DETAILED PROJECT REPORT

VISHWAKARMA YOJANA PHASE-VIII
AN APROCH TOWORD RE-URBNIZATION OF
KHASA(PALANPUR)

2020-21

VISHWKARMA GOVERNMENT ENGINNERING COLLEGE

NODAL OFFICERS: PROF. KETAN L TIMANI
INTERNAL GUIDE: PROF. KETAN L TIMANI

Prepared by:

Civil Engineering Department (VGEC)
Sem-7
Students

Name:	Enrolment No:	Branch
Gaurav Pawar	170170106037	Civil
Dharmendra Prajapati	170170106038	Civil

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad – 382424 Gujarat

CERTIFICATE

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

Detail Project Report for,
VILLAGE KHASA
DISTRICT BANASKATHA

Under

Vishwakarma Yojana: Phase-VIII

in partial fulfilment of the project offered by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

during the academic year 2020-21.

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

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
Gaurav Pawar	170170106037	Civil
Dharmendra Prajapati	170170106038	Civil

Date of Report Submission:	
Principal Name and Signature:	**Dr. Nilay N. Bhuptani**
VY-Nodal Officer Name and Signature:	**Professor ketan Timani**
Internal(Evaluator) Guide Name and Signature:	**Professor ketan Timani**
College Name:	**Vishwakarma Gov, Eng, College**
College Stamp:	

DETAIL PROJECT REPORT

ON

Vishwakarma Yojana: Phase VIII

AN APPROACH TOWARDS RURBANISATION Village

KHASA District

Prepared By

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
Gaurav Pawar	Civil	170170106037
Dharmendra Prajapati	Civil	170170106038
Ravi Dobariya	Electrical	170170109018

NODAL OFFICERS NAME

PROF. KETAN TIMANI

Vishwakarma Government

Engineering college

Year: 2020-21

Gujarat Technological University

Chandkheda, Ahmedabad– 382424 Gujarat

ABSTRACT

In this modern era, the world is growing rapidly and the life and standards of living of people is improving day by day. Development of technologies has made world small and faster. But about 70% of India's population lives in villages and about 60% of Gujarat's population lives in villages. The average village has 250 to 300 houses. Most of the villages are farm-land so they are apart by 2 t o 3 k m distance. Today world is growing rapidly and the living standard of society is improving due to development in each and every field. Due to evolution of new affordable technologies world has become small and faster.

"India lives in its villages"- Mahatma Gandhi.

Hence it is required to develop villages with the primary and the basic required amenities and to increase the standard of living of people live in villages, so that migration of people can be reduced. Due to that, major urban problems like slums, haphazard growth, etc. occurring in nearby urban area can also be avoided.

Peoples of rural area should have the same quality of life and amenities as enjoyed by the people living in city or urban area. Also, there should be adequate facilities of infrastructure, employment, connectivity with nearby areas, medical, refreshment and entertainment.

Vishwakarma Yojana is one of the approaches to developing the village with all the possible amenities that the city may have. The main aim of this project is "creation of infrastructure, connectivity, civic and social infrastructure along with the provision of economy generation."

Khasa is a small Village in Kankrej Taluka in Banas Kantha District, Gujarat. It comes under Khasa Panchayath. It is located 69 KM towards west from District headquartersPalanpur&138 KM from State capital Gandhinagar. After visiting and collecting date from the allocated village Khasa, it can be concluded that the village's infrastructure should be redeveloped such as school building, panchayat house,etc. The village has no public toilet,bank library and such facilities so it is required to build these basic facilities in the village.

In this project first of all the survey would be conducted to collect the information about existing facilities and the development of village could undertake as per need or in particulars includes physical, social, cultural, renewable infrastructure, etc.

KEYWORDS:

Rural development, sustainable development, socio-economic growth, Rural amenities

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 **Dr. Navin Sheth**, **Hon'ble Vice Chancellor, Gujarat Technological University-Ahmedabad**, for his encouragement and giving us the wonderful project.

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

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

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

We are also thankful to our **Prof**. **NILAY N. BHUPTANIPrincipal**, faculties of our colleges for their encouragement and support to complete this project work.

An act of gratitude is expressed to our internal guide / Evaluator / Nodal Officer, **Mr. KETAN L. TIMANI** from college **VISHWAKARMA GOVERNMENT ENGINEERING COLLEGE** for their invaluable guidance, constant inspiration and active involvement in our project work.

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

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

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

CONTENT

LIST OF TABLES

LIST OF FIGURES

CHAPTER: -1 Ideal Village Visit(Punsari)

1.1 Background & Study Area Location

Visit of Ideal village is required to understand the concept of an Ideal village and the development of the village so that we can get the idea about how much development is needed in the allotted village. In Vishwakarma Yojana Project, we have selected Punsari as our Ideal village. So as a part of this project, we tried to collect the data about the village. We have collected a data for analysis purpose from the Google and other websites as it is not possible to visit village considering prevailingcovid-19 pandemic.

We have studied Punsari village one of the ideal villages of India for reference and for understanding how ideal villages are looks like. From the data we will try to develop our concern village as possible. We have collected the information about Punsari village and its facilities. Here some basic information about village and photographs.

1.2 Concept: Ideal Village, Normal Village

An ideal Indian village will be constructed in such a manner that it will be able to lend itself perfect sanitation. It shall have cottages with sufficient light and ventilation built of material that can be obtained within a radius of five miles of it. The cottages shall have courtyards enabling householders to plant vegetables for domestic use and to house their cattle. The village lanes and streets will be free of all kind of avoidable dust. It shall have wells as per the need and demand. It will have houses of worship for all, also a common meeting place, a village common for grazing its cattle, a co-operative dairy, primary and secondary schools in which industrial education will be the central fact, and it will have Panchayat for settling disputes. It will produce its own grains, vegetables and fruit. It shall also have a gram Panchayat as the governing body which may help in solving necessary disputes. The water storage is such that it fulfils the requirements of the village. The lanes are well illuminated at night. It also has proper drainage facilities and ideal ways to dispose-off waste properly. The ideal village has transportation facilities that enable efficient connectivity with nearby towns and villages. It will have houses of worship for all, also a common meeting place, a village common for grazing its cattle, a co-operative dairy, primary and secondary schools in which industrial education will be the central fact, and it will have Panchayat for settling disputes.

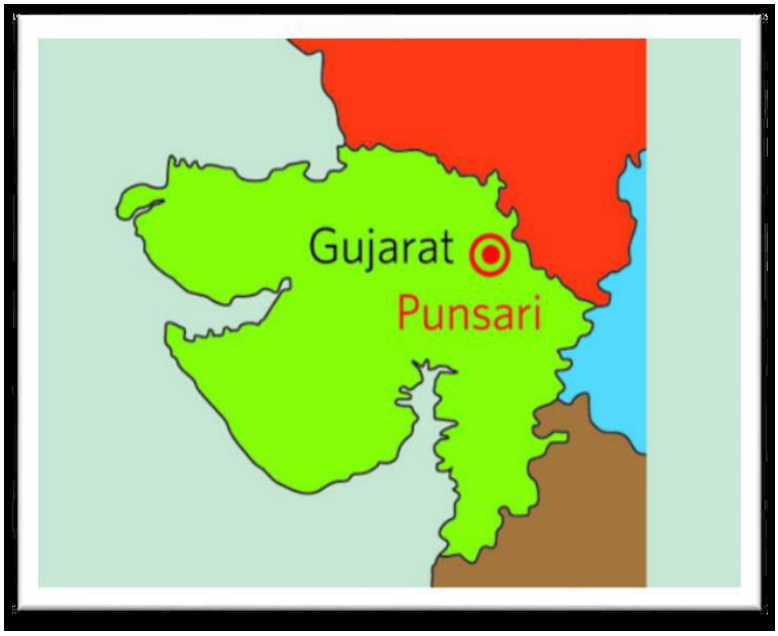


Figure 1. location of Punsari

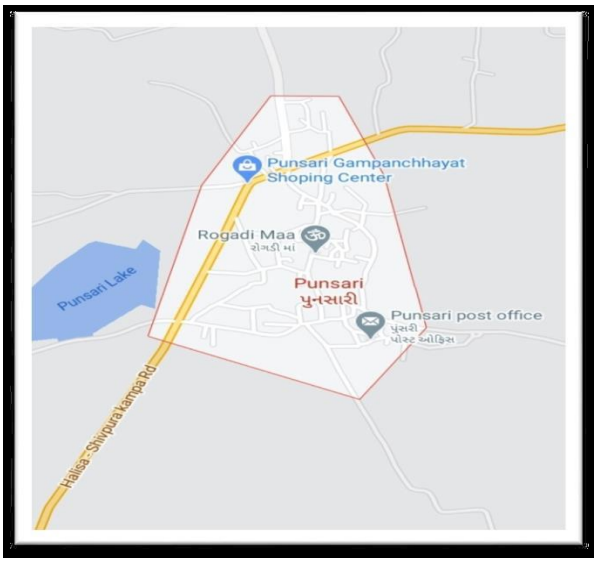


Figure 2. Punsari Google map

Figure 3. Punsari satellite map

1.2.1 Objectives:

- To creating models of local development which can be replicated in other villages.
- To provide easier, faster and cheaper access to urban markets for agricultural produce or other marketable commodities produced in such villages.
- To prevent distress migration from rural to urban areas, which is a common phenomenon in India's villages due to lack of opportunities and facilities that guarantee a decent standard of living.
- To create and sustain a culture of cooperative living for inclusive and rapid development.
- To make the model village a "hub" that could attract resources for the development of other villages in its vicinity.
- To contribute towards social empowerment by engaging all sections of the community in the task of village development.

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

Locality Name: Punsari
Taluka Name: Bayad
District: Sabar Kantha
State: Gujarat
Language: Gujarati and Hindi
Assembly constituency: Prantij assembly constituency
Assembly MLA: Parmar Gajendrasinh Udesinh
Lok Sabha constituency: Sabarkantha parliamentary constituency
Parliament MP: RATHOD DIPSINH SHANKARSINH
Sarpanch Name: Himanshu Patel
Pin Code: 383335
Post Office Name: Gabat
Main Village Name:Gabat

"Swarajya (self-governance) to Surajya (good governance)" has been hailed as the mantra for rural development in the state of Gujarat. The good governance model of this prosperous state from western part of India has been a matter of study for quite some time now. A number of schemes have been launched in the past decade, such as Adarsh Gram, Smaras Gram, Tirth Gram, Sardar Awas, and Paawan Gram, to develop rural areas in Gujarat. The present paper adopts a constructive approach and aims to explore and understand the successful experiment of Punsari Village. The official document of the state government of Gujarat on smart and model village defines a model village as "a village which has foresight for the development and proper planning to keep the village clean, healthy, green, pollution free, crime free, and disease free with co-ordination of various community development and welfare schemes of Government. Smart village means a village which wishes to increase facilities for the citizen by taking decisions democratically. Smart village means a village in which the youth, women, farmers, village artisans, backward, and deprived people may get equal opportunity for development." (Sengupta, 2014). These guidelines aim to offer a design of rural development that focuses not only on improving economic indicators of development but also on bettering the social indicators of development such as health, sanitation, education, women's empowerment, inclusiveness, etc. In this process, the Gram Panchayat has to play a pivotal role. The present programme was inspired by the success of a small village from the District of Sabar kantha in Gujarat called Punsari. In the following section a detailed discussion on how this transformation took place is given. This is based on the information collected through semi-structured in-depth interview with the former village headman and current village headwoman.

1.2.3 The Idea of a model/Smart Village:

Smart Village refers to a concept developed in rural area that provides solutions to problems occurred and improves the quality of life. The main problems faced by rural areas are cover poverty, low level of education, and limited access to technology. Smart village concept emerged due to some different characteristics between rural and urban areas. A village is formed, governed and maintained by its villagers. The People of an ideal village should be honest and hard-working. They should possess qualities like tolerance to every faith and religion, brotherhood and unity. They should live like a large family and help one another in the hour of need. They should have a sense of discipline and a spirit of service before self. They should keep themselves abreast of not only the happenings of the village but also of the country and the world as a whole. They should always be active and cheerful. Simple living and high thinking should be their motto in life.

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

India is a vast country with a majority of its total population living in the villages. The Indian society is predominantly divided into two divisions like the rural society and the urban society. Villages have always been an integral part of society in India. No specific timeframe can be mentioned about the conception of villages in India. However, the concept of village was not present there in the ancient period. The Indus Valley civilisation is so far known to be the ancient civilisation in India and it mainly comprised two cities of Harappa and Mohenjo-Daro. However, the concept of village seems to be absent during this era. No specific timeframe can be mentioned about the conception of villages in India.

There is sufficient evidence to suggest that the village was one of the important settlements in ancient India. The Rig Veda talks about the gram to which various families owed them allegiance. Valmiki's Ramayana talks of two types of villages – the Ghosh and the gram. The Ghosh was smaller than the gram and was also known as vraja, or brij (signifying a cattle farm). Both types of villages had their officials, called the mahattar. There is also a reference to a senior official called gramani or gramik.

A village is a clustered human settlement or community, larger than a hamlet but smaller than a town (although the word is often used to describe both hamlets and smaller towns), with a population typically ranging from a few hundred to a few thousand. Though villages are often located in rural areas, the term urban village is also applied to certain urban neighbourhoods. Villages are normally permanent, with fixed dwellings; however, transient villages can occur. Further, the dwellings of a village are fairly close to one another, not scattered broadly over the landscape, as a dispersed settlement. In the past, villages were a usual form of community for societies that practice subsistence agriculture, and also for some non-agricultural societies. In Great Britain, a hamlet earned the right to be called a village when it built a church. In many cultures, towns and cities were few, with only a small proportion of the population living in them. The Industrial Revolution attracted people in larger numbers to work in mills and factories; the concentration of people caused many villages to grow into towns and cities.

History

The history of Indian villages, in fact, goes back to the Vedic era when the kingdoms comprised a major city and several villages. The villages were a cluster of houses and the surrounding land was cultivated by the villagers. The concept of villages in India flourished during the late Vedic era or during the reign of the Maurya's. The Maurya Dynasty was founded by Chandragupta Maurya during 323 BC and the villages were a predominant part of the Indian social system at that time. The villages were administered in a structured way, through a Gram Sabha during the Maurya Dynasty. The religious and cultural scenario of the villages was primarily dominated by the Hindus, especially the Brahmans. The caste system of Hinduism was strictly maintained during that period. Rural improvement has customarily fixated on the abuse of land-concentrated characteristic assets, for example, horticulture and ranger service.

Structure of the Indian Village System

However, the social structure of the Indian villages changed drastically during the reign of Muslim emperors like the Mughals or Afghans. This period in the history of religions was seen during that period. The social structure in the Indian villages also changed accordingly with the change of religious and cultural scenarios.

Political Scenario of the Indian Village System

The political scenario in the Indian villages has witnessed interesting changes from the ancient period to medieval period to the contemporary period. In the ancient period, the Indian villagers were not inclined to politics and they blindly followed the rules of their kings. This tradition of political unawareness among the Indian villagers continued during the medieval period also. However, the Indian villagers started to be politically aware during the British period. In the contemporary period, the Indian villagers are very much inclined to political activities and they also take active part in all kinds of political decision-making process in independent India.

Transport System of the Indian Village System

Walking was the only way of transport in ancient Indian villages. There was no alternative transport system for the villagers, until the vehicles like Bullock Carts, or Palkis, or Horse Carts, Boats, Ships, etc. came into existence. These continued to be the principal means of transportation for a long period, till the end of the medieval period. However, the British rulers brought about a huge change in the transport system of Indian villages by introducing the busses, train, etc.

Indian villages saw the villagers being influenced by Islam and the equality for religious practice, among all parts of the society was also maintained. During the British period, the Indian villagers got influenced by the Christian religious culture and a rich diversity of several other religious.

Education System of the Indian Village System

The educational scenario has also seen significant changes in the history of Indian villages. In the ancient period, the Indian villagers used to be taught the Vedic and other Hindu scriptures by the Brahmans. These scriptures were the only means of education in the ancient period. The women also used to get education during that period. However, the scenario changed during the medieval period, when the Muslim rulers put on restrictions on women education. The Indian villagers also started to learn about the Buddhist, Jains or Muslim scriptures during that period. The British era brought about a sea of change in the entire educational system of Indian villages. They introduced English language to the Indian people and the missionaries started to propagate Christianity, through the numerous schools established by the British rulers. The British rulers also introduced different streams of education like medical education, engineering education, technological education, etc. This period witnessed a diverse educational scenario in the Indian villages.

Agriculture during the Indian Village System

The history of Indian villages presents an interesting occupation scenario, which has changed with time. Agriculture and farming were the prominent occupations of the Indian villagers during the ancient period and the other occupations included doing clerical jobs in king's courts or working as soldiers for the emperors. The Indian villagers remained dependent on agriculture for several centuries till the British period. However, the scenario changed during the British rule with the introduction of several industries. The villagers started to move to the urban areas, leaving their traditional occupation of agriculture. They joined different industrial organizations as workers or labourers and found alternate occupation. However, agriculture is still the principal occupation in most villages in India.

The scope of getting proper education has increased in the modern times and the literacy rate in the Indian villages has also increased remarkably. The women in Indian villages are also getting enough scope to get educated in the contemporary period. The scope for getting into different occupations has increased for the Indian villagers in the contemporary period as well. Many villagers have changed their occupation from agriculture to industry and have moved to the rural areas for getting into alternate occupation. The women in Indian villages are also getting enough scope to get educated in the contemporary period.

1.3 Detail study (Socio economic, physical, demographic and infrastructure details) Of Ideal village PUNSARI with photograph:

-COMMUNICATION FACILITY

In 2009 Himansupatel, Sarpanch of punsari has installed 12 loudspeakers in the village which are connected in panchayat. Speakers are waterproof so communication continues in monsoon also. They provide information about government schemes by speakers which is very useful.

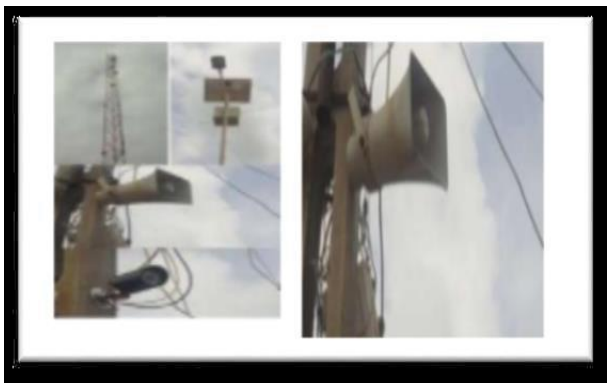


Figure 4. loudspeakers

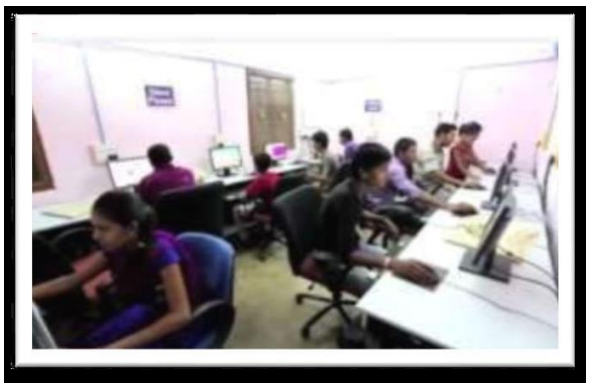


Figure 5. WIFI facility

- WIFI INTERNET FACILITY

Village has a 30mbpsWi-Fi network and villager can take advantage of it by registering themselves in Panchayat at 50 Rs per month. This is very convenient and reasonable price for the interne. By virtue of which people are attracted towards using internet and they are becoming aware about the things going in the world and how they will helpful to them.

- PRIMARY SCHOOLWITH ZERO DROPOUTS

They are providing a best facility to students. There are five primary schools in the village. Classrooms are having CCTV camera and AC. Parents are allowed to watch the performance of the school. Due to such efforts, there are zero dropout in the village.

Figure 6. Primary school

- MINI BUS SERVICE

Before 2008, As Most of the villagers are connected to dairy business; the women were forced to walk around 2 km every day to deliver their milk to milk banks twice a day. Even pregnant ladies had to do this so that there is height MMR and IMR. After 2008, this rate gone to zero as mini bus service started which drops women back in morning and evening.

- RENEWABLE ENERGY PLANT

Village has a waste collecting van which collects the waste of the village and transfers it to the plant where renewable waste is created. Entire village is lit by this plant with 66 KW capacities.

Figure 7. Mini Bus service

Figure 8. Energy plant

- CCTV CAMERA

Village has a CCTV camera at schools and crucial places of the village. The footage can be watch through mobile app or the computer.

Figure 9. CCTV

-RO water purification unit: RO plant for provide clean drinking waterGujarat

Figure 10. RO water treatment plant

- VILLAGE ENTRANCE GATE

Figure 11. Entrance gate

- OTHERS

- Concrete roads
- Solar powered street lamps
- Primary health centre
- Completely managed drainage and sanitary system
- A toilet in every house
- 120 waterproof speakers for communication
- Door to door waste collection system. Tractor were visited to collect waste from each house.
- About eight kinder garden schools
- Urban banking facility
- Toll free complain receiving phone service

1.4 SWOT analysis of Ideal village

Analysis is a strategic planning method used to evaluate the Strengths, Weaknesses, Opportunities, and Threats involved in a project or in a business venture. It involves specifying the objective of the business venture or project and identifying the internal and external factors that are favourable and unfavourable to achieving that objective. It involves specifying the objective of the business venture or project and identifying the internal and external factors that are favourable and unfavourable to achieving that objective. SWOT analysis provides a framework for visioning by helping the planners to identify and priorities the organization's GOALS and to further identifies the strategies of achieving them. SWOT analysis is a technique to analyse the Strengths, Weakness, Opportunity and Threats of a decision, problem ad place etc.

Figure 14. SWOT ANALYSIS

In community development or urban planning SWOT is often used at community meeting to structure conversations about projects carrying out this analysis often illuminates what needs to be done and puts problems in to prospective. A tool that identifies the Strengths, Weaknesses, Opportunities and Threats of an organization. Specifically, SWOT is a basic, straightforward model that assesses what an organization can and cannot do as well as its potential opportunities and threats. The method of SWOT analysis is to take the information from an environmental analysis and separate it into internal (strengths and weaknesses) and external issues (opportunities and threats). Once this is completed, SWOT analysis determines what may assist the firm in accomplishing its objectives, and what obstacles must be overcome or minimized to achieve desired results.

1.5 Benefits by the visit of the ideal village

By the visit of the village, we got all the idea of ideal village, what are the requirements for the ideal village, what are necessary facilities should be there in the village, etc.

All the available facilities were observed in the village like Water supply network, Pucca roads, LED Street lights, Drainage network, Waste disposal, Water storage tanks, waste collection system, etc

CHAPTER: -2 LITERATURE REVIEW

2.1 Introduction: Urban & Rural village concept

2.1.1 Urban village

An urban area, or built-up area, is a human settlement with a high population density and infrastructure of built environment. Urban areas are created through urbanization and are categorized by urban morphology as cities, towns, conurbations or suburbs.

In urbanism, the term contrasts to rural areas such as villages and hamlets; in urban sociology or urban anthropology it contrasts with natural environment. The creation of early predecessors of urban areas during the urban revolution led to the creation of human civilization with modern urban planning, which along with other human activities such as exploitation of natural resources led to a human impact on the environment. "Agglomeration effects" are in the list of the main consequences of increased rates of firm creation since. This is due to conditions created by a greater level of industrial activity in a given region. However, a favourable environment for human capital development would also be generated simultaneously.

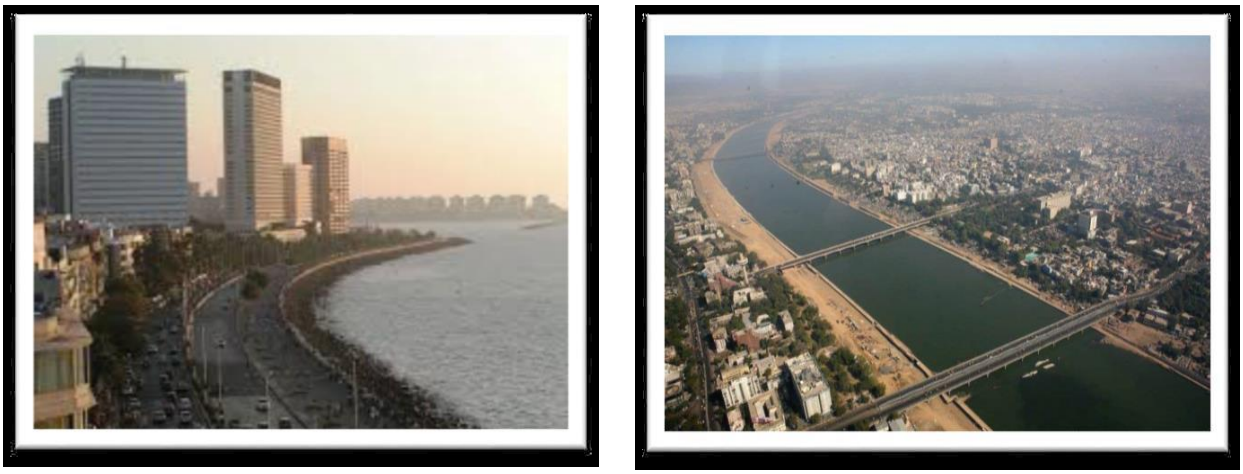


Figure 15. urban area

An urban area is the region surrounding a city. Most inhabitants of urban areas have non-agricultural jobs. Urban areas are very developed, meaning there is a density of human structures such as houses, commercial buildings, roads, bridges, and railways.

2.1.2 Rural village

- A rural area is an open swath of land that has few homes or other buildings, and not very many people. A rural areas population density is very low. Many people live in a city, or urban area. Their homes and businesses are located very close to one another.
- In a rural area, there are fewer people, and their homes and businesses are located far away from one another. Agriculture is the primary industry in most rural areas.
- Most people live or work on farms or ranches. Hamlets, villages, towns, and other small settlements are in or surrounded by rural areas.

- Wildlife is more frequently found in rural areas than in cities because of the absence of people and buildings. In fact, rural areas are often called the country because residents can see and interact with the country's native wildlife.

Figure 16. Rural area

2.2 Importance of the Urbanization

Rural development is necessary not only for an over-whelming majority of the population living in villages but the development of rural activities is essential to accelerate the pace of overall economic development of the country. Rural development has assumed greater importance in India today than in the earlier period in the process of the development of the country. It is a strategy package seeking to achieve enhanced rural production and productivity, greater socioeconomic equity, and aspiration, balance in social and economic development. The primary task is to mitigate the hunger of about 70 percent of the rural population, providing adequate and nutritious food. Then follow an adequate Vishwakarma Yojana Phase-VII Page 22 provision of clothing and footwear, a clean house in a clean environment, medical care, recreational facility, education, transport and communication.

Following are the advantages of the Urbanization

- Growth in industrial productions. The production in various industrial sectors like cement, iron and steel, textile, fertilizers etc., are helping in the economic growth of the country.
- Export increase and this forest reserve increases. Growth in trade and commerce.
- Urbanization helps the nation's business sector.
- Rural people came to the urban places with their goods.
- Development in tourism industries.
- People from foreign countries are attracted to good cities and towns having better transport facilities.
- Tourism is a good source of foreign currency for a country.
- Improvement in Science, Culture etc.
- Urban places are the meeting point of all good cultures of various localities.

- Education, science and technology developments take place in urban places improving the society as a whole.

2.3Different Definition of: Rural -Urban Villages

2.3.1 Rural village

The National Sample Survey Organization (NSSO) defines 'rural' as follows:

- It is generally said thatthe rural areas house up to 70% of India's population.
- Rural India contributes a large chunk to India's GDP by way of agriculture, self-employment, services, construction, etc.
- As per a strict measure used by the National Sample Survey in its 63rd round, called monthly per capita expenditure, rural expenditure accounts for 55% of total national monthly expenditure.
- RBI defines rural areas as those areas with a population of less than 49,000 (tier -3 to tier-6 cities).
- The rural population currently accounts for one-third of the total Indian FMCG sales.

2.3.2 Urban village

According to Wikipedia, an urban village is an urban development typically characterized by medium-density housing, mixed use zoning, good public transit and an emphasis on pedestrianization and public space.

According to census of India 2011 the definition of urban area is:

- A place having minimum population of 5000.
- Population density of 400 persons per sq kilometer or higher.
- 75% plus of the male working population involved in non -agricultural employment activity.

The urban village is an area occupied by the urban community that lives and resides in the urban environment as a group or in certain group which was formed or naturally due to urbanization.

2.4Scenario: Rural / Urban village of India population Growth

In the span of a century, there was a fivefold rise in the population of India – at the start of the 20th century the population was about 238 million, which grew to more than one billion in 2001. With an annual increase of nearly 19 million, India accounts for approximately 18% of the world's population. India has one of the densest rural populations in the world, living in the 600,000 villages scattered throughout the country. The huge density of rural population exerts human pressure on the natural resources and adversely affects the quality of life.

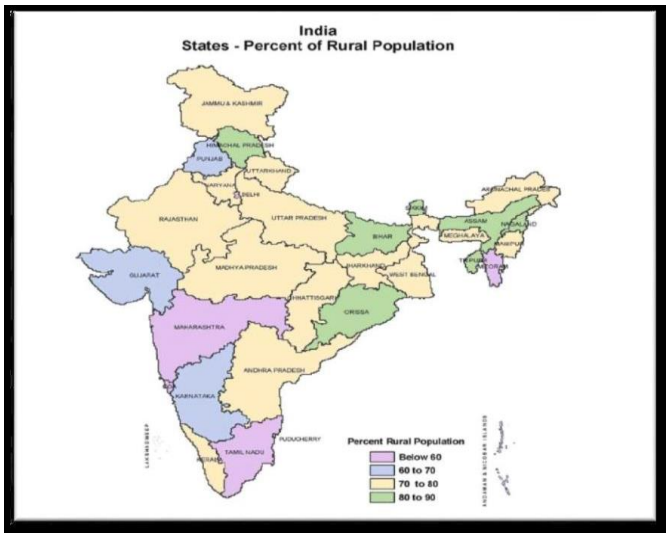


Fig 17 percent of rural population

According to the 2001 Census, 74% of India's population lives in villages. The size of the Indian villages varies considerably – an overwhelming majority of villages have a population less than 1000. Indian society is deeply influenced by religion, caste, language and tradition. The caste and kinship systems regulate economic and social life, especially at the village level to a great extent. More than 80% of the rural population in India is Hindu and the other religious communities are Muslims, Christians, Buddhists, Sikhs and Jains. The rural population comprises of several castes and tribal (Adivasi) communities.

Population	Total	1,210,854,977
	Males	623,724,568
	Females	586,469,294
Literacy	Total	74%
	Males	82.10%
	Females	65.46%
Density of population	per km^2	382
Sex ratio	per 1000 males	940 females
Child sex ratio (0–6 age group)	per 1000 males	914 females

Table 1 Rural population 2011

Though India is considered an emerging economic power, in reality life remains largely rooted in villages. A majority of the rural population in India lives on agriculture and related activities. Throughout India the rural population has lower education levels, higher poverty, higher mortality and higher fertility. Rural residents have relatively fewer modern amenities compared to their urban counterparts. It is also a common trend among villagers to migrate to urban areas in search of employment and education opportunities. The literacy rate among India's rural population is about 60%, which is considerable progress since independence. Disparity with regard to education, employment, land ownership and assets are more pronounced in rural areas with considerable variation.

Description		2011
Approx. Population	6.04 Cr	5.07 Cr
Actual Population	60,439,692	50,671,01
Male	31,491,260	26,385,57
Female	28,948,432	24,285,44
Population Growth	19.28%	22.48%
Percentage of total	4.99%	4.93%
Sex Ratio	919	920
Child Sex Ratio	890	883
Density/km2	308	258
Density/mi2	798	669
Area(Km2)	196,244	196,024
Area mi2	75,770	75,685
Total Child (0-6 Age)	7,777,262	7,532,404
Male (0-6 Age)	4,115,384	4,000,148
Female (0-6 Age)	3,661,878	3,532,256
Literacy	78.03 %	69.14 %
Male Literacy	85.75 %	79.66 %
Female Literacy	69.68 %	57.80 %
Total Literate	41,093,358	29,827,75
Male Literate	23,474,873	17,833,27
Female Literate	17,618,485	11,994,47

Table 2 Rural population 2011

As per projection, population of Gujarat in 2021is 7.15 Crore (**71,536,564**)

- Gujarat's urban population is 42.6 percent of the state's total, according to census figures. Previous figures suggest, 28.08% of Gujarat's population was lived in urban areas in 1971. It rose to 31.1% in 1981, further to34.39% in 2001.
- Calculations further shows that Gujarat's decadal rise in population between 2001 and 2011 stood at19017%. However, the urban population during the same period rose by36%. This is against 9% rate of growth in the rural population.

2.5Various infrastructure guidelines with the Norms for Villages for the provisions of different infrastructure facilities

The importance of infrastructure for economic growth and development in rural area can hardly be overemphasized in a developing economy like India. With poor rural infrastructure, even a marginal improvement in its quantity and quality could significantly improve economic development and human well-being. Improving basic infrastructure, such as roads, transport, electricity, telecommunications, housing, health, water and sanitation, is essential for development and well-being of the rural population. The development of rural infrastructure could promote economic growth, improve the standard of living of the population and reduce the incidence of poverty by generating both farm and non-farm employment and earning opportunities, increasing productivity, providing access to basic goods and services and improving the health and physical condition of people. Empirical studies also report a strong relationship between infrastructure, economic growth, rural development and poverty reduction. In spite of the crucial importance of infrastructure, significant deficiencies have persisted in rural infrastructure across Indian states. The quantity and quality of infrastructure facilities are substantially lower in rural areas than in urban areas. A relatively low density of population, low household incomes and the absence of scale economies are considered to be challenges to the expansion of basic infrastructure facilities in rural areas.

Rural Infrastructure in India: Scope and Importance:
Infrastructure is the backbone of any country. It plays a very important role in supporting nation's economic growth and the same is the case with India. If we talk about rural infrastructure in the country, then it is crucial for agriculture, agro-industries and poverty alleviation in the rural areas. Typically, rural infrastructure in the country encompasses rural roads, major dams and canal works for irrigation and drainage, rural housing, rural water supply, rural electrification and rural telecommunication connectivity.

Importance of rural infrastructure in India:
Basically, rural infrastructure has the potential to provide basic amenities to people that can improve their quality of life. To give an example, development of rural infrastructure can lead to improved access to market centers for the rural producers, better availability of inputs and raw materials at reduced prices and improved mobility. Here is a look at how different sections of rural infrastructure play their role in improving the rural economy as well as life of the people.

Rural road infrastructure: It provides mobility and connectivity to people living in rural areas. It also provides the much-needed boost to agricultural activities by making available water, seeds

and other raw materials to the farmers. By improving connectivity, rural roads also enhance employment opportunities for the rural people in non-agriculture sector, thereby, increasing livelihood opportunities. Rural roads also ensure that the rural areas are served with better public services and all the benefits offered by the state reach the far-flung areas easily. They can even provide access to education and health services.

Rural electrification infrastructure: It basically caters well to the requirements of agriculture and other activities including irrigation pump sets, small and medium industries, khadi and village industries, cold storage chains, healthcare and education

Rural water supply system: It can lead to sustainability of systems and sources and tackle the problem of water quality, thereby, increasing good health of people.

Rural housing infrastructure: It has the potential to improve living standard of the people. Overall and as per various studies, development of rural power, irrigation, water, sanitation and road infrastructure can increase productivity, savings, income and tourism and result in better jobs and health of rural people.

With poor rural infrastructure, even a marginal improvement in its quantity and quality could significantly improve economic development and human well-being. Improving basic infrastructure, such as roads, transport, electricity, telecommunications, housing, health, water and sanitation, is essential for development and well-being of the rural population. The development of rural infrastructure could promote economic growth, improve the standard of living of the population and reduce the incidence of poverty by generating both farm and non-farm employment and earning opportunities, increasing productivity, providing access to basic goods and services and improving the health and physical condition of people.

Scope for development of rural infrastructure in India:

- As per the road statistics published by central government for the year 2012-13, rural roads span 60.39 km of every 100 km. The sad part is that most of these rural roads in the country are in bad shape i.e., they are of poor quality, potholed and unable to withstand the loads of heavy farm equipment, thereby, affecting the rural population's quality of life and ability of the farmers to transport their produce to the market. Further, the rural surfaced road is just 33 per cent of the total rural road network in India and remaining are kutcha roads which are highly vulnerable and inaccessible particularly during the rainy season. Thus, there is increasing need for surfaced rural roads in the country.
- Living conditions of people in rural areas has still not improved much and there are majority who live in kutcha houses which are highly vulnerable to rainfall, wind blow, fire and other environmental hazards. Hence, good rural housing infrastructure is needed in the country.
- As per the Census 2011, still 45 per cent of the rural households are not connected with electricity and depend on kerosene and other means for lighting. Hence, rural electrification infrastructure is needed to make the lives of rural people better.
- Although there are schools in the rural areas but they lack in terms of the number of classrooms, availability of safe drinking water facilities, toilet facilities etc. Hence, the education infrastructure in rural India also needs a lot more improvement.

- It goes without saying that the health infrastructure is poorly developed in rural India. Even if it is there, there are no good doctors because the rural areas have very low connectivity and doctors or skilled health workers are unable to access these areas. This poses a great threat to the lives of rural population in the country.
- Living conditions of people in rural areas has still not improved much and there are majority who live in kutcha houses which are highly vulnerable to rainfall, wind blow, fire and other environmental hazards. Hence, good rural housing infrastructure is needed in the country.
- As per the Census 2011, still 45 per cent of the rural households are not connected with electricity and depend on kerosene and other means for lighting. Hence, rural electrification infrastructure is needed to make the lives of rural people better.
- Although there are schools in the rural areas but they lack in terms of the number of classrooms, availability of safe drinking water facilities, toilet facilities etc. Hence, the education infrastructure in rural India also needs a lot more improvement.
- As per the reports from Census 2011, merely 30 per cent of rural areas are covered with tap water supply. In addition, the sanitation facilities in the rural areas are also not adequate. Thus, there is huge scope for developing drinking water infrastructure and sanitation facilities in the rural areas. With these points, it is clear that there is huge scope for development of all kinds of infrastructure in rural areas. In fact, the gaps in the rural infrastructure need to be addressed properly and as fast as possible so as to achieve redistributive growth and alleviate poverty in the country.

2.6 Other Projects / Schemes of Gujarat / Indian Government

- Sansad Adarsh Gram Yojana (SAGY)
- National Social Assistance Programme.
- Pradhan Mantri Awaas Yojana (Gramin)/ Indira Awaas Yojana.
- Antyodaya Anna Yojana (AAY)
- Provision of Urban Amenities in Rural Areas (PURA)
- National Rural Employment Guarantee Act
- Janani Suraksha Yojana
- Kishori Shakti Yojana
- Balika Samriddhi Yojana
- Mid-day Meal Programme
- Intergrated Child Development Scheme (ICDS)
- Vishwakarma Yojana Phase-VIII Village-Hoda District-Banaskantha
- Gujarat Technological University Page 50
- Mahila Mandal Protsahan Yojana (MMPY)
- National Food for work Programme (NFFWP)
- National Social Assistance Programme
- Sanitation Programme (SP)
- Rajiv Gandhi National Drinking Water Mission
- Swarnjayanti Gram Swarozgar Yojana
- Minimum Needs Programme (MNP)

CHAPTER: -3
Smart (Cities / Village) Concept Idea and its Visit (Civil & Electrical Concept)

3.1 Introduction: Concepts, Definitions and Practices

Concept of smart village

Smart Village is a concept adopted by national, state and local governments of India, as an initiative focused on holistic rural development, derived from Mahatma Gandhi's vision of Adarsh Gram (Ideal Village) and Swaraj (Self Reliance). Prime Minister Narendra Modi launched Sansad Adarsh Gram Yojana (SAGY) or SAANJHI) on 2 October 2014, Gandhi's birthday, in addition to Smart Cities and Digital India, as a development program for India. The Parliamentarian's Model Village Scheme main goal is for each Member of Parliament and Minister to adopt a rural village and develop it into a model by 2019 under the SAGY guidelines. The vision of SAGY is an integrated village development plan, encompassing Personal, Human, Social, and Economic dimensions.

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 Dhanora, Teh. Bari, District Dholpur, a small and remote village of Rajasthan to develop it as India's First Smart Village. The village is situated 30 km away from Dholpur district head quarter and 248 km from Jaipur. The population of the village is about 2,000. 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. Prof. Priyanand Agale Founder of Eco Needs Foundation and Dr. Satyapal Sing Meena (IRS) Joint commissioner of Income Tax has converted this idea into reality and now Dhanora has become role model of Rural Development. Dhanora village was also given an award by Prime minister of India Mr. Narendra Modi in the year 2018.

Definitions of smart villages

- An urban area that uses different types of electronic data collection sensors to supply information which is used to manage assets and resources efficiently. This includes data collected from citizen, devices, and assets that is processed and analysed to monitor and manage traffic and transportation systems, power plants, water supply networks, waste management, law enforcement, schools, hospitals etc.

- Smart city is one that uses technologies to improve and transform the lives of its citizens and the environment, while closing the digital divide and allowing businesses to thrive and innovate. It's an idea of inclusion and not division, collaboration between citizens, and the public and private sectors for sustainable transformation and growth.

Civil Practices:

1. Procurement

The procurement practice involves:

• Selecting Appropriate Method for Construction Management
• Selection of Best team for the design
• Selection of best team to deliver
• Select best team to Operate the facility

2. Partnering

When compared to the traditional approach of working, the partnering is an different working style. This takes a collaborative approach in working.

It has been proved through great projects that working through partnering helps in achieving

• Greater value of money
• Higher Profits for the company
• Quality Improvement
• Prediction of project completion

3. Risk Management

Risk in projected are always expected and it is necessary to maintain a "risk register". This will help to enter all the risk faced from the starting of the project to its end. Along the risk encountered, the method used to manage is also recorded. This helps to be applied in other projects. Risk assessing and analysing will help to assign appropriate actions to different project team. The risk assessment is an activity that have to be performed in a regular basis and in no case be ignored.

4. Value Management

This key practice takes into account time, cost and risk constraints, in order to meet the client's business needs. The method of value management will involve complete collaboration with the team. The team is in charge of design and delivery of the project. This team will also include the end-users and the stake holders. Value management is a systematic approach. This helps in generating different options to satisfy the requirements of the clients. Value management is practiced through the project life. In parallel the risk management is also followed. At the end of every project, it is analyzed and found how the value management helps in satisfying the requirements of the clients and the stakeholders.

5. Benchmarking

This method is practiced by comparing with other completed projects. The performance of different projects is compared each other. The lessons from each project is used to make best

performances for new projects. Benchmarking is a method that improves the performance of the project in a logical and systematic way.

6. Whole Life Costing

Here, the cost of ownership is measured of a building. This will take into consideration the sum of:

- Initial Capital Cost for making the building
- Cost of maintenance of the building
- Cost of servicing the building

7. Health and Safety in Construction

The two main criteria while considering the health and safety in construction are that: The right of workers to be protected against risk and save their health. Effective planning and managing of the construction site to make it safe thus gaining productivity and profitability.

8. Sustainable Construction

Sustainable construction focuses to have social, economic and environmental performance of the industry. The practices focus on:

- Getting maximum profit that help to recognize the business.
- Deliver buildings with greater satisfaction, well-being and value
- Respect and fair treatment of the employees. Considering health and safety factors, welfare conditions etc.
- Protection and enhancement of the environment.
- Waste reduction and pollution during the construction process
- Energy efficient buildings by taking energy from renewable resources.

Brief introduction about Vavol

We have selected the smart village as Vavol. It is located in district Gandhinagar. We have visited the Vavol village.

Vavol is a Census Town city in district of Gandhinagar, Gujarat. The Vavol Census Town has population of 12,628 of which 6,597 are males while 6,031 are females as per report released by Census India 2011.

Figure 18. satellite view

Figure 19. google map

Population of Children with age of 0-6 is 1477 which is 11.70 % of total population of Vavol (CT). In Vavol Census Town, Female Sex Ratio is of 914 against state average of 919. Moreover, Child Sex Ratio in Vavol is around 771 compared to Gujarat state average of 890. Literacy rate of Vavol city is 89.44 % higher than state average of 78.03 %. In Vavol, Male literacy is around 94.76 % while female literacy rate is 83.74 %.

Vavol Census Town has total administration over 2,807 houses to which it supplies basic amenities like water and sewerage. It is also authorized to build roads within Census Town limits and impose taxes on properties coming under its jurisdiction.

The nearest railway station to Vavol is Gandhinagar Cap which is located in and around 1.2 kilometer distance. The following table shows other railway stations and its distance from Mamakudi.

Gandhinagar Cap railway station	1.2 KM
Kalol railway station	10.8KM
Chharodi railway station	14.1KM

3.2 Vision-Goals, Standards and Performance Measurement Indicators

Vision-Goals

- Identify the transportation challenges and needs of the citizen and business community and demonstrate how advanced technologies can be used to address issues in safety, mobility, and climate change, now and into the future.
- Support and encourage cities to take the evolutionary and revolutionary steps to integrate advanced technologies – including connected and automated vehicle technologies – into the management and operations of the city, consistent with the USDOT vision elements.
- Demonstrate, quantify, and evaluate the impact of these advanced technologies, strategies, and applications towards improved safety, efficiency, and sustainable movement of people and goods.

