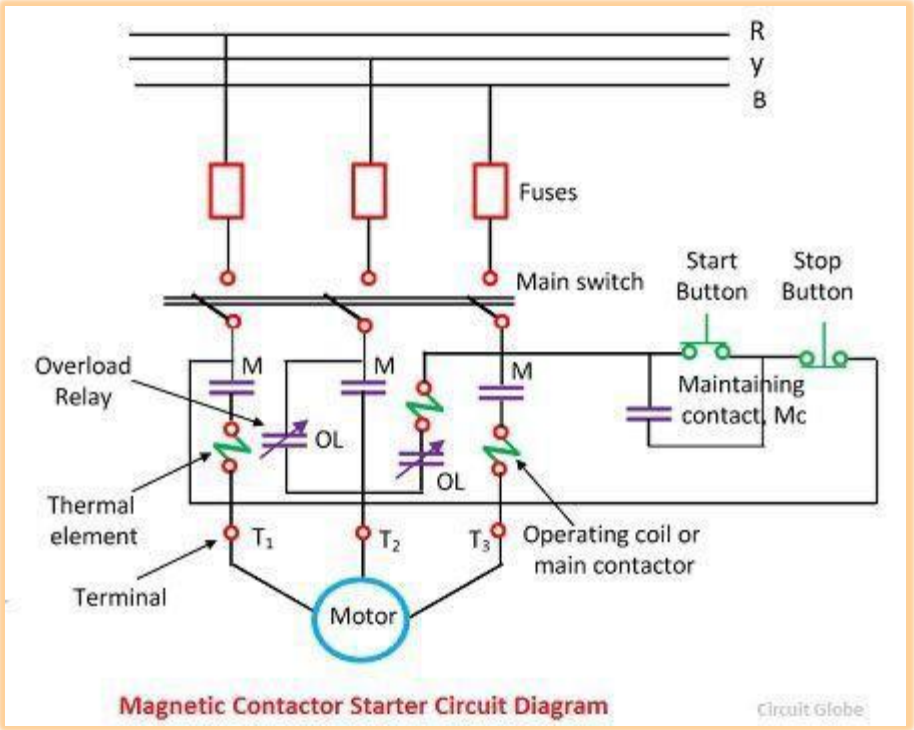
In the future, this project can be developed by using current sensors and a phase-sequence sensor for protecting the overloads and also the motor from applying the wrong phase sequence.

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

Therefore, this is all about the induction motor protection system project and its working. We hope that the information which is provided in this article is very useful for you for a better understanding of this concept. Furthermore, any help in implementing electrical and electronic projects or others, you can approach us by commenting below.

**Working**

When the start push button is pressed, the operating coil or the main contactor gets energised through the overload relay contacts OL. This closes the three main contacts M that connects the motor to the supply. At the same time, a set of auxiliary or maintaining cont acts MC is closed.




When the maintaining contacts MC are closed, a new circuit is established through stop push buttons, maintaining contacts MC and operating coil. Since the operating coil circuit is now maintained by the auxiliary contacts MC, the starter button

is released. Now the motor starts.

For stopping a motor, the stop push buttons is pressed, the operation coil gets de-energized, thereby opening all the main contact and auxiliary contacts. If the supply fails or line voltage drops below a certain value, the maintaining contacts are opened. Upon return of the supply, the contactor cannot close until the start button is again pushed.

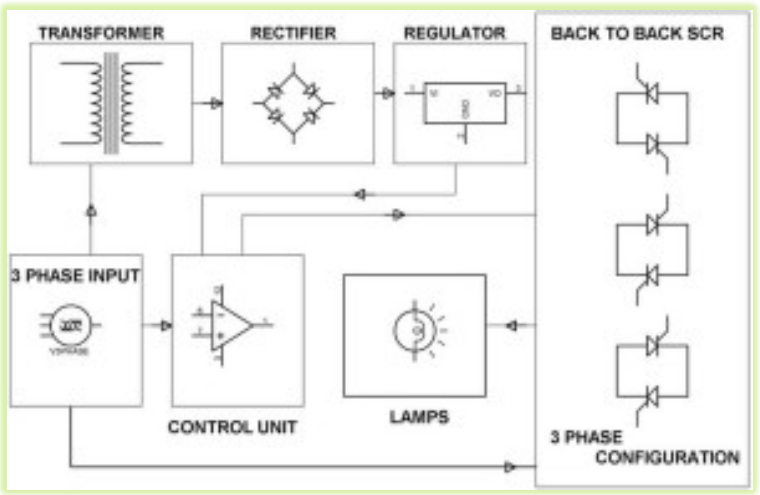
The contactor is controlled by a three-wire control circuit which maintains the interruption of the circuit even after the supply is restored. It is said to supply the under voltage protection for the motor. Such protection is provided when it is desired to prevent the unexpected starting of the motor.

Thermal overload relay is commonly used for motor overload protection. Both act to open the motor circuit and therefore to disconnect the motor from the source of supply. HRC fuses provide very rapid short circuit protection. Current is cut off by HRC fuse even before it attain prospective peak.

The selection of thermal relay is such that for the normal operating condition, the relay does not operate. A setting range is provided for adjustment for different in load conditions.

**Electronic Soft Start for 3-Phase Induction Motor**

This soft start of induction motor is the modern method of starting that reduces the mechanical and electrical stresses caused in the DOL and star-delta starters. This limits the starting current to the induction motor by using thermistors.




This 3-phase motor starter consists of two major units: one is the power unit and the other control unit. The power unit consists of back to back SCRs for each phase, and these are controlled by the logic implemented in the control circuit. This control unit consists of a zero voltage crossing circuit with capacitors for producing delay time.

In the above block diagram, when a three-phase supply is given to the system, the control circuit rectifies each phase supply, regulates it, and compares for zero-crossing voltage by the operational amplifier.

This Op-Amp output drives the transistor, which is responsible for producing time delay with the use of a capacitor. This capacitor discharging enables another Op-Amp output for a certain time so that Opt-isolators are driven for this elapsed time. During this time, the opt isolator output triggers back-to-back thermistors; and, the output applied to the motor is reduced during this time. After this starting time, a full voltage is applied to the induction motor, and hence, the motor runs at full speed. In this way, zero voltage triggering for a certain time period at the starting of an induction motor deliberately reduces the starting inrush current of the induction motor.

## 13.2 Reason For Students Recommending This Design

Teachers can use students' curiosity to motivate learning by choosing phenomena and design challenges that are interesting and engaging to students, including those that are locally and culturally relevant. Science investigation and engineering design give middle and high school student's opportunities to engage in the wider world in new ways by providing agency for them to develop questions and establish the direction for their own learning experiences.

Students' curiosity about the world around them can serve as a motivating factor to their learning. One way that science investigation and engineering design are valuable is that they can provide opportunities to connect to locally and culturally relevant experiences through phenomena that build on students' prior knowledge and actively engage students in learning and reasoning about the natural and designed world. By keeping in mind the diverse backgrounds and experiences of the students and situating science and engineering topics in contexts relevant to students' lives, investigation and design can increase motivation and engagement, increase a sense of belonging, deepen students' understanding of science and engineering, and lead to more effective continued learning. When students have the opportunity to participate in multiple sustained experiences with investigation and design, those experiences provide a way to learn that explicitly engages students in science and engineering contexts that support understanding of the nature of science and engineering.

## 13.3 About Design Suggestions / Benefit Of The Village

Smart Village India gets its foundation from Mahatma Gandhi's vision of Adarsh Gram (model village) and Gram Swaraj (Village self-rule/independence).Gandhi in two texts, Hind Swaraj and Gram (Village) Swaraj, promotes the concept of integrated rural development to impact majority of the population, as the primary initiative after India Independence in 1947. The Eco Needs Foundation has initiated the concept of "Smart Village". Under this project the Foundation is adopting villages and putting efforts for sustainable development by providing basic amenities like sanitation, safe drinking water, internal road, tree plantation, water conservation. The Foundation is also working for inculcating moral values in the society and for improving the standard of living of the villagers. In the concept of "Smart Village" the development of the village shall be based on the five paths Retrofitting, Redevelopment, Green fields, e-Pan, Livelihood. Under the concept of Smart Village, the Foundation has adopted Village Antaliya, Teh. Antaliya, District Lila, a small and remote village of Gujarat to develop it as India's First Smart Village. The village is situated 22 km away from Amreli district head quarter and 12 km from Lila. The population of the village is about 1105 (2011). The village was devoid of its basic needs like sanitation, internal roads. It was also facing various other similar problems such as lack of access to potable water, non-availability of water conservation system, encroachment on the roads, power fluctuation, non-availability of employment oriented education, unemployment and poverty, so on and so forth.

# Chapter 14 Technical Options with Case Studies

Explain All Topic And For Minimum One Topic Explain New Concept, Prototype Model With Actual Cost Estimation

## 14.1 civil engineering

### 14.1.1 Advanced Earthquake Resistant

Earthquake-resistant structures are structures designed to protect buildings from earthquakes. While no structure can be entirely immune to damage from earthquakes, the goal of earthquake-resistant construction is to erect structures that fare better during seismic activity than their conventional counterparts. According to building codes, earthquake-resistant structures are intended to withstand the largest earthquake of a certain probability that is likely to occur at their location. Currently, there are several design philosophies in earthquake engineering, making use of experimental results, computer simulations and observations from past earthquakes to offer the required performance for the seismic threat at the site of interest.

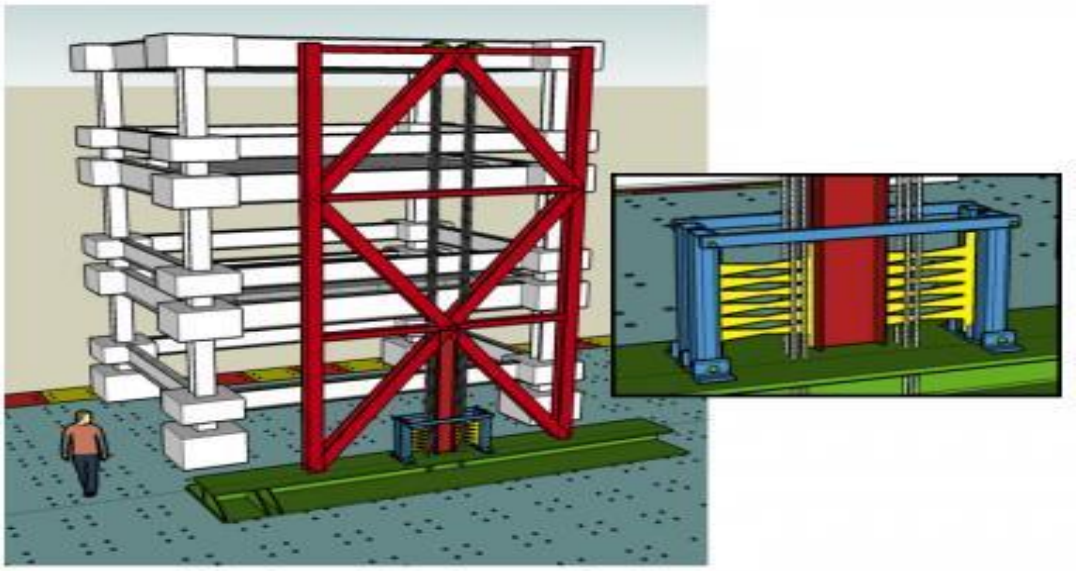


**Fig:-14.1.1 Advanced Earthquake Resistant**

These range from appropriately sizing the structure to be strong and ductile enough to survive the shaking with an acceptable damage. The conventional approach to earthquake resistant design of buildings depends upon providing the building with strength, stiffness and inelastic deformation capacity which are great enough to withstand a given level of earthquake-generated force. This is generally accomplished through the selection of an appropriate structural configuration and the careful detailing of structural members, such as beams and columns, and the connections between them. But more advanced techniques for earthquake resistance is not to strengthen the building, but to reduce the earthquake-generated forces acting upon it.

Among the most important advanced techniques of earthquake resistant design and

construction are:

1) Base Isolation

2) Energy Dissipation Devices

**1) 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.

To get a basic idea of how base isolation works, examine Figure. This shows an earthquake acting on both a base isolated building and a conventional, fixed-base, and building. As a result of an earthquake, the ground beneath each building begins to move. In Figure, it is shown moving to the left. Each building responds with movement which tends toward the right. The building undergoes displacement towards the right. The building's displacement in the direction opposite the ground motion is actually due to inertia. The inertial forces acting on a building are the most important of all those generated during an earthquake. It is important to know that the inertial forces which the building undergoes are proportional to the building's acceleration during ground motion. It is also important to realize that buildings don't actually shift in only one direction. Because of the complex nature of earthquake ground motion, the building actually tends to vibrate back and forth in varying directions. By contrast, even though it too displacing, the base-isolated building retains its original, rectangular shape. It is the lead-rubber bearings supporting the building that are deformed.

The base-isolated building itself escapes the deformation and damage, which implies that the inertial forces acting on the base-isolated building have been reduced. Experiments and observations of base-isolated buildings in earthquakes have been shown to reduce building accelerations to as little as 1/4 of the acceleration of comparable fixed-base buildings, which each building undergoes as a percentage of gravity. As we noted above, inertial forces increase, and decrease, proportionally as acceleration increases or decreases. Acceleration is decreased because the base isolation system lengthens a building's period of vibration, the time it takes for the building to rock back and forth and then back again. And in general, structures with longer periods of vibration tend to reduce acceleration, while those with shorter periods tend to increase or amplify acceleration. Finally, since they are highly elastic, the rubber isolation bearings don't suffer any damage. But the lead plug in the middle of our example bearing experiences the same deformation as the rubber. However, it generates heat.

**2) Energy Dissipation Devices**

The second of the major new techniques for improving the earthquake resistance of buildings also relies upon damping and energy dissipation, but it greatly extends the damping and energy dissipation provided by lead-rubber bearings. As we've said, a certain amount of vibration energy is transferred to the building by earthquake ground motion. Buildings themselves do possess an inherent ability to dissipate, or damp, this energy. However, the capacity of buildings to dissipate energy before they begin to

suffer deformation and damage is quite limited. The building will dissipate energy either by undergoing large scale movement or sustaining increased internal strains in elements such as the building's columns and beams. Both of these eventually result in varying degrees of damage. So, by equipping a building with additional devices which have high damping capacity, we can greatly decrease the seismic energy entering the building, and thus decrease building damage. Accordingly, a wide range of energy dissipation devices have been developed and are now being installed in real buildings. Energy dissipation devices are also often called damping devices. The large number of damping devices that have been developed can be grouped into three broad categories: Friction Dampers: these utilize frictional forces to dissipate energy Metallic Dampers : utilize the deformation of metal elements within the damper Viscoelastic Dampers : utilize the controlled shearing of solids Viscous Dampers: utilized the forced movement (prefacing) of fluids within the dampen.

### 14.1.2 Seismic Retrofitting

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. So Seismic Retrofitting is a collection of mitigation technique for Earthquake engineering. It is of utmost importance for historic monuments, areas prone to severe earthquakes and tall or expensive structures.

**Introduction to Seismic Retrofitting Techniques:**

- Earthquake creates great devastation in terms of life, money and failures of structures.
- Upgrading of certain building systems (existing structures) to make them more resistant to seismic activity (earthquake resistance) is really of more importance.
- Structures can be (a) Earthquake damaged, (b) Earthquake vulnerable
- Retrofitting proves to be a better economic consideration and immediate shelter to problems rather than replacement of building.

### 14.1.3 Advanced practices in Construction field in modern material, Techniques and Equipment's

The Indian advanced construction techniques industry is experiencing a period of fast growth. Aiming to overcome the housing problem, it also has to face the dual challenge of fulfilling the needs of the client and maintain the quality standards.

At the same time, the up-gradation of technology through the adoption of new techniques has become necessary to survive in a tough competitive environment.

The traditional methods of construction are inadequate in executing the work speedily with economy and quality. The construction industry in India must switch over to advanced construction techniques to achieve its goal in "minimum time with maximum efficiency".

**Fig:-14.1.3 ADVANCED CONSTRUCTION TECHNIQUES**

**ADVANCED CONSTRUCTION TECHNIQUES – NECESSITY**

1. The building construction activity, especially the residential and commercial complex is highly labour intensive with very little mechanization. Approximately 35% of the total construction cost is spent on labour.
2. The labourers have their limitations and may fail to meet the time limits. The quality of workmanship, too, differs from person to person. Hence, quality standards cannot be maintained. Wastage of material is considerably high as it is handled and utilized manually.
3. The objective of the construction organizations should be 'speed and economy'. This cannot be achieved with labour oriented advanced construction techniques.
4. Only studying and adopting modern industrial techniques and equipment is the

solution. By this, one can save material, reduce labour expenses, and increase the speed of work, leading to the economy in construction.

5. Though the scope of the subject is vast, in this chapter we shall discuss only the advanced techniques to be used in advanced construction techniques activities.

### 14.1.4 Engineering Aspects Of Soil Mechanics - Environmental Impact Assessment

Unsaturated soil mechanics has rapidly become a part of geotechnical engineering practice as a result of solutions that have emerged to a number of key problems (or challenges). The solutions have emerged from numerous research studies focusing on issues that have a hindrance to the usage of unsaturated soil mechanics. The primary challenges to the implementation of unsaturated soil mechanics can be stated as follows:

The need to understand the fundamental, theoretical behaviour of an unsaturated soil. The formulation of suitable constitutive equations and the testing for uniqueness of proposed constitutive relationships. the ability to formulate and solve one or more nonlinear partial differential equations using numerical methods the determination of indirect techniques for the estimation of unsaturated soil property functions, and in situ and laboratory devices for the measurement of a wide range of soil suctions. This paper explains the nature of each of the previous challenges and describes the solutions that have emerged from research studies. Computer technology has played a major role in achieving practical geotechnical engineering solutions. Computer technology has played an important role with regard to the estimation of unsaturated soil property functions and the solution of nonlinear partial differential equations. Breakthroughs in the in situ and laboratory measurement of soil suction are allowing unsaturated soil theories and formulations to be verified through use of the “observational method.”

### 14.1.5 Accident Alerts in Modern Traffic Signal Control System -Camera Surveillance System

**What is an intelligent traffic management system?**

Current traffic management systems are limited in their abilities to adapt based on real-time traffic conditions. For example, traditional timing systems for traffic signals are programmed based on historical traffic data and are unable to dynamically adjust timing due to irregular events like traffic accidents and construction. Some major cities have implemented a synchronized traffic signal system with the goal of increasing traffic flows at major gridlock intersections, which has shown a reduction in travel time in Los Angeles. However, such systems are still based on a centralized approach. When flow is disrupted at any point within the system, say a traffic accident, it creates a knock-on effect and synchronized traffic signals are not able to adjust their pre-programmed timings accordingly.

An intelligent traffic management system could help cities manage traffic flow more efficiently. The backbone of any intelligent traffic management system is wireless connectivity throughout the city’s infrastructure. Relevant technologies include 4G, 5G, low power wide area network (LPWAN), catering to the various end use applications that require different types of networks. Incumbents like Cisco and AT&T are providing cities with 4G and 5G services for traditional high bandwidth applications like traffic signal control, while startups like Sigfox and Actility have developed Low Power Wide

Area Network (LPWAN) technologies to support the influx of low power sensors.

Although all traffic management systems have certain existing hardware components, they are far from being "smart" enough to provide any advanced management functions. Traditional cameras can monitor traffic flow; however, they are unable to differentiate other variables such as vehicle types, cyclists, and pedestrians. Furthermore, video footage by itself provides little value as cities can only resort to a reactive approach after traffic incidents have occurred. Rotterdam has recently partnered with FLIR to install FLIR's thermal cameras to distinguish cyclists from vehicles in an effort to reduce wait time for cyclists. Copenhagen, another high bicycle traffic city, also installed a similar system to prioritize traffic signals for city buses and cyclists. On the software aspect, TrafficVision is an example of a company that has developed a traffic intelligence software to analyze standard video footage to provide real-time incident alerts.


**Fig :-14.1.5 European Parliamentary Research Service Blog**

Software innovations then perhaps play the most important role in an advanced traffic management with their ability to analyze the various data input, and subsequently provide insights on traffic reduction and prevention recommendations. There are obviously a lot more complexities and variations in end use cases that can adequately described here, but the main takeaway is that software innovation such as artificial intelligence can potentially transform traffic management from a reactive-approach to a proactive one.

Many cities have implemented some type of traffic management system upgrades – wireless networks, surveillance cameras, and connected streetlights – to improve their existing infrastructures. To implement a true advanced traffic management solution, it's far more complex than a single standalone technology, and requires a combination of connectivity, hardware, and software technologies to work together as one system. In addition to preparing for the next generation of transportation, one immediate benefit should be the reduction of emissions by reducing idling and sitting in traffic.

## 14.2 Electrical Engineering

### 14.2.1 Design of Power Electronics Converter

The design of power electronics converter circuits requires design the power and control circuits. The voltage and current harmonics that are generated by the power converters can be reduced or minimized with a proper choice of the control strategy.

The power semiconductor devices or power electronic converter fall generally into six categories :

- ac to dc converter (controlled rectifier)
- dc to dc converter (dc chopper)
- ac to ac converter (ac voltage regulator) - dc to ac converter (inverter)
- static switches

The design of power electronics converter circuits requires design the power and control circuits.

The voltage and current harmonics that are generated by the power converters can be reduced or minimized with a proper choice of the control strategy.