Performance Measurement Indicators

Now that the services in smart villages are developed, they need to be assessed by measuring their performance. This includes measurement of individual services and the performance of the village as a whole. There must be standard parameters for success in reference to timeliness response and remedy of complaints, satisfaction to users, accessibility.

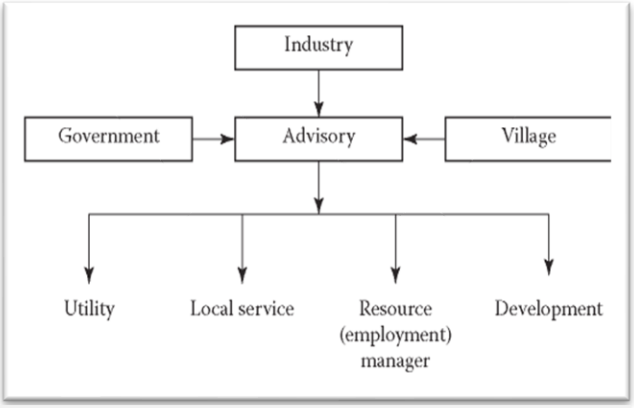


Figure 20. Performance Measurement

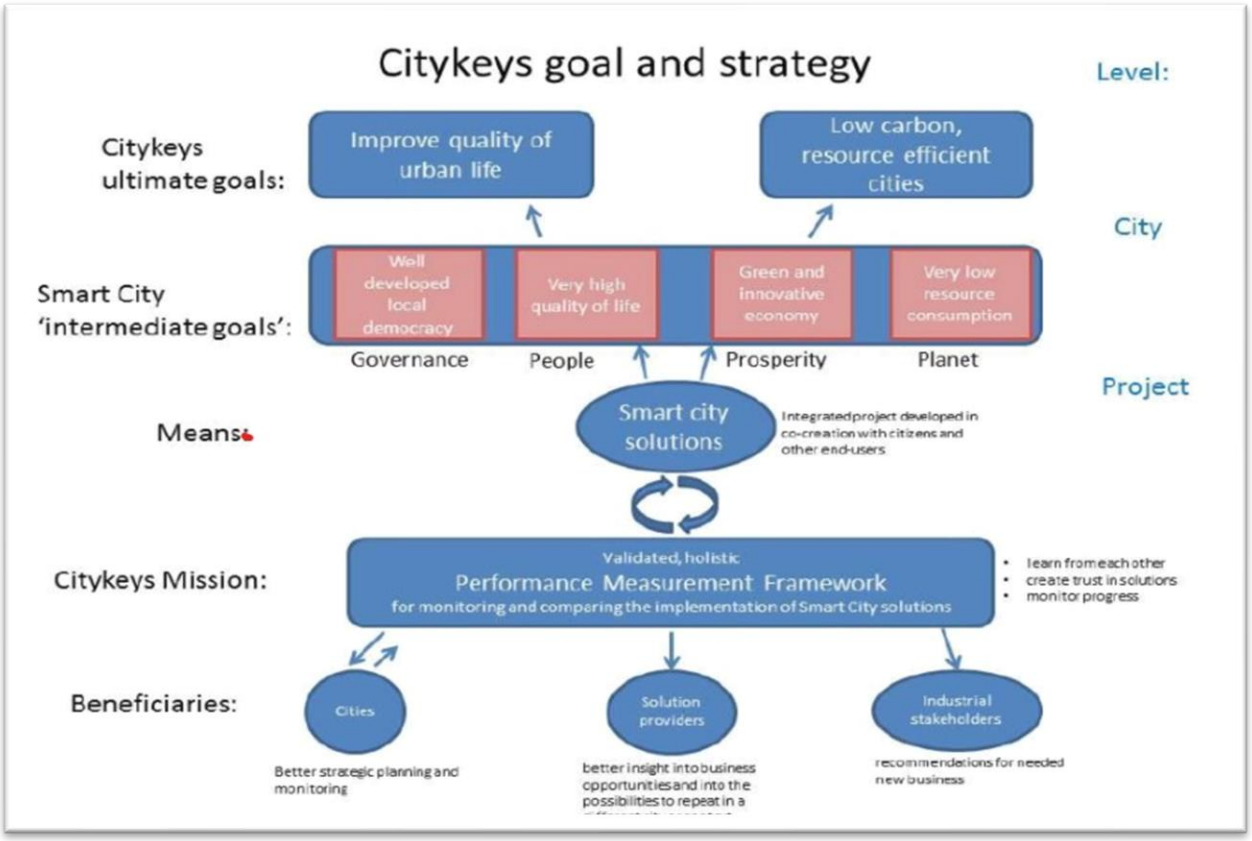


Figure 21. Performance Measurement indicators

- Examine the technical, policy, and institutional mechanisms needed for realizing the potential of these strategies and applications – including identifying technical and policy gaps and issues – and work with partners to address them.
- Assess reproducibility and qualify successful smart city systems and services for technology and knowledge transfer to other cities facing similar challenges

3.3 Technical options

- Smart villages are needed for the welfare of rural people. Technologies are available to make a village smart but due to lack of appropriate strategies, lack of proper, integrated, implementable planning, lack of congenial monitoring, and above all lack of significant execution of activities, there has been failure.
- However, a framework comprising various factors, such as technological factors, social factors, legal and governance factors, and their measurements could be used for designing and developing smart villages in India. An ecosystem should be developed for these smart villages, focusing attention on its location as well as the investment opportunity.
- Here it is also suggested that in order to develop smart villages, the public-private partnership (PPP) model could be of great help.
- It is expected that these concepts and recommendations can be applied in developing smart towns and semi-urban areas to develop smaller towns near the big cities of India. However,

it should be kept in mind that the mere development of these smart villages may not suffice the purpose of betterment of living standards, but attention is to be focused holistically on the sustainability of these smart villages.

Services Required for the Smart Village:

- Solar LED Street Lighting and Solar Home Lighting Systems.
- Development of Health Centres, Roads and school labs and kids playgrounds.
- Efficient public transportation Systems.
- Use of renewable energy.
- Safe Drinking Water Facility- RO Water Plants.
- Solid and liquid waste management.
- Improving sanitation conditions.

Following are the amenities available in Vavol village:

Figure 22. Primary school

Figure 23. ATM

Figure 24. watertank

Figure 25. Bank

Figure26. Pond

Figure27. Bus stand

Figure28. Hospital

3.4 Road Map and Safe Guards

(1) Determine the Case study: -
In this we research on a case study of village Vavol and get some information about village facility.

(2) Initial Interview: -
Then we meet the Sarpanch of the Vavol village and get some idea about how they work on the village.

(3) (I) Analyze the meaning and purpose of the smart village: -
In this we understand or analyse the meaning of the smart village.

(ii) Analyze the smart village model: -
In this we analyse the smart village model.
(iii) Analyse the implementaion in the smart village: -
In this we analyse what types of the he implementation occur in the Vavol village. Like, Ro-Plant, Solid waste disposal etc.

(4) Compare with the regulation about Village: -
In this we compare all the regulation of the village Vavol**.**

(5) Preposes the smart village model: -
After all the process complete, we give a proposed a smart village model**.**

3.5 Issues and challenges
•Illiteracy In villagers
Due to the poor literacy, there is no mutual understanding pf the gov. Yojanas, skims etc. So, this is the main issue occurred in the smart village.

•Less available space for further construction and development
Due to population increase there is increase need of the land as well as the house. So that day by day the land is decrease this is the main issue occurred in smart village.

•Less scope of green development in future.
If the development is increase in village, then there is no scope available in green development in future.

•Unemployment
If village become a smart but if the youth of the villagers are not become self-employed then it occurs major issue in the villages as well as our country.

•Poor Hygiene condition of villagers
Due to the poor hygiene condition maintained by the villagers then the village can't be a smart village.
•Reverse Migration
In mostly current situation generally the peoples who living in urban area they migrate towards to the villages because of in smart village there are some facilities available like urban area. So that's why the reverse migration occur those is the major issue occur in village.

3.5 Cyber security
Due to increase in complexity of smart city systems and globally connected social, economic, political systems, etc. has increased vulnerability of security of a city. The cyber threats have amplified due to infinite supply of data. Smart surveillance technology or analytics to manage the crowd, traffic, cyber security, data privacy, building codes to manage natural/man-made disasters, etc. are some parameters that would make a city safe. Different challenges to our security and expectations of privacy have arrived due to innovations in IT. Humans are already interconnected via gadgets. Standards are evolved for all these potentially connected systems. This will lead improve in quality in life.

3.6 Retrofitting- Redevelopment- Greenfield Development District Cooling

Retrofitting refers to the addition of new technology or features to older systems, for example:

•Power plant retrofit, improving power plant efficiency / increasing output / reducing emissions
•Home energy retrofit, the improving of existing buildings with energy efficiency equipment
•Seismic retrofit, the process of strengthening older buildings in order to make them earthquake-resistant.
•Retrofitting techniques: -
(1) Global
(2) Local

Redevelopment:

Redevelopment is conceptually similar to land readjustment, with the exception that it happens in existing urban areas and often involves a rezoning by the government of a given area from a low-density (single-family housing) to higher-density (mixed-use or commercial) development. It is also accompanied by a provision of infrastructure improvements (mass transit, such as metro lines) that can support such up-zoning.

As part of this process, a government assembles the individual private properties and undertakes a new higher development plan and delivers the necessary infrastructure. At the end, the government returns to each landowner a share of the overall new development that is equivalent to their original land or property ownership. It retains a share of the development that it then sells to recover the cost of the infrastructure improvement.

Green field development:

Greenfield development will introduce most of the Smart Solutions in a previously vacant area (more than 250 acres) using innovative planning, plan financing and plan implementation tools (e.g., land pooling/ land reconstitution) with provision for affordable housing, especially for the poor. Greenfield developments are required around cities in order to address the needs of the expanding population. from a legal perspective, the challenges in obtaining timely, effective, and affordable approvals for Greenfield residential development.

In particular, we focus on the constraints on Greenfield developments (not all green fields are equal); the need to integrate land use planning with the provision of infrastructure; and the opportunities provided by the Special Housing Area legislation. Greenfield areas are seen as the low hanging fruit in terms of providing land for urban expansion, however the reality is quite different. There will be no perfect sites where the conversion of land for urban use will have no effects; all areas will be constrained, and the conversion of any area will need to occur in the context of compromises HAVING been made. One of the most important issues with Greenfield developments is to ensure that the development area can be appropriately served with infrastructure.

District Cooling Systems - Integrated chilled water production system for efficient cooling of buildings in cities:

District Cooling Systems are positioned as an effective technology to mitigate the heat island effect exacerbated by conventional, stand-alone cooling system.

Key features: -

- 50% energy efficiency improvement while electricity consumption is decreased by 35%.
- 50% CO2 emissions savings and decrease of water usage by 65%.
- Architectural heritage preservation.

Profitability: -

- This solution significantly reduces usage costs for end customers, compared to stand-alone units.
- The comparable reductions in cost relative to energy and water use. Categories of Application
- Advanced grid infrastructure

3.7 Strategic Options for Fast Development

Some typical features of comprehensive development in Smart Cities are described below.

- Promoting mixed land use
- Housing and inclusiveness
- Creating walkable localities
- Preserving and developing open
- Promoting a variety of transport options
- Making governance citizen-friendly and cost effective
- Giving an identity to the city
- Applying Smart Solutions to infrastructure and services

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

Linkages between water security and socio-economic growth

The Sustainable Development Goal (SDG) 11 calls for inclusive, safe, resilient, and sustainable cities. This cannot be achieved without innovation in the water sector with in-depth broad thinking, research and analysis on the links between economic growth and the future of our urban spaces.

India has some of the fastest-growing cities in the world, both in terms of population expansion and industrial and economic growth. It is estimated that by 2030 over half the population in the country will live in urban centres.

No Indian city currently supplies 24/7 clean potable water to all its residents year-round. Added to this, is the climate uncertainties and vagaries of changing weather patterns adversely affecting available sources.

Urban Water Supply in India: -

This section provides an analysis of the current situation in urban water supply in India. It presents this analysis in three parts: household, water distribution and treatment systems, and water sources.

Distribution Losses: -

The mere presence of infrastructure is no indicator of availability of water: most urban households do not receive adequate water. Often, non-availability of water or water scarcity is cited as a reason. However, the major challenge, at least among the bigger cities, is huge

distribution losses which account for a significant chunk of the non-revenue water in Indian cities. These losses are both physical due to decrepit pipes and lack of maintenance, and also monetary losses, due to incomplete metering and billing. The physical losses occur in three main ways: leakages in distribution mains, leakages at storage tanks, or leakages at service connection point.

Improper Operations and Maintenance: -
The water supply systems in urban India suffer from inadequate operations and maintenance. Lack of O & M is a major cause of distribution losses, and also affects the longevity of the system. Indian cities are currently trapped in a vicious circle of build, neglect and re-build.

Prevalence of Informal Supply Chains: -
In addition to public distribution systems, there are several informal supply chains in Indian cities. These typically include small to medium tanker operators, who source water from within the city or nearby areas, and supply to households.

Urban Sanitation in India: -
This section presents the analysis of urban sanitation in India, describing the whole wastewater cycle.

Differential Access to Sanitation: -
Access to sanitation is unequal across income groups, cities and states. The section below attempts to highlight the differential access to toilet facilities across different parameters. Across Income Groups Not surprisingly, access to toilet facilities is not distributed equally among households with varying economic status. While there are some differences in the categories for data collection in Census and National Sample Survey Organization, an analysis of NSSO (2009) findings indicates a clear trend: the lower the MPCE quintile, the higher the possibility of lack of access to toilet facilities.

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

Following projects Contributes working by the government in village area.

- Digi Locker
- MyGov.in
- eGram service
- Swachh Bharat Mission mobile app
- National Scholarship Portal
- Smart Data Centre
- Digitize India Platform
- Aarogya setu application
- Dudh Mandali
- Bachat Mandali
- Mahila Forum
- Social infrastructure facilities
- Sustainable infrastructure facilities

Out of them one project is handled by the government in village area: -

I - Khedut Portal:

The portal of Ikhedut is a type of farmers portal by the state government of Gujarat. The portal hosts various types of Government schemes for the farmers of the state. It is a one-stop destination containing information on all farmer related schemes and policies formulated by the government of the state.

Farmers of the state who want to avail the benefits of the scheme must check out this article to get details on the portal, objectives, benefits, eligibility, documents, and more. Applicants' farmers from the state can also check the process to register on the portal and check their application status on the ikhedut portal.

I-khedut portal Gujarat has been launched by the Gujarat government. The main aim of this i-khedut Gujarat Portal is to provide benefit to the farmers of the state. The state starts various schemes for the farmers for farming such as horticulture, fisheries, water conservation, and many more.

•Through this scheme farmers can directly get information related to latest schemes.

•Under this Gujarat Ikhedut Farmer Scheme, farmers do not have to pay any fee to get any information regarding schemes related to agriculture.

•With the help of this Ikhedut Portal 2021, farmers will get information regarding weather, agricultural schemes launched by the government and the market price of the crops, and many more.

•Through this ikhedut portal online application, farmers can apply for tractors and the subsidy will be provided by the government under '' the scheme of khet wadi'' i.e., Ikhedut Portal Gujarat Tractor Yojana**.**

List of the i-khedut portal Gujarat schemes:

The information of all government schemes for farmers will be accessible via the ikhedut portal Gujarat.

(1) Underground pipe line – PVC scheme.
(2) Mb play (hydraulic reverse) scheme.
(3) Automated seed drill scheme.
(4) Mb plau (mechanical reversible scheme.
(5) Automated seed low fertilizers planner scheme.
(6) Open pipeline scheme.
(7) Cultivator scheme.
(8) Automated seed low fertilizers drill scheme.
(9) Ground nut digger scheme.
(10) Charge cutter (engine / oil motor operated) scheme.
(11) Power tiller scheme.
(12) Potato planter scheme.
(13) Multi crop planter scheme.
(14) Post hall digger scheme.
(15) Stable saver scheme.

CHAPTER: -4 About KHASA Village

4.1 Introduction

4.1.1 INTRODUCTION ABOUT ALLOTED VILLAGE

According to Census 2011 informationKhasa is a large village located in Palanpur Taluka of Banaskantha district, Gujarat with total 525 families residing. The Khasa village has population of 2601 of which 1364 are males while 1237 are females as per Population Census 2011. In Khasa village population of children with age 0-6 is 321 which makes up 12.34 % of total population of village. Average Sex Ratio of Khasa village is 907 which is lower than Gujarat state average of 919. Child Sex Ratio for the Khasa as per census is 783, lower than Gujarat average of 890. Khasa village has lower literacy rate compared to Gujarat. In 2011, literacy rate of Khasa village was 75.83 % compared to 78.03 % of Gujarat. In Khasa Male literacy stands at 90.71 % while female literacy rate was 59.76 %.

As per constitution of India and Panchyati Raj Act, Khasa village is administrated by Sarpanch (Head of Village) who is elected representative of village. Khasa village is located in Palanpur Tehsil of Banas Kantha district in Gujarat, India. It is situated 15km away from Palanpur, which is both district & sub-district headquarter of Khasa village. As per 2009 stats, Khasa village is also a gram panchayat.

The total geographical area of village is 521.14 hectares. Khasa has a total population of 2,601 peoples. There are about 525 houses in Khasa village. As per 2019 stats, Khasa village comes under Vadgam assembly & Patan parliamentary constituency. Palanpur is nearest town to Khasa which is approximately 15km away.

4.1.2 NEED OF THE STUDY

As we know that the rural areas having insufficient facilities like water, electricity, road networks, sewage, house, waste disposal etc. These all are major facilities which are not available in rural areas. For the provision of better life in rural areas the government starting a Vishwakarma Yojana project which will be helpful to survey the rural areas by the engineering students and get proper suggestions about the development of the villages. This will provide a better life to the villages of rural areas. Also, able to provide a well-developed plan for the villages which is useful to obtained better income, better lifestyle, health, modern facilities etc. There will be also a provision of Infrastructural development plans by the governments for undeveloped areas. These all are the study criteria which are done by students.

4.1.3 STUDY AREA

This gives the information about the Khasa Village. It includes the location of the village, history related to the village, population statistic, social scenario and land use details of the Khasa village. Study area includes mainly two points.

- Techno economic survey of smart village (Punsari)
- Techno economic survey of project village (Khasa)

4.1.4 OBJECTIVES OF THE STUDY

- Vishwakarma Yojana provides the advantage of real world experience to the engineering students and at the same time applies their technical knowledge in the development of infrastructure for rural development.
- Rural soul with urban amenities makes **R-urban village.**
- Our work is about development of appropriate facility and suggestion for up-gradation of village.
- The main aim of this project is "creation of infrastructure, connectivity, civic and social infrastructure along with the provision of economy generation.

4.1.5 Methodology Frame Work for development of your village

- Selection
- Survey
    1. Ideal village survey (Punsari)
    2. Allotted village survey (Khasa)
    3. Smart village survey (Vavol)
- Problem identification
- Solution

METHODOLOGY:

- Find out our study area
- Literature
- Data collection
  -Govt. & local
  -Office Villages
- Analysis of data
- Problem solution
- Design solution
- Final design solution
- Conclusion

4.2 STUDY AREA PROFILRE OF KHASA VILLAGE

4.2.1 Study Area Location with brief History land use details

Khasa is a small Village in Kankrej Taluka in Banas Kantha District, Gujarat. It comes under Khasa Panchayath. It is located 69 KM towards west from District headquarters Palanpur&138 KM from State capital Gandhinagar. Khasa is a large village located in Palanpur Taluka of Banas kantha district, Gujarat with total 525 families residing. The Khasa village has population of 2601 of which 1364 are males while 1237 are females as per Population Census 2011.

Locality Name:	**Khasa**
Taluka Name:	Palanpur
District:	Banas Kantha
State:	Gujarat
Language:	Gujarati, Hindi
Pin Code:	385515
Post Office Name:	Sihori

Table 3. physical and demographical growth

4.2.2 Base Location Map, Land Map, Gram Tal Map

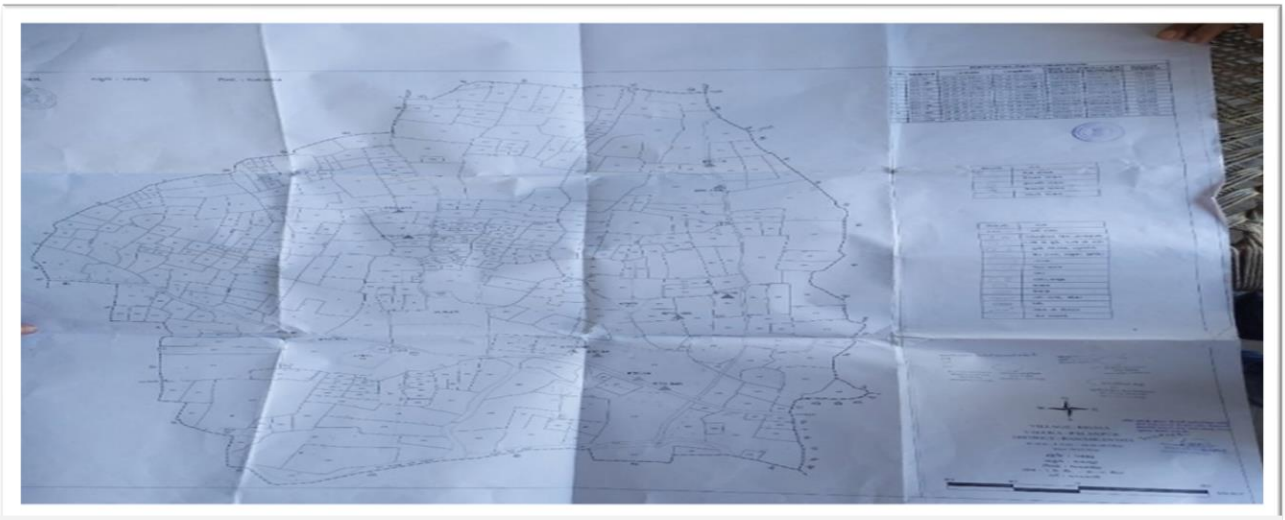


Figure 29. map of khasa village

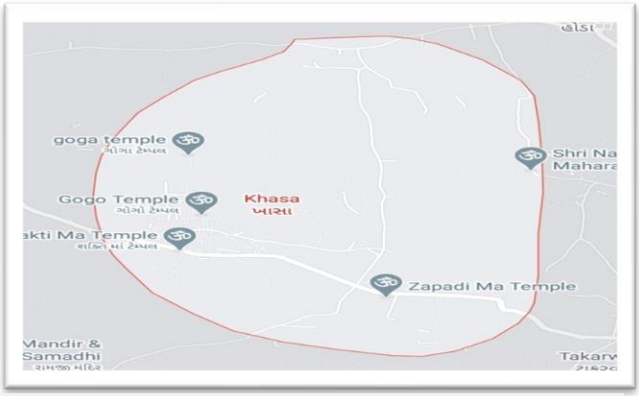


Figure 30. Google map of khasa

Figure 31. Satellite view of khasa

CENSUS PARAMETER	TOTAL	MALE	FEMALE
No. Of houses	525		
Population	2601	1364	1237
Total literacy rate%	75.83%	90.71%	59.76%
Scheduled tribes population	0	0	0
Scheduled cast population	318	164	154
Working population	1203	759	444
Child(0-6) population	321	180	141

Table 4. Details of khasa

According to Census 2011 information the location code or village code of Khasa village is 508196. Khasa village is located in Palanpur Tehsil of Banas Kantha district in Gujarat, India. It is situated 15km away from Palanpur, which is both district & sub-district headquarter of Khasa village. As per 2009 stats, Khasa village is also a gram panchayat.

The total geographical area of village is 521.14 hectares. Khasa has a total population of 2,601 peoples. There are about 525 houses in Khasa village. As per 2019 stats, Khasa village comes under Vadgam assembly & Patan parliamentary constituency. Palanpur is nearest town to Khasa which is approximately 15km away.

Connectivity	Status
Bus Service	Available within village
Private Bus Service	Available within 10+ km distance
Railway	Available within 10+ km distance

Particulars	Total	Male	Female
Total No. of Houses	525	-	-
Population	2,601	1,364	1,237
Child (0-6)	321	180	141
Schedule Caste	318	164	154
Schedule Tribe	0	0	0
Literacy	75.83 %	90.71 %	59.76 %
Total Workers	1,203	759	444
Main Worker	866	-	-
Marginal Worker	337	35	302

Table 5. Rural population

4.2.3 Physical & Demographical Growth

The given table gives the basic idea of the physical and demographical growth of the Khasa village.

4.2.4 Economic generation profile / Banks:

➢ The major sources of income are:
- Farming
- Animal Husbandry
- As Shopkeepers
- As workers in mills and factories.

➢ Banks: There are no banks currently present in Khasa village.

➢ Income: The average income of the village dwellers is about Rs 6000 to Rs 20000 per month.

➢ Post Office: There is no Post Office in Khasa village.

Figure 32. map of khasa village

4.2.5 Actual Problem faced by Villagers and smart solution:

While visiting the village, we interacted with the Sarpanch and asked the facilities available and the facilities required in the village Khasa. And the following information we got:

➢ There is no public toilet available.

➢ There is no post office available in village.

➢ The primary school of the village must need repair on urgent basis.

➢ There are issues for the drinking water and waste management and garbage collection.

➢ There is no public library in the village.
➢ There is no bank existing in the village.
➢ There is no recreational area is available.
➢ There is no cremation house available.

Smart solution:

- Public Toilet
- Public Library
- Post office
- Super market
- Primary school
- Bank
- Communication system

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

Social scenario of Village

CULTURE:
As Khasa is a Gujarati village, the culture of the Gujarati's does not only prevail in Gujarat but it has been widespread to different parts of the world and now recognized as an international culture. There is not much of culture shock seen in the people of Gujarat and so it makes people bold and courageous with lot of energy to face different challenges raised by the global scenario.

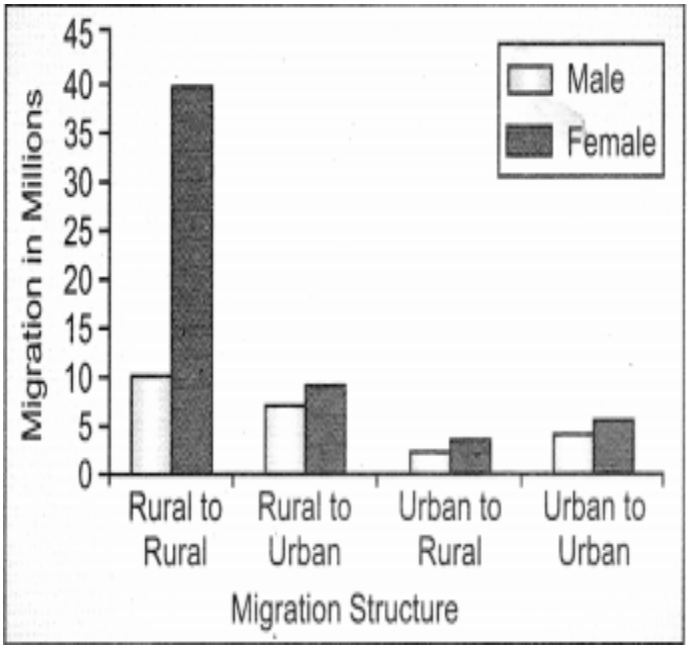


Figure 33. Migration chart of India

CUSTOMS AND TRADITIONS:
As a part of the custom and tradition they celebrate festivals like Navratri and Diwali the most. The women as a part of their tradition carry a bunch of keys on their waist and the ring holder is usually made of silver. Some other jewelry which is worn by the ladies as part of their customs includes mangalsutra, earrings, necklace, rings and bangles. The homes are traditional and also modern. Some of the ceremonies which are must to be celebrated by the people of Gujarat are birth, thread ceremony, marriage and death.

CUISINE:
In Khasa most of the people are vegetarian as there are almost all the Hindus. As all are Guajarati, they are noted for their sweet tongue and every meal will be accompanied by a sweet

dish. Ghee is a must in the food of them. Their evening snack includes bhakri-shak or khichdi kadhi.

OCCUPATION:
The life of villagers is so simple. Their main occupation is farming, dairy, etc.

4.2.7Migration Reasons\Treands:
The shifting of rural populations to urban areas is mainly due to urban biases in terms of development and economic opportunities. It has been observed in developing economies that urban residents have a better standard of living, level of nutrition, and provision of services than rural dwellers.

In India most of the migration is from villages to the city due to the lacking of the facilities in villages.

After visiting the village and collecting the data we can say that the khasa village is lacking from the basic amenities, physical and infrastructure facilities, hence due to this people migrate from the village to the city.

Although there are many reasons of migration and they are as following:
-Lack of amenities
-Employment
-Higher education
-Physical and infrastructure facilities
-For better livelihood
-Lack of invest form government to the rural area, etc.

Reasons of Migration	Total migrants (Lakh persons)	Per cent of Total in-migrants	Per cent of male in-migrants	Per cent of female in-migrants
Marriage	1303	56.1	4.0	76.1
Shifting of family	356	15.3	26.6	11.0
Employment	204	8.8	ii a	1.8
Education	45	2.0	4.8	0.8
Business	53	2.3	6.0	0.5
Other reasons	360	15.5	31.6	9.8

Table 6. Proportion of in migrants according to causes

4.3. Data Collection Khasa village (Photograph/Graphs/Charts/Table)

4.3.1 Describe Methods for data collection:
Data collection is defined as the procedure of collecting, measuring and analyzing accurate insights for research using standard validated techniques.
Essentially there are four choices for data collection – in-person interviews, mail, phone and online. There are pros and cons to each of these modes.
-In-Person Interviews
-Group Surveys
-Observation & field visit
-Questionary Surveys

4.3.2 Primary details of survey:

Khasa village is located in Palanpur Tehsil of Banas Kantha district in Gujarat, India. It is situated 15km away from Palanpur, which is both district & sub-district headquarter of Khasa village. As per 2009 stats, Khasa village is also a gram panchayat. The total geographical area of village is 521.14 hectares. Khasa has a total population of 2,601 peoples. There are about 525 houses in Khasa village. As per 2019 stats, Khasa village comes under Vadgam assembly & Patan parliamentary constituency. Palanpur is nearest town to Khasa which is approximately 15km away.

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

Average size of the house in the village is (6 X 10)m Geo-Tagging: The process of tagging infrastructure with geographical information like Latitude, Longitude, Distance, place name, etc. It is connected to GPS which are monitored through computer internet networks. It can be used to locate important places like labs, dispensaries, milk center, etc. Geo Tagging.

4.3.4 No of Human being in One House:

The average no of human beings in one house is 5.

4.3.5 Material available locally in the village and Material out Sourced by the villagers:

The materials like milk, other grocery materials, wheat, dangar, cotton and other agricultural cereals are used locally as they are locally easily available.

4.3.6 Geographical Detail

The total geographical area of village is 521.14 hectares.
Elevation above MSL: 216 meters
Latitude: 72.312623
Longitude: 24.122019

4.3.7 Demographical Detail

Total No. of houses: 525
Population: 2601 (Male: 1364; Female: 1237)
Literacy: 75.83%
Total Workers: 1203

4.3.8 Occupational Detail - Occupation wise Details / Majority business:

Major occupations are**:**

- Farming
- Animal Husbandry
- Service
- Labour

4.3.9 Agricultural Details / Organic Farming / Fishery:

Majority of the population of Khasa village are occupied in farming. The main crops grown in the village are Wheat, Pearl millet/bajra and Sorghum. There is no any farmer or villager using organic farming or fishery.

4.3.10 Physical Infrastructure Facilities - Manufacturing HUB / Ware Houses:

In transportation facility, Government bus service is available from main highway road. Local transportations are autorickshaw, chagdaa, private vehicles are available in village.

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

In Khasa village there are no any tourism activities available for attracting the tourist.

Figure 34. Primary school

Figure35. Interaction with teacher

4.4Infrastructure Details (With Exiting Village Photograph):

4.4.1 Drinking-Water and Sanitation

Treated tap water supply all-round the year and in summer also available. Covered Well and Tube wells/boreholes are other Drinking Water sources. Closed drainage system available in this village. There is no system to collect garbage on street. Drain water is discharged directly into water bodies.

Figure 36. water tank

Figurce 37. No garbage collecting system

4.4.2 Agriculture

Wheat, Pearl millet/bajra and Sorghum are agriculture commodities grow in this village. 8 hours agricultural power supply in summer and 8 hours agricultural power supply in winter is available in this village. Total irrigated area in this village is 125.35 hectares from Boreholes/Tube wells 125.35 hectares is the Source of irrigation.

4.4.3 Education

Govt Primary School is available in this Village. Nearest Govt Disabled School, Private Pre-Primary School, Govt Secondary School, Govt Arts and Science Degree College, Govt Engineering College, Govt Polytechnic College and Govt ITA College are in Palanpur. Nearest Govt Medical College and Govt MBA college are in Ahmadabad. Nearest Govt Senior Secondary School is in Gadh.

Figure 38.Aanganwadi

4.4.4 Communication

Landline available. No Mobile Coverage is available in this village and no Mobile Coverage available in less than 10 km. Internet Centre available in this village. No Private Courier Facility in less than 10 km.

4.4.5 Transportation

Public Bus service available in this village. There is no Railway Station in less than 10 km. Autos Available in this Village. Tractors available in this Village. No Nearest National Highway in less than 10 km. No Nearest State Highway in less than 10km. No Nearest District Road in less than 10 km. Pucca road, Kuccha Road, Macadam Road and Foot Path are other Roads and Transportation within the village.

Figure 39. temple

4.4.6 Commerce

ATM is available in the village. No commercial bank is available in less than 10 km area. Nearest co-operative Bank is in more than 5 km. Agricultural Credit Society is available in this village.

4.4.7 Other Amenities

This Village has a Power supply with 24-hour power supply in summer and 24-hour power supply in winter, Anganwadi centre, ASHA, Birth & Death registration office, Sports facilities, Public library, Daily News Paper and Polling station are the other amenities in the village.

Figure 40. ATM

Figure 41. Dairy of Khasa

Figure 42. Drinking water

Figure43. Panchayat Building

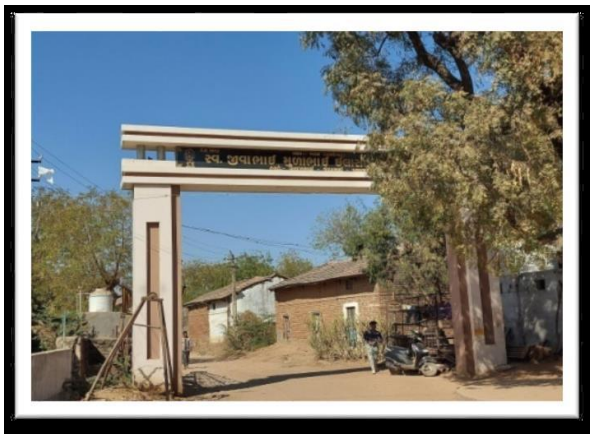


Figure44. Entrance

Figure 45. play ground

4.5 Electrical concept

4.5.1 Renewable Energy Source Planning Particularly for Village

The renewable sources of energy proposed to be put to use for improving the overall energy scenario include biomass, biogas and solar energy. Biomass can be produced from agro waste, mainly paddy in the case of this village, and can be utilized to generate electricity in a biomass plant.

Context

Providing access to electricity in rural areas of India is a major challenge. The fuel is generally of poor quality, and energy is used inefficiently; the power supply is unreliable and access to it limited, with about 500 million people in rural areas still unable to benefit from modern energy services. This not only has an adverse effect on economic productivity; more importantly, it also affects people's quality of life and is having a strong impact on the environment. The unsustainable use of locally sourced biomass and an increasing dependence on fossil fuels are causing environmental degradation at local (land degradation), regional (air, water and soil pollution) and global levels (greenhouse gas – GHG emissions contributing to climate change).

Objective

Model approaches for a renewable energy supply have been developed and demonstrated. These meet the energy requirements of rural people, while raising economic productivity and thereby contributing to a sustainable improvement in living conditions in rural areas; they also provide inputs for further rural energy interventions and they reduce carbon emissions by focusing on technologies not based on fossil fuels.

Approach

The project takes into account India's diverse rural landscape. It is carrying out cluster-based pilot interventions in 26 villages in two distinct regions: Korba in Chhattisgarh, and Kolwan in Maharashtra. It involves the use of three different renewable energy technologies: straight vegetable oil-based electricity generation, dry anaerobic digestion of napier grass, and napier grass-based fuel pellet production. The project integrates the respective communities into its activities through the formation of village energy committees (VECs), sub-VECs and village energy enterprises (VEEs).

Key approaches used to increase the productive applications of the power generated under the project include the promotion of entrepreneurship and the dovetailing of government schemes, such as integrated child development schemes. In this way, the project adheres to a sustainable and integrated concept addressing environmental, economic and social concerns.

4.5.2 Irrigation Facilities

Irrigation is the artificial application of water to the soil through various systems of tubes, pumps, and sprays. Irrigation is usually used in areas where rainfall is irregular or dry times or drought is expected. There are many types of irrigation systems, in which water is supplied to the entire field uniformly. There are different types of irrigation practised for improving crop yield. These types of irrigation systems are practised based on the different types of soils, climates, crops and resources.

The main types of irrigation followed by farmers include:

Surface Irrigation
In this system, no irrigation pump is involved. Here, water is distributed across the land by gravity.

Localized Irrigation
In this system, water is applied to each plant through a network of pipes under low pressure.

Sprinkler Irrigation
Water is distributed from a central location by overhead high-pressure sprinklers or from sprinklers from the moving platform.

Drip Irrigation
In this type, drops of water are delivered near the roots of the plants. This type of irrigation is rarely used as it requires more maintenance.

Centre Pivot Irrigation
In this, the water is distributed by a sprinkler system moving in a circular pattern.

Sub Irrigation
Water is distributed through a system of pumping stations gates, ditches and canals by raising the water table.

Manual Irrigation
This is a labour intensive and time-consuming system of irrigation. Here, the water is distributed through watering cans by manual labour.

Methods of Irrigation
Irrigation can be carried out by two different methods:

- Traditional Methods
- Modern Methods

Importance of Irrigation
The importance of irrigation can be explained in the following points:

1. Insufficient and uncertain rainfall adversely affects agriculture. Droughts and famines are caused due to low rainfall. Irrigation helps to increase productivity even in low rainfall.
2. The productivity on irrigated land is higher as compared to the un-irrigated land.
3. Multiple cropping is not possible in India because the rainy season is specific in most of the regions. However, the climate supports cultivation throughout the year. Irrigation facilities make it possible to grow more than one crop in most of the areas of the country.
4. Irrigation has helped to bring most of the fallow land under cultivation.
5. Irrigation has stabilized the output and yield levels.
6. Irrigation increases the availability of water supply, which in turn increases the income of the farmers.

CHAPTER: -5
Technical Options with Case Studies
(FOR ANY ONE TOPIC, Take a new concept design, prototype model with actual costing)

5.1 Concept (Civil)

5.1.1 Advance Sustainable construction techniques / Practices and Quantity Surveying Industry Scenario

The Construction industry in value terms is expected to record a CAGR of 15.7% to reach $ 738.5 bn by 2022.

The industry contributes 55% share in the Steel industry, 15% in the Paint industry and 30% in the Glass industry.

The Construction industry in India is expected to grow at 5.6% during 2016-20, compared to 2.9% during 2011-15. The activities that registered the highest growth include export cargo (10%), highway construction/widening (9.8%), power generation (6.6%), import cargo (5.8%) and cargo at major ports (5.3%).

- India will be required to spend $ 454.8 bn on infrastructure development over the period of five years (2015-20), with 70% of funds needed for power, roads and urban infrastructure segments
- Expected cement capacity addition of 80-100 MT per annum over next five years.

CONSTRUCTION PRACTICES

Sustainable Construction

Sustainable construction focuses to have social, economic and environmental performance of the industry.

Figure 46. Sustainable construction

The practices focus on:

- Getting maximum profit that help to recognize the business.
- Deliver buildings with greater satisfaction, well-being and value
- Respect and fair treatment of the employees. Considering health and safety factors, welfare conditions etc.
- Protection and enhancement of the environment.
- Waste reduction and pollution during the construction process
- Energy efficient buildings by taking energy from renewable resources.

Health and Safety in Construction

The two main criteria while considering the health and safety in construction are that:

- The right of workers to be protected against risk and save their health.
- Effective planning and managing of the construction site to make it safe thus gaining productivity and profitability.

Whole Life Costing

Here, the **cost of ownership** is measured of a building. This will take into consideration the sum of:

- Initial Capital Cost for making the building
- Cost of maintenance of the building
- Cost of servicing the building

The cost of maintenance of the building is practically more when compared to the initial capital cost. This makes the whole life costing an essential practice in construction. As per studies, for a building of capital cost £100 , the operational procedure will account for £500 over the life period of the building.

Supply Chain Management in Construction

In construction, this term is new. Here, all the operations of the organisations are integrated that is associated with the delivery of a product or a service. Hence, from the primary producer till the end user this is analysed.

Supply chain management in construction will involve analysing from:

- Material
- Suppliers
- Manufacturer
- Distributors
- Installation
- Contractors
- Designers
- Client organization

Value Management

This key practice takes into account time, cost and risk constraints, in order to meet the clients' business needs. The method of value management will involve complete collaboration with the team. The team is in charge of design and delivery of the project. This team will also include the end-users and the stake holders.

Risk Management

- Risk in projected are always expected and it is necessary to maintain a "risk register". This will help to enter all the risk faced from the starting of the project to its end. Along the risk encountered, the method used to manage is also recorded. This helps to be applied in other projects.
- Risk assessing and analysing will help to assign appropriate actions to different project team. The risk assessment is an activity that has to be performed in a regular basis and in no case be ignored.
- For all risk residual items, it is necessary to have some financial allowance. The cost of

this item can be avoided by selecting a best solution for the problem faced.

5.1.2 Soil liquefaction

Soil liquefaction is a phenomenon that often occurs in small to medium sands. In sandy soils, sand particles are retained by bonding between particles and the force can be transmitted through these joints. During lubrication, these joints break down and the force between them becomes cavity pressure and the soil shear strength becomes zero. Sandy soil behaves like a liquid whose specific gravity equals saturated soil.

The main mechanism of liquefaction in saturated and loose sand layers is the gradual increase of pore water pressure due to cyclic stresses caused by earthquake shear wave propagation. If the sand is sufficiently loose and the loading intensity large enough, the pore pressure may be equivalent to the effective stress between the particles. At this moment, the forces between the

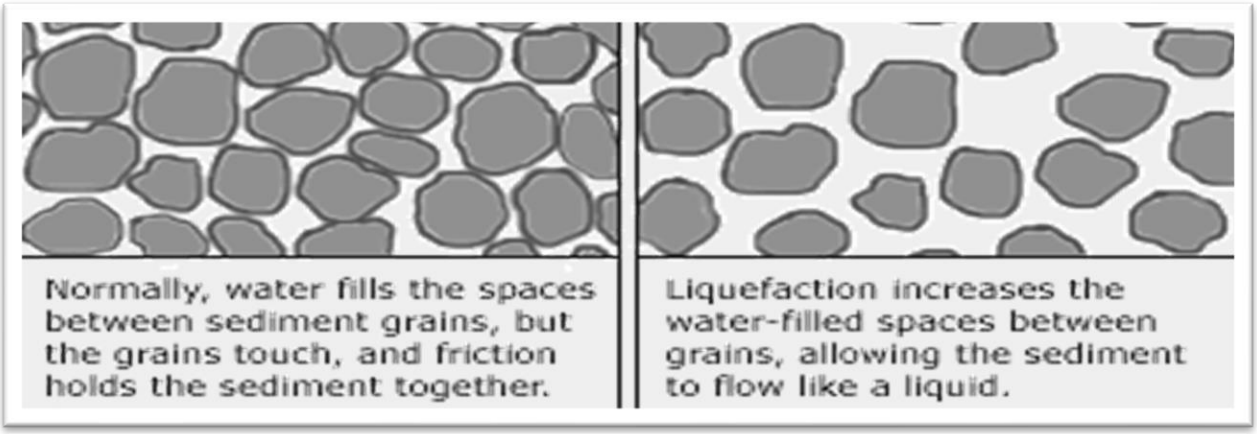


Figure 47. Soil liquefication

particles disappear and the particles become suspended and submerged. In such circumstances, the soil of the site should be appropriately seismically improved.

5.1.3 Sustainable Sanitation

Conventional approaches to wastewater management that regard wastewater as a waste, and often are dysfunctional, have serious drawbacks.

Sustainable sanitation aims at overcoming these drawbacks. It is not a certain technology, but an approach with certain underlying principles. There are a number of technologies (see for instance sanitation

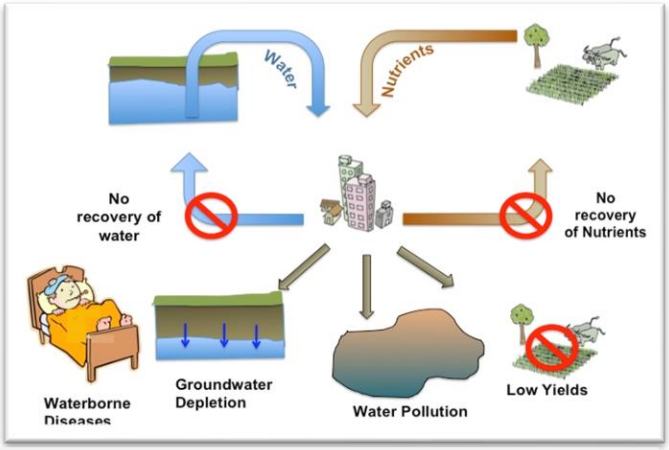


Figure 48. Sustainable sanitation

systems) that can be used to make sanitation and wastewater management more sustainable. The term "sustainable sanitation" in principle denominates the same as ecological sanitation, though the latter has a stronger focus on source separation.
The first and foremost principle is probably the one to recognise that excreta and wastewater are not a waste, but a valuable resource Conventional approaches to wastewater management that regard wastewater as a waste, and often are dysfunctional, have serious drawbacks.