Power electronic switching devices

1. Uncontrolled turn on and off (power diode)
2. Controlled turn on uncontrolled turn off (thyristors)
3. Controlled turn on and off characteristic (power transistor, bjt, mosfet, gto, igbt)
4. Continuous gate signal requirement (bjt, mosfet, igbt)
5. Pulse gate requirement (scr, gto)
6. Bipolar voltage-withstanding capability (scr, gto)
7. Unipolar voltage-withstanding capability (bjt, mosfet, gto, igbt)
8. Bidirectional current capability (triac)
9. Undirectional current capability (scr, gto, bjt, mosfet, igbt)

**Static Converters**

Static converter is a power electronic converter that can conversion of electric power from one to another. The static power converters perform these function of power conversion.
The Power Electronic Converter can be classified into six types:

1. Diode Rectifier
2. AC to DC Converter (Controlled Rectifier)
3. DC to DC Converter (DC Chopper)
4. AC to AC Converter (AC voltage regulator)
5. DC to AC Converter (Inverter)
6. Static Switches

### 14.2.2 Electronic soft starter for 1/3 phase induction motor for agriculture

There are quite different methods for starting an electric motor such as “Direct On Line (DOL)”, “Star-Delta”, “Auto Transformer”, “Primary Resistor”, or using solid-state power electronic devices such as “VFD” or “Soft Starter”.

Every single method has its own specific applications and benefits.

In this easy-to-follow article, we are going to discuss the “Soft Starter” method amongst all and we will cover the rest of methods in future articles. Read on to learn what a soft starter is.

**Defining Soft Starting**

Now let us shift our particular attention to soft starting.

In technical terms, a soft starter is any device that reduces the torque applied to the electric motor. It generally consists of solid-state devices like thyristors to control the application of supply voltage to the motor. The starter works on the fact that the torque is proportional to the square of the starting current, which in turn is proportional to the applied voltage. Thus the torque and the current can be adjusted by reducing the voltage at the time of starting the motor.

**Advantages of Soft Start**

Now that we have learned 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.
- Controlled startup: 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.

**Working Example of 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. A power supply circuitry to provide the required dc supply voltage

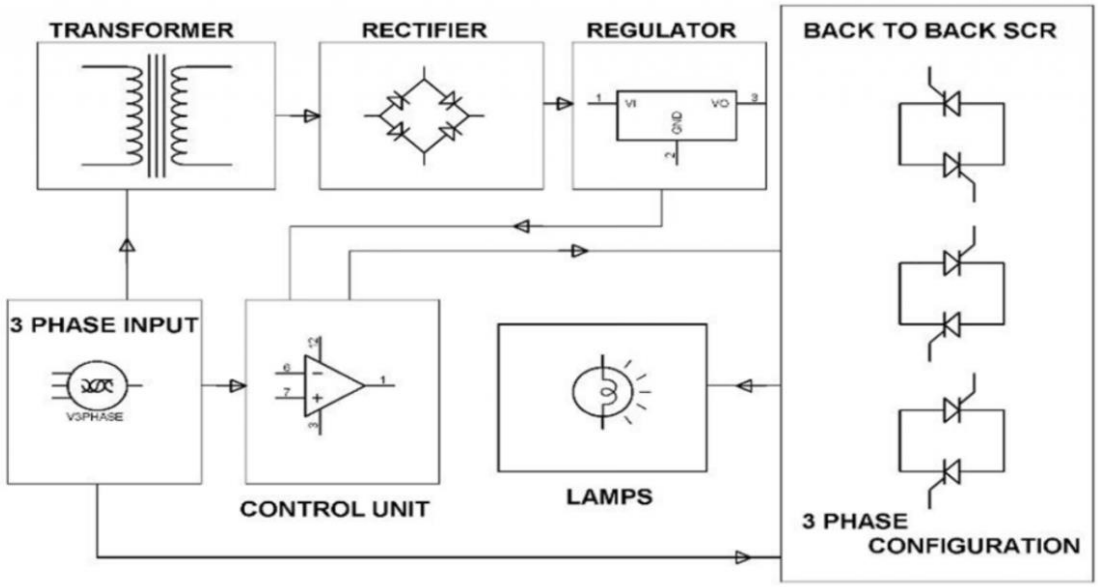



**Fig: - 14.2.2 Electronic soft starter for 1/3 phase induction motor for agriculture**

The level voltage is generated using the comparator LM324 whose inverting terminal is fed using a fixed voltage source and the noninverting 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 noninverting 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 noninverting 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.

### 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.

The Transfer of electrical power in reliable and efficient way is always challenging for the designers and engineers. Presently all electrical power from the generating stations to the distribution station is transferred by the uses of wires and underground cables. One of the major issues in these types of systems is the losses due to resistance of the material. Generally the percentage of loss of power during the transmission and distribution is 26% .

In modern technology the use of portable device has increased such as mobile robots and electric vehicle. Mobility is the main concern of these equipment i.e. they are not connected to the main source of power.

All these problems are the main motivation for researchers. Nikola Tesla was the first who introduce the concept of wireless power transfer [2]. But this technology from the time of Tesla is underdeveloped due to lack of funding and technology .But research from past few years has always going on and recent development has been observed in the field .

Wireless power transfer can be achieved by several methods (discussed later). Here we discussed few methods such as induction coupling, resonating coupling, LASER technology for electrical power transfer

**ADVANTAGES AND DISADVANTAGES**

- ADVANTAGE

  - It gives the human comfort as there is no chording or wiring problem, so mobility is easier.
  - There is no problem of power failure and extensive heating. Cost of overall system decreases due to no uses of wires.
  - Overall efficiency increases due to decrease in the power loss.
  - It offers no corrosion as there is no exposure to the atmosphere which is Ecofriendly
  - It offers ranges of power levels and separation distance between coils.

- It offers convenient, reliability, high efficiency, low cost at the same time.

DISADVANTAGE

- WPT methods uses the electromagnetic radiation for power transfer and the main effect of electromagnetic wave is its biological impact which harms human beings and animal.
- Biological impact of inductive coupling and resonance coupling is far less than compared to microwave power transmission technique There is also a limitation of separation distance and power capacity.
- Interference of microwave with other communication system.
- Initial cost is very high for implementing WPT system

### 14.2.4 Industrial temperature controller

As the name implies, a temperature controller is an instrument used to control temperatures, mainly without extensive operator involvement. A controller in a temperature control system will accept a temperature sensor such as a thermocouple or RTD as input and compare the actual temperature to the desired control temperature, or set point. It will then provide an output to a control element. A good example would be an application where the controller takes an input from a temperature sensor and has an output that is connected to a control element such as a heater or fan. The controller is usually just one part of a temperature control system, and the whole system should be analysed and considered in selecting the proper controller.

**Learn more about Digital Controllers**

What Are the Different Types of Process or Temperature Controllers, and How Do They Work? There are three basic types of process controllers: on-off, proportional and PID. Depending upon the system to be controlled, the operator will be able to use one type or another to control the process.

On/Off temperature Controller An on-off temperature controller is the simplest form of control device. The output from the device is either on or off, with no middle state. An on-off controller will switch the output only when the temperature crosses the setpoint. For heating control, the output is on when the temperature is below the setpoint, and off above setpoint. Since the temperature crosses the setpoint to change the output state, the process temperature will be cycling continually, going from below setpoint to above, and back below. In cases where this cycling occurs rapidly, and to prevent damage to contactors and valves, an on-off differential, or "hysteresis," is added to the controller operations. This differential requires that the temperature exceed setpoint by a certain amount before the output will turn off or on again. On-off differential prevents the output from "chattering" or making fast, continual switches if the cycling above and below the setpoint occurs very rapidly. On-off control is usually used where a precise control is not necessary, in systems which cannot handle having the energy turned on and off frequently, where the mass of the system is so great that

temperatures change extremely slowly, or for a temperature alarm. One special type of on-off control used for alarm is a limit controller. This controller uses a latching relay, which must be manually reset, and is used to shut down a process when a certain temperature is reached.

Proportional Control Proportional controls are designed to eliminate the cycling associated with on-off control. A proportional controller decreases the average power supplied to the heater as the temperature approaches setpoint. This has the effect of slowing down the heater so that it will not overshoot the setpoint, but will approach the setpoint and maintain a stable temperature. This proportioning action can be accomplished by turning the output on and off for short time intervals. This "time proportioning" varies the ratio of "on" time to "off" time to control the temperature. The proportioning action occurs within a "proportional band" around the setpoint temperature. Outside this band, the temperature controller functions as an on-off unit, with the output either fully on (below the band) or fully off (above the band). However, within the band, the output is turned on and off in the ratio of the measurement difference from the setpoint. At the setpoint (the midpoint of the proportional band), the output on:off ratio is 1:1; that is, the on-time and off-time are equal. If the temperature is further from the setpoint, the on- and off-times vary in proportion to the temperature difference. If the temperature is below setpoint, the output will be on longer; if the temperature is too high, the output will be off longer.

PID Control The third controller type provides proportional with integral and derivative control, or PID. This controller combines proportional control with two additional adjustments, which helps the unit automatically compensate for changes in the system. These adjustments, integral and derivative, are expressed in time-based units; they are also referred to by their reciprocals, RESET and RATE, respectively. The proportional, integral and derivative terms must be individually adjusted or "tuned" to a particular system using trial and error. It provides the most accurate and stable control of the three controller types, and is best used in systems which have a relatively small mass, those which react quickly to changes in the energy added to the process. In this other article, how to tune a PID controller is covered in more detail. It is recommended in systems where the load changes often and the controller is expected to compensate automatically due to frequent changes in setpoint, the amount of energy available, or the mass to be controlled. OMEGA offers a number of controllers that automatically tune themselves. These are known as autotune controllers.

Standard Sizes Since temperature controllers are generally mounted inside an instrument panel, the panel must be cut to accommodate the temperature controller. In order to provide interchangeability between temperature controllers, most temperature controllers are designed to standard DIN sizes. The most common DIN sizes are shown below.

### 14.2.5 Accident alerts in morden traffic signal control system camera surveillance system

Video surveillance is the rapidly growing field with various applications that include traffic monitoring and analysis, gesture recognition in human-machine interface and human detection and tracking. In these applications detection of moving objects from the video sequence is a very challenging and critical task. Obtaining the traffic information like the vehicle volume count, traffic flow and traffic events are the significant tasks in traffic analysis and traffic management. Visual traffic surveillance which makes use of computer vision models can be controlled, present, and cost effective. Formerly, video-based traffic surveillance was only noticing the movement of vehicles and its actions to evade signal and speed violation. Nevertheless, advanced approaches also observe incidents in roadways such as vehicle accidents and unexpected traffic blocks traffic congestion. Hence the idea of present video-based traffic surveillance is to detect the accidents in highways and intersections to save the lives of injured people without losing any quality time. The major advantage of this video surveillance is that It also records the incidents by which we can use it for the future reference.

#### 14.2.5.1 Vehicle Tracking Features

It is mainly benefit for the companies which are based on transport system. Since it can show the position of all vehicles in real time, so that they can create the expected data accordingly. These tracking system can store the whole data where the vehicle had gone, where did it stop, how much time it take at every stop and can create whole data analysis. It is also used in buses and trains, to estimate how far are they, how much time it takes for them to come to a particular stop. These systems are used to data capture, data storage, data analysis and finally data transfer.

#### 14.2.5.2 Accident Alert System Features

This system is based on new technology, its main purpose is to detect an accident and alert to the control room, so the victim can find some help. It can detect accidents the intensity of the accident without any visual contact from control room. If this system is inserted in every vehicle then it is easy to understand how many vehicles are involved in a particular accident and how intense is it. So that the help from control room will be according to the control room. The present board designed has both vehicle tracking and accident alert systems, which make it more valuable and useful. This board alerts us from theft and on accident detection also. This device detects fire accidents also by placing fire detector in one of the interrupt pins.

**Vehicle tracking system working**

This system takes input from GPS and which goes into rs232. This Rs232 sends data into max232 and it converts the data format and sends it to the Rx (receiver pin) of

microcontroller and this microcontroller stores this data in USART buffer and the data stored is sent again through Tx pin into max232 this max 232 sends the data into GSM via rs232. This is how vehicle tracking works using GSM and GPS. The lcd interfaced to the microcontroller also shows the display of the coordinates. This lcd display is only used to know the working condition of the vehicle tracking system.

**ADVANTAGES OF OUR SYSTEM**

- This system is an immediate aid system.
- Monitors all hazards and threats.
- Alert messages are sent to the nearby hospitals and police stations.
- It is an affordable system.
- Can be used in any kind of vehicle.
- The alert message regarding the accident is automatically sent,
- This system can be used for a social cause.
- It does not need any operation manually.

**DISADVANTAGES OF OUR SYSTEM**

- Automatic or phone is disconnected or damaged
- Automatic and phone not connected via Bluetooth
- No GPS signal at the time of the crash
- Insufficient cellular signal to upload crash details.

The existing alert system projects include notification only to dear ones and the owner of the vehicle, but not to the emergency stations.

## 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 Village Visit, modern technology with innovation).**

In India there are 6,00,000 villages out of them 1,25,000 villages are backward so there is a need for designing and building the village as a smart village. With modernization and urbanization people migrate from one place to another place for different facilities such as education, employment and affinity of people towards the locality or city. Village is main criteria for development of nation. So, develop the village in such a way that which is self-dependant in providing the services, employment and well connected to the rest of the world i.e. smart village. The smart village corrects the social oversight by providing accommodations for sustainable family relationships without disturbing the lifestyle of different generations. The vision of smart village is that modern energy access can act as catalyst for development in education , health , productive enterprise , clean water , sanitation , environmental sustainability and participatory democracy which helps to support further improvement in access to energy . Initially the concept of development of village is of Mahatma Gandhi i.e. swaraj and suraj village . But, now days it is newly termed as smart village. We know that, India is a developing nation, with the help of smart village we can make India as a SS nation. Now days, our government also gives strong focus on smart village. Government implements so many schemes on smart village.

- **Solar power energy solutions for Yemeni rural villages and desert communities** :

According to UNDP Policy Note 2014, only 23% of Yemen rural community have access to electricity – having connected to national grid or use small isolated generating units – while the country is one of the richest in solar energy with over 3000 h per year clean blue sky. The objectives of this paper is to concentrate on the utilization and the cost effectiveness of photovoltaic solar energy for electrification of Yemeni rural and desert communities, which will result in enhancing education, culture, science, medical services, and improve the living conditions in rural areas. Otherwise, energy poverty that is a facet of a multidimensional poverty in Yemen will persists because the possibility of connecting rural communities to the national grid, even in the next ten years, is invisible due to major political and financial problems that the country is facing. Moreover, PV energy is environmentally clean and has proved to be one of the best solutions for rural electrification in many countries worldwide due to noticeable drop of PV systems prices with the advance in PV technology. Accordingly, it should be the best solution for rural electrification in Yemeni as well. The paper demonstrates the cost effectiveness and the design procedure of utilization of solar energy for rural and desert communities in Yemen using a number of subsequent cases typical to Yemeni

communities and provides also a practical study to support Bedouin backpackers.

### ❖ Rainwater Harvesting

Rainwater Harvesting is a technique of collection and storage of rainwater into natural reservoirs and tanks, or the infiltration of surface water into subsurface aquifers. The rainwater harvesting is of different types such as,

1) Directly from roof tops and stored in tanks,
2) Monsoon runoff and water in swollen streams during the monsoon and storing it in underground tanks,
3) Water from flooded rivers can be stored in small ponds,
4) Collection and transfer of rainwater into percolation tanks. So as to facilitate discharge into ground.

❖ **Advantages:**

1) Rainwater harvesting provides a good supplement to other water sources .Thus relieving pressure on other water sources.
2) It can be as a buffer and can be used in times of emergency or breakdown of public water supply systems.
3) Helps to reduce the storm drainage load and flooding in the cities.
4) It is a flexible technology and can be built to require meets of any range.Also the construction, operation and maintenance is not very labour intensive in most systems.
5) Prevents water wastage by arresting soil erosion and mitigates flood.
6) Sustains and safeguards existing water table through recharge.
7) Arrests sea water intrusion and prevents salination of ground water

❖ **CCTV CAMERAS**

CCTV cameras are installed in the school and colleges. 25 cameras are installed at a prime junction of the village so that the litterbugs can be spotted and punished. Approximately the money required for installation of cameras 70,000 Rs.

❖ **ROAD:**

In javalgaon village we can provide two types of roads, Cement concrete road or Paver block road .

- Cement concrete road: Problems due to the dust and wet weather damage to the road using innovative technology at a low cost. For 1 KM cement concrete road the required cost is 20 lakh.
- Paver block road: Paver block road is used to improve drainage facilities. It is easy for construction and time required for construction is much less than cement concrete road. For 1 KM of paver block road the amount required for construction is 12 Lakh. Therefore the paver block road is economical than cement concrete road and it is suitable. According to us the total cost required for development of Javalgao village as a smart village is 2, 51,81,545 Rs. hence approximately 2.5 to 3 crore required.

- **Smart Connectivity**

Smart connectivity has two distinct connotations for smart village concept. One is to provide reliable and highquality 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.

- **Smart Infrastructure**

In order to ease life of villagers in every possible way, a village has to be well supported with infrastructure to enhance efficiency of habitants and efficacy of inputs from the villagers. The infrastructure includes roads, institution buildings, weather station equipment, hospital equipment, telephone towers etc. Most of these infrastructures can be established with well-intended village habitants and the guiding institutions through convergence of funds, functions and functionaries. Smart element needs to be included in every stage of infrastructure development.

# Chapter 16 Survey By Interviewing With Sarpanch And School Principal.


**Interviewing By Sarpanch**

We meet Antaliya village Sarpanch on 2 march. We collect the details of Antaliya village. We talk about the roads, Grampanchayat, bus stop, electric pole, school, hospital, and all government building's. We also meet the school principle, teacher's, and villagers. We visit 2 times of village in part-1. But we can not live visit in part-2; because of covid 19 situation. In the village we visited properly and capture the photos and video's.

Unplanned development, whether in rural areas, or in peri-urban areas, or in close proximity to the national and State highways, in general, are inefficient in the use of resources; Especially the ground. There is land Limited resources include the pressures of social, economic and environmental needs, including urbanization. industrialization, mining, transportation, rural development, protection of environmental sensitivities Zones and source areas etc. To prevent uncontrolled conversion of rich agricultural land to urban Use, it becomes necessary to indicate appropriate land use standards and activities permitted for rural areas. Right Planning of land and its resources, allows rational and sustainable use of land catering for different needs, Including social, economic, developmental and environmental needs. Based on proper planning of land use Sound scientific, and technological processes, and land use strategies, are supported by the participant Approaches empower people to make decisions about land and how to allocate and use it properly Resources are extensive and continuous and meet current and future demands. Need one To protect the scientific, aesthetic and systematic nature of land resources, facilities and services Physical, economic and social functioning, health and well-being of communities.

To prevent unplanned development in urban areas, local plans are prepared for cities and towns Known as Master Plan and Development Plan and notified under the respective State Town And the Country Planning Act. However, no such initiative has been taken for development yet Villages and surrounding areas. No serious efforts have

been made to prepare space plans for the rural Considering the areas and the vast rural population of the country who have been deprived of access Infrastructure Similar planning initiatives are crucial in rural areas as well; Especially now when The COVID-19 epidemic, the lockdown and the consequent 'reverse migration' of millions of daily laborers, Mainly working in the informal sector. Just like urban areas, rural areas should also have space Integrated scheme such as GPSDP, which identifies land and infrastructural needs for villages. Such as land allotment and use, provision of infrastructural services, economic productivity, For efficient, equitable, harmonious and sustainable development of villages.

1. Which type of medical facility is available?

   Ans.mmedical facilityisnot available

2. What is your primary need?

   Ans. Food, clothing, footwear, housing, health, etc.

3. Which type of facility you want first?

   Ans.Public toilet, solar Street Light

4. Where you dispose your waste?

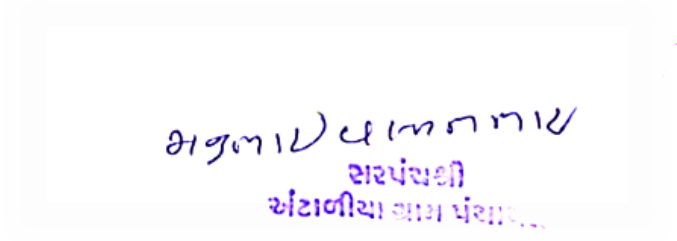
   Ans. Sewer system

5. Do you have enough water supplies?

   Ans.yes

6. Which type of irrigation facility you are using? Is it enough?

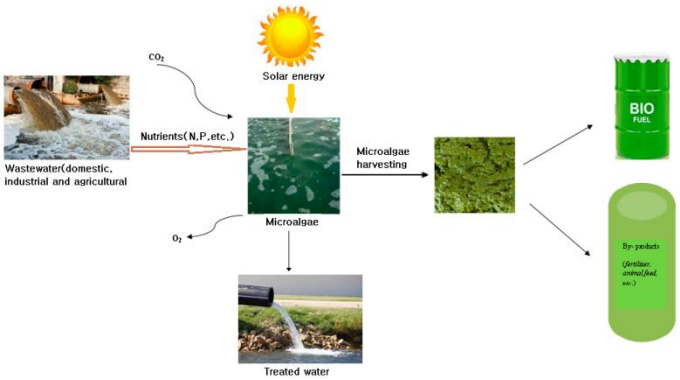
   Ans.Organic farming irrigation, micro-irrigation. No - that's not enough



## Chapter 17 Irrigation/Agriculture Activities And Agro Industry, Alternate Technics And Solution

Innovative irrigation practices can enhance water efficiency, gaining an economic advantage while also reducing environmental burdens. In some cases the necessary knowledge has been provided by extension services, helping farmers to adapt and implement viable solutions, thus gaining more benefits from irrigation technology. Often investment in technological improvements has incurred higher water prices, however, without gaining the full potential benefits through water efficiency. Farmers generally lack adequate means and incentives to know crops' water use, actual irrigation applications, crops' yield response to different water management practices, and thus current on-farm water-efficiency levels.