Sustainable sanitation aims at overcoming these drawbacks. It is not a certain technology, but an approach with certain underlying principles. There are a number of technologies (see for instance sanitation systems) that can be used to make sanitation and wastewater management more sustainable. The term "sustainable sanitation" in principle denominates the same as ecological sanitation, though the latter has a stronger focus on source separation.

5.1.4 Vertical Farming

Figure 49. Vertical farming

Vertical farming is the practice of producing

food on vertically inclined surfaces. Instead of farming vegetables and other foods on a single level, such as in a field or a greenhouse, this method produces foods in vertically stacked layers commonly integrated into other structures like a skyscraper, shipping container or repurposed warehouse.
Using Controlled Environment Agriculture (CEA) technology, this modern idea uses indoor farming techniques. The artificial control of temperature, light, humidity, and gases makes producing foods and medicine indoor possible. In many ways, vertical farming is similar to greenhouses where metal reflectors and artificial lighting augment natural sunlight. The primary goal of vertical farming is maximizing crops output in a limited space.

How Vertical Farming Works
There are four critical areas in understanding how vertical farming works:
1. Physical layout

2. Lighting
3. Growing medium
4. Sustainability features.

Firstly, the primary goal of vertical farming is producing more foods per square meter. To accomplish this goal, crops are cultivated in stacked layers in a tower life structure. Secondly, a perfect combination of natural and artificial lights is used to maintain the perfect light level in the room. Technologies such as rotating beds are used to improve lighting efficiency

Thirdly, instead of soil, aeroponic, aquaponic or hydroponic growing mediums are used. Peat moss or coconut husks and similar non-soil mediums are very common in vertical farming. Finally, the vertical farming method uses various sustainability features to offset the energy cost of farming. In fact, vertical farming uses 95% less water.

Advantages

- It offers a plan to handle future food demands
- It allows crops to grow year-round
- It uses significantly less water
- Weather doesn't affect the crops
- More organic crops can be grown
- There is less exposure to chemicals and disease

Disadvantages

- It could be very costly to build and economic feasibility studies haven't yet been completed
- Pollination would be very difficult and costly
- It would involve higher labor cost
- It relies too much on technology and one day of power loss would be devastating

5.1.5Corrosion Mechanism, Prevention & Repair Measures of RCC Structure

Figure 50. Corrosion

Corrosion is initiated when materials that are harmful to steel, such as CO2 and chloride from de-icing salt, start to penetrate concrete and reach the steel reinforcement. As an electrochemical reaction, electrons migrate from the anodic zone to the cathodic zone, releasing ferrous ions at the anode and hydroxide ions at the cathode. This will eventually lead to a potential difference between the anodic and cathodic areas at the surface of the steel reinforcement. This results in the creation of rust as a by-product. Since rust occupies a larger volume than steel, it exerts internal pressure which causes the surrounding concrete to crack and become damaged. These cracks make their way to the surface of the concrete which causes even more CO2 and chloride to penetrate the concrete and speed up the

process of corrosion. Corrosion is responsible for up to 90% of damage to reinforced concrete structures.

PREVENTION METHODS

Corrosion of steel in reinforced concrete structures can be divided into four different categories, based on how they provide protection:

- Alternative reinforcement and slab design method includes materials that electrically isolate the steel from the concrete and create a barrier for chloride ions, materials that protect steel galvanic-ally, and materials that have significantly higher corrosion thresholds than conventional reinforcing steel. Concrete slabs have been designed without any internal reinforcement.
- Barrier methods protect reinforced concrete from corrosion damage by preventing water, oxygen, and chloride ions from reaching the reinforcement and initiating corrosion.
- Electrochemical methods use current and an external anode to protect the reinforcement, even when the chloride ion concentration is above the corrosion threshold.
- Corrosion inhibitors offer protection by raising the threshold chloride concentration level, by reducing the permeability of the concrete, or by doing both.

PREVENTION METHODS

1. Barrier Coatings

One of the easiest and cheapest ways to prevent corrosion is to use barrier coatings like paint, plastic, or powder. Powders, including epoxy, nylon, and urethane, are heated to the metal surface to create a thin film. Plastic and waxes are often sprayed onto metal surfaces. Paint acts as a coating to protect the metal surface from the electrochemical charge that comes from corrosive compounds. Today's paint systems are actually a combination of different paint layers that serve different functions. The primer coat acts as an inhibitor, the intermediate coat adds to the paint's overall thickness, and the finish coat provides resistance to the environmental factors.
The biggest drawback with coatings is that they often need to be stripped and reapplied. Coatings that aren't applied properly can quickly fail and lead to increased levels of corrosion. Coatings may also contain volatile organic compounds, which can make them vulnerable to corrosion.

2. Hot-Dip Galvanization

This corrosion prevention method involves dipping steel into molten zinc. The iron in the steel reacts with the zinc to create a tightly-bonded alloy coating which serves as protection. The process has been around for more than 250 years and has been used for corrosion protection of things like artistic sculptures and playground equipment. Compared to other corrosion prevention methods, galvanization is known for lower initial costs, sustainability, and versatility.
Unfortunately, galvanization can't be done on-site, meaning companies have to pull equipment out of work to be treated. Some equipment may simply be too large for the process, forcing companies to abandon the idea altogether. In addition, if the process isn't done properly, the zinc can chip or peel. And high exposure to environmental elements can speed up the process of zinc wear, leading to increased maintenance check-ups. Lastly, the zinc fumes that release from the galvanizing process are toxic.

3. Alloyed Steel (Stainless)

Alloyed steel is one of the most effective corrosion prevention methods around, combining the properties of various metals to provide added strength and resistance to the resulting product. Corrosion-resistant nickel, for example, combined with oxidation-resistant chromium results in an alloy that can be used in oxidized and reduced chemical environments. Different alloys provide resistance to different conditions, giving companies greater flexibility.

Despite its effectiveness, alloyed steel is very expensive. Companies with limited financial resources will likely have to turn to other methods. Monitoring surface conditions are critical, as cracks or scratches can result in an increase of corrosion. Companies also need to make sure the agents used in maintenance don't include corrosion properties.

4. Cathodic Protection

Cathodic protection protects against galvanic corrosion, which occurs when two different metals are put together and exposed to a corrosive electrolyte. To prevent this, the active sites on the metal surface need to be converted to passive sites by providing electrons from another source, typically with galvanic anodes attached on or near the surface. Metals used for anodes include aluminium, magnesium, or zinc.

While cathodic protection is highly effective, anodes need to be checked often which can drive up costs of maintenance. They also increase the weight on the attached structure and aren't always effective in high-resistivity environments. Finally, anodes lead to increased water flow on ships and other underwater equipment.

5.2 Case Study of kotarpur water treatment plant

Processes of industrial treatment

Two of the main processes of industrial water treatment are boiler water treatment and cooling water treatment. A large amount of proper water treatment can lead to the reaction of solids and bacteria within pipe work and boiler housing. Steam boilers can suffer from scale or corrosion when left untreated. Scale deposits can lead to weak and dangerous machinery, while additional fuel is required to heat the same level of water because of the rise in thermal resistance. Poor quality dirty water can become a breeding ground for bacteria such as Legionella causing a risk to public health.

Corrosion in low pressure boilers can be caused by dissolved oxygen, acidity and excessive alkalinity. Water treatment therefore should remove the dissolved oxygen and maintain the boiler water with the appropriate pH and alkalinity levels. Without effective water treatment, a cooling water system can suffer from scale formation, corrosion and fouling and may become a breeding ground for harmful bacteria. This reduces efficiency, shortens plant life and makes operations unreliable and unsafe

5.2.1 Introduction

Ahmedabad being the largest city in Gujarat gets 1200 MLD water per day. It meets its water requirements from 4 different water treatment plants after receiving the water from the sources;

Narmada Canal and Sabarmati River, of which 80% is met by the Kotarpur Water Treatment Plant, Naroda using the gravitational force.

- The capacity of the plant is 650 MLD and over-loading capacity is 715 MLD. (Having 10% overloading capacity)
- Gravity line of 2500 mm dia from Narmada main canal to Kotarpur water works is laid in December 2006 & commissioned from January 2007.
- Also, there is one more treatment plant of 200 MLD.
- It takes water from Sabarmati River.
- The water from Sabarmati River is taken by 2 Intake wells
- A French well is driven into Sabarmati River

Figure 51. Water Source (French Well) From Sabarmati River

Figure 52. Water Water Source (Gravity Line) From Narmada Canal

Figure 53. Kotarpur WTP Plant

5.2.2 Components involved in water treatment process

- **Coarse screening**
- **Inlet bay**
- **Fine screening**
- **Alum dozing**
- **Clariflocculator**
- **Filter plant**
- **Post chlorination**

5.2.3 Treatment procedure

- **Inlet bay: -**

In inlet bay water comes from Narmada River under gravity and from Sabarmati River by pumping. Here perchlorinating is done. In this after coarse screening the water enters so may contain algae, waste materials etc. in it. In this after coarse screening the water enters so may contain algae, waste materials etc. in it.

- **Alum Dozing: -**

Alum is stored in alum house, from which it is taken in trolleys for testing purpose. On the basis of jar test the amount of alum is decided, which depends on amount of turbidity. Alum is mixed with water by agitator 30% alum is used as it gives maximum result. Till now maximum turbidity was found to be 2000 NTU (Nephelometric Turbidity Unit)

- **Clarifier: -**

There are 12 number of Clariflocculator for 650MLD and 4 number for 200MLD. The alum solution conveyed through a pipe is mixed in the water at the hydraulic jump near Clariflocculator. The water after it is mixed with the alum solution is diverted in 3 directions.
Each direction sends water in nearby 4 flocculator. Now the water enters in the flocculator from the bottom of the center alum is added about 5ppm. Then the flocs are formed which are settled down at bottom are taken to the center for dumping with the use of Traction bridge. It has scrappers at the bottom at some angle and revolves at speed of 1 revolution per 45 minutes.

- **Filtration: -**

Filtration is done by rapid sand filter. The arrangement of rapid sand filter is done in such a way that coarse gravels are kept at bottom, above those gravels of small size are kept and at top sand is kept in compressed condition. Sand is imported from Rajasthan.

From this arrangement water is filtered and a channel is passed directly to next unit. Backwash is carried out at minimum 24 hrs and maximum 72 hrs., depending upon turbidity of water. In this process air is released so that water particles get unstable, then water is passed so that sludge is removed from top. This water is added till clear water is seen. The waste water is disposed in river again.

- **Chlorination: -**

Chlorination is provided in three stages i.e., pre-chlorination, intermediate chlorination and post chlorination. The pre-chlorination is done after taking water from intake 2 because the water in Narmada canal may have higher number of Algae in it and to destroy it chlorination is required. Intermediate chlorination is done just before the filtration, And the post chlorination is done at the end after the filtration and before the water is going to distributed. They also have a caustic scrubber as a safety measure in case if there is any leakage of chlorine gas this scrubber will react with it and form neutral gas or say neutralize it. It is essential because chlorine is very harmful gas which is viscous and attach with our respiratory system and block it and that can damage our eyes, lungs etc.

After the chlorination the water is collected in the reservoir tank and then it is ready for distribution and it is distributed in the East and the West zone of Ahmedabad. The water is distributed with the help of pumping, for the pumping there are total 10 centrifugal pumps in which 8 are running and 2 are standby. The water is collected by station in each zone and required residual chlorine is maintained to 0.5ppm. Then the water is distributed to the different area by branch pipes of same and smaller diameter.

CHAPTER: -6 Swatchh Bharat Abhiyan (Clean India)

6.1 Background

India began its journey of cleanliness with the efforts of Mahatma Gandhi. The Father of our nation initiated a massive awareness program on hygi ene and sanitation which inspired many more leaders to follow his footsteps. In 2014, P rime Minister Narendra Modi launched a nationwide campaign in the form of Swachh Bharat Abhiyan to achieve the dream of Clean India as a tribute to Mahatma Gandhi on his 10th birth anniversary.

Components of Clean India Mission

Swachch Bharat Abhiyan- Gramin
It focuses on improving the ambit of rural sanitation coverage and eliminating the practice of open defecation. The scheme also focuses on i mproving the management of solid and liquid wastes.
Swachch Bharat Abhiyan- Urban
The scheme aims to ensure three-fold objectives within its scope. First of all, it envisages reducing the number of households engaging in the practice of open defecation. The second objective is to convert pit latrines into sanitary latrines. The third objective of the Clean India Mission is to halt the construction of any new unsanitary toilets. Secretary of Ministry of Drinking Water and Sanitation is the Mission Coordinator for SBM.
Evolution of Swachhata Abhiyan
Earlier, a sanitation program was launched in 1954. T his was the first such program of the nation. It was followed by the launch of the Central Rural Sanitation Programme in 1986. Then the strategic revamp of the scheme led to the development of the Total Sanitation Campaign (TSC) in 1999, which transformed later into the Nirmal Bharat Abhiyan in 2012.
Finally, the Nirmal Bharat Abhiyan was restructured into the Swachh Bharat Abhiyan by Cabinet approval on 24 September 2014.

Objectives of Swachh Bharat Abhiyan
- To promote cleanliness and hygiene in a wholistic manner.
- To reduce the incidence of open defecation
- To bring improvement in the quality of life in rural areas
- To encourage the concept of sustainable sanitation practices
- To create awareness about health and hygiene.
- To help India reach to India Sustainable Development Goal 6 (SDG 6).
- To encourage cost-effective sanitation efforts.
- To develop community managed sanitation systems
- To focusing on scientific Solid & Liquid Waste Management systems.
- To create a positive impact on gender and promote social inclusion

Funding pattern of PM Swachh Bharat Abhiyan

The scheme is covered by multi-sectoral funding pattern which includes: -

1. Budgetary support
2. Funding and technical support from the World Bank and international institutions
3. Corporate social responsibility (CSR) initiatives
4. Swachh Bharat Kosh(SBK)

An incentive of Rs. 12,000 i s provided to the eligible beneficiaries in rural areas for the construction of Individual Household Latrines. It also covers the provision of water storage. The funding for constructing toilets will also be met by 3 primary sources – Ministry of Drinking Water & S anitation, Ministry of Rural Development, and the States. The funding ratio will be 75:25 between center and State for the normal states while for the North Eastern state, it will be 90:10.

6.2 Swatchhta needed in allocated village -Existing Situation with photograph

➢ After visiting Khasa village and the information given by t he Sarpanch, we can say that there is no proper garbage collecting system available in the village.

➢ As per the given information in Khasa, weekly one day all the garbage from the household is collected and dumped on the land.

Figure54 Existing situation

6.3 Activities Done by Students for allocated village with Photograph

With the visit of village, we have realized that there is need for cleaning in the village. We have travelled to and fro in the village and saw the condition of the village with respect to swachchhata. We have also meet sarpanch of the village and by ha ving conversation with him (Thakor Ajamalji L.) we knew that there is a facility of the waste collecting in the village in which waste of t he households is collected by the team of pa nchayat with the help of tractor and is disposed of at the nearby open area in the trenches. This is the good a pproach for t he keep village cleanbut the frequency of the work is not sufficient. So as a result, we have explained the sarpanch about the importance of hygiene and we told him to do a meeting and organize the mission of clean village in the village for one day we also told him about the swachchhataabhiyan inaugurated by honourable PM of India.

Figure55 Students' activity

CHAPTER: -7
Village condition due to Covid-19

7.1 Taken steps in allocated village related to existing situation with photograph

COVID-19 had mostly remained in India's cities, but the disease is now spreading to rural India – an area with over 850 million people and far worse healthcare. The reason for this shift appears to be migrant workers who have been returning to their villages since lockdown was eased at the end of June. The medical response to stop the spread and treat those infected has been inadequate, according to media reports. With one trained doctor for every 1,497 people, against the World Health Organization recommended one per 1,000, and public health expenditure for 2018 at just 1.3% of GDP, India faces an uphill struggle in dealing with the pandemic. While two-thirds of India's population lives in rural areas, there are almost four times as many health workers per person in cities.
While interacting with the sarpanch and the school teacher we found that there were no cases of covid-19 as it is small village.

7.2 Activities Done by Students for allocated village with Photograph

During visit we have distributed the sanitizers and masks to the villagers. Also, we gave information about "Arogya setu" application. As well as we aware the villagers about social distancing and the preventing measures of covid-19.

7.3 Any other steps taken by the students / villagers

Fortunately, owing blessings of god the villagers have not faced any strain of covid-19 going in the country so that there is no need to provide any quarantine center in the khasa village. But as we all know "precaution is better than cure"the panchayat has done its best to prevent villagers from strain of covid-19. Panchayat has circulated the guidelines of government to the villagers and arranged proper facilities of sanitizers and masks as well as forced everyone to maintain proper social distancing and follow the covid-19 guidelines published by ministry of health.

Figure56. Mask distribution

CHAPTER: -8
Sustainable Design Planning Proposal (Prototype Design)

8.1 Design Proposals: Observation and brief write up about each design from8.1.1 to 8.1.6

Sustainable Design: Primary health Centre

In khasa village, there is no facility available for public toilet. And by provision of public toilet the people will going to avoid to go in open area and will going to be used to with toilet. So we provided a public toilet design in the village.

Physical design: Post Office

The villagers have to go nearby village for any need related to post service so that there is so much wasting of time of people and we all know that in this generation time is not money but more than that. The provision of post office attracts the persons to take advantage of facility and it will provide awareness among the villagers so that threat of people to go such government offices will reduced and there is lots of benefits overall.

Social Design: Public toilet

The PHC is a most important and basic infrastructure that should be there in any village. This can provide heath support to the villagers. It can save the life of human being. It provides medical care in the village. By virtue of PHC life and health condition of the beneficiaries can be increased substantially.

Socio-Cultural Design: Public library

There is a public library available in the village, but is is combined with the school library so that we think that there is need for separate library for public so we provide AutoCAD design of public library. By the virtue of the public library people are going to attract toward reading books and reading book is the habit. By reading people will aware about the issues and society of India which will improve the general living standard of public.

Smart Village Design: Cybercafe

A cybercafe is a type of business where computers are provided for accessing the internet, playing games, chatting with friends or doing other computer related tasks and access of these is charged based on time.

Smart Village Design: Bank

For enjoying banking facilities, the villagers have to go nearby town/city, and it very time consuming. Due to this people are discouraged to use such facilities so we provide bank floor plan in AutoCAD software.it will help beneficiaries to protect their money. People will get

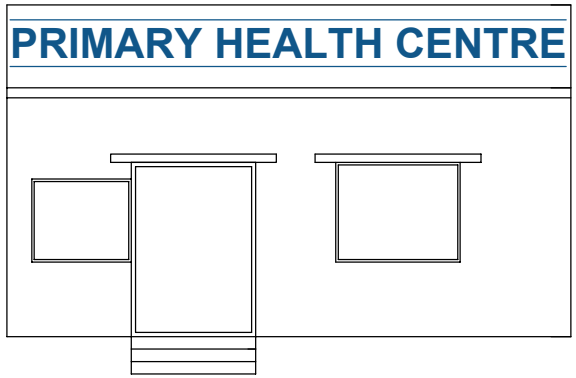
knowledge about the banking service and it will helps in lifting the living standard and spread the awareness among the habitants of village.

8.1.1 Sustainable Design: Primary health Centre

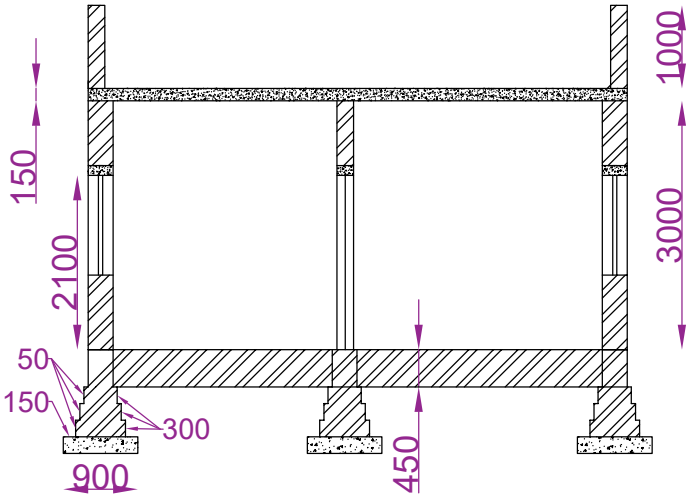
Scenario:

The PHC is a most important and basic infrastructure that should be there in any village. This can provide heath support to the villagers. It can save the life of human being. It provides medical care in the village. By virtue of PHC life and health condition of the beneficiaries can be increased substantially.

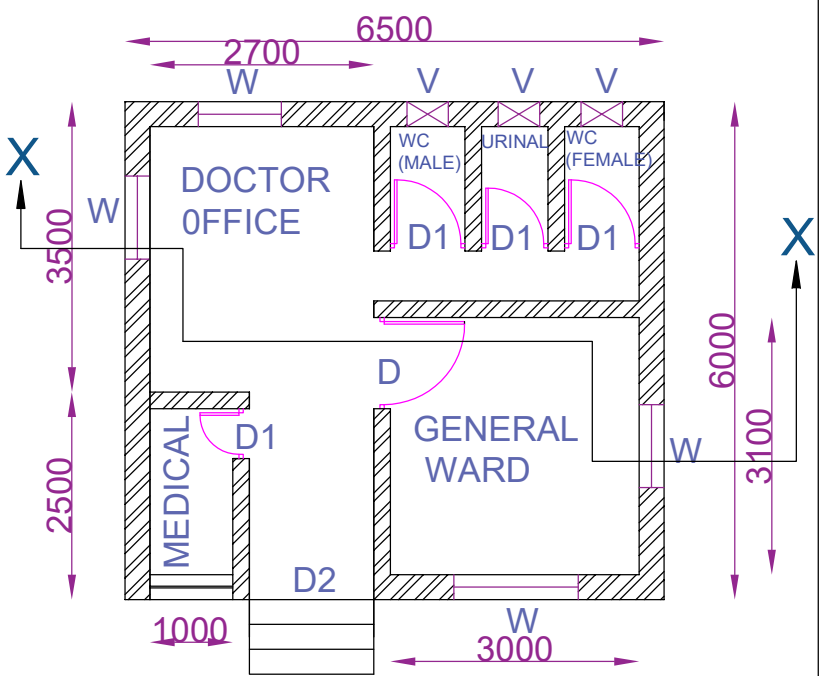
Proposed Design of Primary health Centre in AutoCAD



ELEVATION



SECTION X-X



FLOOR PLAN

SCHEDULE OF OPENINGS				
SR. NO	DETAILS	SYMBOL	NOS	SIZE
1	DOOR	D	1	(1.1*2.1)m
2	DOOR	D1	4	(0.6*2.1)m
3	DOOR	D2	1	(1.5*2.1)m
4	WINDOW	W	4	(1.0*1.2)m
5	VENTILATOR	V	3	(0.6*0.6)m

ALL DIMENSIONS ARE IN **mm** EXCEPT UNIT MENTIONED

VISHWAKARMA YOJANA PROJECT
DESIGN OF PHC
PREPARED BY:- GAURAV PAWAR DHARMENDRA PRAJAPATI
VILLAGE:- KHASA(BANASKATHA)

Item	No.	L (m)	W (m)	D (m)	Quantity (m^3)
Centre line Total length= 43.1m					
Earth work in Excavation		43.1	0.9	0.5	19.395
Foundation PCC (Work)		43.1	0.9	0.15	5.81
Brickwork in foundation					
Step-1		43.1	0.6	0.30	7.758
Step-2		43.1	0.5	0.30	6.465
Step-3		43.1	0.4	0.30	5.172
Up to plinth		43.1	0.3	0.45	5.8185
PCC in steps					
Step-1		1.2	0.9	0.15	0.162
Step-2		1.2	0.6	0.15	0.108
Step-3		1.2	0.3	0.15	0.054
Brick masonry in super structure		43.1	0.3	3.0	38.79
					Total PCC work=6.134
RCC work		6.5	6	.15	5.85
Deduction					
Window	4	1	1.2	0.3	1.152
Door D D1	1 4	1.2 0.9	2.1 2.1	0.3 0.3	0.756 2.268
Lintel	4 1	1.2 1.6	0.3 0.3	0.75 0.75	1.08 0.36 total=5.62
Parapet wall	1	26.2	0.2	1	5.24
Window	4	1	1.2	0.3	1.152
Door D D1	1 4	1.2 0.9	2.1 2.1	0.3 0.3	0.756 2.268
					Total brick work in superstructure =33.17
					Total Brickwork=**82.90**

MEASURMENT HEET OF PHC (Table 7)

Abstract SHEET OF PUBLIC PHC (Table 8)

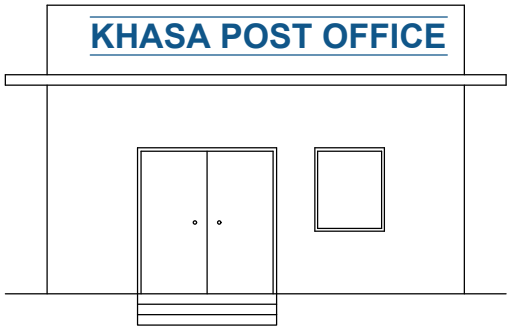
Item	Quantity (m^3)	Rate (RS)	Per	Amount
Earthwork in Excavation	**19.395**	100	Cubic meter	1939.5
PCC Work	**6.134**	3000	Cubic meter	18402
RCC work	5.85	9000	Cubic meter	52650
Brick Work	**82.90**	3500	Cubic meter	290150

The total cost of the construction is =3,63,142 Rs

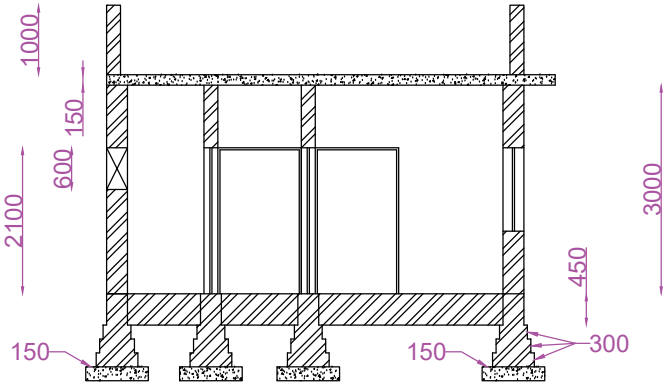
8.1.2 Physical design: Post Office

Scenario:
The villagers have to go nearby village for any need related to post service so that there is so much westing of time of people and we all know that in this generation time is not money but more than that. The provision of post office attracts the persons to take advantage of facility and it will provide awareness among the villagers so that threat of people to go such government offices will reduced and there is lots of benefits overall.

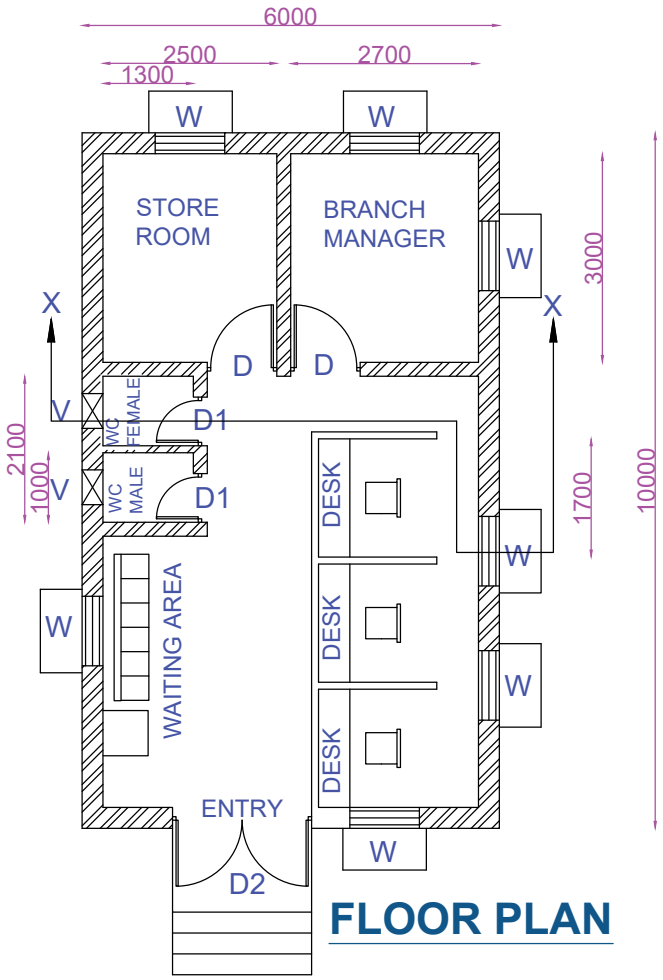
Proposed Design of post office in AutoCAD



ELEVATION



SECTION X-X



FLOOR PLAN

SCHEDULE OF OPENINGS				
SR. NO	DETAILS	SYMBOL	NOS	SIZE
1	DOOR	D	2	(1.0*2.1)m
2	DOOR	D1	2	(0.7*2.1)m
3	DOOR	D2	1	(2.0*2.1)m
4	WINDOW	W	7	(1.0*1.2)m
5	VENTILATOR	V	2	(0.6*0.6)m

ALL DIMENSIONS ARE IN **mm** EXCEPT UNIT MENTIONED

VISHWAKARMA YOJANA PROJECT
DESIGN OF POST OFFICE
PREPARED BY:- GAURAV PAWAR DHARMENDRA PRAJAPATI
VILLAGE:- KHASA(BANASKATHA)

MEASURMENT SHEET OF POST OFFICE (Table 9)

Item	No.	L (m)	W (m)	D (m)	Quantity (m^3)
Centre line Total length= 42m					
Earth work in Excavation		39.75	0.9	1.1	**39.3525**
Foundation PCC (Work)		39.75	0.9	0.2	7.155
Brickwork in foundation					
Step-1		40.5	0.6	0.30	7.29
Step-2		40.75	0.5	0.30	6.1125
Step-3		41	0.4	0.30	4.92
Up to plinth		41.25	0.3	0.45	5.56875
PCC in steps					
Step-1		1.2	0.9	0.15	0.162
Step-2		1.2	0.6	0.15	0.108
Step-3		1.2	0.3	0.15	0.054
Brick masonry in super structure		41.25	0.3	3.0	37.125
					Total PCC work=7.479
Deduction					
Window	7	0.8	0.3	2.1	3.528
Door D D1	2 4	0.6 1.2	0.3 0.3	2.1 2.1	0.756 3.024
Lintel	4	1.2	0.3	0.12	0.230 Total= 7.538
Parapet wall	1	26.2	0.2	1	5.24
Window	4	1	1.2	0.3	1.152
Door D D1	1 4	1.2 0.9	2.1 2.1	0.3 0.3	0.756 2.268
					Total brick work in superstructure =29.587
					Total Brickwork=**61.016**

ABSTRACT SHEET OF PUBLIC POST OFFICE (Table 10)

Item	Quantity	Rate	per	Amount
Excavation	**39.3525**	100	Cubic meter	3936
PCC Work	**7.479**	3000	Cubic meter	22437
RCC work	**9**	9000	Cubic meter	81000
Brick Work	**61.016**	3500	Cubic meter	187173

The total cost of the construction is =294545 Rs

8.1.3Social Design: Public toilet

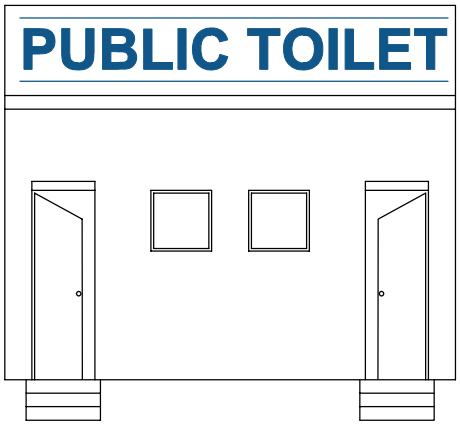
Scenario:
Public toilet is the most basic amenity among the all. It should be must in the everywhere. In the minds of many, the best public toilet is the one they don't have to use. It's not uncommon for someone to reject their bodies warning signs and forgo restroom use, waiting in pain until they're able to scamper into their bathroom at home.

This perception of the public restroom, somewhere that must be avoided like the plague, is unfortunate. At their best, public restrooms should be viewed not just a place to relieve one's self in a pinch, but also as a space that carries out important public services, says Rights Info.

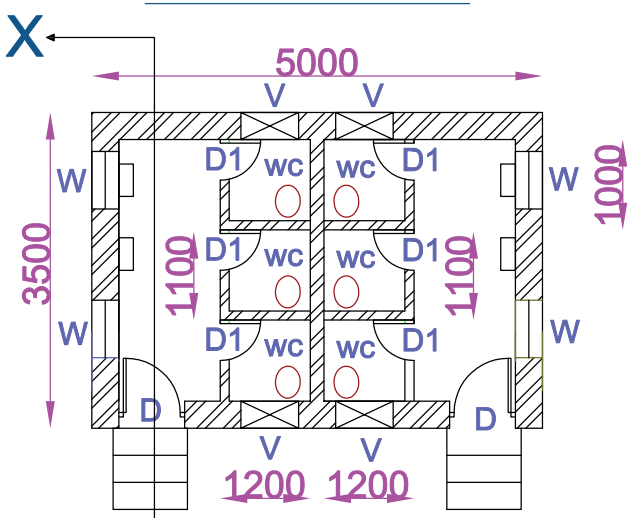
Public restrooms, the website argues, offers pregnant women and disabled people a place where they can relieve themselves when home is just too far away. Those who suffer from anxiety attacks and other mental health issues can use the restroom as a sort of refuge — a place where they can go to collect their thoughts and relax.

Proposed Design of Public toilet in AutoCAD

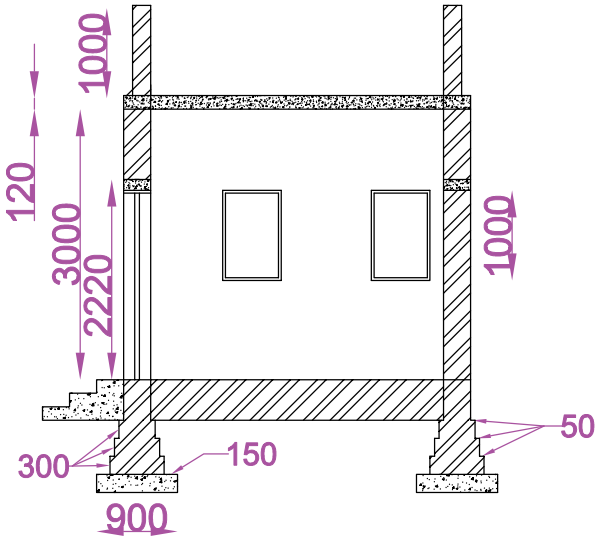
PUBLIC TOILET



ELEVATION



FLOOR PLAN



SECTION X-X

SCHEDULE OF OPENINGS				
SR. NO	DETAILS	SYMBOL	NOS	SIZE
1	DOOR	D	2	(0.7*2.1)m
2	DOOR	D1	4	(0.6*2.1)m
3	WINDOW	W	4	(6.5*1.0)m
4	VENTILATOR	V	4	(0.6*0.6)m

ALL DIMENSIONS ARE IN mm EXCEPT UNIT MENTIONED

VISHWAKARMA YOJANA PROJECT
DESIGN OF PUBLIC TOILET
PREPARED BY:- GAURAV PAWAR DHARMENDRA PRAJAPATI
VILLAGE:- KHASA(BANASKATHA)

Item	No.	L (m)	W (m)	D (m)	Quantity (m^3)
Centre line Total length= 15.5m					
Earth work in Excavation		14.6	0.9	1.1	**14.454**
Foundation PCC (Work)		14.6	0.9	0.2	2.628
Brickwork in foundation					
Step-1		14.9	0.6	0.30	2.628
Step-2		15	0.5	0.30	2.25
Step-3		15.1	0.4	0.30	1.812
Up to plinth		15.2	0.3	0.45	2.052
PCC in steps					
Step-1		1.2	0.9	0.15	0.162
Step-2		1.2	0.6	0.15	0.108
Step-3		1.2	0.3	0.15	0.054
Brick masonry in super structure		15.2	0.3	3.0	13.68
					Total PCC work=3.492
Deduction					
Window	4	0.8	0.3	2.1	1.152
Door D	2 4	1.2 1.2	0.3 0.3	2.1 2.1	1.512 3.024
Lintel	2 4	1.8 1.2	0.3 0.3	0.12 0.12	0.230 0.1728 Total= 1.5228
Parapet wall	1	15.2	0.2	1	3.06
					Total brick work in superstructure =14.3172
					Total Brickwork=**43.4132**

MEASURMENT SHEET OF PUBLIC TOILET (Table 11)

ABSTRACT SHEET OF PUBLIC TOILET (Table 12)

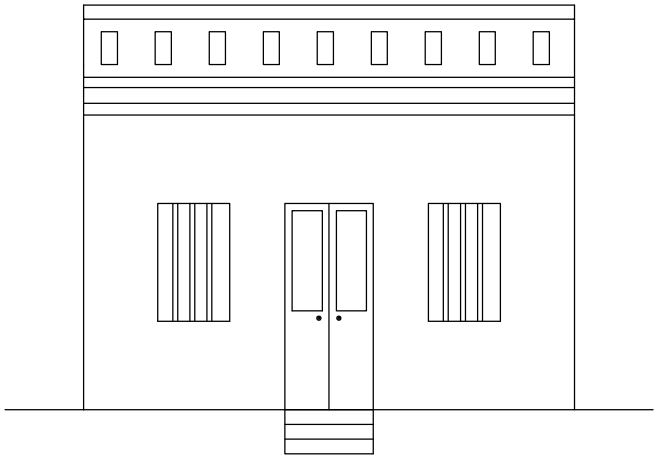
Item	Quantity	Rate	per	Amount
Excavation	**17424**	100	Cubic meter	1742.4
PCC Work	**3.492**	3000	Cubic meter	10427
RCC work	**2.64**	9000	Cubic meter	23760
Brick Work	**43.4132**	3500	Cubic meter	151946.2

The total cost of the construction is =187924.6 Rs

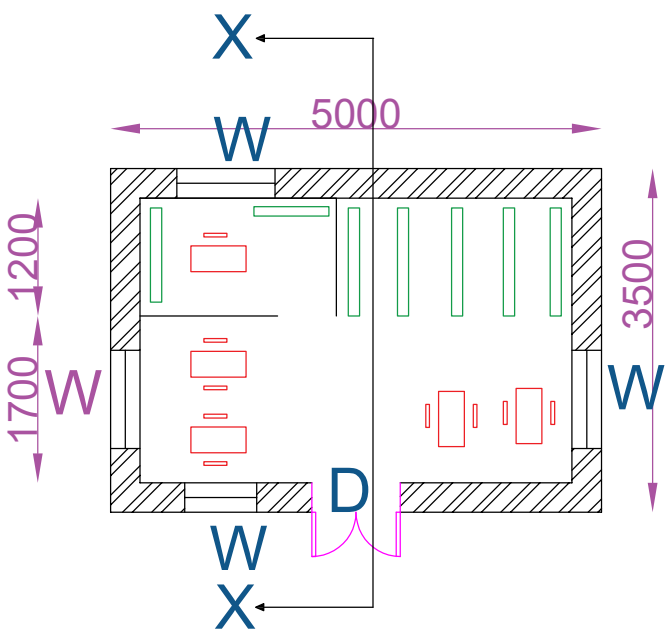
8.1.4 Socio-Cultural Design: Public library

Scenario:
There is a public library available in the village, but is is combined with the school library so that we think that there is need for separate library for public so we provide AutoCAD design of public library. By the virtue of the public library people are going to attract toward reading books and reading book is the habit. By reading people will aware about the issues and society of India which will improve the general living standard of public.

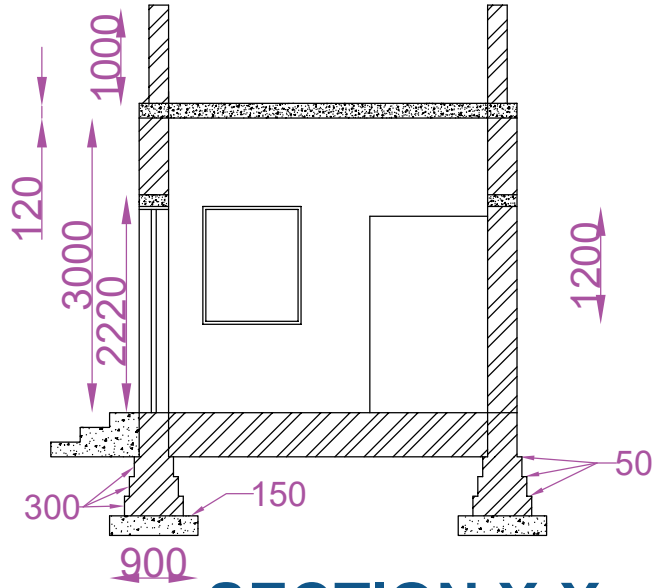
Proposed Design of Public toilet in AutoCAD



ELEVATION



FLOOR PLAN



SECTION X-X

SCHEDULE OF OPENINGS				
SR. NO	DETAILS	SYMBOL	NOS	SIZE
1	DOOR	D	1	(1.0*2.1)m
2	WINDOW	W	2	(1.0*1.2)m

ALL DIMENSIONS ARE IN **mm** EXCEPT UNIT MENTIONED

VISHWAKARMA YOJANA PROJECT
DESIGN OF PUBLIC LIBRARY
PREPARED BY:- GAURAV PAWAR DHARMENDRA PRAJAPATI
VILLAGE:- KHASA(BANASKATHA)

MEASURMENT SHEET OF PUBLIC LIBRARY (Table 13)

Item	No.	L (m)	W (m)	D (m)	Quantity (m^3)
Centre line Total length= 15.8m					
Earth work in Excavation		15.8	0.9	1.1	**15.642**
Foundation PCC (Work)		15.8	0.9	0.2	2.844
Brickwork in foundation					
Step-1		15.8	0.6	0.30	2.844
Step-2		15.8	0.5	0.30	2.37
Step-3		15.8	0.4	0.30	1.896
Up to plinth		15.8	0.3	0.45	2.133
PCC in steps					
Step-1		1.2	0.9	0.15	0.162
Step-2		1.2	0.6	0.15	0.108
Step-3		1.2	0.3	0.15	0.054
Brick masonry in super structure		15.2	0.3	3.0	13.68
					Total PCC work=3.168
Deduction					
Door D	1 **5**	1.2 1.2	0.3 0.3	2.1 0.8	0.756 1.44
Lintel		1.3	0.3	0.12	00.468 Total= 2.2428
Parapet wall	1	17	0.2	1	3.4
					Total brick work in superstructure =11.9772
					Total Brickwork=24.6202

ABSTRACT SHEET OF PUBLIC LIBRARY (Table 14)

Item	Quantity	Rate	per	Amount
Excavation	**15.642**	100	Cubic meter	1564.2
PCC Work	**3.168**	3000	Cubic meter	9504
RCC work	**2.625**	9000	Cubic meter	23625
Brick Work	**24.6202**	3500	Cubic meter	86170.7

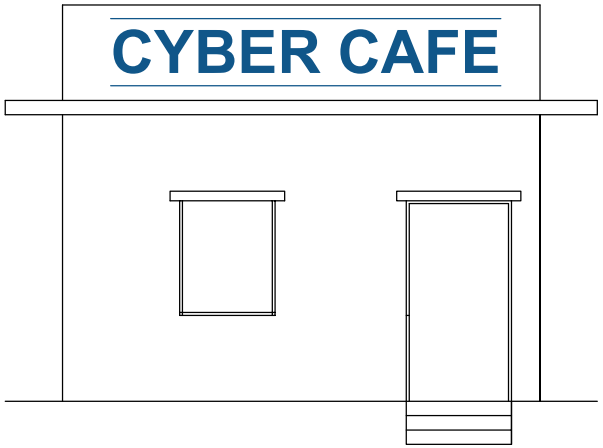
The total cost of the construction is =120863.9 Rs

8.1.5 Smart Village Design 1: Cybercafe

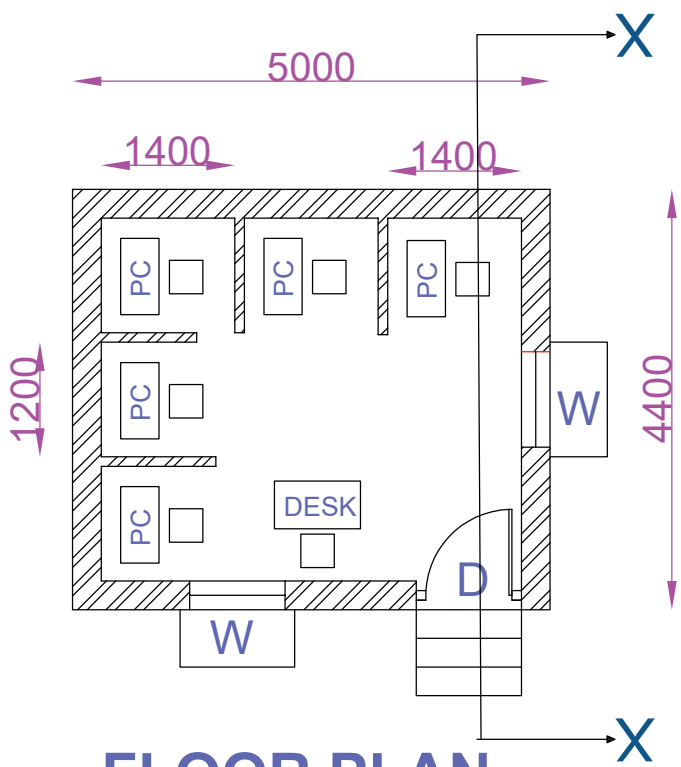
Scenario:

A cybercafe is a type of business where computers are provided for accessing the internet, playing games, chatting with friends or doing other computer related tasks and access of these is charged based on time.