Those general difficulties are illustrated by our two case studies investigating options, stimuli and difficulties to improve water-efficient practices. The two areas have strong stimuli for improvement but lack a knowledge-exchange system to help farmers and resource managers identify scope for improvements. Partly for this reason, farmers' responsibility for efficient water management has been displaced to hypothetical prospects, e.g. extra supplies from reuse of treated wastewater or a long-term low water pricing. In both cases a displaced responsibility complements the default assumption that farmers' irrigation practices already have adequate water-use efficiency. Under current circumstances, agricultural water management will maintain the unknown water-efficiency level and farmers will have weaker incentives to make efforts for more efficient practices. A continuous knowledge-exchange is necessary so that all relevant stakeholders can share greater responsibility across the entire water-supply chain. On this basis, more water-efficient management could combine wider environmental benefits with economic advantage for farmers.




Irrigation systems have been under pressure to produce more with lower supplies of water. Various innovative practices can gain an economic advantage while also reducing environmental burdens such as water abstraction, energy use, pollutants, etc. (Faurès and Svendsen, 2007). Farmers can better use technological systems already installed, adopt extra technologies, enhance their skills in soil and water management, tailor cropping

patterns to lower water demand and usage, reduce agrochemical inputs, etc. Water-efficient practices potentially enhance the economic viability and environmental sustainability of irrigated agriculture, without necessarily reducing water usage. To inform such practices, experts have developed various models of water efficiency, yet these are little used by farmers.

Through two case studies in the EU context, this paper will address the following questions:

- When an irrigation area invests in innovative technology, how can its operation help farmers to achieve the full potential benefits together, e.g. an economic advantage, greater water-use efficiency and lower resource burdens?
- Why are innovative technologies often applied in ways which miss the full potential benefits?
- What tensions arise among various objectives and potential benefits?
- How can these difficulties be addressed?

The paper first surveys analytical perspectives on irrigation efficiency – especially the means, incentives and limitations – as a basis to analyse two cases and draw general conclusions.

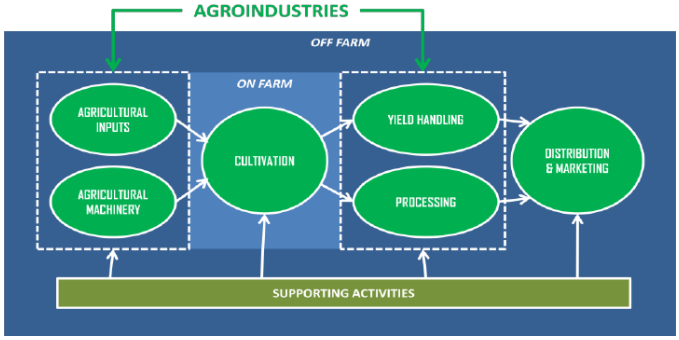
### ❖ Agriculture


Farming methods have evolved massively over the years, from basic, hand-held tools to the modern, sophisticated machinery we use today. Farmers are now embracing modernity, which has enabled them to achieve the highest potential in whichever farming activity they choose to undertake. Farming methods are increasingly becoming more refined, less manual, yields are increasing, and it's not uncommon to find beef poultry, beef cattle, and dairy cows on the same farm. But what is causing these changes? The answer is simple. Technology!

Technological advancements have permeated every industry across the world and agriculture is no exception. Nowadays, technology is significantly helping growers and farmers in several ways, including precise forecasting, data-driven decision making, and more. The changes have also resulted in a positive impact on the bottom line of most farmers and ultimately led to improved accesses to food products, at reasonable prices. Let's delve into the specific ways in which technology has revolutionised agriculture.

❖ **Agro Industry**

An agro-industry is an enterprise that processes bio-mass, i.e. agricultural raw materials, which include ground and tree crops as well as livestock and fisheries, to create edible or usable forms, improve storage and shelf life, create easily transportable forms, enhance nutritive value, and extract chemicals for other uses. As the products of agro-industries are both edible and non-edible, the agro-industries can be classified as agro-food insutries (or merely food processing industries) and agro-non-food industries. The agro-industry provides the crucial farm-industry linkage which helps accelerate agricultural development by creating backward linkages (supply of credit, inputs and other production enhancement services) and forward linkages (processing and marketing), adding value tot he farmer's produce, generating employment opportunities, and increasing the farmer's net income. This in turn motivates the farmer for better productivity and further opens up possibilities of industrial development. The agro-industry generates new demand on the farm sector for more and different agricultural outputs which are more suitable for processing. An agro-processing plant can open up new crop and livestock opportunities to the farmer and thus increase the farm income and employment. The paper identifies following major issues to be discussed and researched:



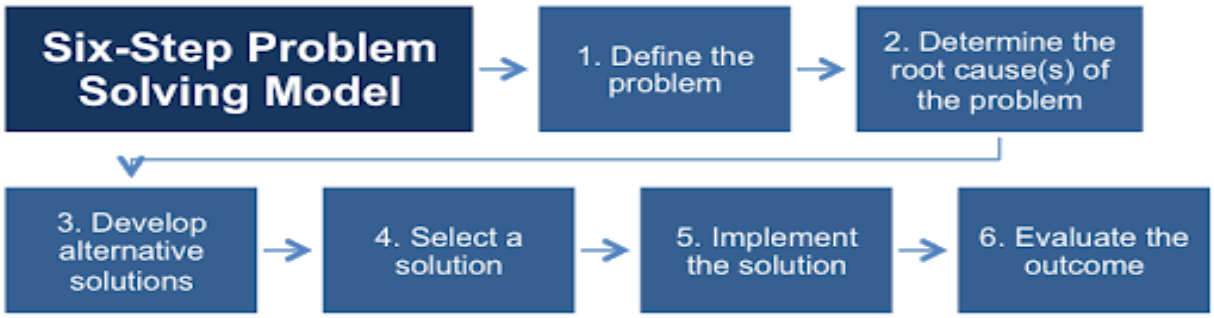

1) Organizational Patterns for Agro-Processing.
2) R&D Inputs and Technology Upgradation.
3) Market Development.
4) Need for Confessional Finance and Larger Margin Money for Working Capital.
5) Tax Incidence.
6) Linkage Agro-industry with Planning for Agro-Climate Regions.
7) Strengthening of the Data Base.
8) Need for Further Research.

❖ **Alternative solutions and problem**

In the article about problem solving in software engineering, i highlighted the major problem solving steps as:-

- Define the problem
- Analyse the problem
- List/Identify alternative solutions
- Select the best solution
- List instructions that lead to the solution using the selected solution
- Evaluate the solution

In this post, i will focus on how to generate alternative solutions.The first solution you are arrive at may not be best of all possible options. It is important that we generate as many alternatives as possible. This will allow us to choose the most effective solution to the problem.




To generate alternative solutions, you can look at the problem in different ways. You are argued to find a new perspective that you have not yet thought about. One technique is to quickly list different solutions including those that do not look viable and then try to eliminate one by one and see where they fail. Try combinations of different parts of solutions.

You can also engage stakeholders. Usually stakeholders see problems from completely different perspectives. If you are a developer, involve users, involve sales people and other stakeholders.

Within the same group, brainstorming sessions tend to generate different solutions. In general, the more alternative solutions at hand, the final solution will be cheaper, elegant and easy to implement

## Chapter 18 Social Activities planned By Student's




**We cleaned Play ground and collected west plastic.**

**Then we distributed sanitizers and masks**

**We sanitized streets with pump And then we instructed stay home stay safe in covid 19 situation**.

## Chapter 19 Allocated Village

### SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Akala Gram Panchayat: Akala Ward No. 1

Block: Lathi District: Amreli

State: Gujarat LS Constituency: lathi - babra 96

**1. Family Identity and Size**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Name of Head of Household | Patel Vikashbhai Mandibhai | | | | | | | Male/ Female | |
| SECC Survey ID: | – | Family Size | 6 | Over 18 | 4 | 6 to 18 | 2 | Under 6 | – |

**2. Category & Entitlement Details** (Tick as appropriate)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Social Category[1] | | 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] |
|---|---|---|---|---|---|---|---|---|
| Vikashbhai Patel | 40 | M | N | Y | 12-Pass | Y | Y | N |
| Manjibhai Patel | 68 | M | N | Y | Un Edu. | Y | Y | N |
| Maniben Patel | 64 | F | N | Y | Un Edu. | Y | Y | N |
| Sobhanaben Patel | 38 | F | N | Y | 10-Pass | 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 |
|---|---|---|---|---|---|---|---|---|
| Abhay Patel | 17 | M | N | N | 11th | Y | 11th | Y |
| Mansi Patel | 13 | F | N | N | 8th | Y | 8th | Y |
| | | | | | | | | |

**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 | Yes | Yes |
| Children | No | No |

**9. House & Homestead Data**

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

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

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

**11. Source of Lighting and Power**

| |
|---|
| Electricity Connection to Household: Yes / No |
| Lighting: Electricity/Kerosene/Solar Power |
| **Mention if Any Other:** LPG1 |
| Cooking: LPG/Biogas/Kerosene/Wood/Electricity |
| **Mention if Any Other:** Normal |
| **If cooking in Chullah:** Normal/ Smokeless |

**12. Landholding (Acres)**

| | | | |
|---|---|---|---|
| 1. Total | 0.077 acres | 2. Cultivable Area | — |
| 3. Irrigated Area | — | 4. Uncultivable Area | — |

**13. Principal Occupations in the Household**

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

**14. Migration Status**

Does any member of the household migrate for Work: Yes / No. If Yes Entire Year / Seasonal

Does anyone below 18 years migrate for work: Y/N

**15. Agriculture Inputs**

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

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

| Name | Unit | Quantity |
|---|---|---|
| Kapas | kg | 200 |
| Vegetable | — | — |
| | | |

**17. Livestock Numbers**

| | | |
|---|---|---|
| Cows: ✓ | Bullocks: ✓ | Calves: |
| Female Buffalo: ✓ | Male Buffalo: | Buffalo Calves: |
| Goats/ Sheep: | Poultry/ Ducks: | Pigs: |
| Any other: Type NO | | No. |
| Shelter for Livestock: Pucca / Kutcha / None | | |
| Average Daily Production of Milk(Litres): | | |

**18. What games do Children Play**

Free fire, Pub G, Outdoor Gaame etc. —

**19. Do children play musical instrument** (mention)

No

Schedule Filled By: Chintan Posiya, Om Kalbandiya

Principal Respondent:

Date of Survey: 25/5/2021

**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: Akala

b. Block: Lathi

c. District: Amreli

d. State: Gujarat

e. Lok Sabha Constituency: lathi - Babra (96)

f. Number of Wards in the Gram Panchayat: _____

g. Number of Villages in the Gram Panchayat: 1 - Akala

h. Names of Villages: Akala, Dudhala, Lathi

**Demographic Information**

Number of Households 601 Total Population 3159 Male 1612 Female 1547

SC HHs 71 ST HHs 66 OBC HHs 56 Other HHs 468

**I. Access to Infrastructure / Facilities / Services**

| | Infrastructure Facilities / Services | Located within the GP Yes (Y)/No (N) | If located elsewhere (N), distance from the GP office |
|---|---|---|---|
| a. | ANM/ Health Sub Centre | N | — |
| b. | Nearest Primary Health Centre (PHC) | Y | Near GP 1 km |
| c. | Nearest Community Health Centre (CHC) | N | — |
| d. | Nearest Post Office | Y | Near Village - |
| e. | Nearest Bank Branch (Any) | Y | market. |
| f. | Nearest Bank with CBS Facility | N | — |
| g. | Nearest ATM | Y | Near bank |
| h. | Nearest Primary School | Y | Near bank |
| i. | Nearest Middle School | Y | Near bank |
| j. | Nearest Secondary School | N | — |
| k. | Nearest Higher Secondary School / +2 College | N | — |
| l. | Nearest Graduate College | N | — |
| m | Nearest ITI / Polytechnic Centre | N | — |
| n | Kisan Seva Kendra | Y | Near Main Gate |

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 | Y | Near Commandis |
| p | Nearest Agro Service Centre | N | — |
| p | MSP based Government Procurement Centre | N | — |
| q | Milk Cooperative /Collection Centre | Y | In Main Market |
| r | Veterinary Care Centre | N | — |
| s | Ayurveda Centre | N | — |
| t | E – Seva Kendra | N | — |
| u | Bus Stop | Y | Ap. half km. for Market. |
| v | Railway Station | N | — |
| w | Library | N | — |
| x | Common Service Centre | N | — |

**IV. Sports Facilities in the Gram Panchayat**

**a.** Number of Play Grounds in the GP: Total 1 Public ✓ Private _____

**b.** Mini Stadium : ✓ Yes(Y) /No (N) *(Playground with equipment and sitting arrangement)*

**V. Education, ICDS**

a. Number of Angan Wadi Centres: 1

b. Number of villages without Angan Wadi Centres —

Names of such villages: —

c. Schools (Number)

Primary Private: — Primary Govt.: ✓

Middle Private: — Middle Govt.: ✓

Secondary Private: — Secondary Govt.: —

Higher Secondary Private: — Higher Secondary Govt: —

**VI. Public Distribution System**

| | Item | Private Contractor | Women's SHG | Gram Panchayat | Cooperative | Other (Mention) | Location in GP (mention Location) | If outside GP, Location & distance from GP HQrs) |
|---|---|---|---|---|---|---|---|---|
| a. | Cereal (Rice/ Wheat/ Millets) | Y | N | Y | Y | N | In Market | — |
| b. | Kerosene | Y | Y | Y | Y | N | " | — |
| c. | Other (mention) | N | N | N | N | N | N | — |

2

**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 yes / Not Covered | Akala, Luhariya | — |
| b. | Hand Pump Coverage in Villages: | Covered yes / Not Covered | Akala | — |
| c. | Coverage under Covered Drains: | Covered yes / Not Covered | Akala | — |
| d. | Coverage under Open Drains: | Covered / Not Covered No | — | — |
| e. | Villages with Household Electricity Connection (Numbers) | Connected yes / Not Connected | Akala | — |

**VIII. Land and Irrigation**

| | Private Land | Area in Acres | | Common Land | Area in Acres | | Irrigation Structure | No. |
|---|---|---|---|---|---|---|---|---|
| a. | Cultivable Land | 2534.74 Hec | d. | Pasture / Grazing Land | — | g. | Check Dam | 2 |
| b. | Irrigated Land | — | e. | Forests/ Plantations | Y | h. | Wells/Bore Wells | 14 |
| c. | Un-irrigated Land | — | f. | Other Common Land | N | i | Tanks /Ponds | 2 |

[1] Mention the number of Villages Covered and Not Covered

3

**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) | 33 (old Age) |
| b) | Number of Households receiving pension (old age, widow, disability) | 14 (old age) |
| c) | Number of eligible Households who are not receiving pension | others all |
| d) | Number of Households eligible for Ration Card | Maximum |
| e) | Number of eligible HHs having ration cards | 12 |
| f) | Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana) | 13 |
| g) | Number of HHs covered under AABY (Aam Aadmi Bima Yojana) | 14 |
| h) | Number of active Job Card holders under MGNREGA | 13 |
| i) | Number of Job Card holders who completed 100 days of work during 2013-14 | 15 |
| j) | Number of shops selling alcohol | 0 |
| k) | Number of BPL families | 11 |
| l) | Number of landless households | 13 |
| m) | Number of IAY beneficiaries | 11 |
| n) | Number of FRA[2] beneficiaries | 11 |
| o) | Number of Community Sanitary Complexes | 10 |
| p) | Number of Households headed by single women | 7 |
| q) | Number of Households headed by physically handicapped persons | 3 |
| r) | Total number of Persons with Disability in the village | 97 |
| s) | Number of SHGs | 0 |
| t) | Number of active SHGs | 0 |
| u) | Number of SHG Federations | 0 |
| v) | Number of Youth Clubs | 1 |
| w) | Number of Bharat Nirman Volunteers | 10 |

**Name and Signature of Surveyor and Respondent**[1]

| | | | |
|---|---|---|---|
| Om Kalbetiya<br>Chintan Posiya<br>Jaydip Vaghasiya<br>Surveyor | PRI Respondent (Preferably Gram Panchayat Chairperson) | Official Respondent (Preferably seniormost Government official in the Gram Panchayat) | 26/5/2021<br>Date of Survey |

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

4

## SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

*This questionnaire should be filled for each of the villages in the selected Gram Panchayat*[1]

### I. Basic Information

a. Village: Akala

b. Ward Number: 1

c. Gram Panchayat: Akala

d. Block: Lathi

e. District: Amreli

f. State: Gujarat

g. Lok Sabha Constituency: Lathi - babra 96

h. Number of Habitations / Hamlets in the Gram Panchayat: Khunt dhigubhai

i. Names of Habitations / Hamlets:
Khunt Dhigubhai

**Demographic Information**

Number of Households 661 Total Population 3159 Male 1612 Female 1547

SC HHs 71 ST HHs 66 OBC HHs 56 Other HHs 468

### II. Access to Infrastructure/Amenities etc.

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

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

1

## SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

**ii.** Road Connectivity

**a.** Habitations connected by All-weather Roads Yes (1) *(1-All 2-None 3-Some)*

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

**iii. Drinking Water Facilities**

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

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

b.Hand Pump Coverage in Habitations: Yes (3) *(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-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: No (2)

**v. Coverage of Habitations under Electrification**

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

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

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

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: 1

c. Schools (Number)

Primary Private: – Primary Govt.: ✓

Middle Private: – Middle Govt.: ✓

Secondary Private: – Secondary Govt.: –

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 | HEC 2534.74 | d. | Pasture / Grazing Land | — | g. | Check Dam | 2 |
| b. | Irrigated Land | — | e. | Forests/ Plnatations | 4 | h. | Wells/Bore Wells | 14 |
| c. | Un-irrigated Land | — | f. | Other Common Land | N | I | Tanks /Ponds | 2 |

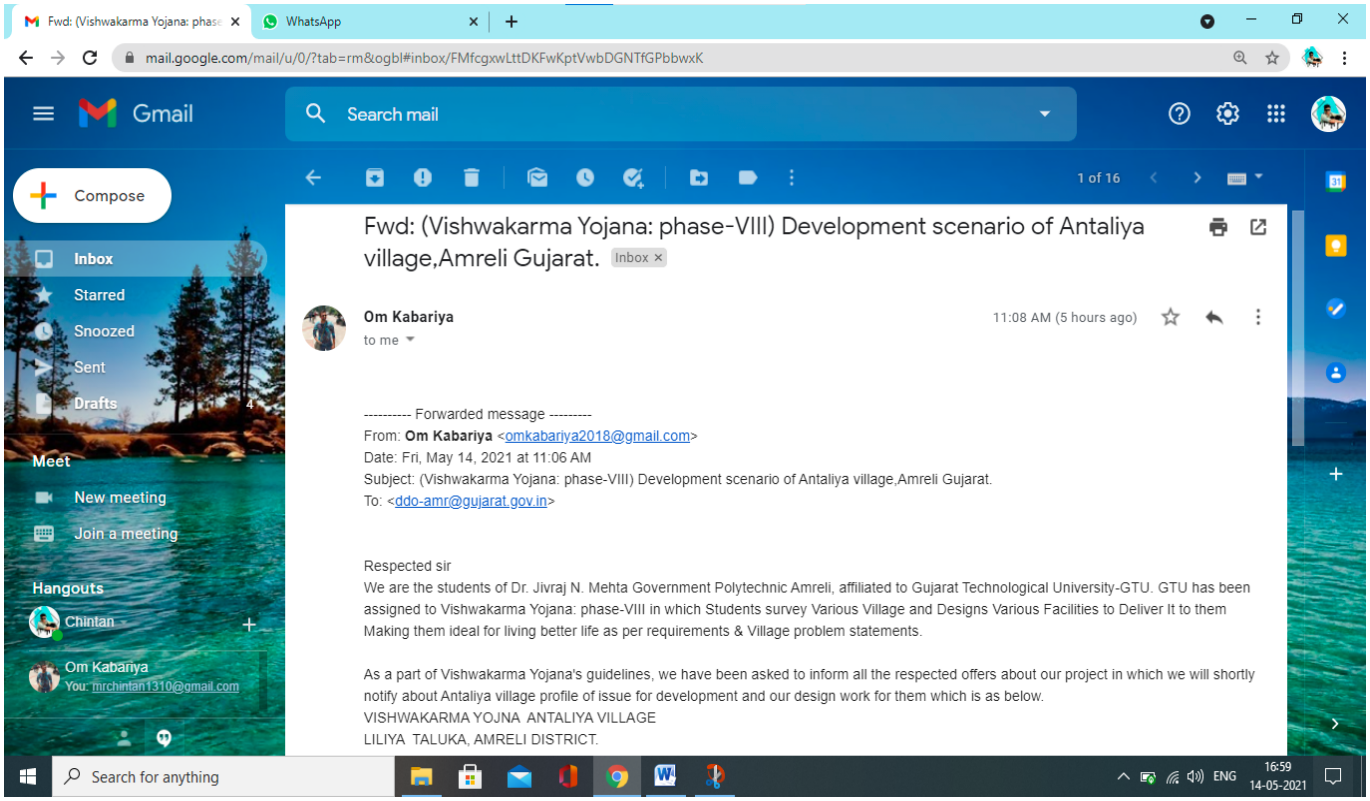
| ix. Entitlement Related Parameters | | |
|---|---|---|
| 1 | Number of active Job Card holders under MGNREGA | 13 |
| 2 | Number of active Job Card holders who have completed 100 days of work | 15 |
| 3 | Number of shops selling alcohol | 0 |
| 4 | Number of BPL families | 11 |
| 5 | Number of landless households | 13 |
| 6 | Number of IAY beneficiaries | 11 |
| 7 | Number of FRA beneficiaries | 11 |
| 8 | Number of common sanitation complexes | 10 |
| 9 | Number of SHGs | 0 |
| 10 | Number of active SHGs | 0 |
| 11 | Existence of SHG Federation in the Village (Yes / No) | 0 |
| 12 | Number of Youth Clubs | 1 |
| 13 | Number of Bharat Nirman Volunteers | 10 |