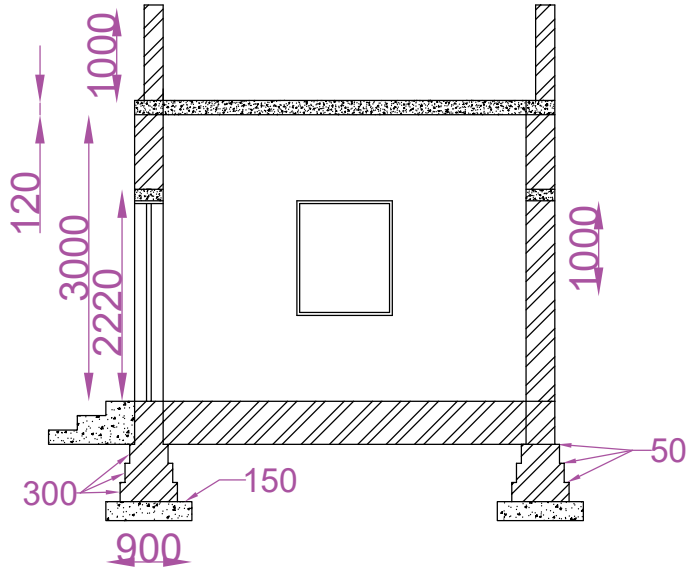
Proposed Design of Public toilet in AutoCAD



ELEVATION



FLOOR PLAN



SECTION X-X

SCHEDULE OF OPENINGS				
SR. NO	DETAILS	SYMBOL	NOS	SIZE
1	DOOR	D	1	(1.1*2.1)m
2	WINDOW	W	2	(1.0*1.2)m

ALL DIMENSIONS ARE IN **mm** EXCEPT UNIT MENTIONED

VISHWAKARMA YOJANA PROJECT
DESIGN OF CYBER CAFE
PREPARED BY:- GAURAV PAWAR DHARMENDRA PRAJAPATI
VILLAGE:- KHASA(BANASKATHA)

MEASUREMENT SHEET OF SYBER CAFE (Table 15)

Item	No.	L (m)	W (m)	D (m)	Quantity (m^3)
Centre line Total length= 42m					
Earth work in Excavation		17.6	0.9	1.1	**17.243**
Foundation PCC (Work)		17.6	0.9	0.2	3.168
Brickwork in foundation					
Step-1		17.6	0.6	0.30	3.168
Step-2		17.6	0.5	0.30	2.64
Step-3		17.6	0.4	0.30	2.112
Up to plinth		17.6	0.3	0.45	2.376
PCC in steps					
Step-1		1.2	0.9	0.15	0.162
Step-2		1.2	0.6	0.15	0.108
Step-3		1.2	0.3	0.15	0.054
Brick masonry in super structure		17.6	0.3	3.0	15.84
					Total PCC work=1.026
Deduction					
Window	7	0.8	0.3	2.1	0.756
Door D D1	2	0.6	0.3	2.1	0.72
Lintel	4	1.2	0.3	0.12	0.0768 Total= 1.5228
Parapet wall	1	18.8	0.2	1	5.24
					Total brick work in superstructure =14.3172
					Total Brickwork=**28.37**

ABSTRACT SHEET OF SYBER CAFE(Table 16)

Item	Quantity	Rate	per	Amount
Excavation	**17.424**	100	Cubic meter	1742.4
PCC Work	**1.0264**	3000	Cubic meter	3079.3
RCC work	**2.64**	9000	Cubic meter	23760
Brick Work	**28.37**	3500	Cubic meter	99306.2

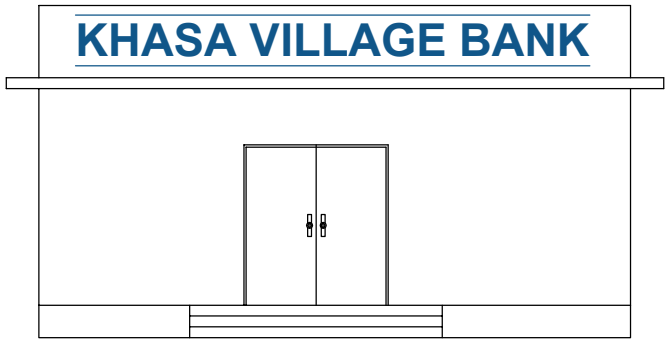
Total cost=127887.9 Rs

8.1.6 Smart Village Design 2: Bank

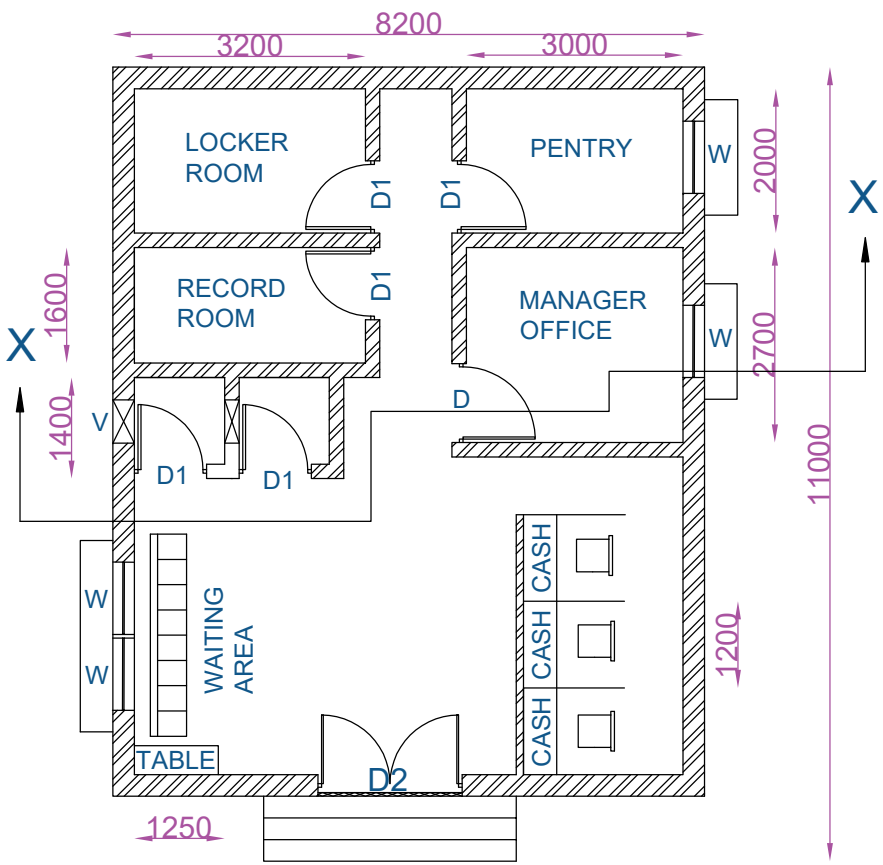
Scenario:

For enjoying banking facilities, the villagers have to go nearby town/city, and it very time consuming. Due to this people are discouraged to use such facilities so we provide bank floor plan in AutoCAD software.it will help beneficiaries to protect their money. People will get knowledge about the banking service and it will help in lifting the living standard and spread the awareness among the habitants of village.

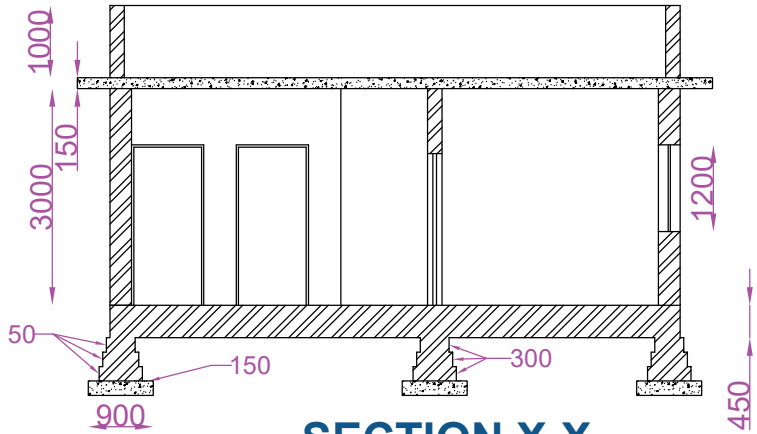
Proposed Design of BANK in AutoCAD



ELEVATION



FLOOR PLAN



SECTION X-X

SCHEDULE OF OPENINGS				
SR. NO	DETAILS	SYMBOL	NOS	SIZE
1	DOOR	D	1	(1.2*2.1)m
2	DOOR	D1	5	(1.0*2.1)m
3	DOOR	D2	1	(2.0*2.1)m
4	WINDOW	W	4	(1.0*1.2)m
5	VENTILATOR	V	2	(0.6*0.6)m

ALL DIMENSIONS ARE IN **mm** EXCEPT UNIT MENTIONED

VISHWAKARMA YOJANA PROJECT
DESIGN OF BANK
PREPARED BY:- GAURAV PAWAR DHARMENDRA PRAJAPATI
VILLAGE:- KHASA(BANASKATHA)

Item	No.	L (m)	W (m)	D (m)	Quantity (m^3)
Centre line Total length= 33.6m					
Earth work in Excavation		33.6	0.9	1.1	**33.264**
Foundation PCC (Work)		33.6	0.9	0.2	6.048
Brickwork in foundation					
Step-1		34.2	0.6	0.30	6.156
Step-2		34.4	0.5	0.30	5.16
Step-3		34.6	0.4	0.30	4.152
Up to plinth		34.8	0.3	0.45	4.698
PCC in steps					
Step-1		1.2	0.9	0.15	0.162
Step-2		1.2	0.6	0.15	0.108
Step-3		1.2	0.3	0.15	0.054
Brick masonry in super structure		34.8	0.3	3.0	31.32
					Total PCC work=6.372
Deduction					
Door D D1	3 2	1.2 0.8	0.3 0.3	2.1 2.1	2.268 0.576
Lintel	3 2	1.6 1.2	0.3 0.3	0.12 0.12	0.1152 0.0864 Total= 3.0456
Parapet wall	1	3.5	0.2	1	5.24
					Total brick work in superstructure =28.2744
					Total Brickwork=**55.4404**

MEASURMENT SHEET OF BANK (Table 17)

ABSTRACT SHEET OF PUBLIC BANK (Table 18)

Item	Quantity	Rate	per	Amount
Excavation	**33.264**	100	Cubic meter	3326.4
PCC Work	**6.372**	3000	Cubic meter	1916
RCC work	**1.8**	9000	Cubic meter	16200
Brick Work	**55.4404**	3500	Cubic meter	194041.4

Total cost= 232683.8 Rs

8.2Reason for students Recommending this Design

The villagers have to go nearby village for any need related to post service so that there is so much westing of time of people and we all know that in this generation time is not money but more that that. The provision of post office attracts the persons to take advantage of facility and it will provide awareness among the villagers so that threat of people to go such government offices will reduced and there is lots of benefits overall.

Public toilet

public toilet is the most basic amenity among the all. It should be must in the everywhere. In the minds of many, the best public toilet is the one they don't have to use. It's not uncommon for someone to reject their bodies warning signs and forgo restroom use, waiting in pain until they're able to scamper into their bathroom at home.

This perception of the public restroom, somewhere that must be avoided like the plague, is unfortunate. At their best, public restrooms should be viewed not just a place to relieve one's self in a pinch, but also as a space that carries out important public services, says Rights Info.

Public restrooms, the website argues, offers pregnant women and disabled people a place where they can relieve themselves when home is just too far away. Those who suffer from anxiety attacks and other mental health issues can use the restroom as a sort of refuge — a place where they can go to collect their thoughts and relax.

Reasons for provide public toilet

The first reason behind provision of public toilet is that there is no facility of the same in the village. And by provision of public toilet the people will going to avoid to go in open area and will going to be used to with toilet. Toilet also helps in protect our society from many diseases which can be spread by human faeces. With increasing use of such a service there will be good and pleasant atmosphere surrounding which may result in creation of play ground or recreation centre at the area where such activity is done.

Public library

Public Library is defined as a library which is accessible to the public and generally funded from public source and may be operated by c ivil servant (Anil Kumar Dhiman and Yasoda Rani, 2011). Public library, as its name suggests, it is for the people, by the people and of the people. It exists from civilization of mankind and act as the important custodian of human culture, knowledge and social customs (Kaliya Perumal and Bahskarn, 2010).
Government of India Advisory Committee on libraries with K P Sinha as the Chairman has defined Public Library as s Library:-

- Which is financed for most part out of public funds?
- Which is intended as a auxiliary educational institutions providing a means of self-education which is endless.
- Which houses learning materials giving reliable information freely and without partially or prejudice on as wide a variety of subject as will satisfy the interest of the readers.

Importance of library

- Personality development
- Culture and issues
- Economic development
- Human adjustment
- Science and tech.
- Self-development
- Spread of education

Reasons for provide public library

There is a public library available in the village, but is is combined with the school library so that we think that there is need for separate library for public so we provide AutoCAD design of public library. By the virtue of the public library people are going to attract toward reading books and reading book is the habit. By reading people will aware about the issues and society of India which will improve the general living standard of public.

Gram panchayat

Each village is divided into smaller units called Wards. Each ward selects or elects a representative who is known as t he Ward Member Of Panch. All the members of the Gram Sabah also elect a Sarpanch who is the president of the Panchayat.
It comprises of the Sarpanch and the Panch which is elected for 5 years. Gram panchayat has a Secretary who is also the secretary of the Gram Sabah. This person is not an elected person but is appointed by the government. He is responsible for calling the meetings of the Gram Sabha and Gram Panchayat and keep a record of the proceedings.

Powers and Functions of Gram Panchayat

The Panchayat Act specifies the functions, powers, and duties of the Gram Panchayats. A Gram Panchayat shall provide for:

 Sanitation, conservancy and drainage and the prevention of public nuisances;
 Curative and preventive measures in respect of any epidemic;
 Supply of drinking water and disinfecting the sources of supply and storage of water;
 The maintenance, repair, construction and protection of public streets;
 The removal of encroachments of public streets or public places;
 The management and care of public tanks;
 Organizing voluntary labor for upliftment of its area;
 The control and administration of the Gram Panchayat Fund;
 The imposition, assessment, and collection of the taxes, rates or fees;
 The maintenance and control of Daalders and Chowkidars;
 Administration of Nyaya Panchayat, etc.

Reasons for providing gram panchayat

There are so many reasons for providing panchayat building in the village. The existing structure of panchayat in the poor condition. There is huge need for the recreation of the structure. the panchayat building should be in sound condition as following issues are generally discussed in the panchayat office:

 Social issues
 Water problem
 BPL benefits
 Tracking misuse of money, and
 The undue favour done to a group of people

For example, if a village is having water problem what will be the alternative ways to develop. Different panch will come with different ideas like using the hand pump, checking dams and rainwater harvesting methods, making tube-wells or wells in the village. Now the Gram Sabha will select the best idea and try to work on it.

8.3About designs Suggestions / Benefit of the villagers

PHC

 Early detection
 Health maintenance
 Convenience
 Continuity
 Early detection

Bank

 Bank accounts offer convenience. For example, if you have a checking account, you can easily pay by check or through online bill pay.

 Bank accounts are safe. Your money will be protected from theft and fires.
 It's an easy way to save money.
 Bank accounts are cheaper.
 Bank accounts can help you access credit

Post office

 Post Office regular savings account.
 Post Office time deposit account (TD)
 Post Office recurring deposit account (RD)
 Post Office monthly income deposit account (MIS)
 Public Provident Fund account (PPF)
 Sukanya Samriddhi Yojana Account (SSY)
 Kisan Vikas Patra (KVP) account.
 National Savings Certificate (NSC)

Public toilet

 Keep hygienic atmosphere
 Reduce/avoid mosquito nuisance
 Protect us from mosquito porn diseases

Public library
 They foster literacy of all kinds.
 They create healthy communities.
 They support culture and creativity.
 They provide public space

Gram panchayat

 Maintenance and construction of water resources, roads, drainage, School buildings and CPR (common property resources).
 Levy and collect local taxes.
 Execute government schemes related to employment.

Cybercafe

 Internet facilities
 Computer services
 Online work facilities

CHAPTER: -9
Proposing designs for Future Development of the Village for the PART-II Design

1. **School building**:

There is a school building in the khasa village but building is not in safe condition so that we will provide design plan of school building for village. School building should be in very good condition as children are future of our developing country so there should not be any compromise with the future and education of children.

2. Play-ground development

There is a large area behind the school is empty so that we are thinking about develop that area for playing cricket and other sports as sports are also an important part of our day to day life.

3. Recreation area

Four lakes are there in the village so that there is a vast opportunity for creating recreational area for that we will provide public garden.

4. Youth club/ Sports club

We are looking for providing a youth club in the village as to encourage the youth of the village for their self-development and so that they can also develop the village.

5. Super market

In the village, there is no proper place where people can purchase their necessary things like food, vegetables, grocery, etc. So, if we can make a super market in the village, it will beneficial for the villagers.

CHAPTER: -10
Conclusion of the Entire Village Activities of the Project

We have visited the ideal village punsari and smart village vavol which help us to understand the basic facilities of the village. This visit provides us reference point for the development of village.Visit help us in understanding the social, economic and financial aspect of the village.

We have visited the allocated village khasa, palanpur, banaskatha. By visiting the village, we have seen the different facilities available in the village such as overhead water tank, primary school, panchayat house, aaganwadi, ATM, doodhmandali, community hall, etc. But we have also noticed that the villageg has lack of amenities like public toilet, public library, post office, bank, etc. And also the existing buildings such as primary school and punchayat building needs to renovation especially for the school building as we have seen the condition of the building.

We have done meeting with sarpanch and obtain the required data then we have visited the village and we have spent some time with teacher of primary school from where we also received some important data which are very useful for us in report preparation and giving the proposals of designs which can improve the level of village.

So we have decided to provide the designs of panchayat building, post office, public toilets, library, bank and cybercafé. We have done meeting with sarpanch and obtain the required data then we have visited the village and we have spent some time with teacher of primary school from where we also received some important data which are very useful for us in report preparation and giving the proposals of designs which can improve the level of village.

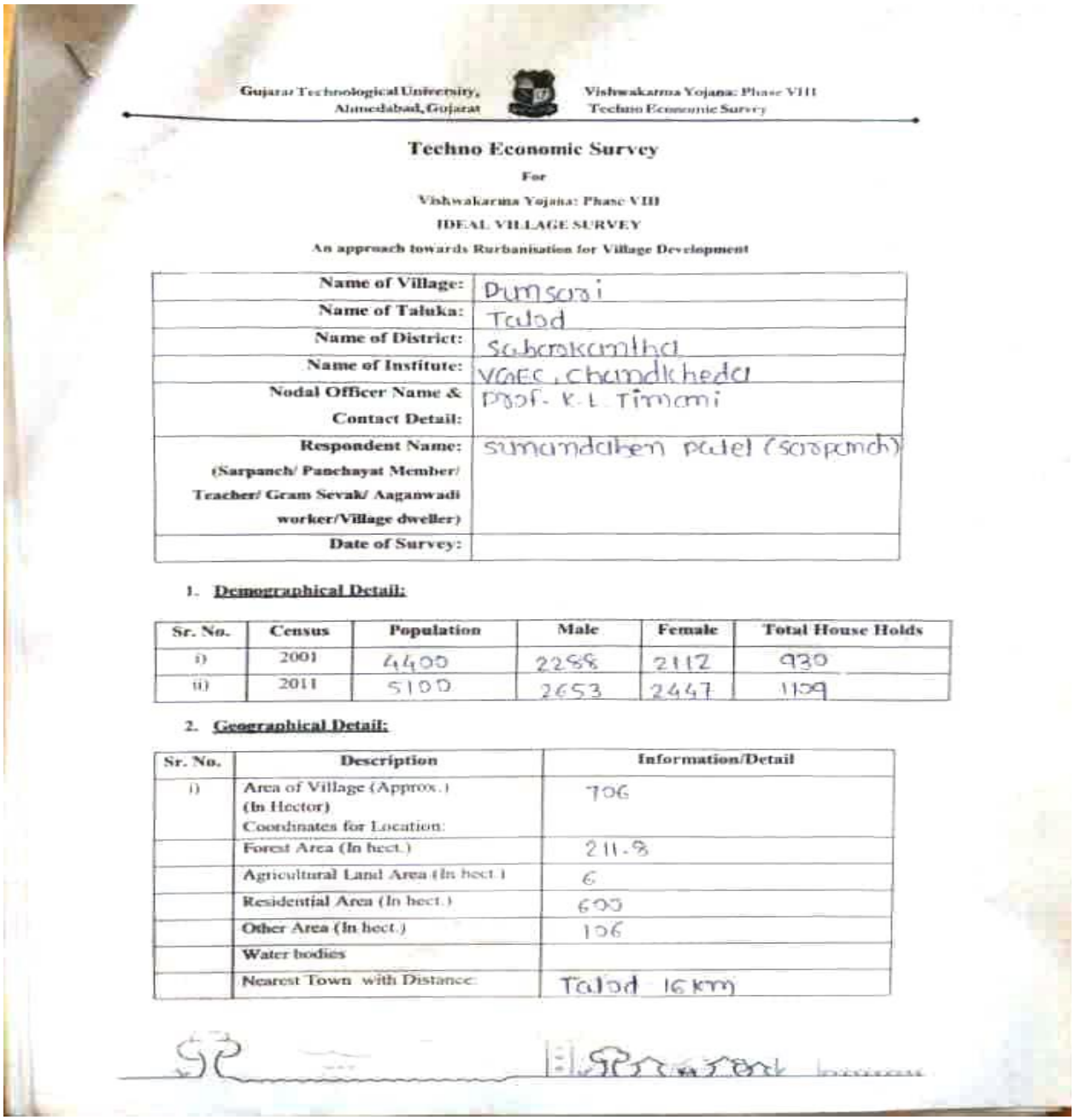
We have provided some deigns here as a part of Vishwakarma yojana project which will make life of villagers easy and fast. This will improve the life-style and living standard of village also improves the quality of villager socially, economically and financially. This will help in overall development of village.

CHAPTER: -11
Chapters referred for this project

- www.vyojana.gtu.ac.in
- www.onefivenine.com
- www.censusgujarat.gov.in
- www.census2011.com
- www.indikosh.com
- www.wikipedia.com
- GTU guidelines and briefings
- www.censusindia.gov.in
- www.researchgate.net
- www.villageinfo.in
- www.villagemaps.in

CHAPTER-12
ANNEXURE ATTACHMENT

12.1 Survey form of Ideal village scanned copy attachment in the 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:	Dumsari
Name of Taluka:	Talod
Name of District:	Sabarkantha
Name of Institute:	VGEC, Chandkheda
Nodal Officer Name & Contact Detail:	Prof. K.L. Timani
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	sumandaben patel (sarpanch)
Date of Survey:	

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	4400	2288	2112	930
ii)	2011	5100	2653	2447	1159

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	706
	Forest Area (In hect.)	211.8
	Agricultural Land Area (In hect.)	6
	Residential Area (In hect.)	600
	Other Area (In hect.)	106
	Water bodies	
	Nearest Town with Distance:	Talod 16 km

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

3. Occupational Details:

Name of Three Major Occupation groups in Village	1. Agriculture 2. Animal husbandry 3. Gruh udhyog

4. Physical Infrastructure Facilities:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated)	available	yes		
	• RO Water	available	yes		
	• Well (Covered/ Uncovered)				
	• Hand pumps	available	yes		
	• Tube well/ Borehole	available	yes		
	• River/ Canal/ Spring/ Lake/ Pond	Not available			
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	1,50,000	Litres	
	Underground Sump	Capacity:	No		
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	yes			
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	closed	yes		
	If Open than Pucca / Kutchcha				
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	NO			
Suggestions if any:					

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

E.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road		yes		pucca
	Main road		yes		pucca
	Internal streets	available	yes		WBM
	Nearest NH/SH/MDR/ODR Dist. in kms.	6 km	yes		pucca
Suggestions if any:					

F.	Transport Facility				
	Railway Station (Y/N) (If No than Nearest Rly Station—Kms)	Not available (13 km)	yes		Taluka
	Bus station (Y/N) Condition: (If No than Nearest Bus Station—Kms)	available	yes		within village
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)		yes		jeep/auto ect.etc
Suggestions if any:					

G.	Electricity Distribution				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	More than 6 hrs	yes		UGVCL electricity
	Power supply for Domestic Use	available	yes		
	Power supply for Agricultural Use				
	Power supply for Commercial Use				
	Road/ Street Lights	available	yes		

Gujarat Technological University, Ahmedabad, Gujarat — Vishwakarma Yojana Phase VI... Techno Economic Survey

	Electrification in Government Buildings Schools/ Hospitals	available	yes		
	Renewable Energy Source Facilities (Y/ N)	Not			
	LED Facilities	available			

Suggestions if any:

H.	Sanitation Facility				
	Public Latrine Blocks If available than Nos.	yes			
	Location Condition	Good			
	Community Toilet (With bath/ without bath facilities)	yes			
	Solid & liquid waste Disposal system available	yes			
	Any facility for Waste collection from road	yes			door to door collection

Suggestions if any:

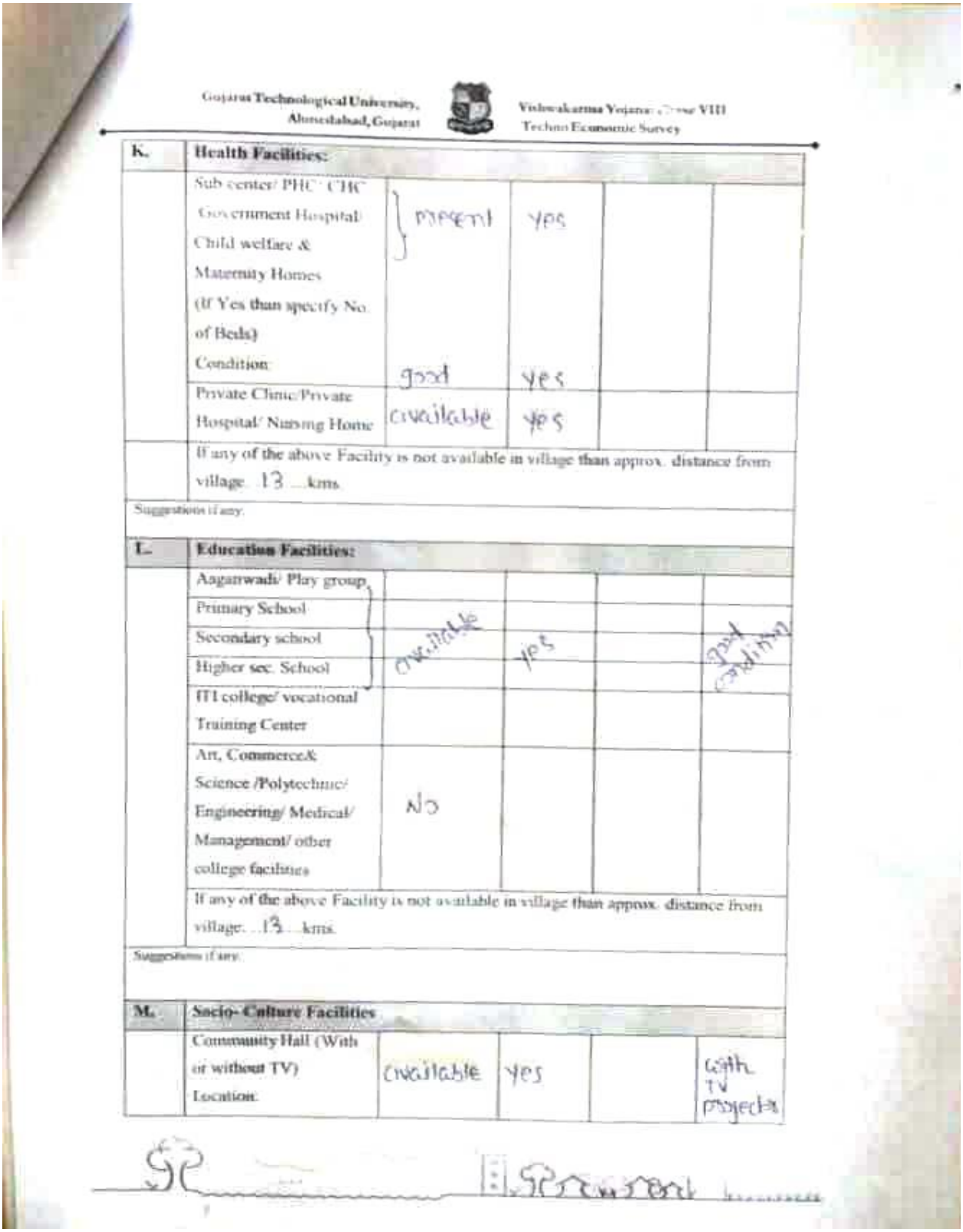
I.	Irrigation Facility:				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Tube wells	yes		good condition

Suggestions if any:

J.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)	Mostly pucca	yes		7/8

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks



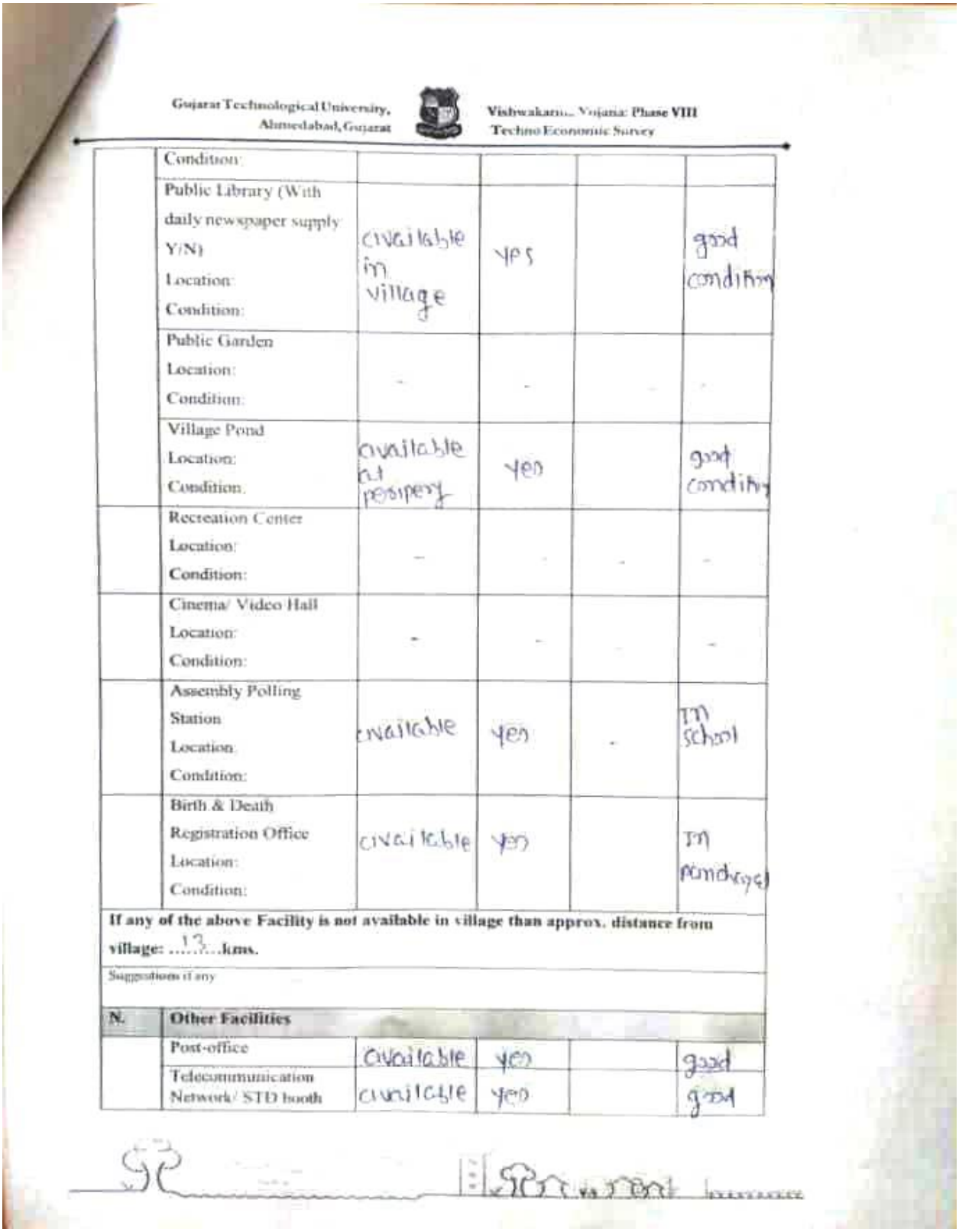
Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana : Phase VIII
Techno Economic Survey

K.	Health Facilities:				
	Sub center/ PHC/ CHC Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds)	present	yes		
	Condition	good	yes		
	Private Clinic/Private Hospital/ Nursing Home	available	yes		
	If any of the above Facility is not available in village than approx. distance from village 13 kms				
Suggestions if any:					

L.	Education Facilities:				
	Aaganwadi/ Play group	available	yes		good condition
	Primary School				
	Secondary school				
	Higher sec. School				
	ITI college/ vocational Training Center				
	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 13 kms.				
Suggestions if any:					

M.	Socio- Culture Facilities				
	Community Hall (With or without TV) Location:	available	yes		with TV projector



Gujarat Technological University, Ahmedabad, Gujarat

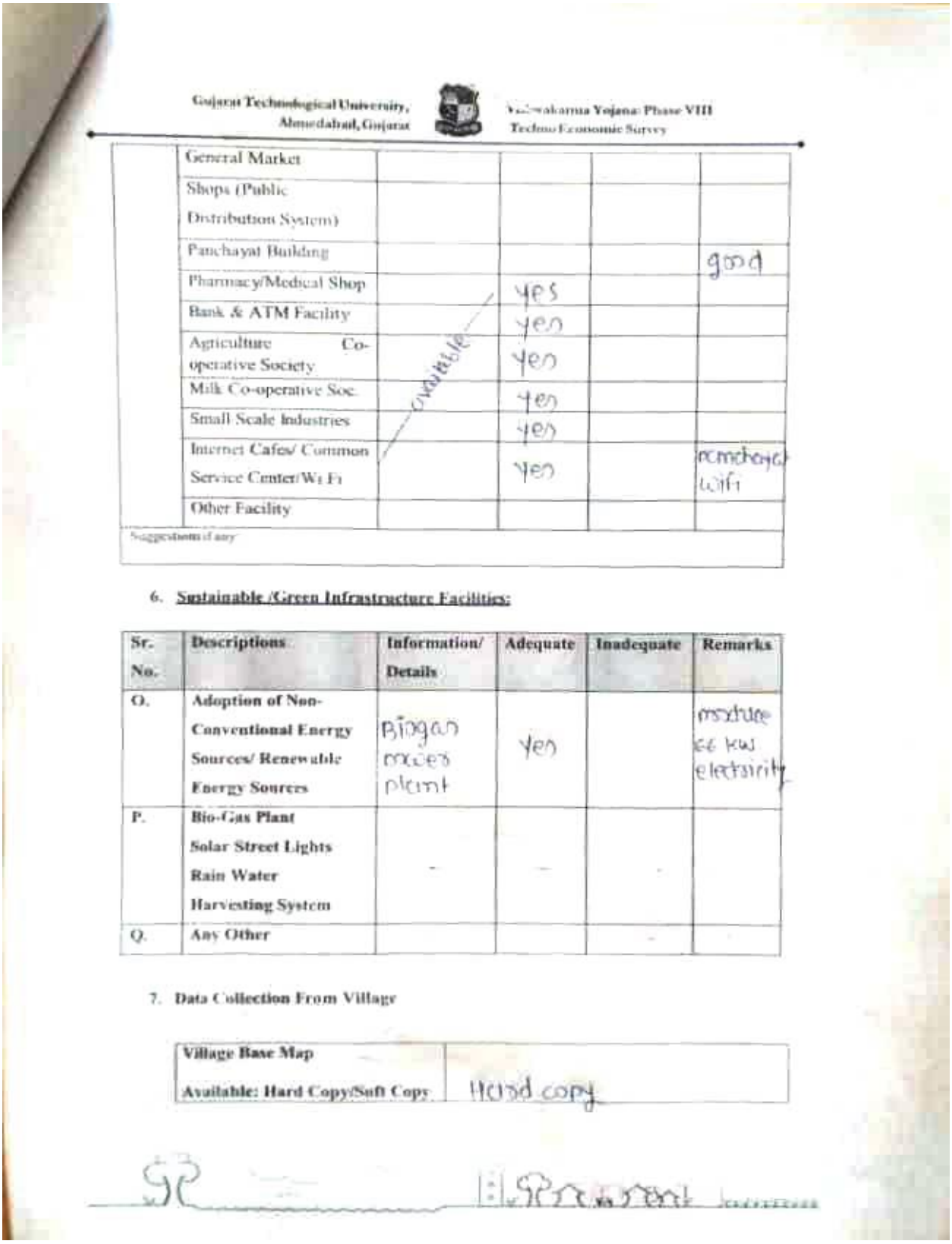
Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Condition:				
	Public Library (With daily newspaper supply Y/N) Location: Condition:	available in village	yes		good condition
	Public Garden Location: Condition:	-	-	-	-
	Village Pond Location: Condition:	available at periphery	yes		good condition
	Recreation Center Location: Condition:	-	-	-	-
	Cinema/ Video Hall Location: Condition:	-	-	-	-
	Assembly Polling Station Location Condition:	available	yes	-	In school
	Birth & Death Registration Office Location: Condition:	available	yes		In panchayat

If any of the above Facility is not available in village than approx. distance from village: ....13....kms.

Suggestions if any

N.	Other Facilities				
	Post-office	available	yes		good
	Telecommunication Network/ STD booth	available	yes		good



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

	General Market				
	Shops (Public Distribution System)				
	Panchayat Building				good
	Pharmacy/Medical Shop		yes		
	Bank & ATM Facility	available	yes		
	Agriculture Co-operative Society		yes		
	Milk Co-operative Soc.		yes		
	Small Scale Industries		yes		
	Internet Cafes/ Common Service Center/Wi Fi		yes		remchang wifi
	Other Facility				

Suggestions if any

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

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
O.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	Biogas moces plant	yes		module 66 kw electricity
P.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	-	-	-	
Q.	Any Other			-	

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	Hard copy

Recent Projects going on for Development of Village	
Any NGO working for village development	

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)		
2.	Additional Information/ Requirement		

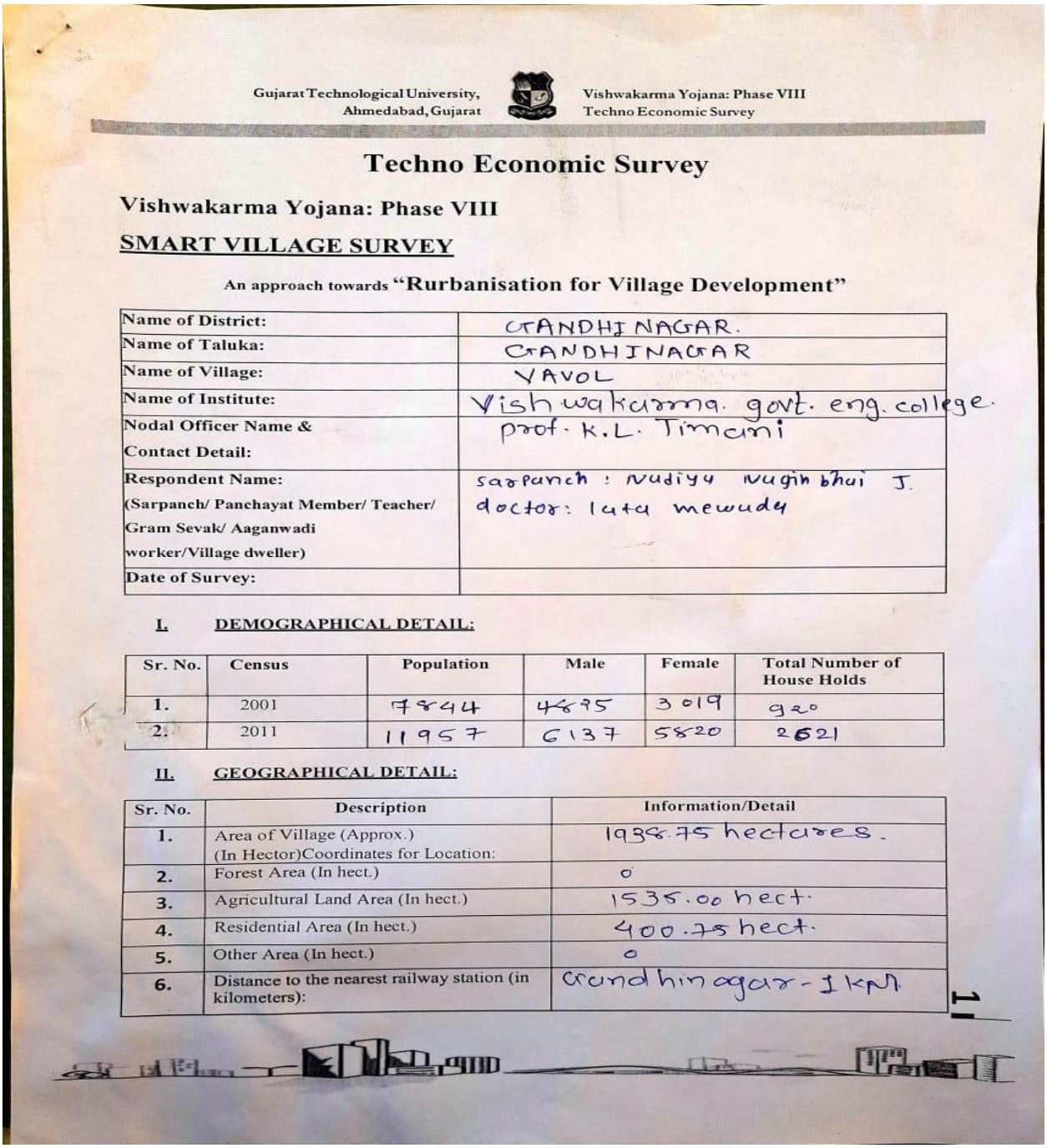
9. Smart Village Proposal Design

Sr. No.	Descriptions	Information/ Detail	Remarks
1.			

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

12.2 Survey form of smart village scanned copy attachment in the 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:	GANDHINAGAR.
Name of Taluka:	GANDHINAGAR
Name of Village:	VAVOL
Name of Institute:	Vishwakarma. govt. eng. college.
Nodal Officer Name & Contact Detail:	prof. K.L. Timani
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	sarpanch : Nadiya Nagin bhai J. doctor: Lata mewada
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	7844	4825	3019	920
2.	2011	11957	6137	5820	2621

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1938.75 hectares.
2.	Forest Area (In hect.)	0
3.	Agricultural Land Area (In hect.)	1535.00 hect.
4.	Residential Area (In hect.)	400.75 hect.
5.	Other Area (In hect.)	0
6.	Distance to the nearest railway station (in kilometers):	Gandhinagar - 1 KM.

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

7.	Name of Nearest Town with Distance:	Gandhinagar - 5 KM
8.	Distance to the nearest bus station (in kilometers):	Gandhinagar - 4 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.	
	2.	JOB
	3.	workers (GIDC)

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

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				-
	Public Tap/Standpipe	yes	one.		- working
	Tube Well Or Bore Well	yes	-		4 - tube well
2.	**DUG WELL**	no			
	Protected Well	-			
	Un Protected Well	-			
3.	**WATER FROM SPRING**				
	Protected Spring	-			
	Unprotected Spring	-			
	Rainwater	-			
	Tanker Truck				
	Cart With Small Tank	-			
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/**				
	Irrigation Channel	no			-
	Bottled Water	-			
	Hand Pump	-			-
	Other(Specify)**Lake/ Pond**	-			one - lake

2

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions if any:						
B.	**Water Tank Facility**					
	Overhead Tank	Capacity:	3x 1 lakh			
	Underground Sump	Capacity:	1 x			
Suggestions if any:						
C.	**The Type of Drainage Facility**					
	A. UNDERGROUND DRAINAGE	under ground	adequate			
	1					
	2					
	B. OPEN WITH OUTLET	x				
	C. OPEN WITHOUT OUTLET	x				
Suggestions if any:						
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**					
	Village approach road	yes			four-lane paved	
	Main road	yes			paved	
	Internal streets	yes			concrete	
	Nearest NH/SH/MDR/ODR Dist. in kms.	yes			within range bypass-	
Suggestions if any:						
E.	**Transport Facility**					
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	no.			available within range	
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	yes			government service only	
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	yes			private	
Suggestions if any:						
F.	**Electricity Distribution**					
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	yes			24 hr. (UGVCL)	

3

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Power supply for Domestic Use	yes	✓		
	Power supply for Agricultural Use	yes	✓		from panchayat
	Power supply for Commercial Use	yes.	✓		
	Road/ Street Lights	yes	✓		conventional
	Electrification in Government Buildings/ Schools/ Hospitals	yes.	✓		
	Renewable Energy Source Facilities (Y/ N)	-			
	LED Facilities	yes.			street light
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	yes.			one.
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	no.			
	Solid & liquid waste Disposal system available	yes	✓		tructo - trolly
	Any facility for Waste collection from road	-	✓		
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND	yes	✓		one - lake
	STREAM/RIVER	no.			
	CANAL	yes	✓	-	for drinking
	WELL	yes			only. (Narmada)
	TUBE WELL	yes	✓		
	OTHER (SPECIFY)	no.			-
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	80% P. 20% K.	✓		-

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

V. SOCIAL INFRASTRUCTURAL FACILITIES:

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

51

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions if any:

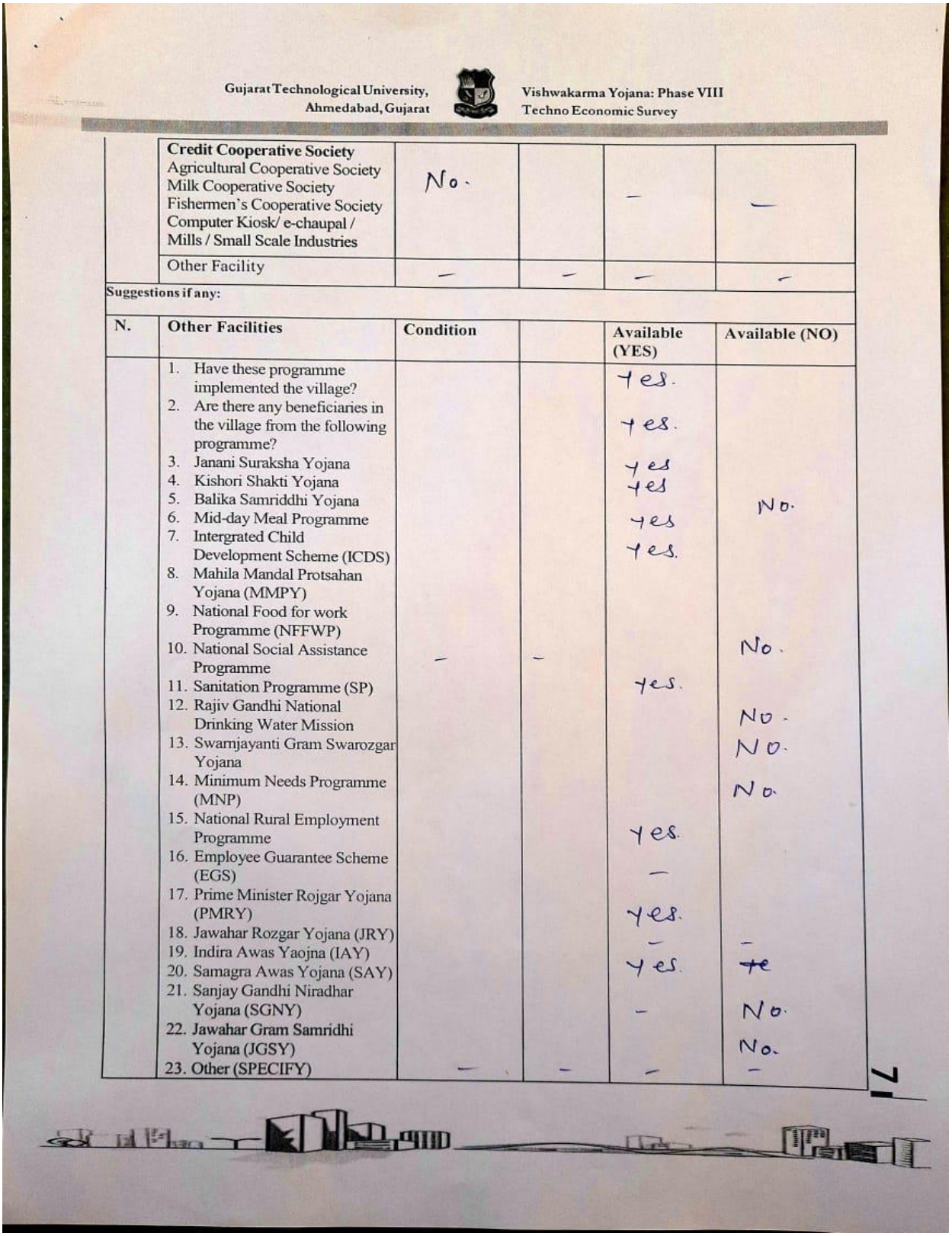
L.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)	no.			
	Public Library (With daily newspaper supply: Y/N)	yes			
	Public Garden	no			
	Village Pond	yes		yes	
	Recreation Center	yes		yes	
	Cinema/ Video Hall	no			
	Assembly Polling Station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

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

Suggestions if any:

M.	Other Facilities	Condition	Location	Available (YES)	Available (NO)
	Post-office	good		✓	
	Telecommunication Network/ STD booth	–			✓
	General Market	–		✓	
	Shops (Public Distribution System)	✓		✓	
	Panchayat Building	good		✓	
	Pharmacy/Medical Shop	good		✓	
	Bank & ATM Facility	4- bank	Various spot	✓	
	Agriculture Co-operative Society	No.			✓
	Milk Co-operative Soc.	good		✓	
	Small Scale Industries	No.			✓
	Internet Cafes/ Common Service Center/Wi Fi	yes.			✓
	Youth Club	–			✓
	Mahila Mandal	yes.		✓	

19



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-chaupal / Mills / Small Scale Industries	No.		–	–
	Other Facility	–	–	–	–

Suggestions if any:

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

71

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

1.	Repair & Maintenance of Existing Public Infrastructure facilities,	-	
	School Building	Yes	-
	Health Center	No	-
	Panchayat Building	Yes.	-
	Public Toilets & any other	No.	-
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?	Yes Yes.	due to Covid-19.

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

સરપંચ
વાવોલ ગ્રામ પંચાયત
તા. જી. ગાંધીનગર

12.3 Survey form of allocated village scanned copy attachmnet in the report

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"**

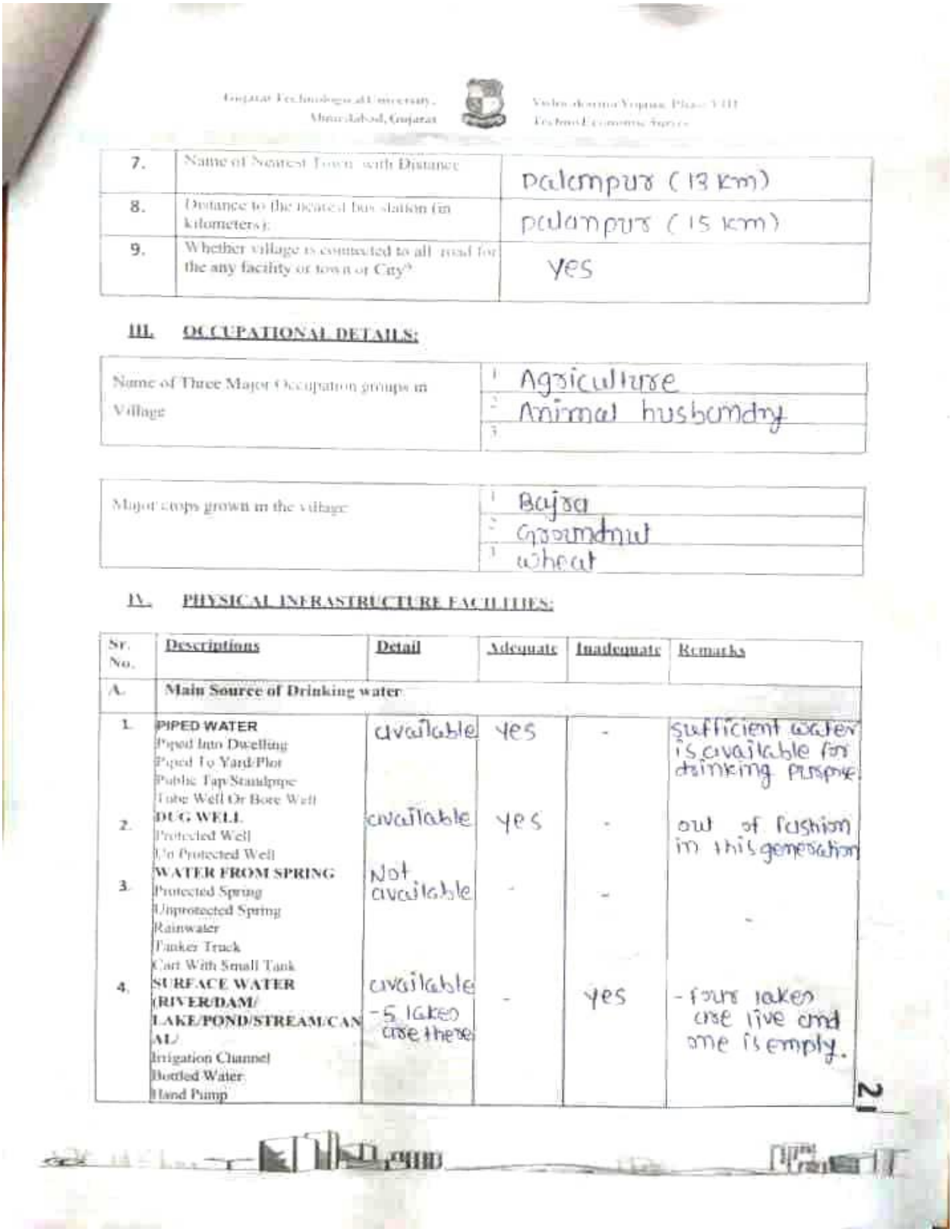
Name of District:	Banas kantha
Name of Taluka:	Palampur
Name of Village:	Khasa
Name of Institute:	Vishwakarma Govt. Engg. college
Nodal Officer Name & Contact Detail:	Prof. K.L. TIMANI
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Thakor Ajamalji Lalaji (Sarpanch) Prajapati Kalubhai (Teacher)
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	2026	1032	994	487
2.	2011	2601	1364	1237	525

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location	521.14
2.	Forest Area (In hect.)	78.171
3.	Agricultural Land Area (In hect.)	260.57
4.	Residential Area (In hect.)	156.342
5.	Other Area (In hect.)	26.057
6.	Distance to the nearest railway station (in kilometers)	Palampur (15 km)



Gujarat Technological University, Ahmedabad, Gujarat — Vishwakarma Yojana Phase-VIII — Technical Economic Survey

7.	Name of Nearest Town with Distance	Palampur (13 Km)
8.	Distance to the nearest bus station (in kilometers):	palampur (15 km)
9.	Whether village is connected to all road for the any facility or town or City?	yes

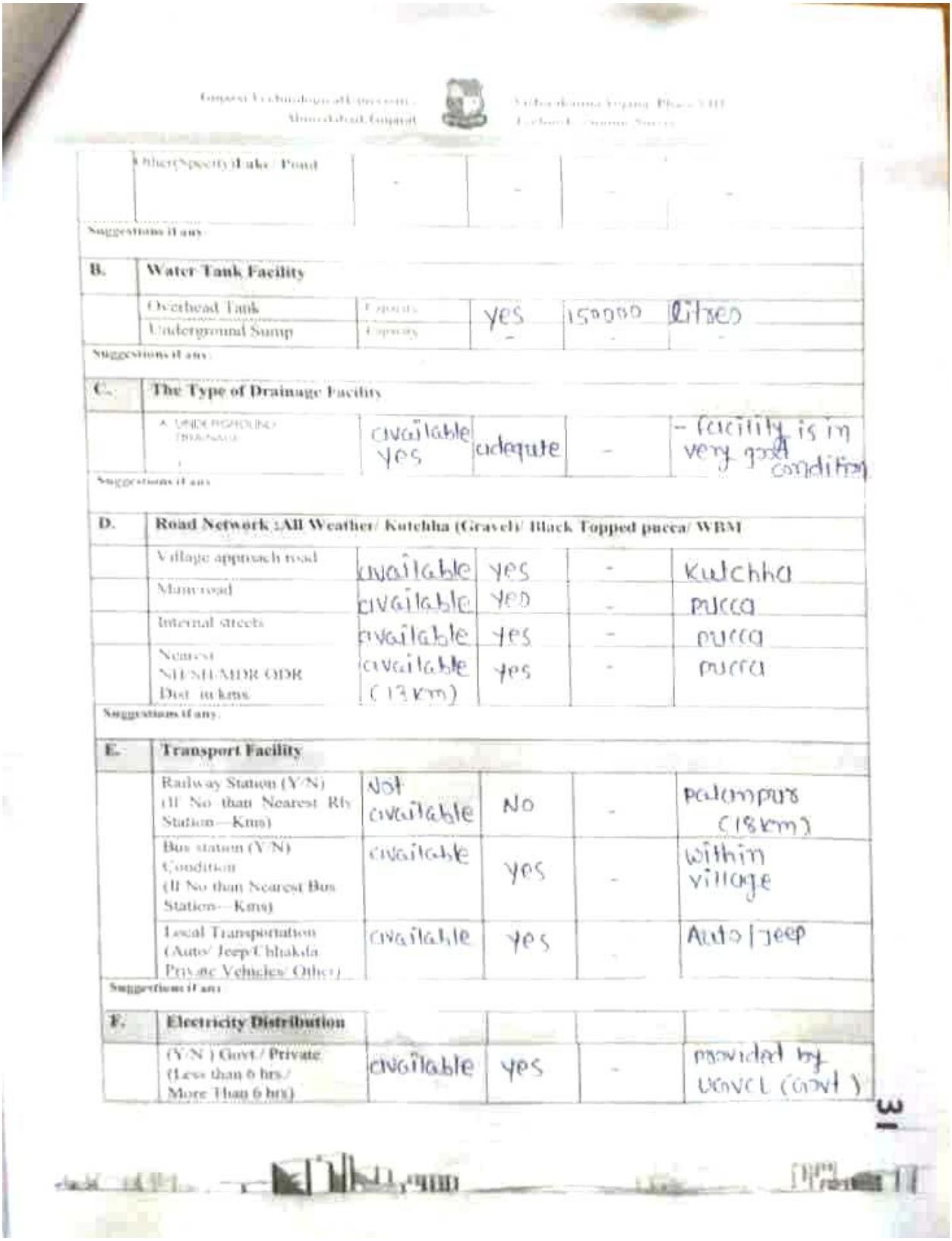
III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1	Agriculture
	2	Animal husbandry
	3	

Major crops grown in the village:	1	Bajra
	2	Groundnut
	3	wheat

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
1.	**PIPED WATER** Piped Into Dwelling Piped To Yard/Plot Public Tap/Standpipe Tube Well Or Bore Well	available	yes	-	sufficient water is available for drinking purpose
2.	**DUG WELL** Protected Well Un Protected Well	available	yes	-	out of fashion in this generation
3.	**WATER FROM SPRING** Protected Spring Unprotected Spring Rainwater Tanker Truck Cart With Small Tank	Not available	-	-	-
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/** Irrigation Channel Bottled Water Hand Pump	available - 5 lakes are there	-	yes	- four lakes are live and one is empty.



	Other(Specify) Lake / Pond	-	-	-	-

Suggestions if any:

B.	Water Tank Facility				
	Overhead Tank	Capacity	yes	150000	litres
	Underground Sump	Capacity	-	-	-

Suggestions if any:

C.	The Type of Drainage Facility				
	A. UNDERGROUND DRAINAGE	available yes	adequate	-	- facility is in very good condition

Suggestions if any:

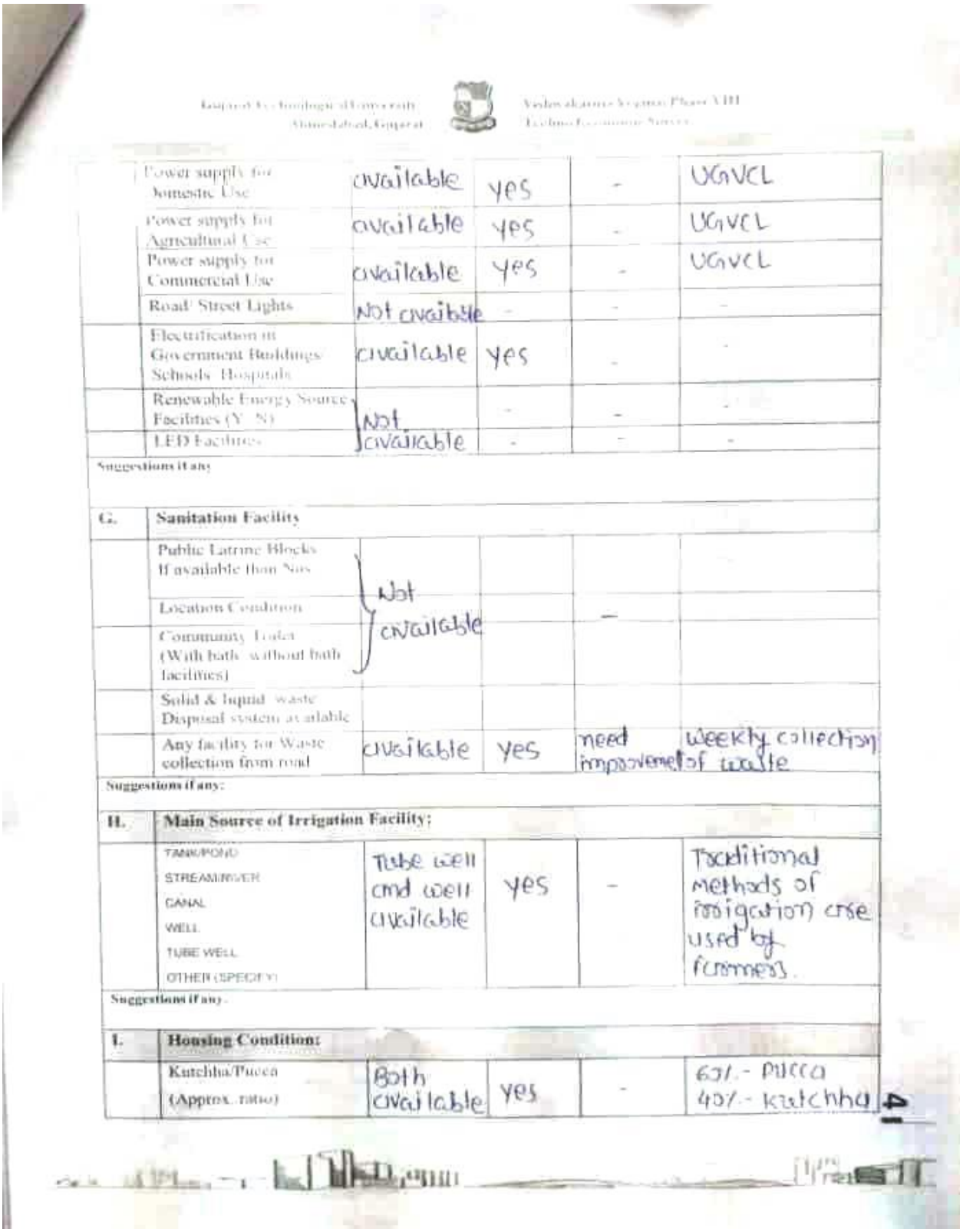
D.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	available	yes	-	Kutchha
	Main road	available	yes	-	pucca
	Internal streets	available	yes	-	pucca
	Nearest SH/SH/MDR/ODR Dist in kms	available (13km)	yes	-	pucca

Suggestions if any:

E.	Transport Facility				
	Railway Station (Y/N) (If No than Nearest Rly Station—Kms)	Not available	No	-	palampur (18km)
	Bus station (Y/N) Condition (If No than Nearest Bus Station—Kms)	available	yes	-	within village
	Local Transportation (Auto/ Jeep/Chhakda Private Vehicles/ Other)	available	yes	-	Auto / jeep

Suggestions if any:

F.	Electricity Distribution				
	(Y/N) Govt / Private (Less than 6 hrs / More Than 6 hrs)	available	yes	-	provided by Gevel (Govt)



	Power supply for domestic Use	available	yes	-	UGVCL
	Power supply for Agricultural Use	available	yes	-	UGVCL
	Power supply for Commercial Use	available	yes	-	UGVCL
	Road/ Street Lights	Not available	-	-	-
	Electrification in Government Buildings/ Schools/ Hospitals	available	yes	-	-
	Renewable Energy Source Facilities (Y/N)	Not available	-	-	-
	LED Facilities		-	-	-

Suggestions if any:

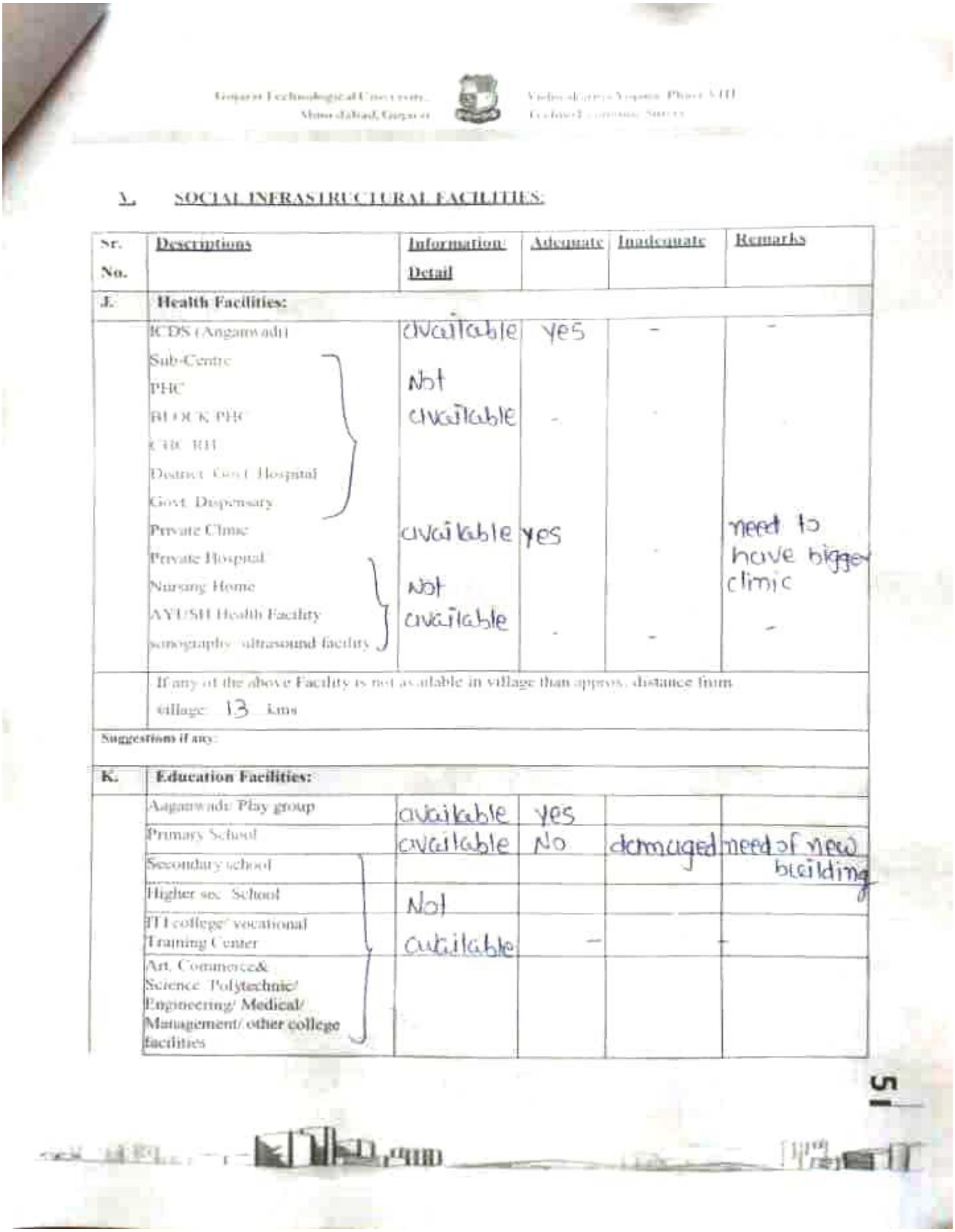
G.	Sanitation Facility				
	Public Latrine Blocks If available then Nos	Not available			
	Location/ Condition			-	
	Community Toilet (With bath/ without bath facilities)				
	Solid & liquid waste Disposal system available				
	Any facility for Waste collection from road	available	yes	need improvement	weekly collection of waste

Suggestions if any:

H.	Main Source of Irrigation Facility:				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL OTHER (SPECIFY)	Tube well and well available	yes	-	Traditional methods of irrigation are used by farmers.

Suggestions if any:

I.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)	Both available	yes	-	60% - Pucca 40% - Kutchha



Gujarat Technological University, Ahmedabad, Gujarat — Vishwakarma Yojana Phase-VIII — Evaluation Survey

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	available	yes	-	-
	Sub-Centre	Not available	-		
	PHC				
	BLOCK PHC				
	CHC/ RH				
	District Govt. Hospital				
	Govt. Dispensary				
	Private Clinic	available	yes		need to have bigger clinic
	Private Hospital	Not available			
	Nursing Home				
	AYUSH Health Facility				-
	sonography/ ultrasound facility		-	-	
	If any of the above Facility is not available in village than approx. distance from village: 13 kms				
Suggestions if any:					
K.	**Education Facilities:**				
	Anganwadi/ Play group	available	yes		
	Primary School	available	No	damaged	need of new building
	Secondary school				
	Higher sec. School	Not available			
	ITI college/ vocational Training Center		-	-	
	Art, Commerce& Science Polytechnic/ Engineering/ Medical/ Management/ other college facilities				

15

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions if any:

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

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

Suggestions if any:

M.	Other Facilities	Condition	Location	Available (YES)	Available (NO)
	Post-office	good		✓	
	Telecommunication Network/ STD booth	-			✓
	General Market	-		✓	
	Shops (Public Distribution System)	✓		✓	
	Panchayat Building	good		✓	
	Pharmacy/Medical Shop	good		✓	
	Bank & ATM Facility	4-bank	Various spot	✓	
	Agriculture Co-operative Society	No.			✓
	Milk Co-operative Soc.	good		✓	
	Small Scale Industries	No.			✓
	Internet Cafes/ Common Service Center/Wi Fi	yes.			✓
	Youth Club	-			✓
	Mahila Mandal	yes.		✓	

19

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-chaupal / Mills / Small Scale Industries	No.		–	–
	Other Facility	–	–	–	–

Suggestions if any:

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

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

8

Gujarat Technological University
Ahmedabad, Gujarat

Vishwakarma Yojana Phase VIII
Techno Economic Survey

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	school and panchayat building are not in good condition	Both required repair/ renovation
2.	Additional Information/ Requirement	-	-
3.	During the last six months how many times CLEANING ......1...... FOGGING........4 (due to corona) 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 ? yes	- Infrastructure - wifi - Irrigation	- Cyber cafe - public toilet

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

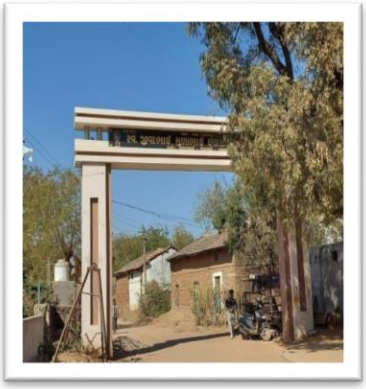
16

12.4GAP Analysis of the allocated village:

Village gap analysis					
Facilities	**Planning Commission/UDPFI Norms**	**Village Name:**	KHASA (PALANPUR, BANASKATHA)		
		Population:2601			
		Existing	**Required as per Norms**	**Smart Village / Cities / Heritage Future Projection Design**	**Gap**
Social Infrastructure Facilities					
Education					
Anganwadi	Each Per 2500 population	1	1	-	0
Primary School	Each Per 2500 population	1	1	-	0
Secondary School	Per 7,500 population	0	0	-	0
Higher Secondary School	Per 15,000 Population	0	0	-	0
College	Per 125,000 Population	0	0	-	0
Tech. Training Institute	Per 100000 Population	0	0	-	0
Agriculture Research Centre	Per 100000 Population	0	0	-	0
Skill Development Center	Per 100000 Population	0	0	-	0
Health Facility					
Govt/Panchayat Dispensary or Sub PHC or Health Centre	Each Village	0	1	-	-1
Primary Health & Child Health Centre	Per 20,000 population	0	0	-	0
Child Welfare and Maternity Home	Per 10,000 population	0	0	-	0
Multispecialty Hospital	Per 10,000 population	0	0	-	0
Public Latrines	1 for 50 families (if toilet is not	0	1	-	-1

	there in home, especially for slum pockets & kutcha house)				
Physical Infrastructure Facilities					
Transportation		**Adequate**		-	-
Pucca Village Approach Road	Each village	**Adequate**	2km approach road	-	-
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	**Adequate**	-	-	-
Drinking Water (Minimum 70 lpcd)		**Adequate**	-	-	-
Over Head Tank	1/3 of Total Demand	**Adequate**	1	1	0
U/G Sump	2/3 of Total Demand	**Adequate**	1	1	0
Drainage Network - Open		**Adequate**	0	-	0
Drainage Network - Cover		**Adequate**	All covered	-	-
Waste Management System		**Inadequate**	-	-	-
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	1	1	-	0
Public Library	Per 15000 Population	0	1	-	-1
Cremation Ground	Per 20,000 population	0	1	-	-1
Post Office	Per 10000 Population	0	1	-	-1
Gram Panchayat Building	Each individual/group panchayat	1	1	-	0
APMC	Per 10000 Population	0	0	-	0
Fire Station	Per 10000 Population	0	0	-	0
Public Garden	Per village	0	1	-	-1
Police post	Per 40,000Population	0	0	-	0
Shopping Mall : Shops are available in village					
Electrical Design					
Electricity Network		Inadequate			
Any Smart Village Facility					
Technology		-	-	-	-

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

Photos from the Punsari village		
		
Photos from the Khasa village		
		
Photos from the Khasa village		
		

12.6 Village Interaction with Sarpanch/Talati Report with the Photograph:

INTERACTION WITH

SARPANCH / TALATI & VILLAGERS

Vishwakarma yojana phase-VIII
khasa, palampur
Pin code: 385515

Subject: - Interaction for Vishwakarma Yojana initiative of GTU with talati and sarpanch

I sarpanch/talati of khasa Village undersigned give approval to the

1) Gaurav Pawar (170170106037)
2) Dharmendra Prajapati (170170106038)
3)

Student of **Vishwakarma Government Engineering College, Chandkheda** working for **Vishwakarma Yojana project phase-VIII – An approach toward R-urbanization** to interact with villagers of khasa with taking care of all the necessary precautions of covid-19.

Date:

12.7 Sarpanch Letter Giving Information About the village development:-

APPROVAL OF DESIGN PROPOSAL FROM

SARPANCH / TALATI

Vishwakarma yojana phase–VIII
Khasa, palampur
Pin code: 385515

Subject: - Approval of design proposal from talati and sarpanch

I sarpanch/talati of Khasa Village undersigned give approval to the

1) Gaurav pawar (170170106037)
2) Dharmendra prajapati (170170106038)
3)

Student of VGEC, Chandkheda working for Vishwakarma Yojana project phase-viii to design essential infrastructure and facilities for villagers of Khasa and assure that their proposed design will ensure efficient progress of village to achieve idea of ideal village in future. I sarpanch talati will help them in all possible aspect to meet their requirement for design of infrastructure from civil and electrical point of view.

Date:

Seal of gram panchayat

12.8 Approved Letter from Swachhta & Covid Awareness Activity Approval:

APPROVAL LETTER FOR SWACHHTA & COVID AWARENESS ACTIVITY APPROVAL

Vishwakarma yojana phase–VIII
khasa, palampur
Pin code: 385515

Subject: **- Approval to carry out awareness activity for SWACHH BHARAT ABHIYAN ant fight against NOVEL CORONA VIRUS from talati and sarpanch**

I sarpanch/talati of khasa Village undersigned approval letter to

1) Gaurav pawar (170170106038)
2) Dharmendra prajapati (170170106038)
3) _____

Student of **Vishwakarma Government Engineering College, Chandkheda** working for **Vishwakarma Yojana project phase-VIII – An approach toward rurbanisation** to carry out awareness activity under banner of Swachh bharat abhiyan and fight against corona virus with villagers of khasa .

Date: _____

ખાસા ગ્રામ પંચાયત
તા.પાલનપુર, જી.બ. કાં
Seal of Gram panchayat

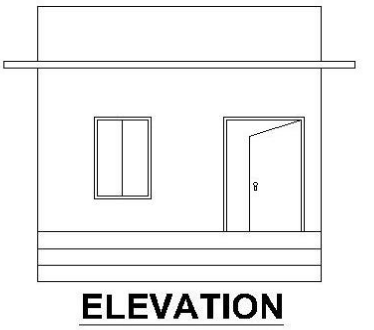
CHAPTER:-13
Design Proposals

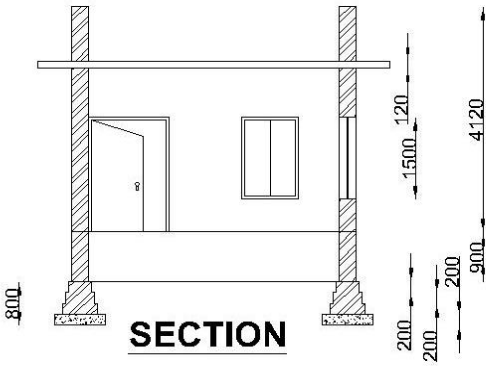
13.1 SCHOOL CLASSROOM

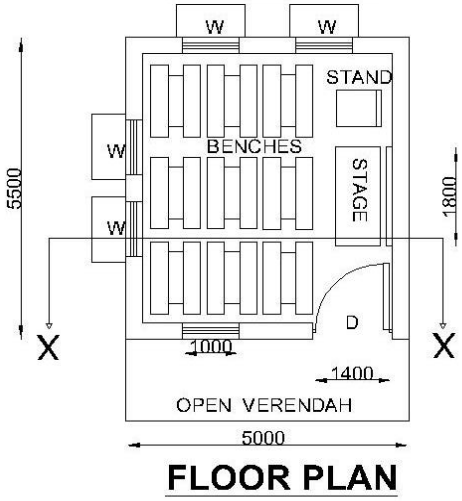
Scenario

In khasa village there is an availability of school but classrooms are collapsed due to finishing of service life of the structure. Due to that there is lots of problems are faced by the children and staff of the school. So as a part of solution we are giving a line diagram of the school's classrooms and detailed floor plan layout of the one unit as all the classrooms are same. There are office and store in a sound condition so there is no need to give its layout plan. As we all know students are the future of new INDIA there must be proper and sound education system in village. To have good school structure is the prerequisite of good education system. By this step we are trying help village to grow smoothly.

Proposed Design of Classroom in AutoCAD







SCHEDULE OF OPENINGS				
SR. NO	DETAILS	SYMBOL	NOS	SIZE
1	DOOR	D	1	(1.4*2.1)m
2	WINDOW	W	5	(1.0*1.2)m

ALL DIMENSIONS ARE IN mm EXCEPT UNIT MENTIONED

VISHWAKARMA YOJANA PROJECT
DESIGN OF CLASSROOM
PREPARED BY:- GAURAV PAWAR DHARMENDRA PRAJAPATI
VILLAGE:- KHASA(BANASKATHA)

MEASUREMENT SHEET

Sr no.	Item	no	Length (m)	Width (m)	Height (m)	Qty.	Total
	Total Centre Line Length=24.5						
1	earthwork in excavation						
	25.4	1	25.4	0.9	1.1	25.146	
2	PCC	1	25.4	0.9	0.2	4.572	
3	B.M in foundation Step 1	1	25.1	0.6	0.3	4.518	
	Step 2	1	25	0.5	0.3	3.75	
	Step 3	1	24.9	0.4	0.3	2.988	
	up to plinth	1	24.8	0.3	0.45	3.348	14.604
4	B.M in super structure	1	24.8	0.3	3	22.32	
	Parapet	1	24.7	0.2	1	4.94	
5	Deduction						
	Door	1	1.4	0.3	2.1	0.882	
	window	5	1	0.3	1.2	1.8	
	lintels for windows	4	1.3	0.3	0.12	0.1872	
	lintel for door	1	1.7	0.3	0.12	0.0612	2.9304
	Total B.M in super structure						11.6736
6	RCC						
	Slab	1	7.5	5	0.12	4.5	
	lintels for windows	4	1.3	1.3	0.12	0.8112	
	lintels for door	1	1.7	0.3	0.12	0.0612	5.3724
7	Total B.M						26.2776

MEASURMENT SHEET OF SCHOOL CLASSROOM (Table 19)

Abstract SHEET of School classroom (table20)

Item	Quantity (m^3)	Rate (RS)	Per	Amount
Earthwork in Excavation	25.146	100	Cubic meter	2514.6
PCC Work	4.572	3000	Cubic meter	13716
RCC work	5.3724	9000	Cubic meter	48351.6
Brick Work	26.2776	3500	Cubic meter	91971.6

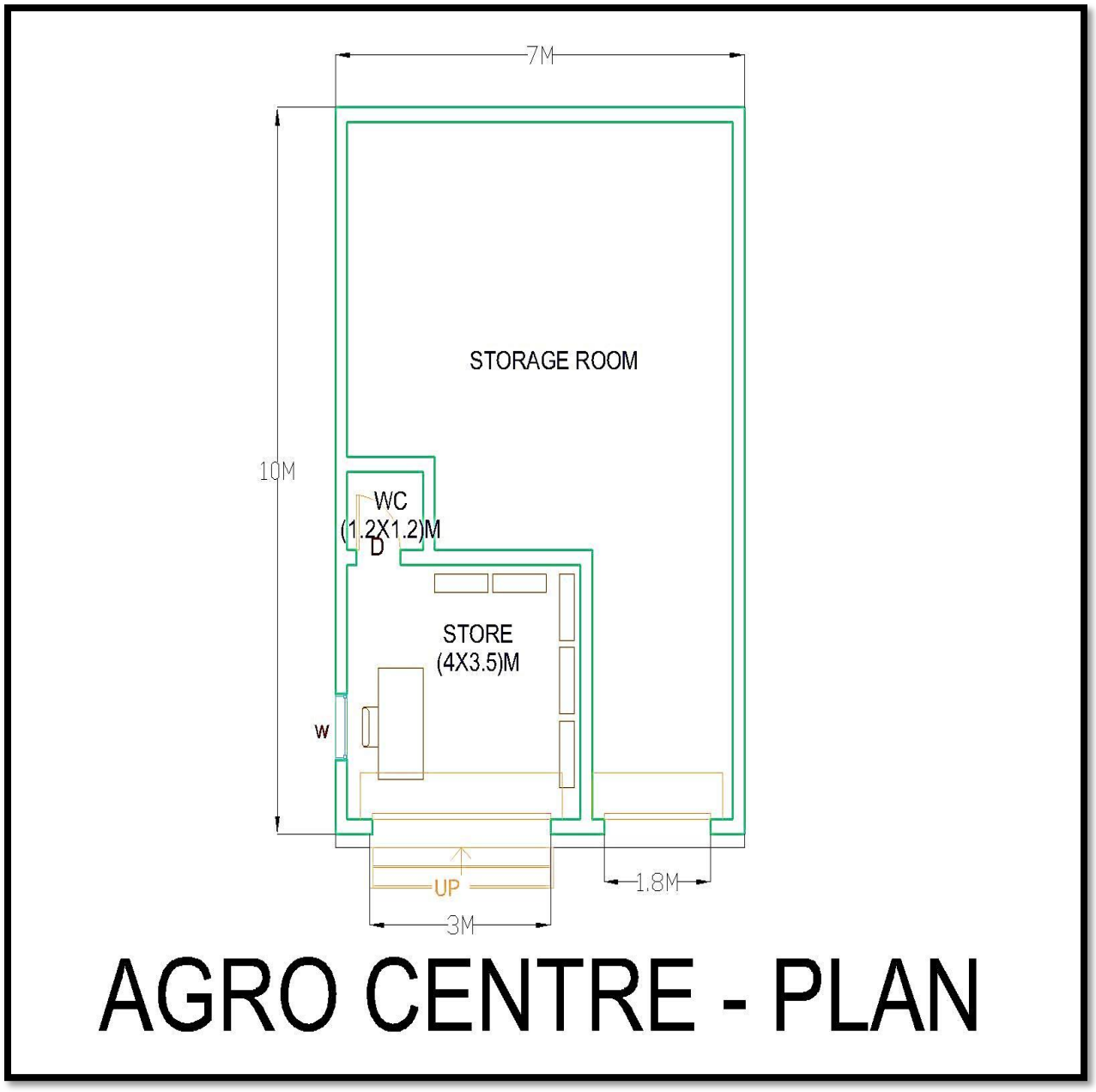
The total cost of the construction of one classroom is = Rs 156560 /-

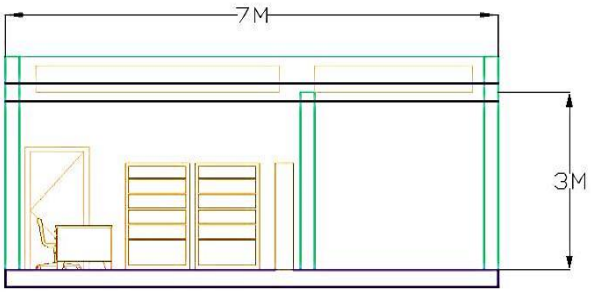
13.2 AGRO CENTRE

Scenario

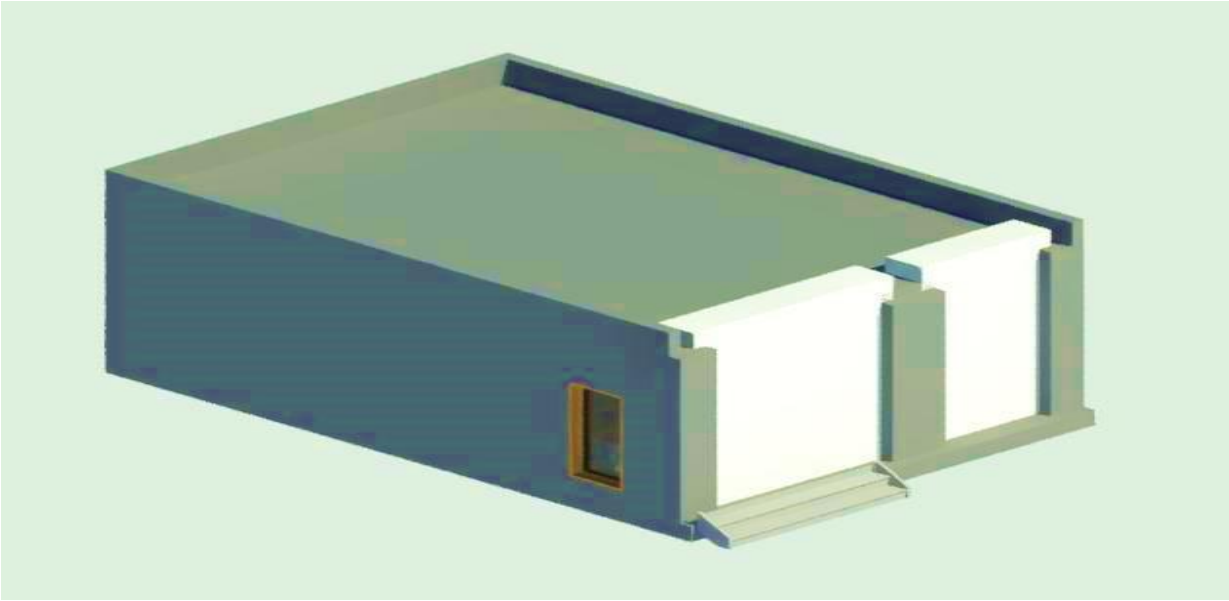
Khasa village is a agricultural village. Farming is the back bone of the its economy as it is the main source of income in the village. So, there shouldn't be any compromise with respect to the farming. There should be facility of Agro-centre within the village to save time and transportation costs. Currently farmers of the village have to go outside of the village to buy seed and fertilizers, fungicides, pesticides, etc. so we are providing a floor plan layout of the Agro-centre which will going to save the time and money of the farmers.