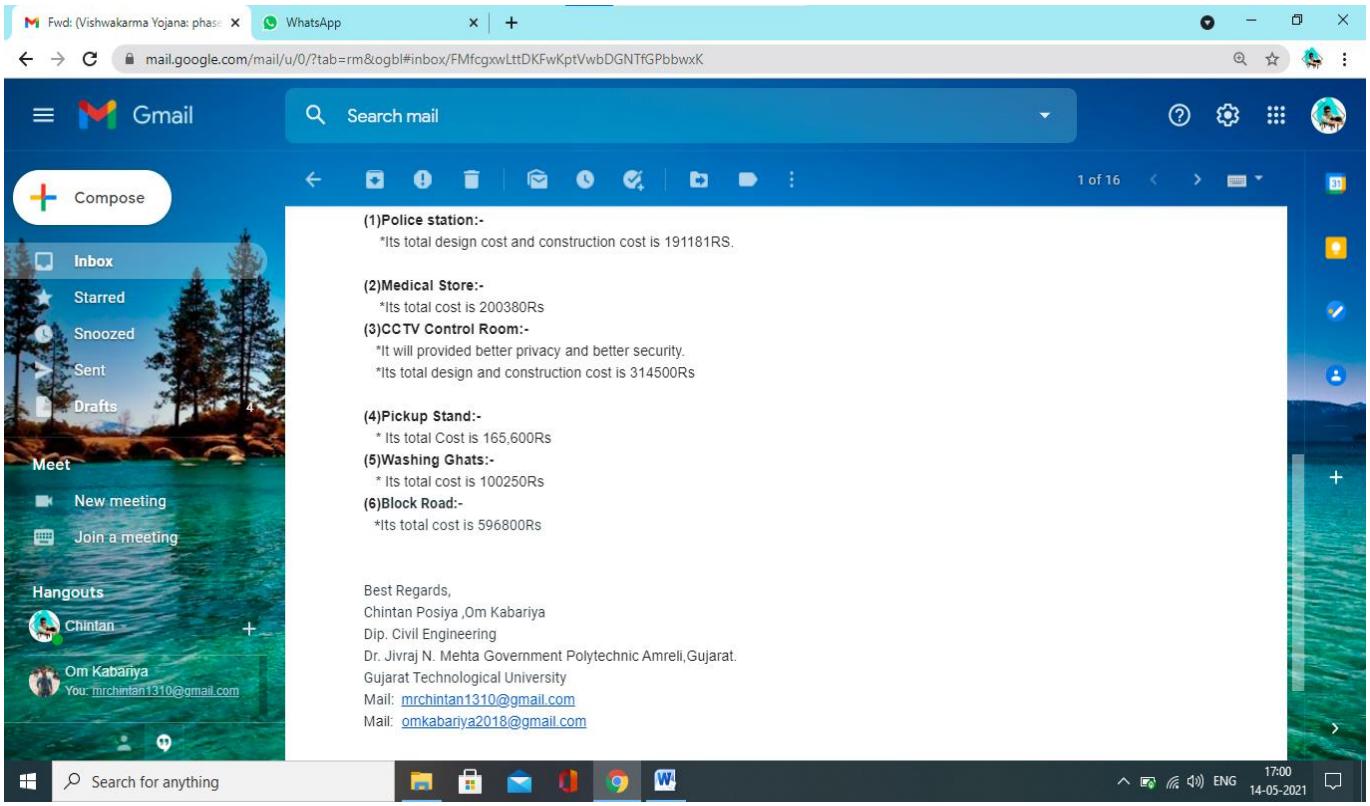
**Name and Signature of Surveyor and Respondent'**

| | | | |
|---|---|---|---|
| Posiya Chintan Kubadiya Om Vaghasiya Jaydip | સરપંચ અંટાળીયા ગ્રામ પંચાયત | સરપંચ અંટાળીયા ગ્રામ પંચાયત | 28/5/2021 |
| Surveyor | PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village) | Official Respondent (Preferably seniormost Government official in the Gram Panchayat) | Date of Survey |

3

## Chapter 20 TDO-DDO-collector email sending soft copy attachment in the report

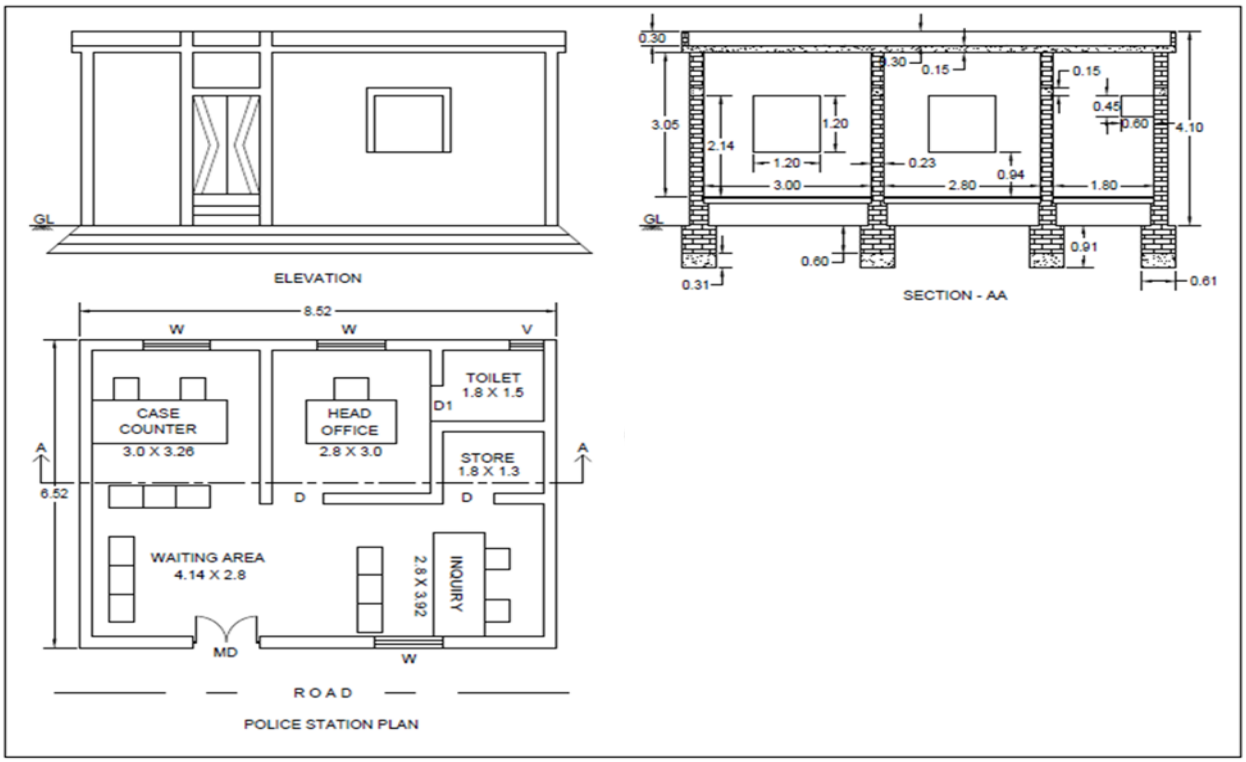


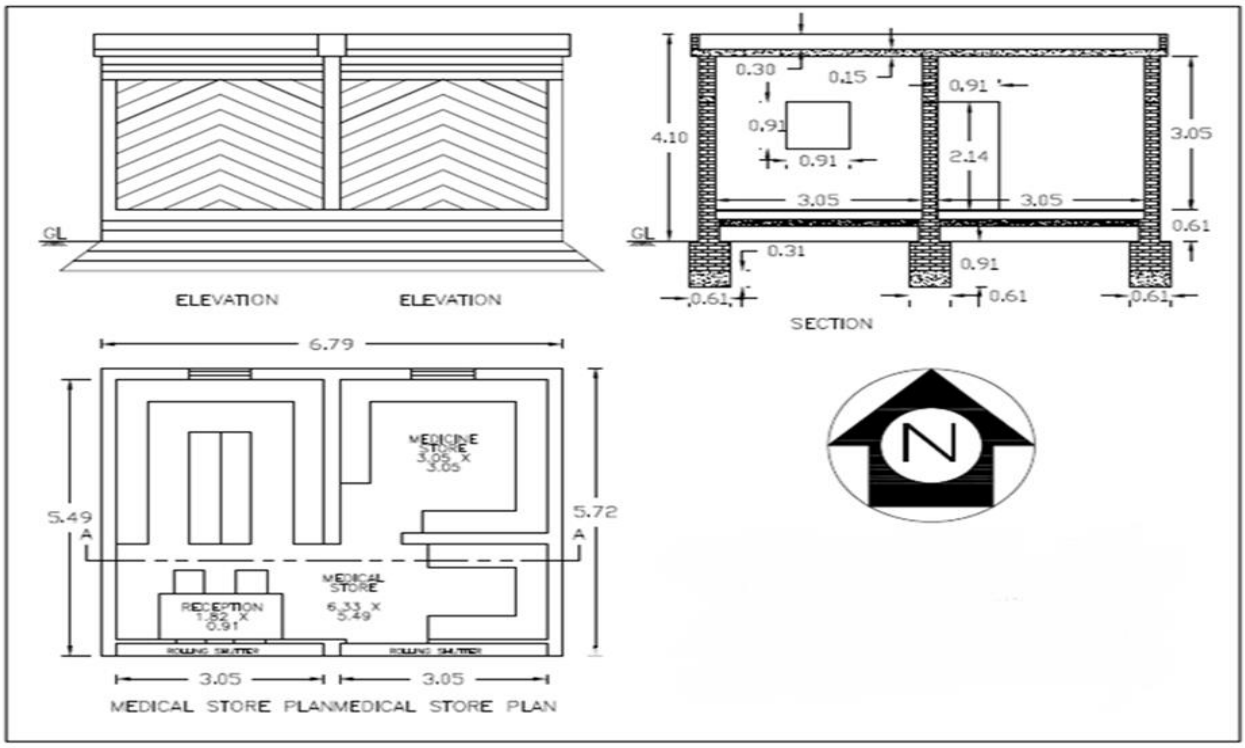
## Chapter 21 comprehensive report for the entire village

in villages no renewable energy sources was used till now and the people are not that muchaware from electric energy conservation and advantages of renewable sources. Need toaware people from both and also aware from the other government's schemes and subsidyrelated to it so, villagers are start using renewable energy sources and save electricity.