Proposed Design of agro centre in Revit





AGRO CENTRE - SECTION



MEASUREMENT SHEET

Sr no.	Item	No.	Length (m)	Width (m)	Height (m)	Qty.	Total
Total Centre Line Length=24.5							
1	earthwork in excavation						
	25.4	1	25.4	0.9	1.1	25.146	25.146
2	PCC	1	25.4	0.9	0.2	4.572	4.572
3	B.M in foundation step 1	1	25.1	0.6	0.3	4.518	
	step2	1	25	0.5	0.3	3.75	
	step3	1	24.9	0.4	0.3	2.988	
	up to plinth	1	24.8	0.3	0.45	3.348	14.604
4	B.M in super structure	1	24.8	0.3	3	22.32	
	W.C	1	2.4	0.2	3	1.44	
	Parapet	1	34	0.2	1	6.8	30.56
5	Deduction						
	shutter 1	1	3	0.3	2.5	2.25	
	shutter 2	1	1.8	0.3	2.5	1.35	
	door (W.C)	1	0.9	0.3	2.1	0.567	
	Lintel	1	1.2	0.3	0.12	0.0432	
	Window	1	1	0.3	1.5	0.45	4.6602
	Total B.M in super structure						25.8998
6	RCC						
	Slab	1	10	7	0.12	8.4	
	Lintel	1	1.2	1.3	0.12	0.1872	8.5872
7	total brickwork						40.5038

MEASURMENT SHEET OF AGRO CENTRE (Table 21)

Abstract SHEET of Agro centre (table22)

Item	Quantity (m^3)	Rate (RS)	Per	Amount
Earthwork in Excavation	25.146	100	Cubic meter	2514.6
PCC Work	4.572	3000	Cubic meter	13716
RCC work	8.5872	9000	Cubic meter	77284.8
Brick Work	40.5038	3500	Cubic meter	141763.3

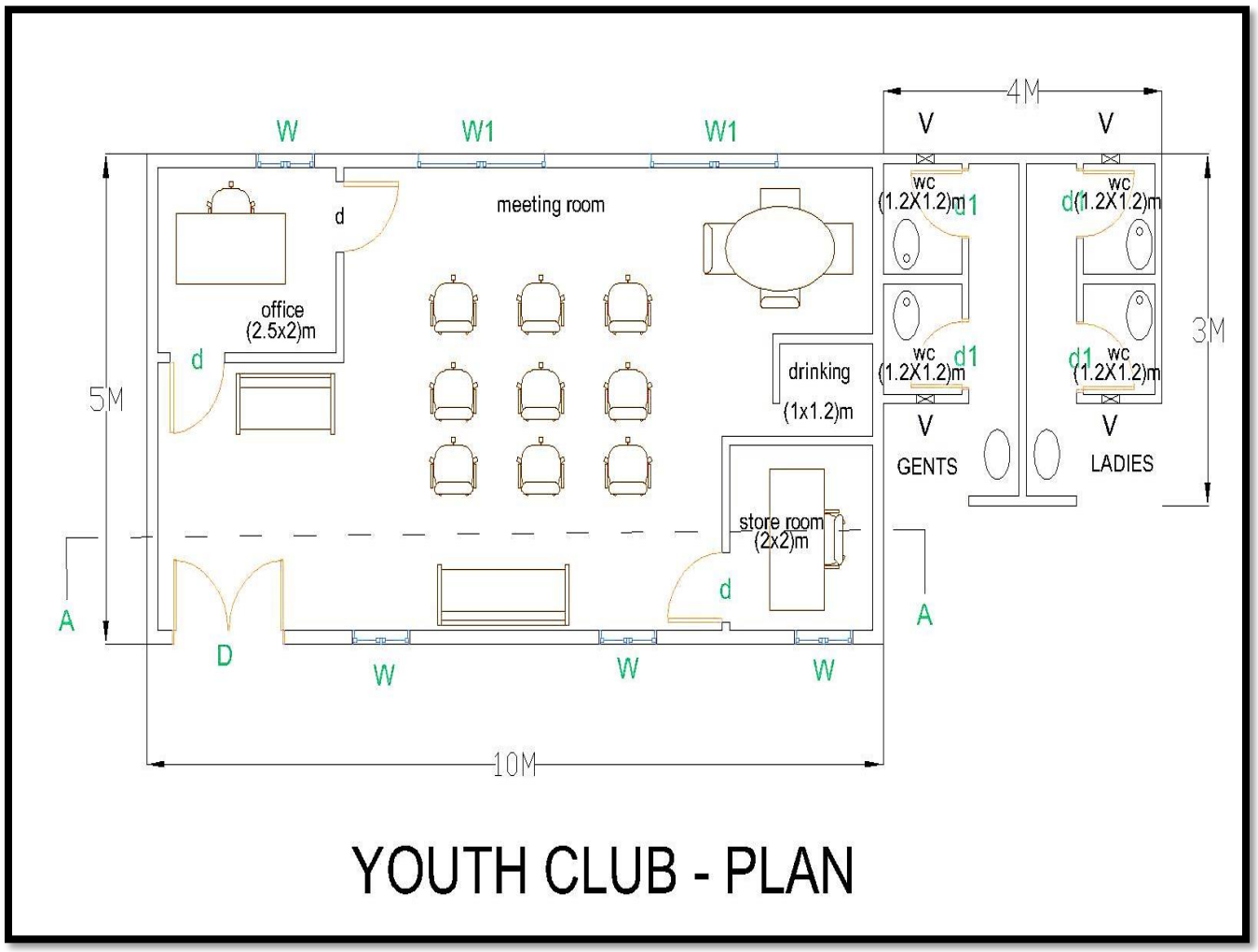
The total cost of the construction is = Rs. 235280 /-

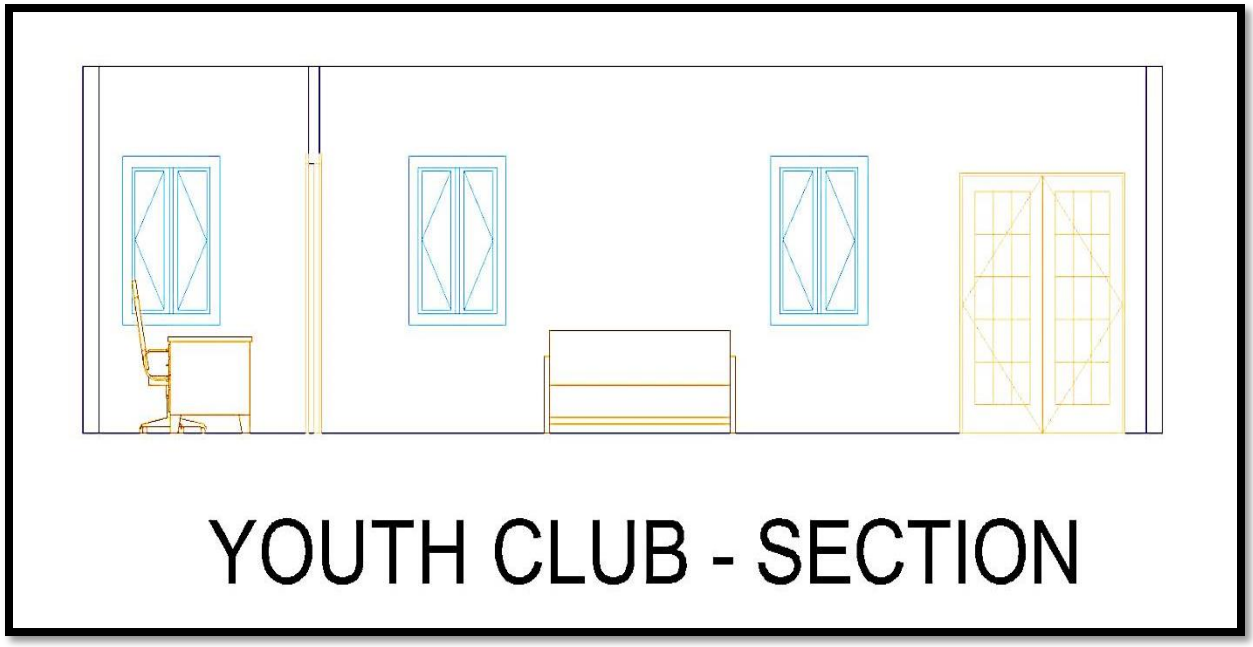
13.3 YOUTH-CLUB

Scenario

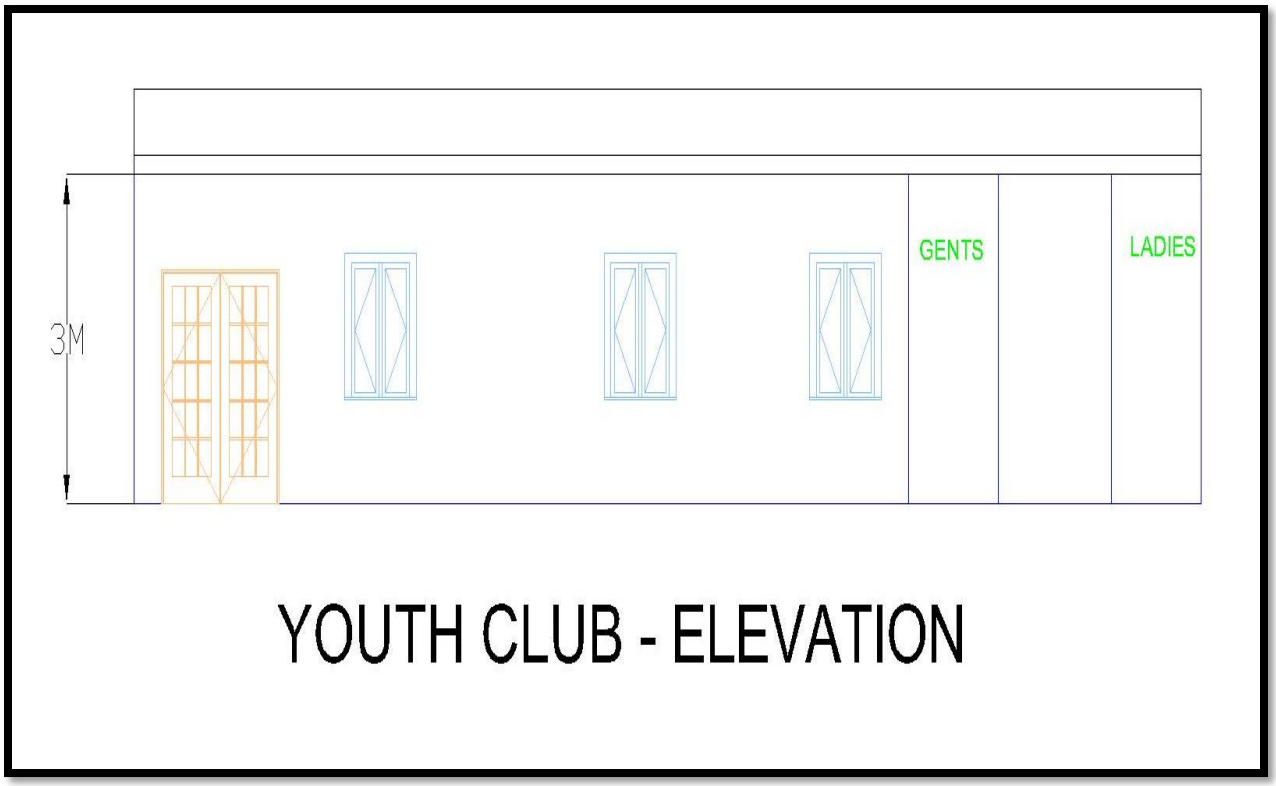
We all have heard the famous idioms “crowd of ants pull the snake”. If group of small insects like ant can pull the snake than we are the humans. And in human’s youth are the strongest group of the community. Group of the young people can change the whole world so that youth club should be must in every village/society of the country. By uniting together, they may talk about current trends, plan a festival, solve the problems up to their extent, etc. so youth club can be called helping the social working group. This will develop so many skills among the members like leadership quality, analytical skill, good perception, humanity, kindness, and most important team work.

Proposed Design of youth club in Revit





YOUTH CLUB - SECTION



YOUTH CLUB - ELEVATION

MEASUREMENT SHEET (MEASURMENT SHEET OF YOUTH CLUB (Table 23))

Sr no.	Item	no	Length (m)	Width (m)	Height (m)	Qty.	Total
	Total centre line length = 47.8m						
1	Earthwork in excavation						
	50.95	1	50.95	0.9	1.1	50.4405	
2	PCC	1	50.95	0.9	0.2	9.171	
3	B.M in foundation Step 1	1	49.9	0.6	0.3	8.982	
	Step 2	1	49.55	0.5	0.3	7.4325	
	Step 3	1	49.2	0.4	0.3	5.904	
	Up to plinth	1	48.85	0.3	0.45	6.59475	28.91325
4	B.M in super structure	1	48.85	0.3	3	43.965	
	W.C	4	2.4	0.2	3	5.76	
	Drinking water	1	2.1	0.2	3	1.26	
	Parapet	1	26	0.2	1	5.2	56.185
5	Deduction						
	Door D	1	2	0.3	2.1	1.26	
	Door d	3	1.2	0.3	2.1	2.268	
	Door d1	5	0.9	0.2	2.1	1.89	
	Window W	4	1.2	0.3	1.5	2.16	
	Window W1	2	2	0.3	1.5	1.8	
	Lintels for						
	Door D	1	2.3	0.3	0.12	0.0828	
	Door d	3	1.5	0.3	0.12	0.162	
	Door d1	5	1.2	0.2	0.12	0.144	
	Window W	4	1.5	0.3	0.12	0.216	
	Window W1	2	2.3	0.3	0.12	0.1656	10.1484
	Total B.M in super structure						46.0366
6	RCC						
	Slab 1	1	10	5	0.12	6	
	Slab 2	1	4	3	0.12	1.44	
	Lintels for					0	
	Door D	1	2.3	0.3	0.12	0.0828	
	Door d	3	1.5	0.3	0.12	0.162	
	Door d1	5	1.2	0.2	0.12	0.144	
	Window W	4	1.5	0.3	0.12	0.216	
	Window W1	2	2.3	0.3	0.12	0.1656	8.2104
7	Total B.M						74.94985

Abstract SHEET of Youth club (table24)

Item	Quantity (m^3)	Rate (RS)	Per	Amount
Earthwork in Excavation	50.4405	100	Cubic meter	5044.05
PCC Work	9.171	3000	Cubic meter	27513
RCC work	74.94985	9000	Cubic meter	73893.6
Brick Work	8.2104	3500	Cubic meter	262324.475

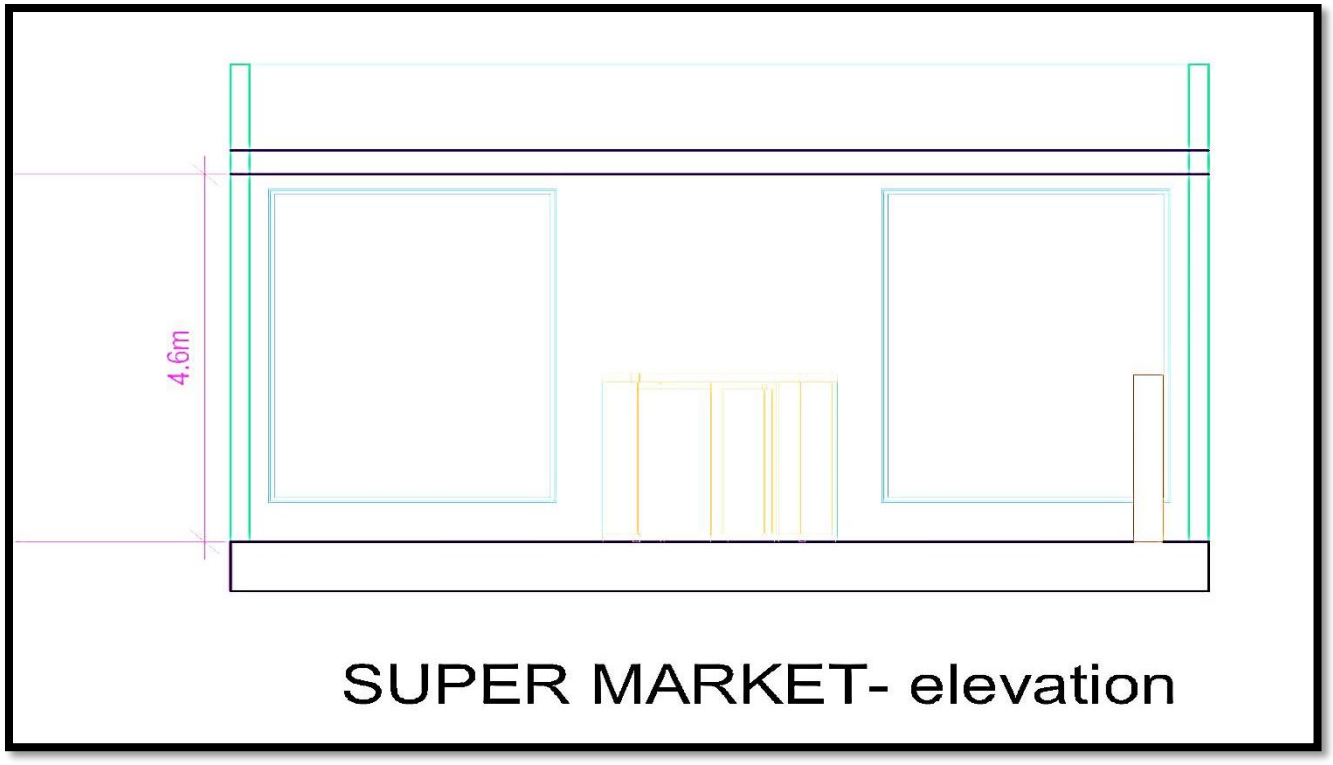
The total cost of the construction is = Rs 3,68,780 /-

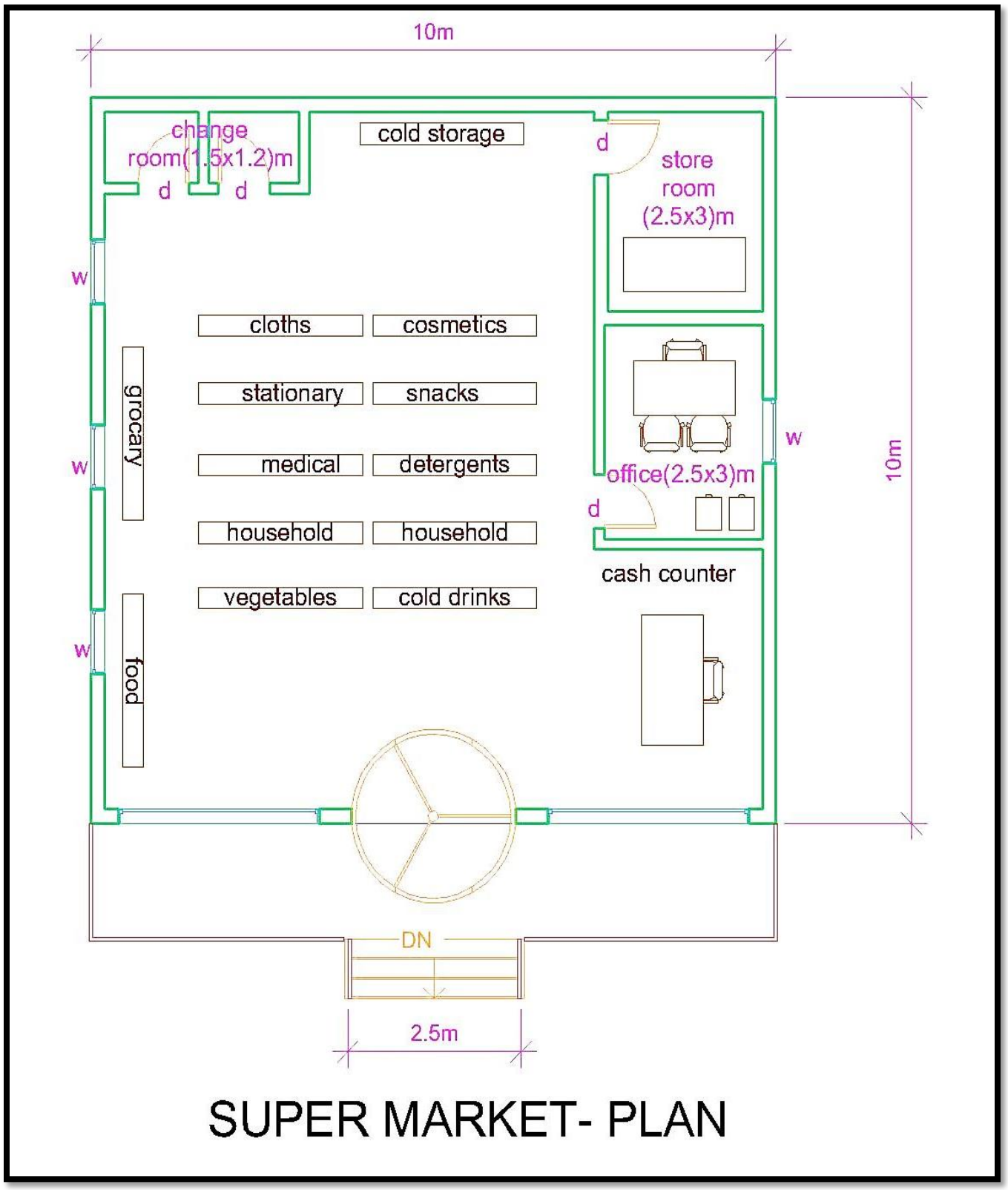
13.4 SUPER MARKET

Scenario

By visiting village, we have noticed that there are shops in the village but all are staggered. If one has to buy vegetable and grocery then he/she cannot be able to buy from one place. He/she has to wonder to accomplish the needs. So, it gave us a message that why we shouldn't give layout of the super markets in which grocery, vegetables, and provisional all the things are available so villagers won't have to worry. They get all the things from one place in reasonable price.

Proposed Design of super market in Revit





SUPER MARKET- PLAN

MEASUREMENT SHEET(MEASURMENT SHEET OF SUPER MARKET (Table 25))

Sr no.	Item	no	Length (m)	Width (m)	Height (m)	Qty.	Total
	Total centre line length = 64.7m						
1	Earthwork in excavation						
	66.95	1	66.95	0.9	1.1	66.2805	
2	PCC	1	66.95	0.9	0.2	12.051	
3	B.M in foundation step 1	1	66.2	0.6	0.3	11.916	
	step2	1	65.95	0.5	0.3	9.8925	
	step3	1	65.7	0.4	0.3	7.884	
	Up to plinth	1	65.45	0.3	0.45	8.83575	38.52825
4	B.M in super structure	1	51	0.3	3	45.9	
	Parapet	1	44	0.2	1	8.8	
	W.C	1	5.4	0.2	3	3.24	57.94
5	Deduction						
	Elevation glass door	1	10	0.3	2.1	6.3	
	Door 1	2	1.2	0.3	2.1	1.512	
	Door 2	2	0.9	0.2	2.1	0.756	
	Lintels of door 1	2	1.5	0.3	0.12	0.108	
	Door 2	2	1.2	0.3	0.12	0.0864	8.7624
	Total B.M in super structure						49.2546
6	RCC						
	Slab	1	10	10	0.12	12	
	Lintel for door 1	2	1.5	0.3	0.12	0.108	
	Lintel for door 2	2	1.2	0.3	0.12	0.0864	12.1944
7	Total B.M						87.70585

Abstract SHEET of Youth club (table26)

Item	Quantity (m^3)	Rate (RS)	Per	Amount
Earthwork in Excavation	66.2805	100	Cubic meter	6628.05
PCC Work	12.051	3000	Cubic meter	36153
RCC work	12.1944	9000	Cubic meter	108849.6
Brick Work	87.70585	3500	Cubic meter	3069970.475

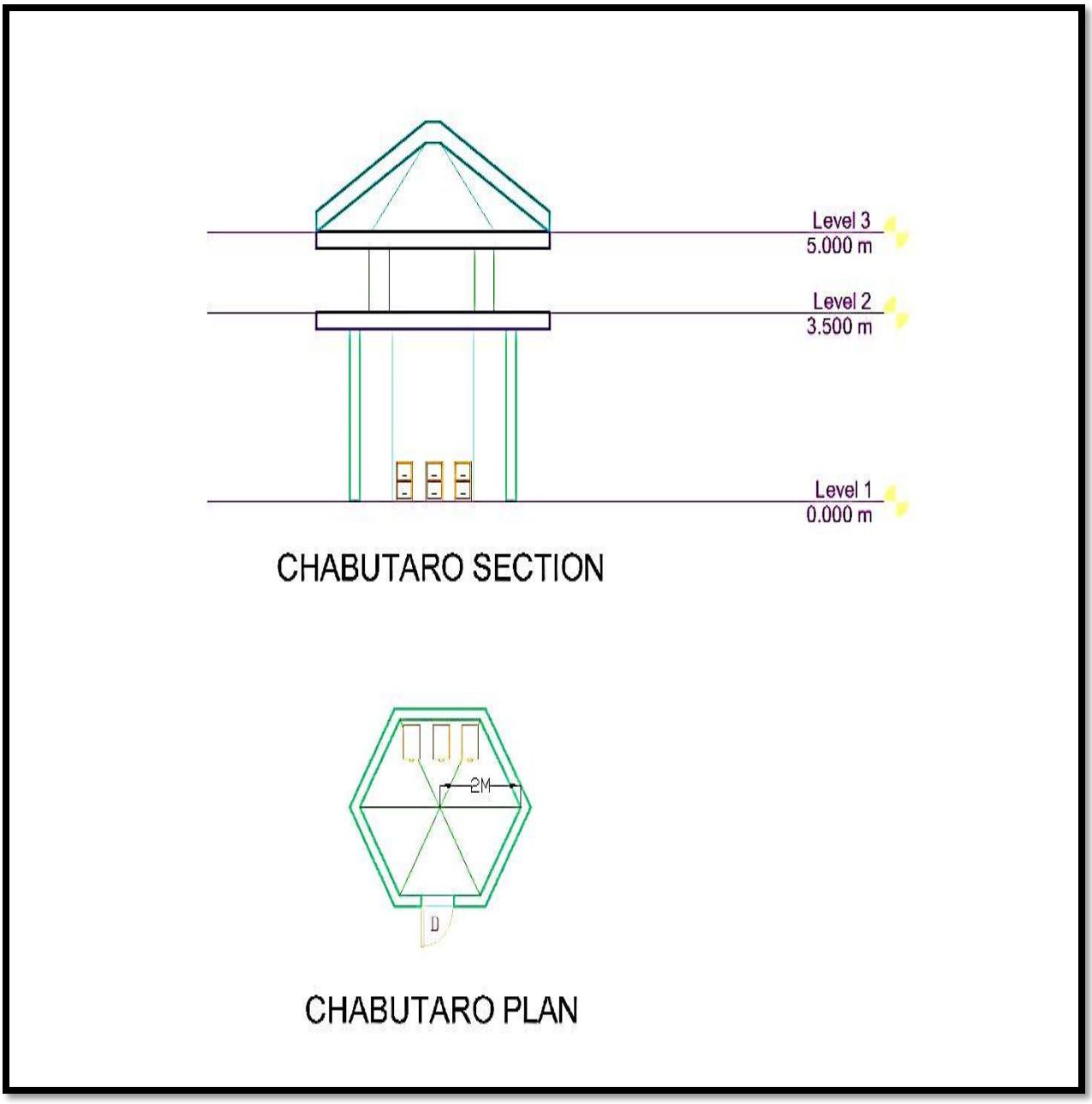
The total cost of the construction is =Rs. 458600 /-

13.5 CHABUTARO

Scenario

In this modern time, it is difficult to see group of birds. If one sees it, is a surprising moment. As along with increase in network facilities, bird community is going to be expel. In villages also they may be rarely found. A place where villagers provide food for birds is known as chabutara. It is one of the heritage structures. There is no such a facility in the village so we have provided the plan layout of the structure. It enhances the beauty of the village.

Proposed Design of chabutaro in Revit



MEASUREMENT SHEET (MEASURMENT SHEET OF CHABUTARO (Table 27)**)**

Sr no.	Item	no	Length (m)	Width (m)	Height (m)	Qty.	Total
	Total centre line length = 12m						
1	Earthwork in excavation						
	12	1	12	0.9	1.1	11.88	
2	PCC	1	12	0.9	0.2	2.16	
3	B.M in foundation Step 1	1	12	0.6	0.3	2.16	
	Step 2	1	12	0.5	0.3	1.8	
	Step 3	1	12	0.4	0.3	1.44	
	Up to plinth	1	12	0.3	0.45	1.62	9.18
4	B.M in super structure	1	12	0.3	3	10.8	
	Columns above slab	6	0.23	0.23	1.5	0.4761	11.2761
5	Deduction						
	Door	1	1.2	0.3	2.1	0.756	
	Lintel for door	1	1.5	0.3	0.12	0.054	0.81
	Total B.M in super structure						10.5339
6	RCC	1	area=10.5		0.12	1.26	
	Top dome RCC	1	area=10.6		0.12	1.26	2.52
7	Total B.M						19.6461

Abstract SHEET of Chabutaro (table28)

Item	Quantity (m^3)	Rate (RS)	Per	Amount
Earthwork in Excavation	11.88	100	Cubic meter	1188
PCC Work	2.16	3000	Cubic meter	6480
RCC work	2.52	9000	Cubic meter	22680
Brick Work	19.6461	3500	Cubic meter	68761.35

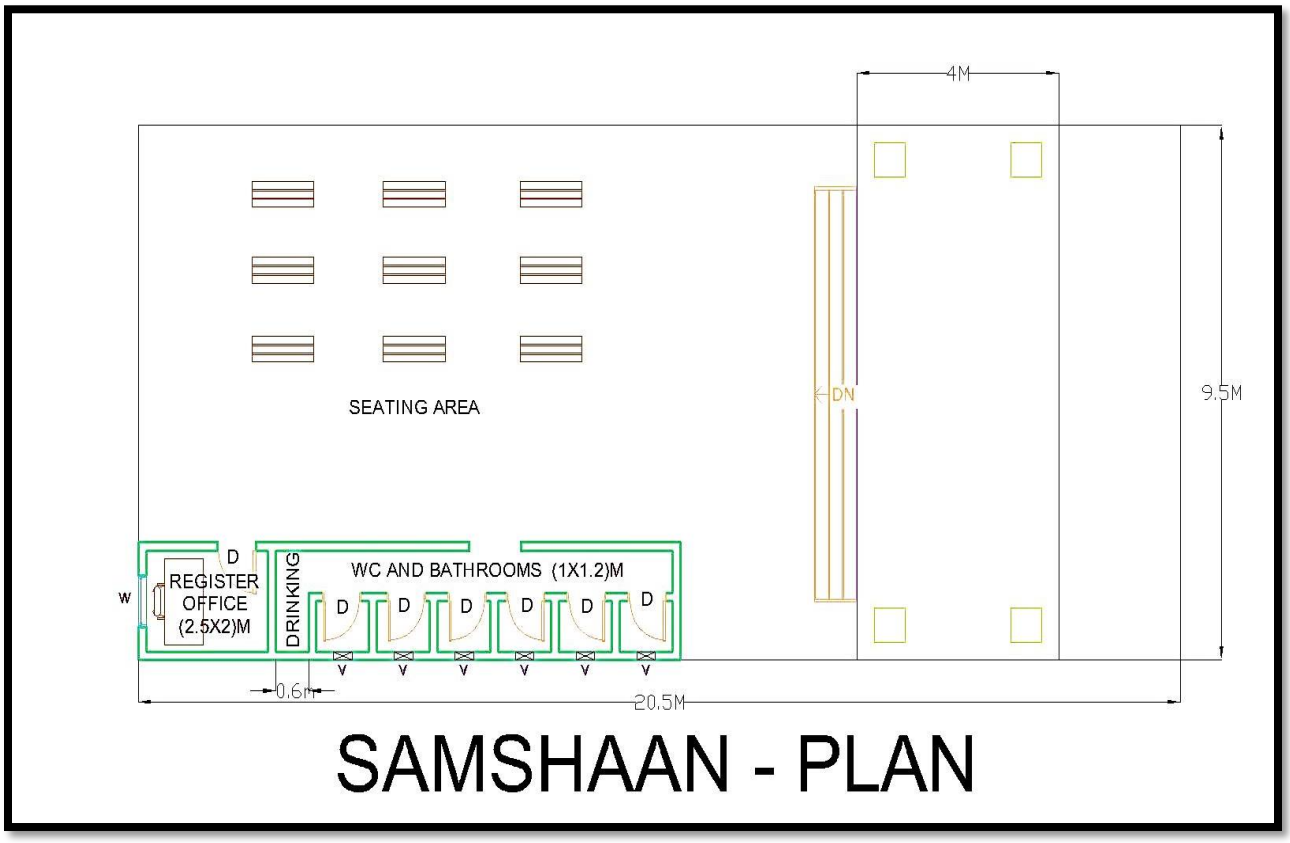
The total cost of the construction is =Rs. 99150 /-

13.6 CREMATION HOUSE

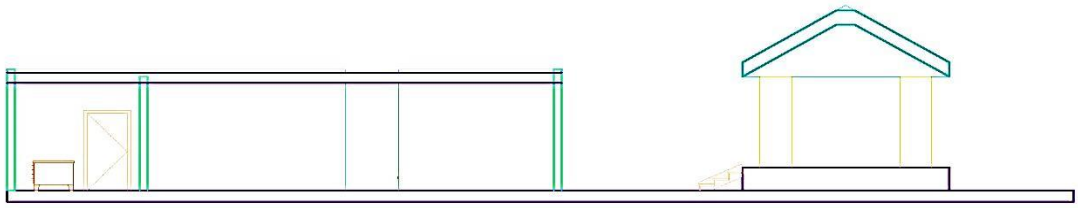
Scenario

The final destiny of human being is the cremation house. Un- availability of such a facility in the village is not fair from the social point of view. In khasa, the area is allotted for such a activity but no structure is created for the funeral. People have to face problems in monsoon season. So, we are providing a cremation house design.

Proposed design in Revit



SAMSHAAN - PLAN



SAMSHAAN - SECTION

MEASUREMENT SHEET

Sr no.	Item	no	Length (m)	Width (m)	Height (m)	Qty.	Total
	Total centre line length =18.3m						
1	Earthwork in excavation						
	19.2	1	19.2	0.9	1.1	19.008	
2	PCC	1	19.2	0.9	0.2	3.456	
3	B.M in foundation Step 1	1	18.9	0.6	0.3	3.402	
	Step 2	1	18.8	0.5	0.3	2.82	
	Step 3	1	18.7	0.4	0.3	2.244	
	Up to plinth	1	18.6	0.3	0.45	2.511	
	W.C and bath	6	1.25	0.2	3	4.5	
4	B.M in super structure	1	18.6	0.3	3	16.74	
	Parapet	1	25	0.2	1	5	21.74
5	Deduction						
	Door D	1	1.2	0.3	2.1	0.756	
	door D	6	1.2	0.2	2.1	3.024	
	Window W	1	1.2	0.3	1.5	0.54	
	Ventilator V	6	0.5	0.3	0.5	0.45	
	Opening	1	2	0.3	2.1	1.26	
	lintels for						
	door D	1	1.5	0.3	0.12	0.054	
	window W	1	1.5	0.3	0.12	0.054	6.128
	Total B.M in super structure						15.612
6	RCC						
	Slab	1	10	2.5	0.12	3	
	Lintels for						
	Door D	1	1.5	0.3	0.12	0.054	
	Window W	1	1.5	0.3	0.12	0.054	3.108
7	Total B.M						31.079

MEASURMENT SHEET OF CREMATION HOUSE (Table 29)

Abstract SHEET of Cremation house (table30)

Earthwork in Excavation	**19.008**	**100**	**Cubic meter**	**1900.8**
PCC Work	3.456	3000	Cubic meter	10368
RCC work	3.108	9000	Cubic meter	27972
Brick Work	31.079	3500	Cubic meter	108776.5

The total cost of the construction is = Rs. 298000 /- (L.S)

CHAPTER:-14
Technical options with case studies

14.1 Civil Engineering

14.1.1 Advanced Earthquake Resistant Buildings

Figure 63 collapsed building due to

Earthquakes are natural disasters of a generally unpredictable nature. It is shaking of the earth due to the movement of the earth's crust. When such quakes happen, enormous amounts of energy is released, which is far greater than big nuclear bomb. The terms related to earthquake are as following:
Fault-plane, hypocenter, epicenter, etc.
Earthquake-resistant or aseismic structures are designed to protect buildings to some or greater extent 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. This means the loss of life should be minimized by preventing collapse of the buildings for rare earthquakes while the loss of the functionality should be limited for more frequent ones.

Conventional methods

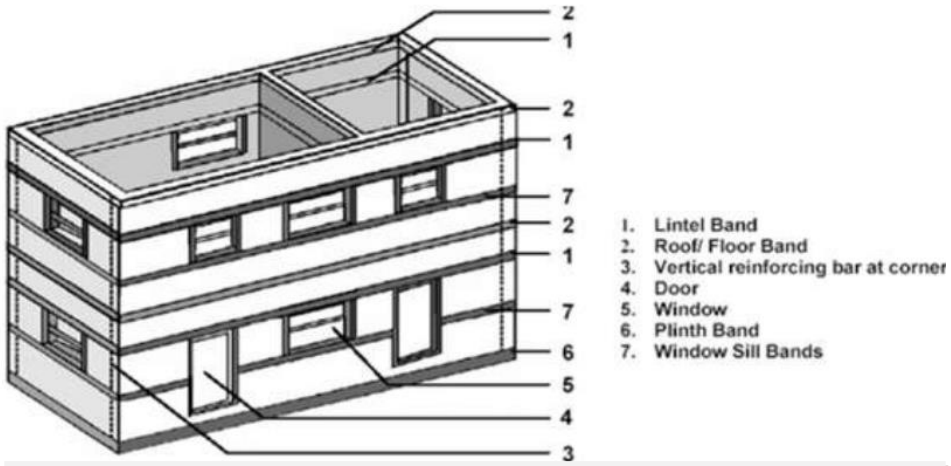


Figure 64 component of building

- The concept is to strengthen the building.
- Have stiffness and in-elastic deformation capacity.

Some of the general design concepts are:

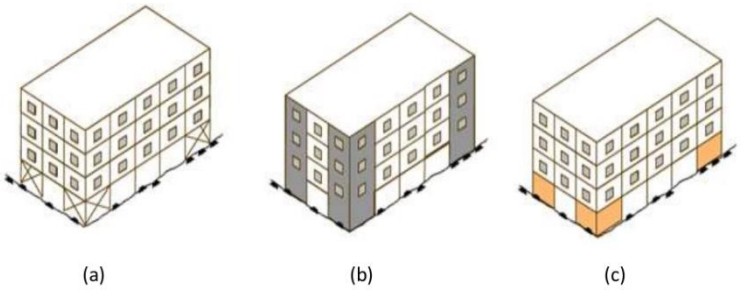
- Follow current earthquake standards and codes.
- Provide strong foundation.
- Use best quality materials.
- Avoid irregular shaped structures and framing system.
- Maintain integrity by providing seismic bands.
- Introduce shear walls to transfer seismic loads down to the bottom of the foundation.

Remedial measures foe soft storey buildings

Basic approach is to reduce the earthquake generated forces acting upon the building rather than strengthening it.

Two main techniques are:

- Base isolation
- Energy dissipation devices



(a) bracings in columns of open ground storey, (b) Providing R.C. shear wall and (c) Providing brick infills between columns.

Figure 65 soft storey

Base isolation devices:
It separates building from building foundation by bearing pads.

- Lead rubber bearings
- Spherical sliding isolation systems

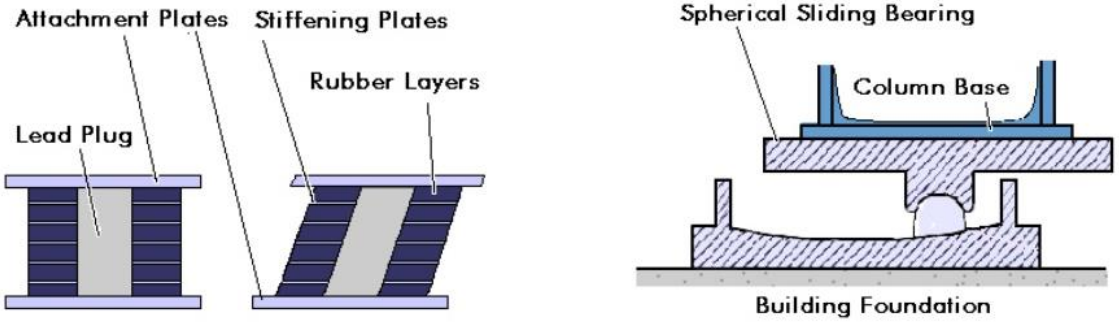


Figure 66 base isolation

Base isolation devices are supported by series of pads which are placed between the building and the building foundation. In case of earthquake: **Fixed base buildings** deform and damaged.**Base isolated buildings** rock back and forth like a boat. Shaking is reduced by as much as 5 times.

Energy dissipation devices/ seismic dampers

- Viscous dampers utilize the forced movement within the damper.
- Friction dampers utilize frictional forces to dissipate energy.
- Metallic dampers utilize the deformation of metal element within the damper.

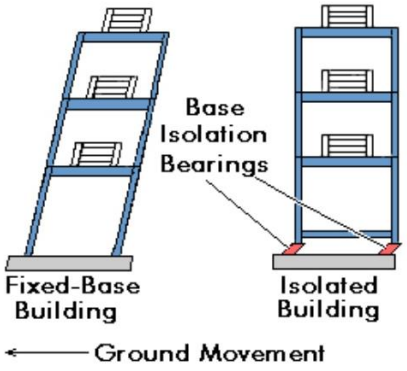


Figure 67 base isolation

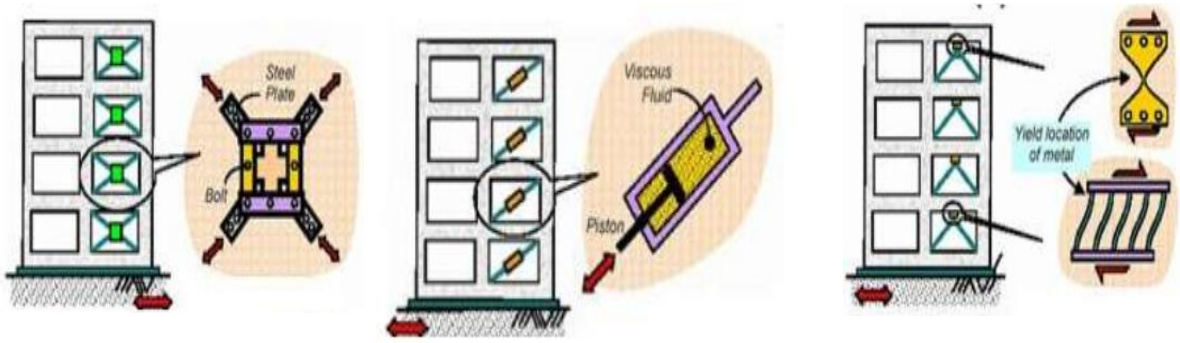


Figure 68 energy dissipation devices

Case study of Taipei 101 building

Overview

Taipei 101 (once known as Taipei World Financial Corporation)

- 1,667 feet (508 meters) from ground to the tip of the spire
- 101 floors above ground & 5 floors underground
- Plan Area - 50m x 50m
- Cost - $700 million
- Building Use - Office Complex + Mall
- Parking - 83,000 m2, 1800 cars
- Retail - Taipei 101 Mall (77,033 m2)
- Offices - Taiwan Stock Exchange (198,347 m2)
- Construction took 5 years to complete ○ Finished in 2004 ○ Cost $1.8 billion
- Tallest LEED certified building in the world (LEED Platinum)
- Designed to withstand typhoon winds and earthquakes tremors common in the area east of Taiwan
- Designed to withstand gale winds of 134 mph, and the strongest earthquakes in a 2,500-year cycle.
- Designed to be flexible as well as structurally resistant.

● Because of the height of Taipei 101, and the building being located 660 feet away from a major fault line, Taipei 101 used high-performance steel construction and concrete columns.
● Most famously, RWDI designed a 660-tonne steel pendulum that serves as a tuned mass damper.

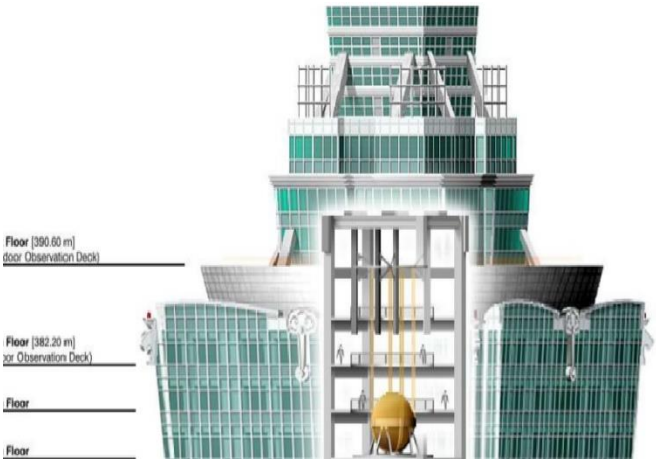


Figure 69 Taipei 101 building

- It uses mass damper also known as a harmonic absorber.
- The Steel sphere 18 feet across and weighing 728 ton.
- It is Suspended from the 92nd to the 87th floor.

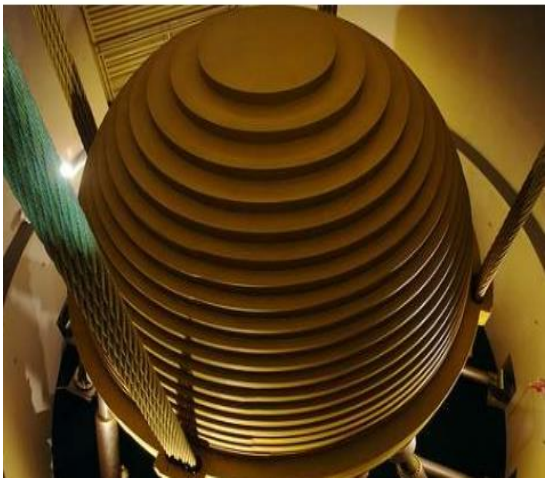


Figure 70 tuned mass damper

Device consists of:

1. Massive steel ball that sways to counteract the building's movement.
2. Eight steel cables form sling to support the ball.
3. Eight viscous dampers act like shock absorbers when sphere shifts.
4. Two additional tuned mass dampers for additional protection. The ball can move5ft. in any direction and reduce sways by 40 percent.

14.1.2 Seismic retrofitting of the buildings

Seismic retrofitting is the modification of existing structures to make them more resistant to seismic activity, ground motion, or soil failure due to earthquakes. With better understanding of seismic demand on structures and with our recent experiences with large earthquakes near urban centers, the need of seismic retrofitting is well acknowledged.
The retrofit techniques outlined here are also applicable for other natural hazards such as tropical cyclones, tornadoes, and severe winds from thunderstorms. Whilst current practice of seismic retrofitting is predominantly concerned with structural improvements to reduce the seismic hazard of using the structures, it is similarly essential to reduce the hazards and losses from non-structural elements. It is also important to keep in mind that there is no such thing as an earthquake-proof structure, although seismic performance can be greatly enhanced through proper initial design or subsequent modifications.

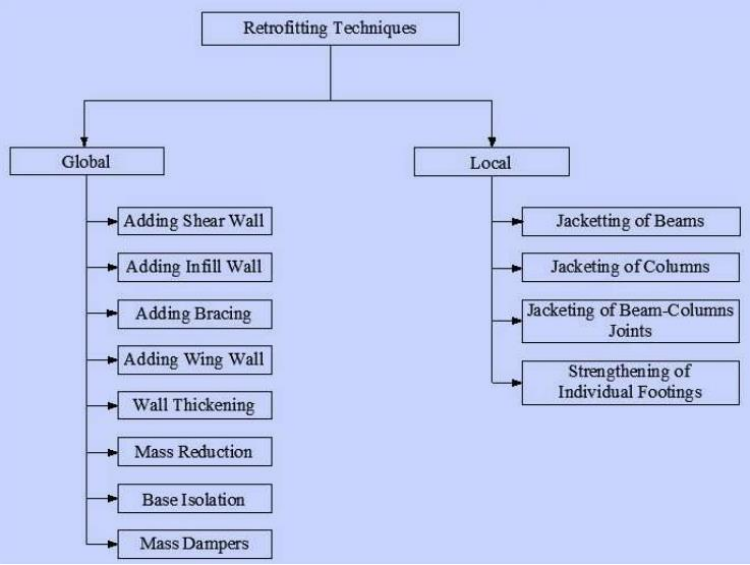


Figure 71 retrofitting techniques

Seismic retrofitting strategies:

- Increasing the global capacity (strengthening). This is typically done by the addition of cross braces or new structural walls.
- Reduction of the seismic demand by means of supplementary damping and/or use of base isolation systems.
- Increasing the local capacity of structural elements. This strategy recognizes the inherent capacity within the existing structures, and therefore adopts a more cost-effective approach to selectively upgrade local capacity (deformation/ductility, strength or stiffness) of individual structural components.
- Selective weakening retrofit. This is a counter-intuitive strategy to change the inelastic mechanism of the structure, while recognizing the inherent capacity of the structure.
- Allowing sliding connections such as passageway bridges to accommodate additional movement between seismically independent structures.
- Addition of seismic friction dampers to simultaneously add damping and a selectable amount of additional stiffness.

14.1.3 Advance practice in construction field in modern material

After realization of the need for durable concrete structures, the composition of concrete has undergone changes. From being a product made of three or four materials (cement, aggregates, water), today a typical durable concrete consists of six or more materials. The use of low water cement ratio enables a reduction in the volume and size of capillary voids in concrete; this alone is not sufficient to reduce the cement based content of concrete which is the source of micro-cracking from thermal shrinkage and drying shrinkage.

To reduce the cement based content, both the water content and cement content must be reduced as much as possible. Concrete mixes with fewer micro cracks can be produced by blending the cement with mineral admixtures either in the batching plant or in the cement plant. This enhances the service life of concrete structures in a cost-effective manner. The various modern construction materials are as following:

Self–compacting Concrete (SCC)

SCC leaving the batching plant is in a semi-fluid state and is placed into the formwork without the use of vibrators. Due to its fluidity, SCC is able to find its way into the formwork and in

between the reinforcement and gets self-compacted in the process. SCC is particularly useful for components of structures which are heavily reinforced. The fluidity is realized by modifying the normal mix components. In addition to cement, coarse and fine aggregates, water, special new generation polymer based admixtures are used to increase the fluidity of the concrete without increasing the water content.

Due to its high fluidity, the traditional method of measuring workability by slump does not work. The fluidity is such that any concrete fed to the slump cone falls flat on raising the slump cone; the diameter of the spread of concrete is measured as an indication of workability of SCC. This is called Slump Flow and is in the range of 600 – 800 mm.

Fly Ash

Thermal power stations are left with an undesirable by-product, fly ash, in large quantities which is not able to effectively utilize or dispose of. Currently, (2009) more than 120 million tonne of fly ash are generated annually and the storage and disposal has been costing the power stations substantial unproductive expenditure. Unfortunately, all the fly ash available at the power stations is not fit for use as mineral admixture directly. Fly ash as a mineral admixture should conform to IS: 3812. Such a material is available in the finer streams of Electro Static Precipitators fitted to the power generation system.

The coarser materials are required to be processed (generally with the help of Cyclones) before being considered for use as mineral admixture for concrete. There are only a few processing units in India, including the one as Nashik Thermal Power Station. As per the Euro Code for Concrete, only processed fly ash can be permitted as mineral admixture in concrete. The code limits the use of fly ash. About 35% of cement may be replaced by fly ash; the actual percentage replacement depending on the outcome of trial mixes.

High Volume Fly Ash Concrete (HVFA)

The high volume fly ash concrete (HVFA) represents an emerging technology for highly durable and resource efficient concrete structures. Laboratory and field experience have shown that fly ash from modern coal-fired thermal power plants, when used in large volume (typically 50 - 60% by mass of the total cementitious materials content, is able to impart excellent workability in fresh concrete at a water content that is 15 – 20% less than without fly ash. To obtain adequate strength at early age, further reductions in the mixing water content can be achieved with better aggregate grading and use of super-plasticizers.

HVFA concrete has now been successfully used in a few sporadic projects in India. All SCC in India use HVFA, to the extent of 50% cement replacement. Some concrete roads being built by NHAI have also used HVFA concrete, including the Four-Laning of Satara – Kolhapur National Highway.

Ground Granulated Blast Furnace Slag (GGBFS)

The problems associated with the quality of fly ash do not exist in the case of Ground Granulated Blast Furnace Slag GGBFS, as the produce is necessarily the outcome of grinding to the required particle size. Thus the use of GGBFS as a mineral admixture should be preferred, despite long leads for end users in certain parts of India far from the steel plants. GGBFS sold in India is of uniform quality and particle size gradation. For many landmark structures such as the Burj Dubai (the tallest building in the world in 2009) GGBFS has been extensively used as a mineral admixture, even though the material is imported from other countries, resulting in the landed cost

being more than that of cement. This was a conscious decision with a view to obtaining a more durable concrete structure.
In India the use of GGBFS has been fairly limited, in spite of all the technical advantages. The Indian Concrete Code permits up to 70% of cement replacement where GGBFS is used. Technically, the use of GGBFS is more effective only at replacement levels of 50% or more. For a number of structures in a port in Andhra Pradesh, typically the M40 concrete mix contained 100 kg of cement and 300 kg of GGBFS.

Portland Slag Cement (PSC) is also available and useful for ensuring durability of concrete structures. Due to the proximity to steel mills, PSC is generally produced in locations close to steel plants. Here again due to the bulky nature of the product, the transportation cost predominate. Another issue concerning quality of the PSC is the actual percentage replacement while making PSC; this information is not normally displayed on the bags, leaving the user at a disadvantage. In developed countries, information regarding the percentage of slag utilized in making PSC is generally printed on each bag of cement.

Condensed Silica Fume (CSF)
CSF is a by-product of Ferro-Silicon industry and at present an imported product, easily available in the Indian market. The particle size is very small, about 100 times smaller than that of cement. It can occupy the voids in between cement particles in a concrete mix, reduce the water demand and thus contribute to a very dense concrete of high durability. Normally, 5 - 10% of cement can be replaced by CSF in order to produce durable concrete. The product is expensive and is used in developed countries only for very high strength concrete (above 75 mPa). Indiscriminate use of CSF for lower grades, barring exceptions, only increases the project cost without corresponding technical benefits. Even when used, the percentage replacement should be based on trial mixes in each case, which may vary from one to 10%. CSF may also be used for High Performance Concrete of lower grades.

Ternary Blends
Ternary blends of mineral admixtures are now recommended for improving the durability of important concrete structures. An outstanding example is the Reconstruction of the New I-35 W St. Anthony Falls Bridge crossing the Mississippi River in Minneapolis, US. The new bridge has been opened to traffic in September 2008, less than 14 months after the collapse. HPC has been used for reconstruction with a target 100 year life span. High Performance Concrete containing silica fume and fly ash was used for low permeability.

Durability Enhancing Products
A full line of products are available to prevent or repair corrosion damage. A typical corrosion inhibiting admixture prevents deleterious expansion and cracking caused by the formation of rust during over-induced corrosion. There are also penetrating sealants to protect new and repaired concrete from the corrosive effects of chloride. The silane and siloxane based reacting sealers soak into the surface, creating a barrier against water or chlorides.
A number of concrete waterproofing admixtures eliminate the need for conventional external waterproofing membranes and saves time, money and hassle at the construction site. It transforms concrete into a water-resistant barrier by becoming an integral part of the concrete matrix.

Recycled Aggregates

With continuous development activity worldwide, the availability of coarse aggregates from natural sources or crushed rock are dwindling; at the same time, due to demolition of old structures, roads etc., a large amount of debris is generated annually and their disposal poses problems for the individuals and the Governments. In many countries including the UK, any demolition agency is not permitted to dispose of the debris except at predetermined locations which may involve very long leads, expensive operations.

Extensive research has now established that the debris can be crushed, processed and recycled as coarse aggregate for fresh concrete. Such recycling solves the above mentioned problems of disposal, and also more economical. Many national codes in the developed world permit the use of recycled aggregates in concrete, subject to safeguards.

Lightweight Aggregates

These are manufactured products and are extensively used in all types of structures involving longer spans where the dead-load forms a major component of the loads involved in the design. Such lightweight aggregates are manufactured products using expanded clay, sintered fly ash etc. Their contribution to strength depends on the type and quality of the lightweight aggregate, the size fraction used and the amount of aggregate used as well as the type and quality of binder in concrete. However, the addition of lightweight aggregate in concrete reduces the modulus of elasticity.

High Performance Lightweight Concrete

By using high strength/high performance lightweight concrete in prestressed concrete bridge girders, spans of bridge girders can be extended by up to 20%. The implications of using lightweight aggregate on prestressing losses long-term creep and shrinkage deformation should be considered. Compressive strength of up to 75 mPa has been obtained. They also result in reduction in creep and shrinkage and consequently lower prestressed losses. The overall costs for a given load capacity are reduced. The reduction in the structure dead-load leads to a reduction in the foundation size.

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”.

Necessity of advance construction techniques:

- 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.
- 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.

- The objective of the construction organizations should be 'speed and economy'. This cannot be achieved with labour oriented advanced construction techniques.
- 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.
- 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.

EQUIPMENT USED FOR SMALL AND MEDIUM CONSTRUCTION WORK

- Chain and pulley block.
- Grouting pumps.
- Sprayers for painting work.
- Tile cutters.
- Portable hand drilling machines.
- Horizontal trolleys, wheelbarrows.
- Pumps.
- Sand washing machine.
  Concrete mixers.
- Vibrators for compaction of concrete, surface vibrators.
- Auto ramming concrete block machine.
- M.S. tubular scaffolding, and formwork
- Earthmovers
- Cranes Vertical lifts, hoists, winches.
- Earth excavators.

OTHER BUILDING CONSTRUCTION TECHNIQUES – TECHNOLOGY

Some new, cost-effective and time-saving techniques used in building advanced construction technology are

LIGHTWEIGHT BLOCKS & CONCRETE

The density of normal concrete varies from 2200 to 2600 kg/m3 while that of lightweight concrete varies from 300 to 1850 kg/m³.

Advantage

- Reduction of dead load.
- Increases the progress of work.
- Lowers the handling cost.
- This leads to a lighter structural design.

FERROCRETE TECHNIQUES

Ferrocrete consists of wire mesh and cement mortar. The wire mesh is spaced closely & impregnated with a rich cement mortar mix.

Advantages

- It has got a higher ratio of tensile strength to weight and superior cracking behavior compared to R.C.C.
- It can be used for septic tanks, water tanks, fishing boats, roofs and wall panels for low-cost housing, bio-gas digesters, silos, kitchen otta, door and window frames, cupboard, etc.

- It is cheaper than conventional concrete.

EARTH MOVING MACHINES

For mass excavation works & a huge amount of filling, earthmoving machines are useful. They save considerable time & manpower.

Advantages

- Save time.
- Cost-effective.
- Save manpower.
- Useful for mass excavation & filling basements, canals, etc.

SLIP TUNNEL FORMWORK TECHNIQUES

For mass concreting of high rise buildings, slip tunnel formwork can be used.

Advantages

- Save the de-shuttering & shuttering time.
- More number of repetitions for formwork
- More accuracy in work.
- Reduce labour.
- Overall quality increases, with a reduction in cost.
- Most suitable for identical vertical lifts.

PRECAST COMPONENTS

They are factory-made components of the building which are joined to form the structure.

Advantages

- Controlled quality of the final product.
- Better curing and higher strength due to mechanization.
- Saves space for raw material stackings.
- Reduces the requirement of skilled labour.
- Increase in construction speed due to symmetrical and simple joining methods.
- Saves, total project time.
- Dependability of the activities can be nullified & most of the activities can be taken up simultaneously.

14.1.4 Engineering Aspects of soil mechanics - Sustainable development technique

For civil engineers, soil plays a big part in the construction projects they are involved in be it a school, a large airport facility or even bridges and tunnels. All foundations for any structure that a civil engineer constructs are bound to rest on the soil. The bigger the building or structure, the bigger its foundation and consequently the more important it is for a civil engineer to take into consideration the soil mechanics of the site. The foundation is where the load the structure bears is transferred hence understanding the soil is crucial to building a strong structure. Hard soil with sufficient strength allows an engineer to use shallow foundations, and the alternative is also true. Weak soil will need deep foundations to provide robust support for the structure being put up.

Soil mechanics enables a civil engineer to understand engineering properties and behavior of the soils in order to provide satisfactory solution to soil problems when the civil engineering structures such as building, overhead tanks/silos, sunk/semi sunk water reservoirs, bridges, road/railway embankments, tunnels, canals or dams are founded on soils which ultimately

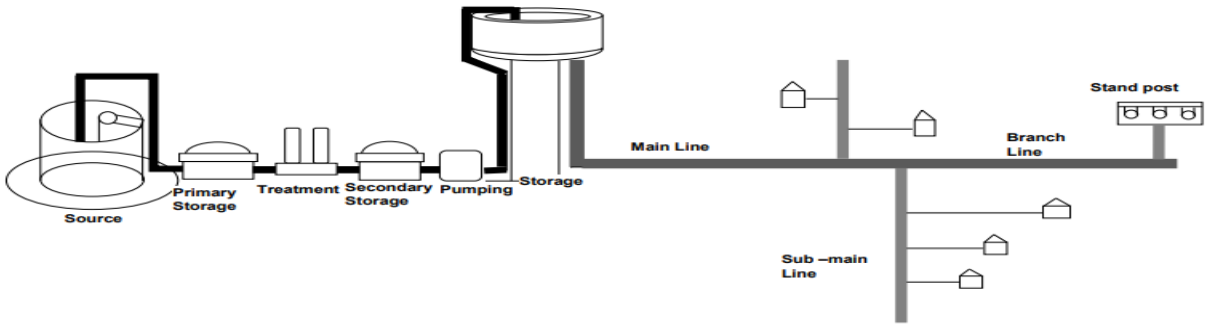
supports in such a manner that the structure do not get excessively settled or tilted or damaged due to some kind of failure of the foundation soil. Field of soil mechanics is very vast and its thorough knowledge and clear understanding is a prerequisite in predicting its behavior as regards to the safety of structures is concerned and characterization of underground soil conditions is a fundamental step for the successful design. Soil being very complex natural material, is different than other materials of construction known to man and it exhibits wide range of characteristics from peats to gravel. Sometimes even at the same site and from the same stratum, soil samples taken from two locations not too far apart, show widely varying properties. A perfect soil engineer is a practitioner of an art rather than science and in to reach engineering judgment for the solution of a specific problem he incorporated theory, experience and skill.

14.1.5 Water supply- sewerage system-waste water –sustainable development techniques

Water Supply in India is now previewed as community based demand driven system, under which it is essential to enhance capacity of local community residing in villages and small towns to develop and manage their own water supply systems. Role of community groups is to ensure effective and participatory implementation of water supply system in their village/town, water quality control, financial management and effective operation and maintenance of water supply system established. Hence, it is evitable that such community groups are aware about the basics of water supply system, operation and maintenance of water assets and water supply system as well as basics of sanitation and waste management.

Typical Village/town water supply system

Typical Village/town water supply system constitutes of a gravity/pumping based transmission and distribution system from local/distant water source with needed water treatment system.



Sources	Open Well, Tube Well, Hand pump, Pond, Dam Site, External Pipe Supply, Rain Water Harvesting System/Tank
Village/town level Treatment	Reverse Osmosis System (RO), Chlorination, Sedimentation, Sand Filter, etc.
Storage	Elevated Surface Reservoirs (ESR), Ground Service Reservoirs (GSR), Sump
Distribution	Main Line, Sub-Main Line, Branch Pipe Line, Household Level Tape, Stand Post, Washing Unit.

Figure 72 Typical Village/town water supply system

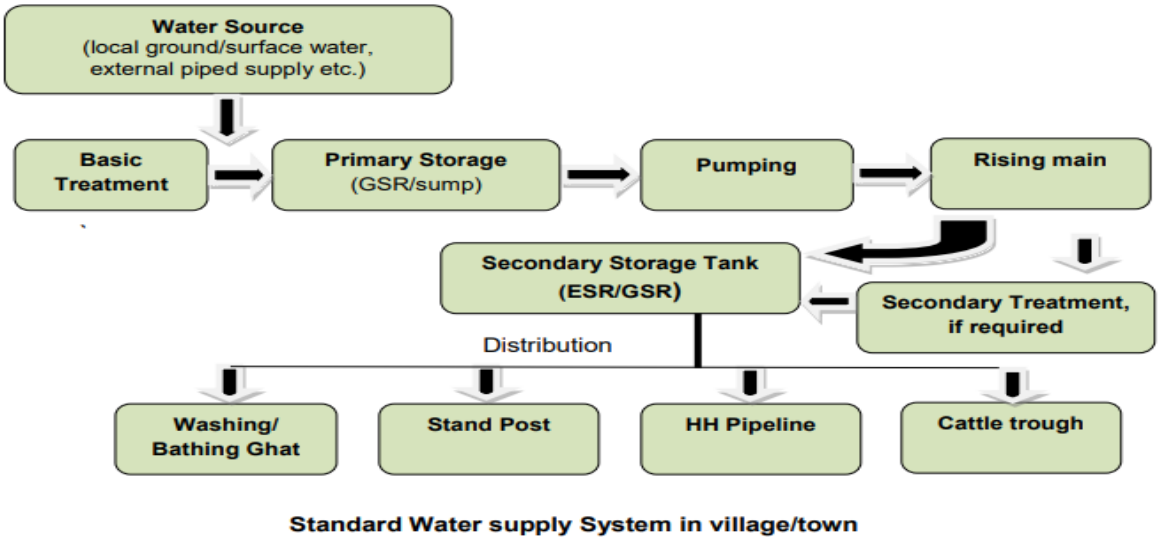


Figure 73 standard water supply system in village

Roof Top Water Harvesting

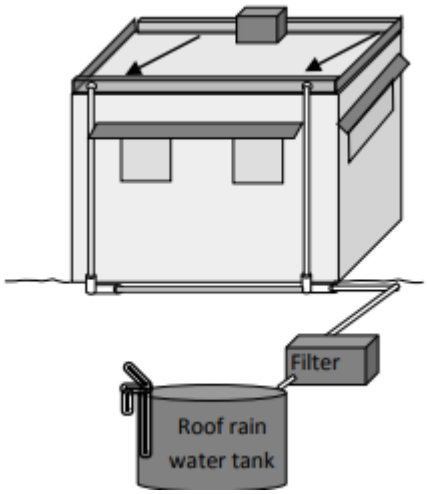


Figure 74 roof top water harvesting

Roof top rain water harvesting is a simple method to collect and store rain water from roof top. Such system can be installed at household as well as community level like schools, panchayat building etc.

• Typical rain water harvesting unit consists of
a. Gutter pipes for conveying water from sloped roofs.
b. Conveyance pipes connected from gutter pipes (sloped roofs) or directly from roof outlet.
c. Valve prior to filter unit for flushing impure water, mainly first rain.
d. Filter unit consisting of sand-gravel bed for basic filtration.
e. Storage tank (normally 5,000-10,000 litres tank can be installed at HH level for family of five. At community level storage size can be decided on water that can be harvested and funds available). Storage tank normally should be underground.
f. Hand pump/motorised pump to withdraw water from the tank

• Normally, first rain water is not filled in tank as the roof top gets cleaned. Even for subsequent rains, allow rain water for first 5-10 minutes to flush away for getting rid of impurities from roof.
• Calculation for water that can be harvested from roof top in litres:
(Area of roof in m2 (a) * run-off coefficient (c) * annual rainfall in region in meter * 1000 (for converting m3 into litres)).

— Area of roof is measured as (length in meter * breath in meter).
— Run off co-efficient caters to spillage, leakage, absorption by roof material. For smooth/pucca roof like sheet/tiled/RCC roof, run off co-efficient can be generally taken as 0.8. For kutcha roof, the co-efficient can be taken as 0.6
— Annual rainfall is normally available in millimeter. So convert it into meter by dividing it with 1,000.
• Sample calculation for small house with RCC slab roof = 36 m2 (area of roof) x 0.8 (run-off co-efficient) x 0.8 meter (annual rainfall) x 1000 = 23,040 litres, day 20,000 litres. This means that a standard house can harvest 15,000-20,000 litres of rain water in a year from roof top.

Waste water treatment techniques
Four common ways to treat wastewater include physical water treatment, biological water treatment, chemical treatment, and sludge treatment.
***Physical Water Treatment**
In this stage, physical methods are used for cleaning the wastewater. Processes like screening, sedimentation and skimming are used to remove the solids. No chemicals are involved in this process. One of the main techniques of physical wastewater treatment includes sedimentation, which is a process of suspending the insoluble/heavy particles from the wastewater. Once the insoluble material settles down at the bottom, you can separate the pure water. Another effective physical water treatment technique includes aeration. This process consists of circulating air through the water to provide oxygen to it. Filtration, the third method, is used for filtering out all the contaminants. You can use special kind of filters to pass the wastewater and separate the contaminants and insoluble particles present in it. The sand filter is the most commonly used filter. The grease found on the surface of some wastewater can also be removed easily through this method.
***Biological Water Treatment**
This uses various biological processes to break down the organic matter present in wastewater, such as soap, human waste, oils and food. Microorganisms metabolize organic matter in the wastewater in biological treatment. It can be divided into three categories:
Aerobic processes: Bacteria decompose the organic matter and converts it into carbon dioxide that can be used by plants. Oxygen is used in this process.
Anaerobic processes: Here, fermentation is used for fermenting the waste at a specific temperature. Oxygen is not used in anaerobic process.
Composting: A type of aerobic process where wastewater is treated by mixing it with sawdust or other carbon sources.
***Chemical Water Treatment**
As the name suggests, this treatment involves the use of chemicals in water. Chlorine, an oxidizing chemical, is commonly used to kill a bacterium which decomposes water by adding contaminants to it. Another oxidizing agent used for purifying the wastewater is ozone. Neutralization is a technique where an acid or base is added to bring the water to its natural pH of 7. Chemicals prevent the bacteria from reproducing in water, thus making the water pure.
***Sludge Treatment**
This is a solid-liquid separation process where the least possible residual moisture is required in the solid phase and the lowest possible solid particle residues are required in the separated liquid phase.

CHAPTER:-15
Smart and/or Sustainable features of Chapter 8 & 13 designs, Impact on society

The villagers have to go nearby village for any need related to post service so that there is so much westing of time of people and we all know that in this generation time is not money but more that that. The provision of post office attracts the persons to take advantage of facility and it will provide awareness among the villagers so that threat of people to go such government offices will reduced and there is lots of benefits overall.

Public toilet

Public toilet is the most basic amenity among the all. It should be must in the everywhere. In the minds of many, the best public toilet is the one they don't have to use. It's not uncommon for someone to reject their bodies warning signs and forgo restroom use, waiting in pain until they're able to scamper into their bathroom at home.

Duration: - 2 months
Cost: - 187925 Rs.

Reasons for provide public toilet

The first reason behind provision of public toilet is that there is no facility of the same in the village. And by provision of public toilet the people will go to avoid to go in open area and will going to be used to with toilet. Toilet also helps in protect our society from many diseases which can be spread by human feces. With increasing use of such a service there will be good and pleasant atmosphere surrounding which may result in creation of play ground or recreation Centre at the area where such activity is done.

Public library

Public Library is defined as a library which is accessible to the public and generally funded from public source and may be operated by civil servant (Anil Kumar Dhiman and Yasoda Rani, 2011). Public library, as its name suggests, it is for the people, by the people and of the people.
Importance of library

- Personality development
- Culture and issues
- Economic development
- Human adjustment
- Science and tech
- Self-development
- Spread of education

Duration: - 2 months

Cost: - 120863 Rs.

Reasons for provide public library

There is a public library available in the village, but is is combined with the school library so that we think that there is need for separate library for public so we provide AutoCAD design of public library. By the virtue of the public library people are going to attract toward reading books and reading book is the habit. By reading people will aware about the issues and society of India which will improve the general living standard of public.

Gram panchayat

Each village is divided into smaller units called Wards. Each ward selects or elects a representative who is known as the Ward Member Or Panch. All the members of the Gram Sabah also elect a Sarpanch who is the president of the Panchayat.

Duration: - 1.5-2 months
Cost: - 187925 Rs.

Reasons for providing gram panchayat

There are so many reasons for providing panchayat building in the village. The existing structure of panchayat in the poor condition. There is huge need for the recreation of the structure. the panchayat building should be in sound condition as following issues are generally discussed in the panchayat office:

- Social issues
- Water problem
- BPL benefits
- Tracking misuse of money, and
- The undue favour done to a group of people

For example, if a village is having water problem what will be the alternative ways to develop. Different panch will come with different ideas like using the hand pump, checking dams and rainwater harvesting methods, making tube-wells or wells in the village. Now the Gram Sabha will select the best idea and try to work on it.

PHC

- early detection
- Health maintenance
- Convenience
- Continuity

Duration: - 3 months
Cost: - 363142 Rs.

Bank

- Bank accounts offer convenience. For example, if you have a checking account, you can easily pay by check or through online bill pay.
- Bank accounts are safe. Your money will be protected from theft and fires. It's an easy way to save money.
- Bank accounts are cheaper.

 Bank accounts can help you access credit
Duration: - 4-5 months
Cost: - 232684 Rs.

Post office
 Post Office regular savings account.
 Post Office time deposit account (TD)
 Post Office recurring deposit account (RD)
 Post Office monthly income deposit account (MIS)
 Public Provident Fund account (PPF)
 Sukanya Samriddhi Yojana Account (SSY)
 Kisan Vikas Patra (KVP) account.
 National Savings Certificate (NSC)

Duration: - 3 months
Cost: - 294545Rs.

School classroom
In khasa village there is a availability of school but classrooms are collapsed due to finishing of service life of the structure. Due to that there is lots of problems are faced by the children and staff of the school. So as a part of solution we are giving a line diagram of the school's classrooms and detailed floor plan layout of the one unit as all the classrooms are same. There is office and store in a sound condition so there is no need to give its layout plan. As we all know students are the future of new INDIA there must be proper and sound education system in village. To have good school structure is the prerequisite of good education system. By this step we are trying help village to grow smoothly.

Duration: - 1.5-2 months for one class room
Cost: - 156560 Rs. For one classroom

Agro-centre
Khasa village is a agricultural village. Farming is the back bone of the its economy as it is the main source of income in the village. So, there shouldn't be any compromise with respect to the farming. There should be facility of Agro-centre within the village to save time and transportation costs. Currently farmers of the village have to go outside of the village to buy seed and fertilizers, fungicides, pesticides, etc. so we are providing a floor plan layout of the Agro-centre which will going to save the time and money of the farmers.

Duration: - 2 months
Cost: - 235280 Rs.

Youth-club
We all have heard the famous idioms "crowd of ants pull the snake". If group of small insects like ant can pull the snake than we are the humans. And in humans youth are the strongest group of the community. Group of the young people can change the whole world so that youth club should be must in every village/society of the country. By uniting together, they may talk about

current trends, plan a festival, solve the problems up to their extent, etc. so youth club can be called helping the social working group. This will develop so many skills among the members like leadership quality, analytical skill, good perception, humanity, kindness, and most important team work.

Duration: - 2 months
Cost: - 368780 Rs.

Super market

By visiting village, we have noticed that there is shops in the village but all are staggered. If one has to buy vegetable and grocery then he/she can not be able to buy from one place. He/she has to wonder to accomplish the needs. So, it gave us a message that why shouldn't we give layout of the super market in which grocery, vegetables, provisional all the the things are available so villagers won't have to worry. They get all the things from one place in reasonable price.

Duration: - 2-3 months
Cost: - 458600 Rs.

Chabutaro

In this modern time, it is difficult to see group of birds. If one sees it, is a surprising moment. As along with increase in network facilities, bird community is going to be expel. In villages also they may be rarely found. A place where villagers provide food for birds is known as chabutara. It is one of the heritage structures. There is no such a facility in the village so we have provided the plan layout of the structure. It enhances the beauty of the village.

Duration: - 1 months
Cost: - 99150 Rs.

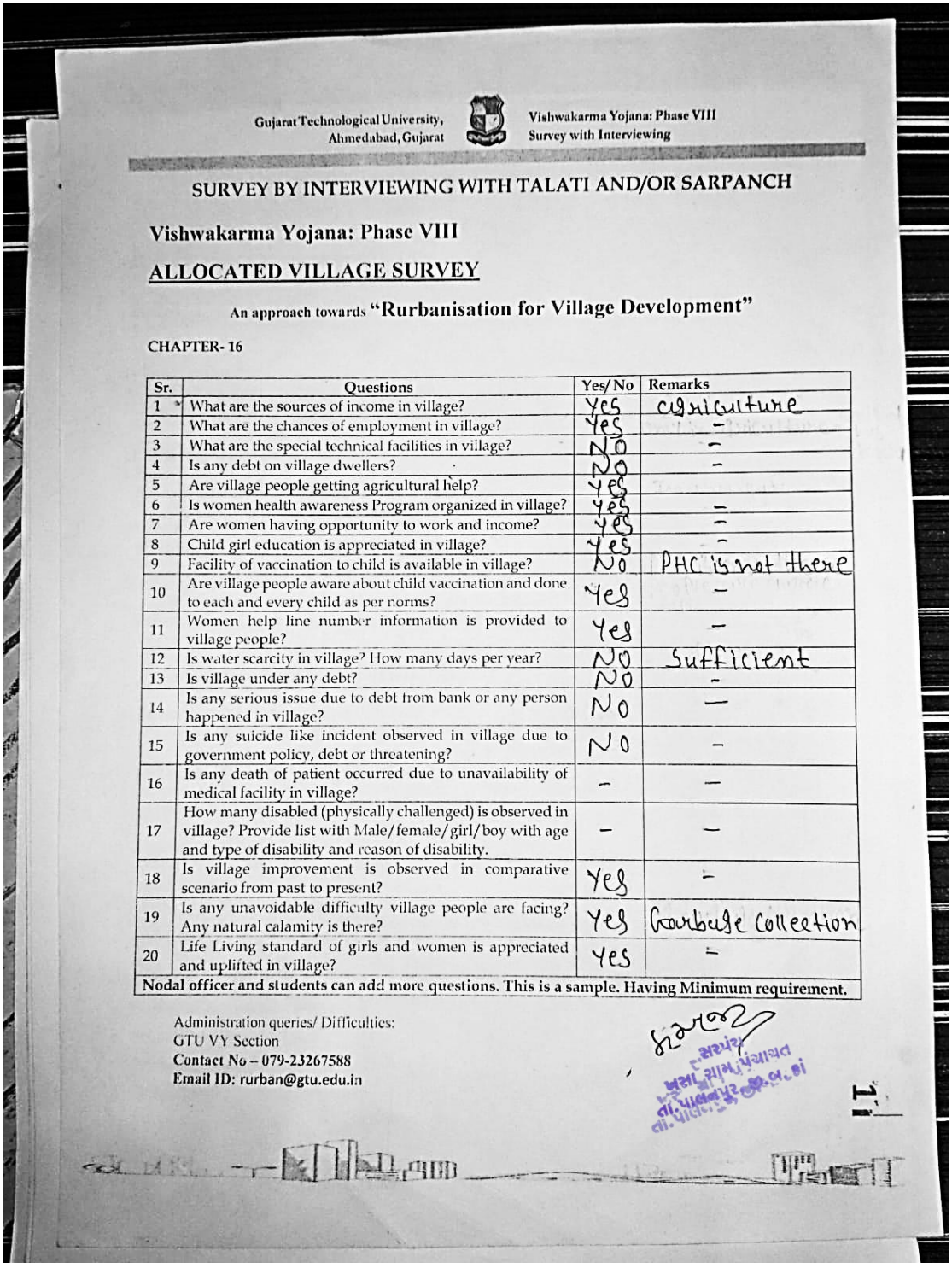
Cremation house

The final destiny of human being is the cremation house. No availability of such a facility in the village is not fair from the social point of view. In khasa, the area is allotted for such a activity but no structure is created for the funeral. People have to face problems in monsoon season.So, we are providing a cremation house design.

Duration: - 2 months
Cost: - 298000 Rs.

CHAPTER:-16

SOCIAL QUESTIONAIRE FOR VILLAGE



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

CHAPTER- 16

Sr.	Questions	Yes/ No	Remarks
1	What are the sources of income in village?	Yes	agriculture
2	What are the chances of employment in village?	Yes	-
3	What are the special technical facilities in village?	No	-
4	Is any debt on village dwellers?	No	-
5	Are village people getting agricultural help?	Yes	
6	Is women health awareness Program organized in village?	Yes	-
7	Are women having opportunity to work and income?	Yes	-
8	Child girl education is appreciated in village?	Yes	-
9	Facility of vaccination to child is available in village?	No	PHC is not there
10	Are village people aware about child vaccination and done to each and every child as per norms?	Yes	-
11	Women help line number information is provided to village people?	Yes	-
12	Is water scarcity in village? How many days per year?	No	Sufficient
13	Is village under any debt?	No	-
14	Is any serious issue due to debt from bank or any person happened in village?	No	-
15	Is any suicide like incident observed in village due to government policy, debt or threatening?	No	-
16	Is any death of patient occurred due to unavailability of medical facility in village?	-	-
17	How many disabled (physically challenged) is observed in village? Provide list with Male/female/girl/boy with age and type of disability and reason of disability.	-	-
18	Is village improvement is observed in comparative scenario from past to present?	Yes	-
19	Is any unavoidable difficulty village people are facing? Any natural calamity is there?	Yes	Garbage Collection
20	Life Living standard of girls and women is appreciated and uplifted in village?	Yes	-

Nodal officer and students can add more questions. This is a sample. Having Minimum requirement.

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

CHAPTER 17
IRRIGATION: ALTERNATE TECHNIQUE AND SOLUTIONS

IRRIGATION

Irrigation is the process through which controlled amount of water can be supplied through artificial means such as pipes, ditches, sprinklers etc. the main objectives of irrigation systems is to help agricultural crop growth, landscape maintenance, reduce the effect of inadequate rainfall etc.

Water is an essential element for survival. About seventy per cent of the human body consists of water while plants contain almost 90 per cent of water. Still, we have to depend on some outside sources to fulfil the water requirements of our body.

Similarly, crops require water for their growth and development. The process of supplying water to the crops is known as irrigation. Generally, villagers are dependent on the channel irrigation.

ALTERNATE TECHNIQUES

- They can grow vegetables and fruits.
- Adopt new and easy irrigation methods.
- They can use organic fertilizers for the increase in crop yield.
- Use of drip and sprinkler methods for the irrigation.

SOLUTIONS

- Use of greenhouse, it will give benefits such as, Longer Growing Season. Most obviously, a greenhouse offers an extended growing season. Weather Protection. When using a greenhouse, you also get a level of protection from harsh weather conditions. More Plant Options. Pest Prevention. Portability and Customization.

Figure 7 green house

Figure 75 sprinkle irrigation

- Use of subsurface irrigation method, it can be done by applying water directly to the root of the plant by means

of buried pipes. It eliminates the need of levelling the farm and increases the local ground water table.

- Development of the industries related to the agriculture such as Textiles, Sugar, Tea and Coffee, etc. it will raise the economy of the village by providing the lots of jobs to the surrounding and also reduce the unemployment.
- Boosting the use of modern irrigation systems to increase the crop yield at lower cost. it will also save the water.

Figure 76 drip irrigation

Improved Irrigation Systems

- Under certain conditions, surface irrigation techniques such as level basins can also be very efficient. These methods require precise grading of the topography, high instantaneous flow rates and relatively high levels of automation and management.
- Micro irrigation is the slow rate of water application at discrete locations at low pressures, and includes trickle or surface drip, subsurface drip, micro sprinklers and bubblers. It has made tremendous strides over the past three decades, and has become the modern standard for efficient irrigation practices for water conservation and optimal plant responses. These systems have small diameter tubing laid in the field, either on the surface or underground, with small water application devices that apply water (usually a drip or very small stream of water) directly to a plant at low pressures. These systems are particularly advantageous on widely spaced tree and vine crops as well as high-value vegetable crops (e.g., under plastic mulches that control weeds, minimize foliar diseases and eliminate soil evaporation). Carefully managed subsurface (buried) drip will probably provide the greatest potential for water conservation because of the potential for reduced losses.
- Development of the industries related to the agriculture like Textiles industry, Sugar industry, Tea and Coffee industry, etc. it will raise the economy of the village and help to reduce the unemployment by providing so many opportunities for the surrounding area.
- Self-propelled irrigation systems include center pivots that use long, single-pipe laterals moving in a circle around a central point, and linear move sprinkler irrigation systems that move in straight lines. As they travel across a field, these systems apply water just above or in the plant canopy using small sprinklers, sprayers or bubblers. Nominally, water is applied uniformly regardless of topographic, soil type or plant differences over the entire field. These systems are most suited for low-growing crops such as vegetables, alfalfa, small grains, rice, soybeans and sugar beet as well as taller crops such as corn and sugarcane.
- One highly efficient variation of water application by self-propelled irrigation systems is referred to as low-energy precision applications or LEPA. Water is actually applied at ground level between plant rows (e.g., every other row). Water bubbles out of the application device into the furrow, and some people have referred to this technique as “traveling drip.” The term precision here is a little misleading as it is not precision in

exactly meeting plant needs, but it applies the water more precisely in space than a sprinkler. LEPA is commonly used on large fields located in water-short areas such as the Ogallala aquifer in the Central High Plains.

- schemes is to reduce labour by automation, minimizing water costs by conservation (higher irrigation efficiencies). Another reason is to enable them to expand their irrigated area with the same diverted water volume (irrigation capacity), which is allowed in some states as "water spreading." (This practice will probably disappear in the near future in most western states.)
- There are several management options for reducing water losses. Making small pits or basins (minireservoirs), commonly called furrow diking, in sprinkler irrigated fields to hold water where it falls from both irrigation or precipitation can be beneficial (this may be required under LEPA systems). Reducing areas of irrigated and fertilized crops, but unharvested for whatever reason will likewise reduce nonbeneficial uses. Irrigation at night can reduce evaporation losses. Weeds are a major nonbeneficial use of water and their control is critical, but chemical control is costly and may have unwanted environmental consequences. The use of mulches for weed control may reduce nonbeneficial ET and soil evaporation. Reduced tillage techniques can reduce soil evaporation losses. Drip irrigation technologies can conserve water by greatly reducing soil evaporation and maximizing crop water productivity. These strategies could also incorporate alternative cropping systems including winter crops and deep-rooted cultivars that maximize use of stored soil water and some nutrients.
- Improving irrigation efficiencies through the above means will require substantial investments by farmers in infrastructure and new equipment; and such investments are often accompanied by higher operating and more energy costs and requires greater management skills. Growers will need the flexibility to manage rate, frequency, and duration of water supplies to optimize allocation of limited water and other inputs among crops, minimize evaporation and seepage losses, reduce soil erosion, and capture dissolved nutrients. Changes in water policies and institutional structures will be needed to enable and foster emerging irrigation technologies.
- Subsurface irrigation is also a good option for the increase in crop yield as it will increase the local water table due to buried pipes through which irrigation is directly done at the root of the crop. This is very good method for unlevelled and levelled both type of land but it is little bit costly than others.
- Nevertheless, the deficit irrigation strategies discussed above will not be possible without advanced irrigation methods, and the potential to save water depends on the capabilities of the irrigation system and the operator to implement water-saving practices and technologies. Self-propelled centre pivot or linear move sprinkler and various micro irrigation systems are good alternatives to improve efficiencies through site-specific and accurate applications at various points across a field. These technologies will also benefit from other precision agriculture tools such as site-specific nutrient applications.

CHAPTER:-18
Social activities Done By Students

Activities Done by Students

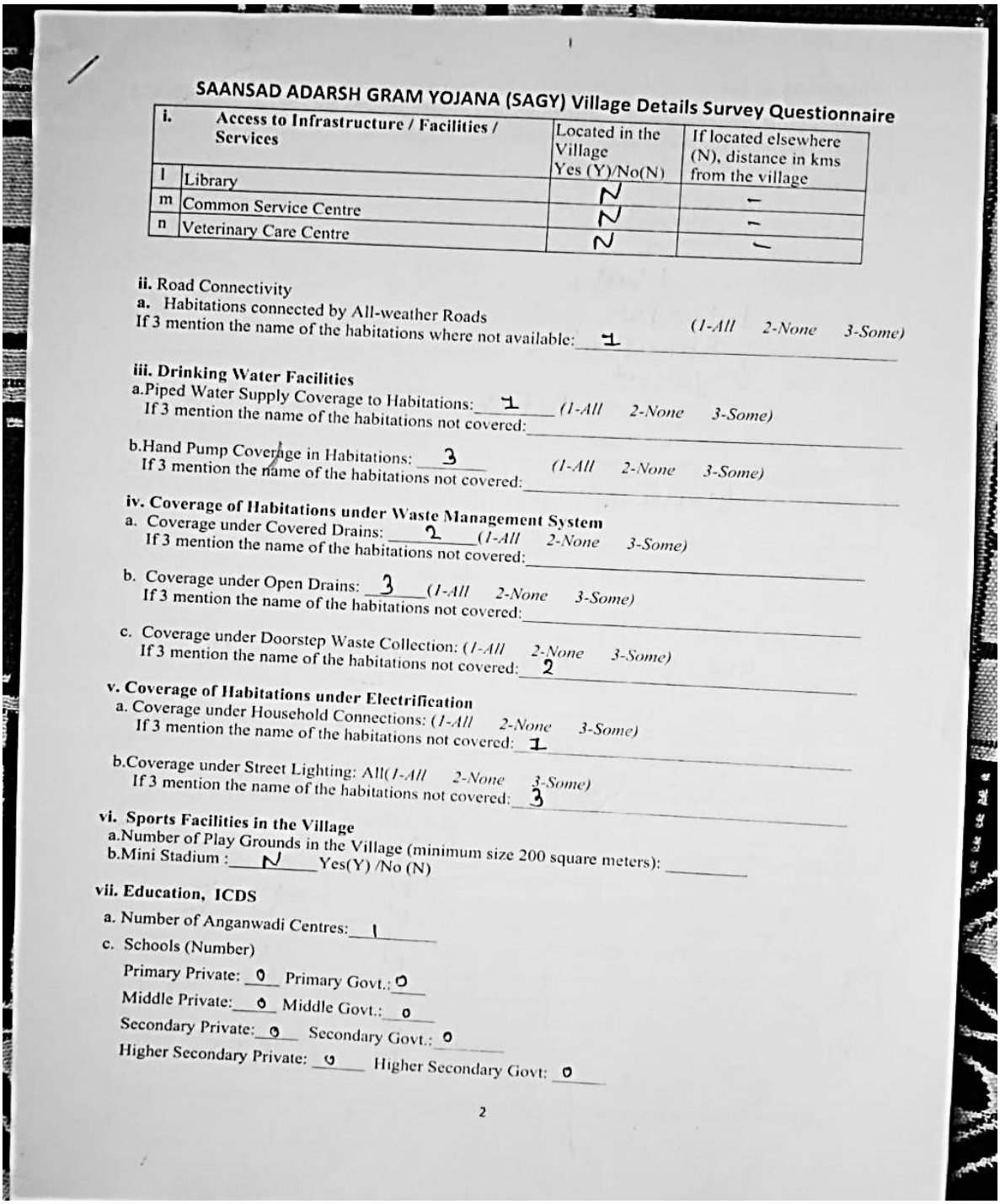
COVID-19 had mostly remained in India's cities, but the disease is now spreading to rural India – an area with over 850 million people and far worse healthcare. The reason for this shift appears to be migrant workers who have been returning to their villages since lockdown was eased at the end of June. The medical response to stop the spread and treat those infected has been inadequate, according to media reports. With one trained doctor for every 1,497 people, against the World Health Organization recommended one per 1,000, and public health expenditure for 2018 at just 1.3% of GDP, India faces an uphill struggle in dealing with the pandemic.
While interacting with the Sarpanch and the school teacher we found that there were no cases of covid-19 as it is small village.