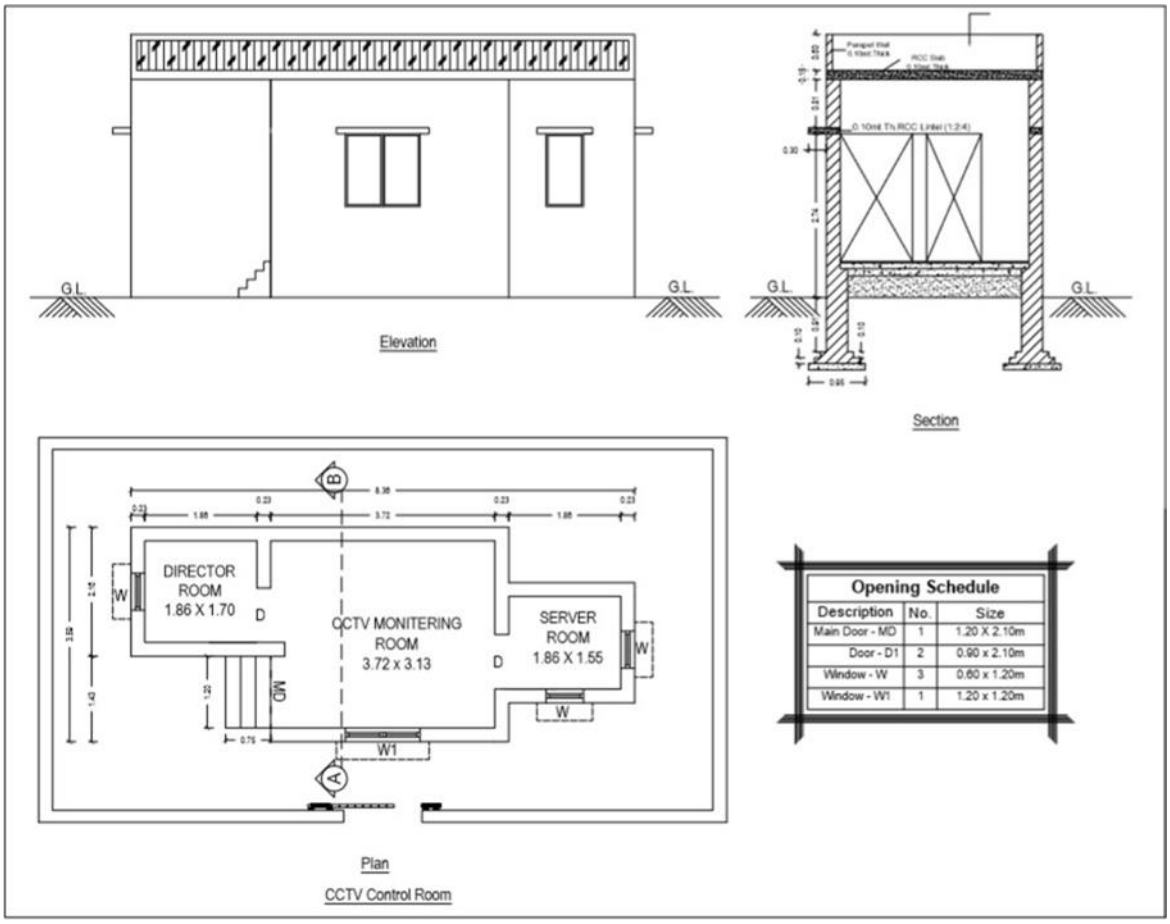
Based on the collection of the data of the village andsurvey work done in both semester we have to do some improvement in the Delad village and do some repair work in the village. We have to provide some facilities inthe village like repair and re-habitation of the existing school building etc. There is a room which is not in good condition in primary school so it needs re-construction.as per the demand of villagers and review of sarpanchtalati we propose the design of the recreational park, engineering store, egov- common service centre, efficient motor pump, irrigation system, etc. In Delad village there is less number of street lights so it should install new LED street lights for less power consumption and good efficiency also in households. It is also require to connect the grid of village with nearby substation. Because the village grid only connected with Delad sub-station. It is also required to build an e-governance common service centre. In addition, the primary health is also needed as per villagers. Therefore, we can say if all the missing amenities are provided then it may stop the migration of rural people towards the urban area. This can cause reduce the load on urban areas. And this amenities designed by us is helpful for better development of village as physically as well as socially, which improves the overall lifestyle of people. We achieved an impressive growth rate in the overall infrastructural development; the agricultural infrastructure development is not evenly distributed in village. The study of various energy saving concepts and renewable and/or sustainable energy programme have led us to the conclusion that the goal of "Vishwakarma Yojana Project" can be achieved by taking proper efforts towards development of rural areas by developing the required infrastructure and implementing the applicable and suitable energy efficient methods. Since energy demand is always going to be more than the energy supply, energy saving is the only way to achieve "rurbanization" which is the ultimate aim of Vishwakarma Yojana Project.



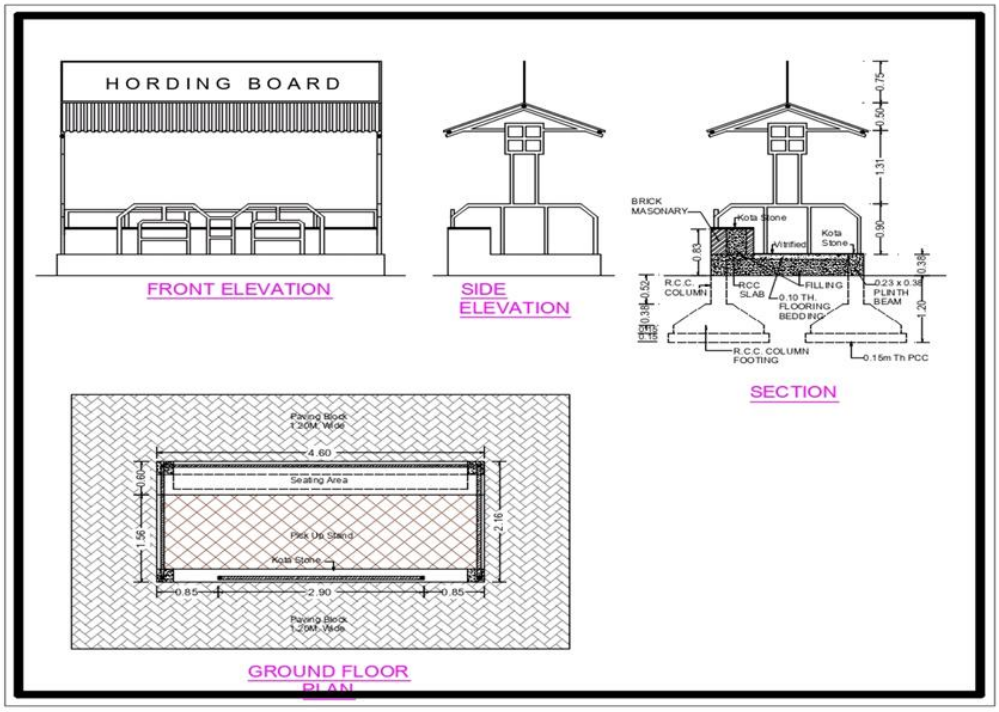

**Police station**



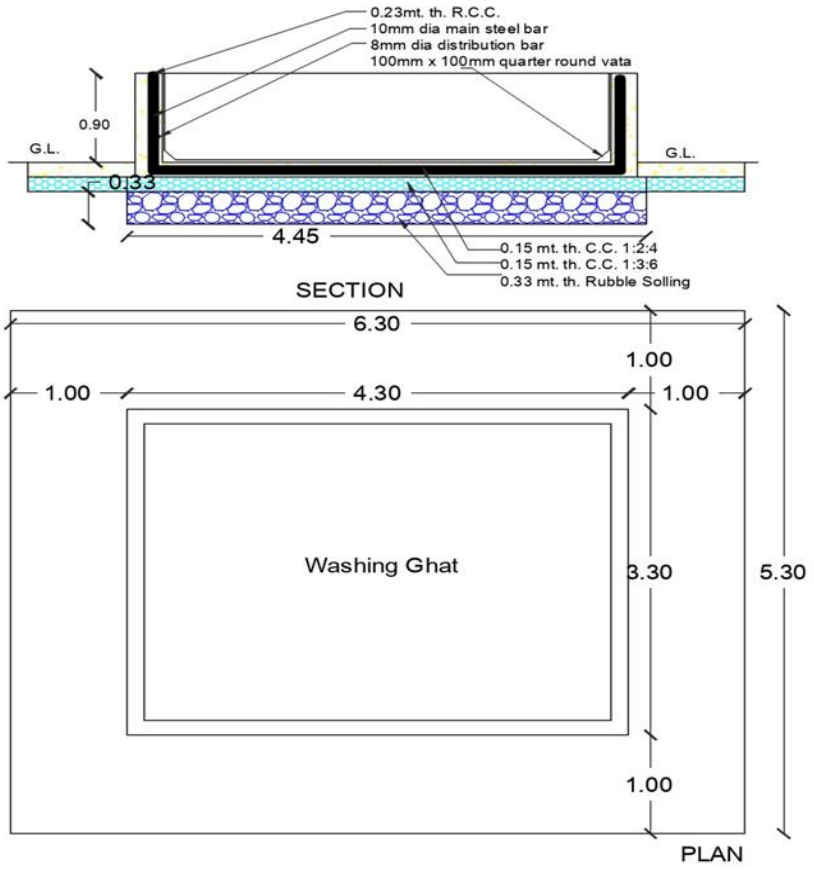

**Medical Store**



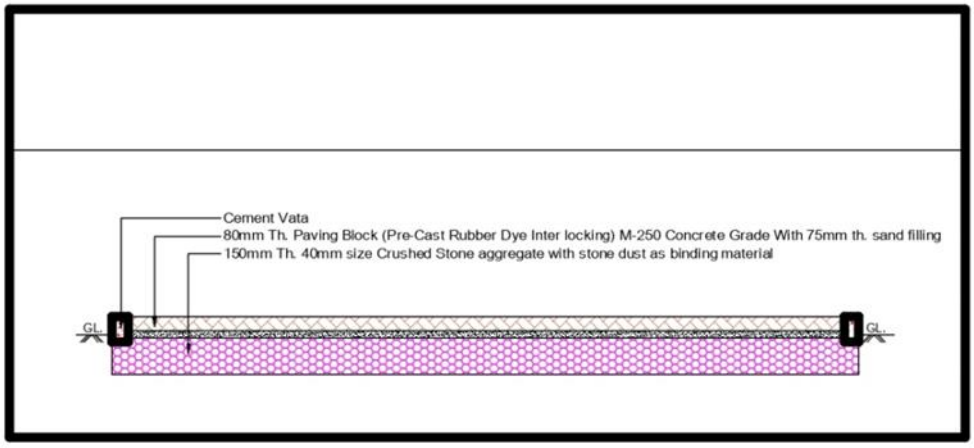

**Cctv Control Room**




**Pickup stand**




**washing ghat**




**W.B.M. With Paving Block Road**