Figure 77 activities done by students

- During visit we have distributed the sanitizers and masks to the villagers. Also, we gave information about "Arogya setu" application.
- As well as we spread awareness among the the villagers about social distancing and the preventing measures of covid-19.
- Fortunately, owing blessings of god the villagers have not faced any strain of covid-19 going in the country so that there is no need to provide any quarantine center in the khasa village. But as we all know "precaution is better than cure" so the panchayat has done its best to prevent villagers from strain of covid-19. Panchayat has circulated the guidelines of government to the villagers.
- Also arranged proper facilities of sanitizers and masks as well as forced everyone to maintain proper social distancing and follow the covid-19 guidelines published by ministry of health.
- During the visit we spent some time with the school teachers too. And at that time we discussed the situation of teaching in the pandemic time. The online teaching in the village was not possible due to not everyone can afford the required accessories for learning online.
- Due to covid pandemic we couldn't make to visit the village frequently as the village is far from our home. Hence not so many activity have been done in the village by.

CHAPTER:-19
SAGY Questionnaire Survey Form with Sarpanch Signature



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

iii. Drinking Water Facilities
a.Piped Water Supply Coverage to Habitations: 1 (*1-All 2-None 3-Some*)
If 3 mention the name of the habitations not covered:

b.Hand Pump Coverage in Habitations: 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: 2 (*1-All 2-None 3-Some*)
If 3 mention the name of the habitations not covered:

b. Coverage under Open Drains: 3 (*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: 2

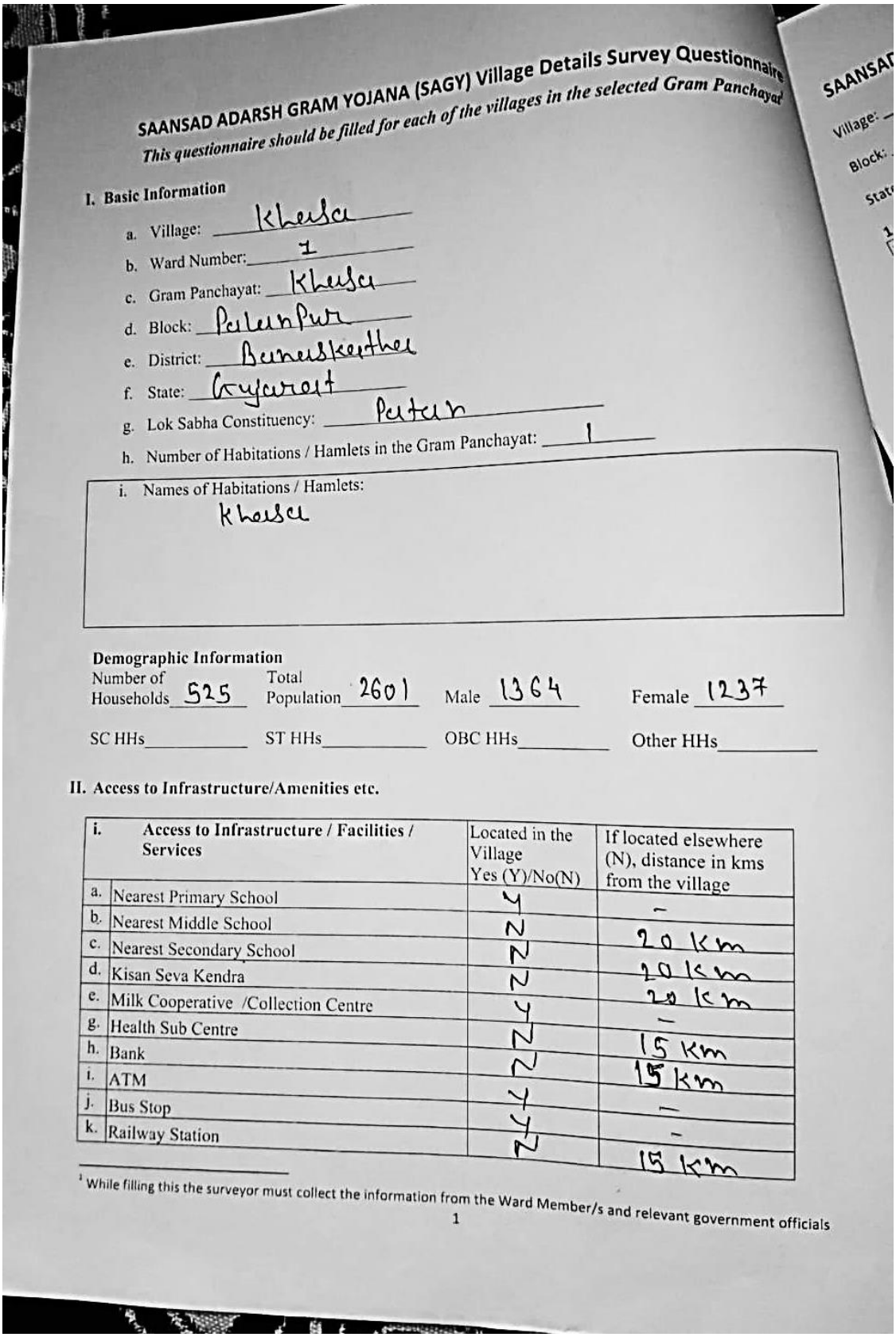
v. Coverage of Habitations under Electrification
a. Coverage under Household Connections: (*1-All 2-None 3-Some*)
If 3 mention the name of the habitations not covered: 1

b.Coverage under Street Lighting: All(*1-All 2-None 3-Some*)
If 3 mention the name of the habitations not covered: 3

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

vii. Education, ICDS
a. Number of Anganwadi Centres: 1
c. Schools (Number)
Primary Private: 0 Primary Govt.: 0
Middle Private: 0 Middle Govt.: 0
Secondary Private: 0 Secondary Govt.: 0
Higher Secondary Private: 0 Higher Secondary Govt: 0

2



SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: Khasa
b. Ward Number: 1
c. Gram Panchayat: Khasa
d. Block: Palanpur
e. District: Banaskantha
f. State: Gujarat
g. Lok Sabha Constituency: Patan
h. Number of Habitations / Hamlets in the Gram Panchayat: 1
i. Names of Habitations / Hamlets: Khasa

Demographic Information

Number of Households 525 Total Population 2601 Male 1364 Female 1237

SC HHs _____ ST HHs _____ OBC HHs _____ Other HHs _____

II. Access to Infrastructure/Amenities etc.

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
a.	Nearest Primary School	Y	-
b.	Nearest Middle School	N	20 km
c.	Nearest Secondary School	N	20 km
d.	Kisan Seva Kendra	N	20 km
e.	Milk Cooperative /Collection Centre	Y	-
g.	Health Sub Centre	N	15 km
h.	Bank	N	15 km
i.	ATM	N	-
j.	Bus Stop	N	-
k.	Railway Station	N	15 km

[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) Baseline Household Survey Questionnaire

Village: Khesa Gram Panchayat: Khesa Ward No. 1

Block: Palanpur District: Banaskantha

State: Gujarat L S Constituency: Banaskantha Patan

1. Family Identity and Size

Name of Head of Household	Laljibhai Patel							Male/ Female	M
SECC Survey ID:		Family Size	4	Over 18	1	6 to 18	3	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	Yes
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]
Khushby Patel	20	F	N	N	10-Pass	Y	N	N
Meet Patel	18	M	N	N	ITA	Y	Y	N
Somiben Patel	40	F	N	Y	7-Pass	Y	N	N
Laljj Patel	45	M	N	Y	12-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

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

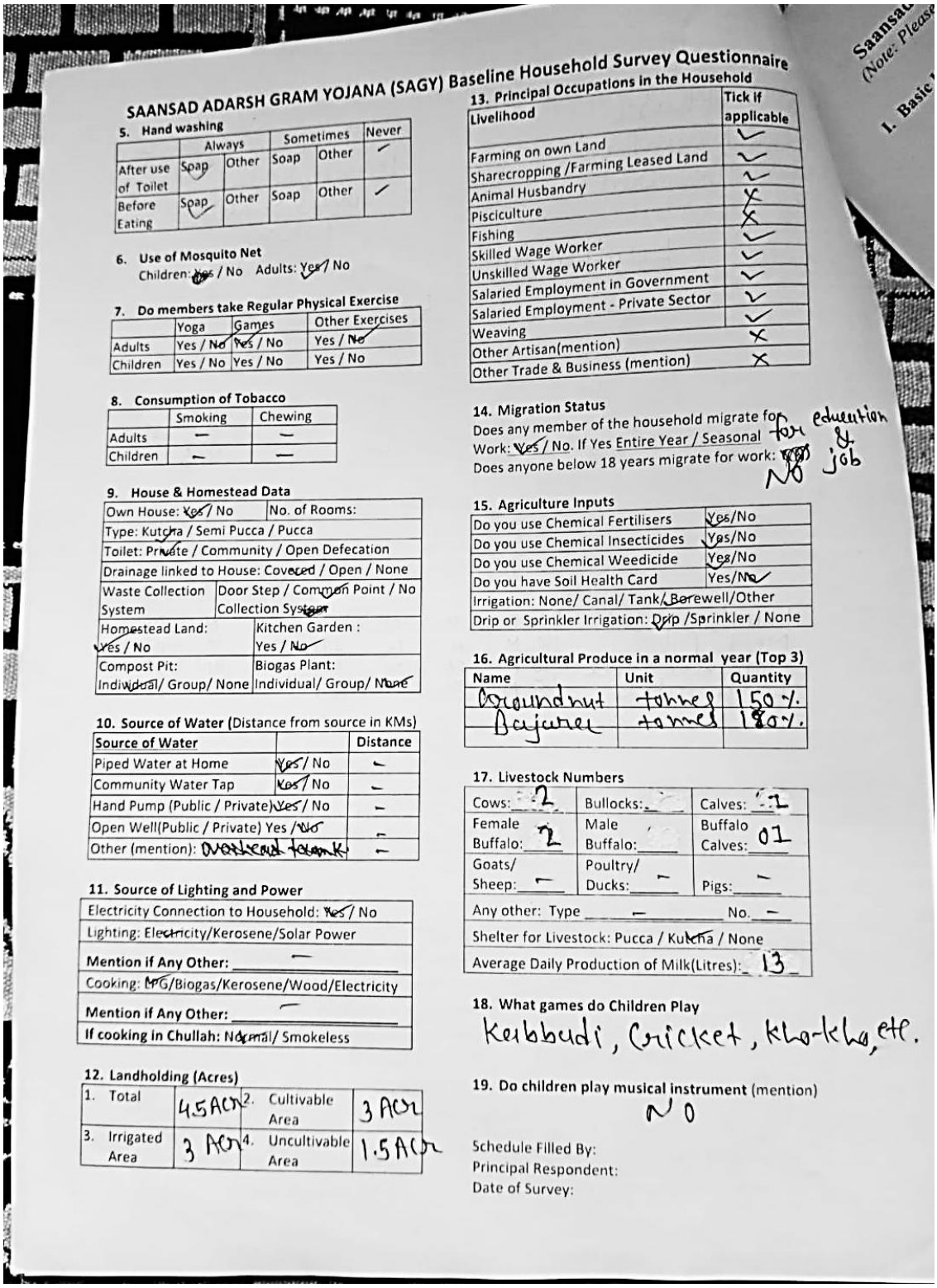
[1] Scheduled Caste 1, Scheduled Tribe 2, Other Backward Castes 3, Other 4

[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	–	–
Children	–	–

9. House & Homestead Data

Own House: Yes / No	No. of Rooms:
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): Overhead tank		–

11. Source of Lighting and Power

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

12. Landholding (Acres)

1. Total	4.5 Acr	2. Cultivable Area	3 Acr
3. Irrigated Area	3 Acr	4. Uncultivable Area	1.5 Acr

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: No
for education & job

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
Groundnut	tonnes	150 %
Bajarei	tonnes	180 %

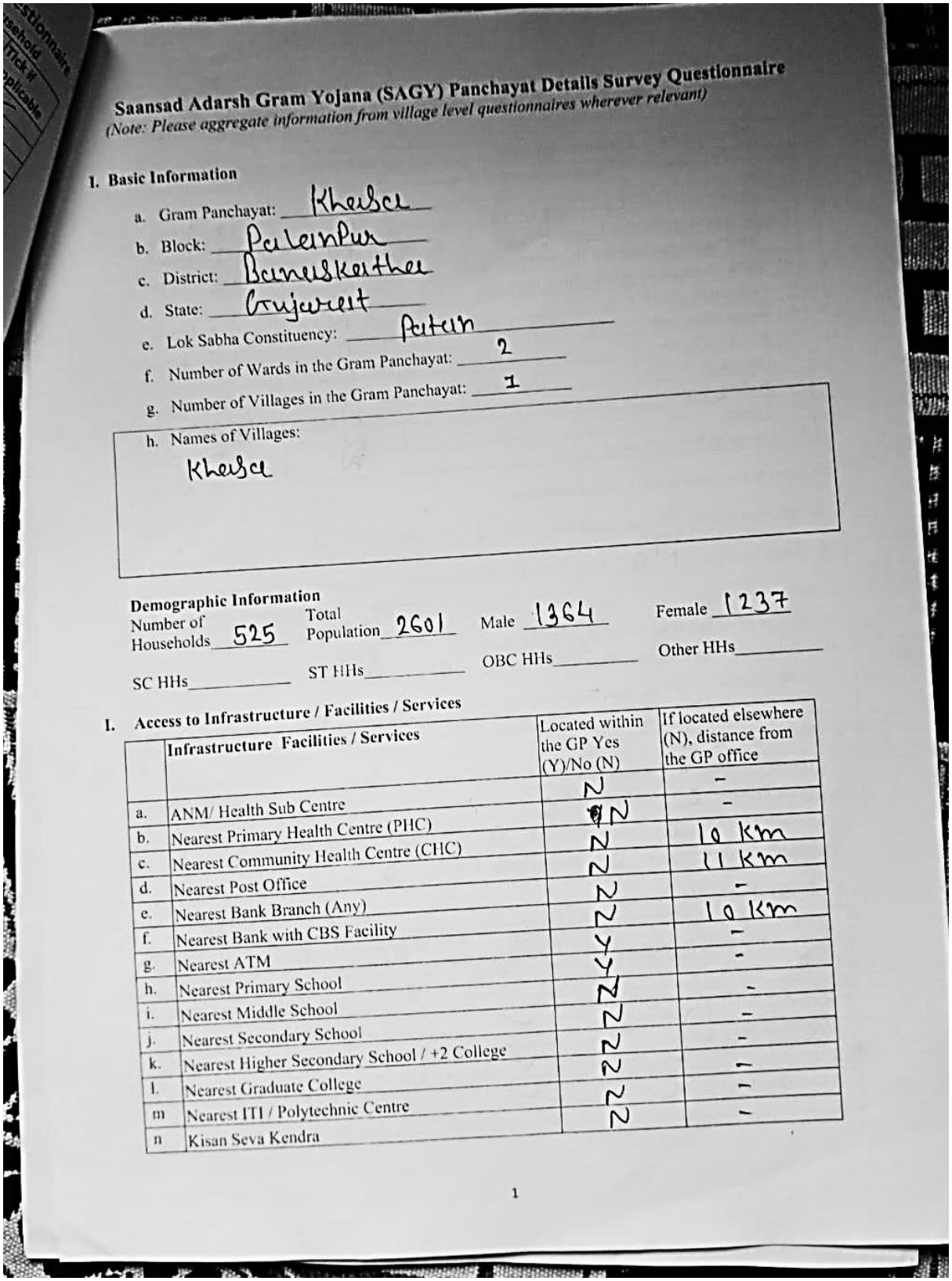
17. Livestock Numbers

Cows: 2	Bullocks: –	Calves: –
Female Buffalo: 2	Male Buffalo: –	Buffalo Calves: 01
Goats/ Sheep: –	Poultry/ Ducks: –	Pigs: –
Any other: Type –		No. –
Shelter for Livestock: Pucca / Kutcha / None		
Average Daily Production of Milk(Litres): 13		

18. What games do Children Play
Kabbadi, Cricket, Kho-kho, etc.

19. Do children play musical instrument (mention)
No

Schedule Filled By:
Principal Respondent:
Date of Survey:



Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

I. Basic Information

a. Gram Panchayat: Khasa
b. Block: Palanpur
c. District: Banaskantha
d. State: Gujarat
e. Lok Sabha Constituency: Patan
f. Number of Wards in the Gram Panchayat: 2
g. Number of Villages in the Gram Panchayat: 1
h. Names of Villages:
Khasa

Demographic Information

Number of Households 525 Total Population 2601 Male 1364 Female 1237

SC HHs _____ ST HHs _____ OBC HHs _____ Other HHs _____

I. Access to Infrastructure / Facilities / Services

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
a.	ANM/ Health Sub Centre	N	-
b.	Nearest Primary Health Centre (PHC)	N	-
c.	Nearest Community Health Centre (CHC)	N	10 Km
d.	Nearest Post Office	N	11 Km
e.	Nearest Bank Branch (Any)	N	-
f.	Nearest Bank with CBS Facility	N	10 Km
g.	Nearest ATM	Y	-
h.	Nearest Primary School	Y	-
i.	Nearest Middle School	N	-
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	N	-

1

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
o	Agriculture Credit Cooperative Society	N	13 Km
p	Nearest Agro Service Centre	N	13 Km
p	MSP based Government Procurement Centre	N	13 Km
q	Milk Cooperative /Collection Centre	Y	-
r	Veterinary Care Centre	N	13 Km
s	Ayurveda Centre	N	15 Km
t	E – Seva Kendra	N	-
u	Bus Stop	Y	13 Km
v	Railway Station	N	15 Km
w	Library	N	-
x	Common Service Centre	N	-

IV. Sports Facilities in the Gram Panchayat

a. Number of Play Grounds in the GP: Total - Public - Private -

b. Mini Stadium : NO 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 0

Names of such villages: -

c. Schools (Number)

Primary Private: 0 Primary Govt.: 1

Middle Private: 0 Middle Govt.: 0

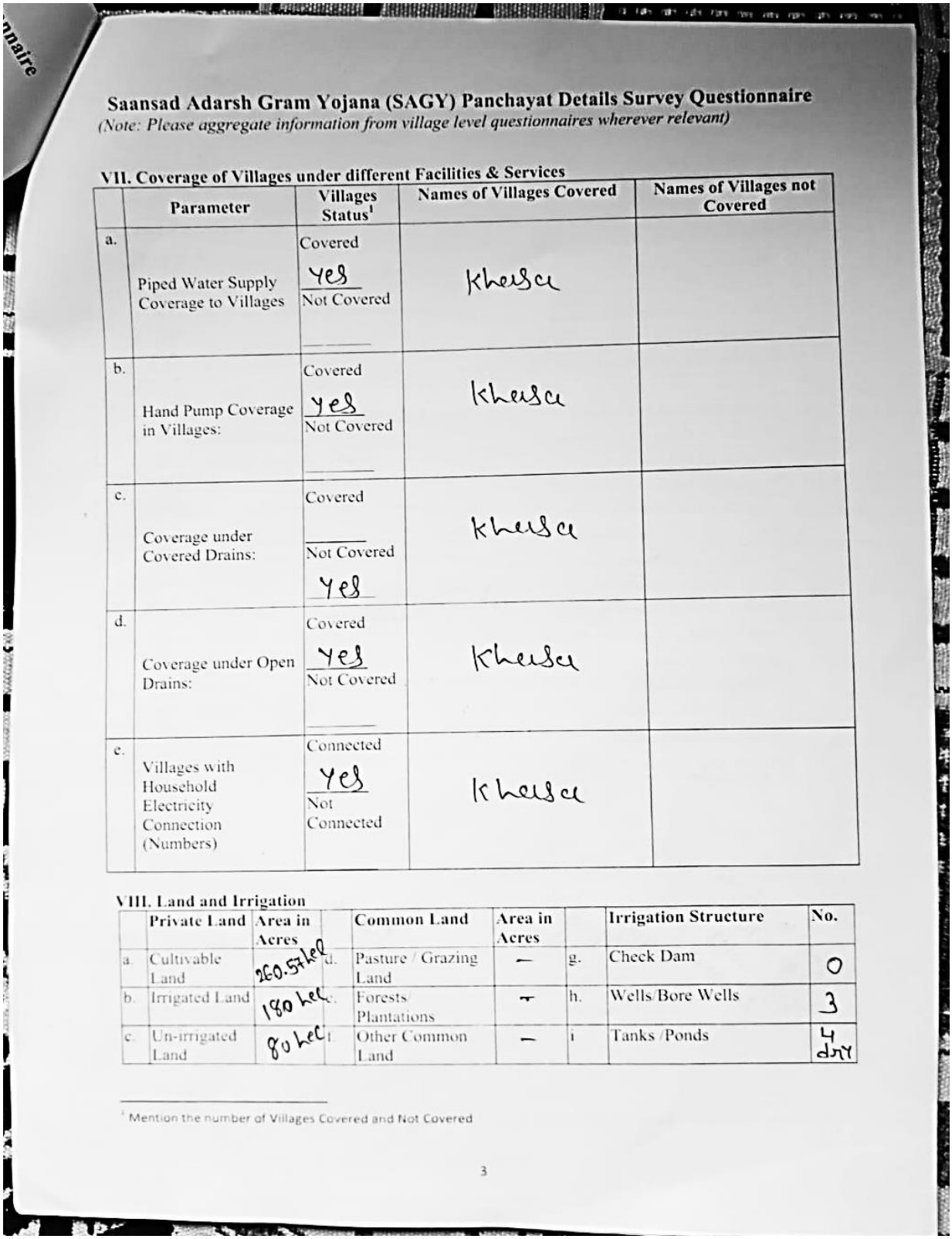
Secondary Private: 0 Secondary Govt.: 0

Higher Secondary Private: 0 Higher Secondary Govt: 0

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)	✓	-	✓	-	-	-	-
b.	Kerosene	✓	-	✓	-	-	-	-
c.	Other (mention)	✓	-	✓	-	-	-	-

2



naire

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:	Khasa	
b.	Hand Pump Coverage in Villages:	Covered: Yes / Not Covered:	Khasa	
c.	Coverage under Covered Drains:	Covered: / Not Covered: Yes	Khasa	
d.	Coverage under Open Drains:	Covered: Yes / Not Covered:	Khasa	
e.	Villages with Household Electricity Connection (Numbers)	Connected: Yes / Not Connected:	Khasa	

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	260.57 hec	d.	Pasture / Grazing Land	—	g.	Check Dam	0
b.	Irrigated Land	180 hec	e.	Forests/ Plantations	—	h.	Wells/Bore Wells	3
c.	Un-irrigated Land	80 hec	f.	Other Common Land	—	i	Tanks /Ponds	4 dry

[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)

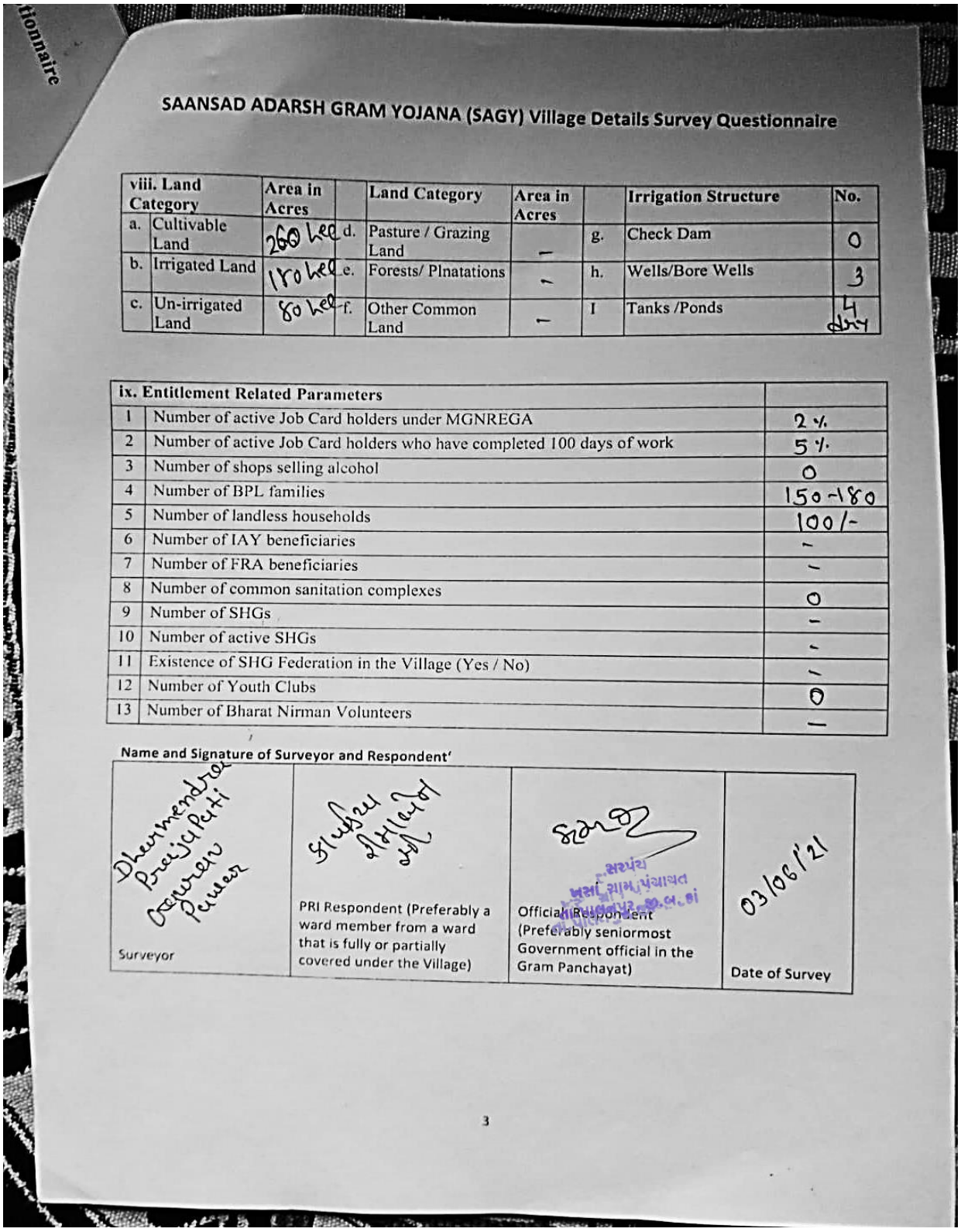
	IX. Parameters relating to Households & Institutions	Number
a)	Number of eligible Households for pension (old age, widow, disability)	10-12
b)	Number of Households receiving pension (old age, widow, disability)	10-12
c)	Number of eligible Households who are not receiving pension	0
d)	Number of Households eligible for Ration Card	98%
e)	Number of eligible HHs having ration cards	99%
f)	Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	20%
g)	Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	20%
h)	Number of active Job Card holders under MGNREGA	7%
i)	Number of Job Card holders who completed 100 days of work during 2013-14	5%
j)	Number of shops selling alcohol	0
k)	Number of BPL families	100-200
l)	Number of landless households	20%
m)	Number of IAY beneficiaries	-
n)	Number of FRA[2] beneficiaries	-
o)	Number of Community Sanitary Complexes	0
p)	Number of Households headed by single women	3%
q)	Number of Households headed by physically handicapped persons	0
r)	Total number of Persons with Disability in the village	1%
s)	Number of SHGs	6
t)	Number of active SHGs	6
u)	Number of SHG Federations	6
v)	Number of Youth Clubs	0
w)	Number of Bharat Nirman Volunteers	0

Name and Signature of Surveyor and Respondent

Surveyor	PRI Respondent (Preferably Gram Panchayat Chairperson)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey
			03-06-'21

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

4



tionnaire

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	260 Hec	d.	Pasture / Grazing Land	–	g.	Check Dam	0
b.	Irrigated Land	180 Hec	e.	Forests/ Plnatations	–	h.	Wells/Bore Wells	3
c.	Un-irrigated Land	80 Hec	f.	Other Common Land	–	I	Tanks /Ponds	4 ઉંડા

ix. Entitlement Related Parameters		
1	Number of active Job Card holders under MGNREGA	2 %
2	Number of active Job Card holders who have completed 100 days of work	5 %
3	Number of shops selling alcohol	0
4	Number of BPL families	150-180
5	Number of landless households	100/-
6	Number of IAY beneficiaries	–
7	Number of FRA beneficiaries	–
8	Number of common sanitation complexes	0
9	Number of SHGs	–
10	Number of active SHGs	–
11	Existence of SHG Federation in the Village (Yes / No)	–
12	Number of Youth Clubs	0
13	Number of Bharat Nirman Volunteers	–

Name and Signature of Surveyor and Respondent'

Dharmendra Prajapati Computer Power			03/06/'21
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-Collectors email sending soft copy attachment in the report

Development scenario of Khasa Village, PALANPUR, BANASKATHA

Gaurav Pawar <gauravpawar945@gmail.com> 17 July 2021 at 11:13
To: tdo-pal@gujarat.gov.in, ddo-ban@gujarat.gov.in

Respected Sir/Madam

We are students of Vishwakarma Govt. Engineering College, Ahmedabad affiliated to Gujarat Technological University-GTU. GTU has been assigned to Vishwakarma Yojana-VY in which students survey the allocated village and then give a needful solution in the form of providing designs of the amenities which are lacking by the village. As a part of vy yojana we are asked to inform you about the project as below:
Khasa is a small Village in Kankrej Taluka in Banas Kantha District, Gujarat. It comes under Khasa Panchayath. It is located 69 KM towards west from District headquartersPalanpur&138 KM from State capital Gandhinagar. After visiting and collecting date from the allocated village Khasa, it can be concluded that the village's infrastructure should be redeveloped such as school building, panchayat house,etc. The village has no public toilet, bank library and such facilities so it is required to build these basic facilities in the village.
In this project first of all the survey would be conducted to collect the information about existing facilities and the development of village could undertake as per need or in particulars includes physical, social, cultural, renewable infrastructure, etc. The 12 designs given by us are as following:

SR NO.	DESIGN	PERIOD	AMOUNT(Rs)
1	POST OFFICE	3 months	294545
2	PHC	3 months	363142
3	PUBLIC TOILET	2 months	187925
4	VILLAGE BANK	4-5 months	232684
5	CYBERCAFE	1 months	187925
6	PUBLIC LIBRARY	2 months	120863
7	SCHOOL ROOM	1.5-2 months	156560 For one classroom
8	SHAMSHAN GRUH	2 months	298000
9	YOUTH CLUB	2 months	368780
10	CHABUTARO	1 months	99150
11	SUPER MARKET	2-3 months	458600
12	AGRO CENTRE	2 months	235280

Also please find the DPR in the attachment.

thanks and regards
gaurav pawar

khasa vy project05042021.pdf
9625K

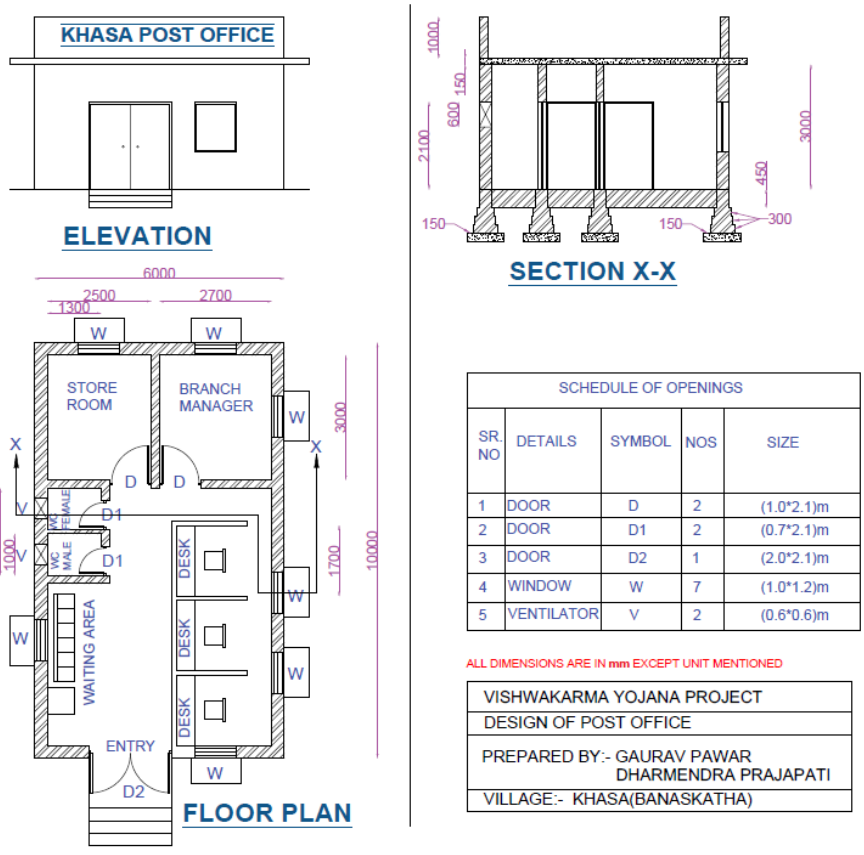
CHAPTER:-21

Comprehensive report for the entire village

Abstract: - Vishwakarma Yojana is one of the approaches to developing the village with all the possible amenities that the city may have. The main aim of this project is "creation of infrastructure, connectivity, civic and social infrastructure along with the provision of economy generation."

Introduction: - Khasa is a small Village in Kankrej Taluka in Banas Kantha District, Gujarat. It comes under Khasa Panchayath. It is located 69 KM towards west from District headquartersPalanpur&138 KM from State capital Gandhinagar. After visiting and collecting date from the allocated village Khasa, it can be concluded that the village's infrastructure should be redeveloped such as school building, panchayat house,etc. The village has no public toilet, bank library and such facilities so it is required to build these basic facilities in the village.
In this project first of all the survey would be conducted to collect the information about existing facilities and the development of village could undertake as per need or in particulars includes physical, social, cultural, renewable infrastructure, etc. The 12 designs given by us are as following:

1) **POST OFFICE**

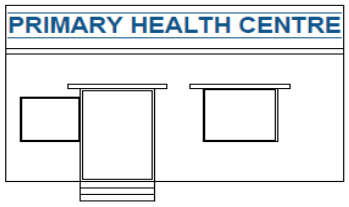


SCHEDULE OF OPENINGS				
SR. NO	DETAILS	SYMBOL	NOS	SIZE
1	DOOR	D	2	(1.0*2.1)m
2	DOOR	D1	2	(0.7*2.1)m
3	DOOR	D2	1	(2.0*2.1)m
4	WINDOW	W	7	(1.0*1.2)m
5	VENTILATOR	V	2	(0.6*0.6)m

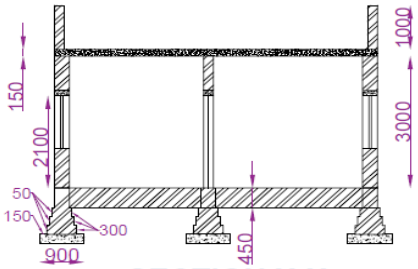
ALL DIMENSIONS ARE IN mm EXCEPT UNIT MENTIONED

VISHWAKARMA YOJANA PROJECT
DESIGN OF POST OFFICE
PREPARED BY:- GAURAV PAWAR DHARMENDRA PRAJAPATI
VILLAGE:- KHASA(BANASKATHA)

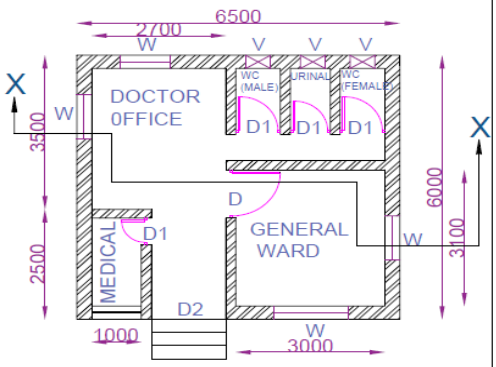
2) PRIMARY HEALTH CENTRE



ELEVATION



SECTION X-X



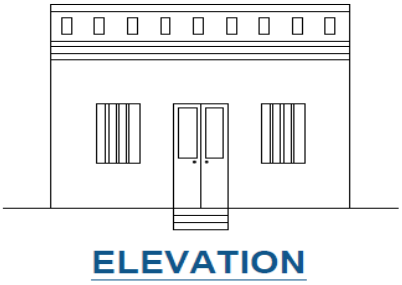
FLOOR PLAN

SCHEDULE OF OPENINGS				
SR. NO	DETAILS	SYMBOL	NOS	SIZE
1	DOOR	D	1	(1.1*2.1)m
2	DOOR	D1	4	(0.6*2.1)m
3	DOOR	D2	1	(1.5*2.1)m
4	WINDOW	W	4	(1.0*1.2)m
5	VENTILATOR	V	3	(0.6*0.6)m

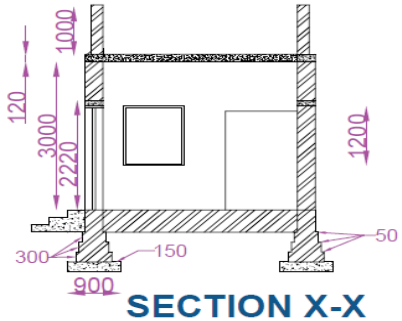
ALL DIMENSIONS ARE IN **mm** EXCEPT UNIT MENTIONED

VISHWAKARMA YOJANA PROJECT
DESIGN OF PHC
PREPARED BY:- GAURAV PAWAR DHARMENDRA PRAJAPATI
VILLAGE:- KHASA(BANASKATHA)

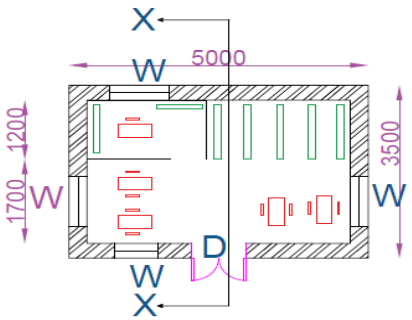
3) LIBRARY



ELEVATION



SECTION X-X



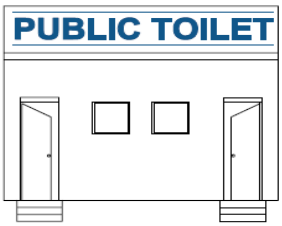
FLOOR PLAN

SCHEDULE OF OPENINGS				
SR. NO	DETAILS	SYMBOL	NOS	SIZE
1	DOOR	D	1	(1.0*2.1)m
2	WINDOW	W	2	(1.0*1.2)m

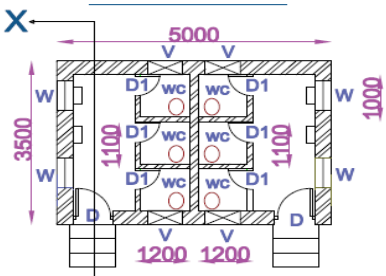
ALL DIMENSIONS ARE IN **mm** EXCEPT UNIT MENTIONED

VISHWAKARMA YOJANA PROJECT
DESIGN OF PUBLIC LIBRARY
PREPARED BY:- GAURAV PAWAR DHARMENDRA PRAJAPATI
VILLAGE:- KHASA(BANASKATHA)

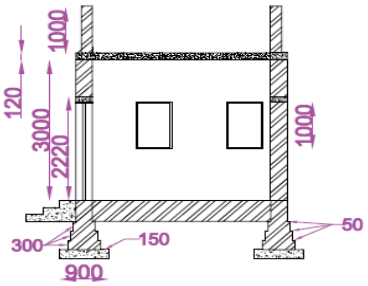
4) PUBLIC TOILET



ELEVATION



FLOOR PLAN



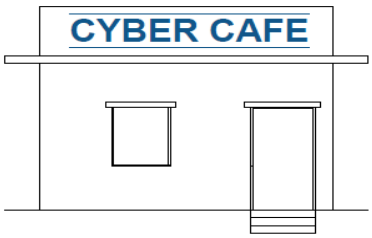
SECTION X-X

SCHEDULE OF OPENINGS				
SR. NO	DETAILS	SYMBOL	NOS	SIZE
1	DOOR	D	2	(0.7*2.1)m
2	DOOR	D1	4	(0.6*2.1)m
3	WINDOW	W	4	(6.5*1.0)m
4	VENTILATOR	V	4	(0.6*0.6)m

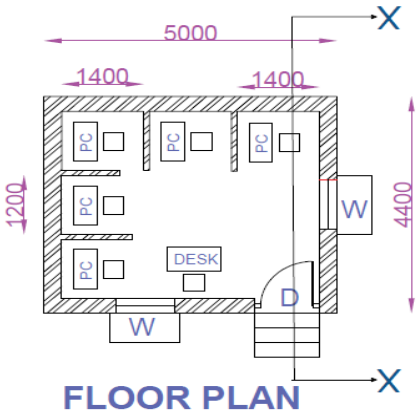
ALL DIMENSIONS ARE IN mm EXCEPT UNIT MENTIONED

VISHWAKARMA YOJANA PROJECT
DESIGN OF PUBLIC TOILET
PREPARED BY:- GAURAV PAWAR DHARMENDRA PRAJAPATI
VILLAGE:- KHASA(BANASKATHA)

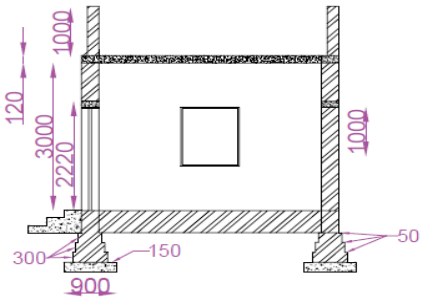
5) CYBER CAFE



ELEVATION



FLOOR PLAN



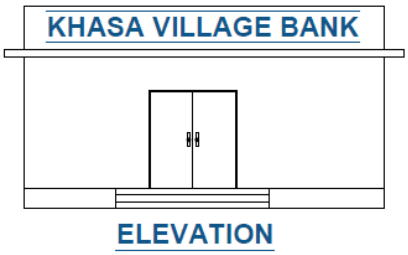
SECTION X-X

SCHEDULE OF OPENINGS				
SR. NO	DETAILS	SYMBOL	NOS	SIZE
1	DOOR	D	1	(1.1*2.1)m
2	WINDOW	W	2	(1.0*1.2)m

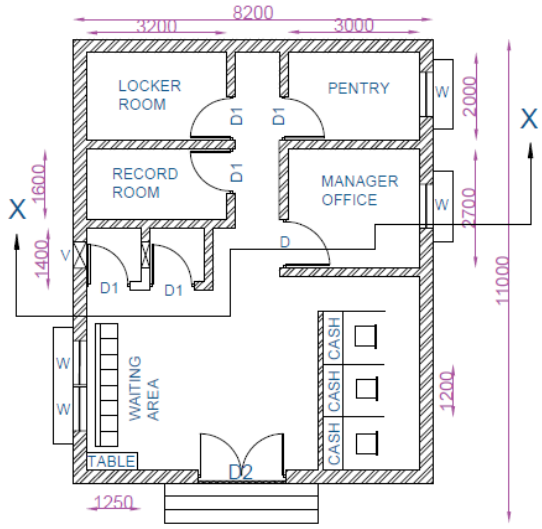
ALL DIMENSIONS ARE IN mm EXCEPT UNIT MENTIONED

VISHWAKARMA YOJANA PROJECT
DESIGN OF CYBER CAFE
PREPARED BY:- GAURAV PAWAR DHARMENDRA PRAJAPATI
VILLAGE:- KHASA(BANASKATHA)

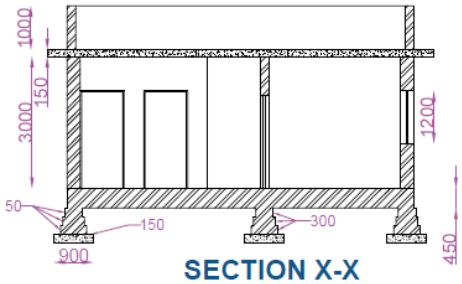
6) VILLAGE BANK



ELEVATION



FLOOR PLAN



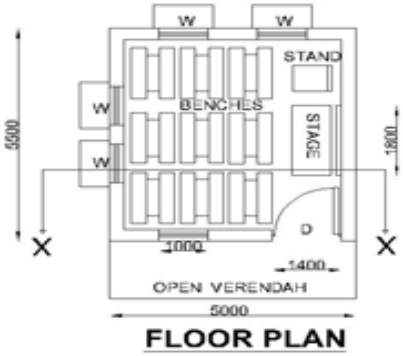
SECTION X-X

SCHEDULE OF OPENINGS				
SR. NO	DETAILS	SYMBOL	NOS	SIZE
1	DOOR	D	1	(1.2*2.1)m
2	DOOR	D1	5	(1.0*2.1)m
3	DOOR	D2	1	(2.0*2.1)m
4	WINDOW	W	4	(1.0*1.2)m
5	VENTILATOR	V	2	(0.6*0.6)m

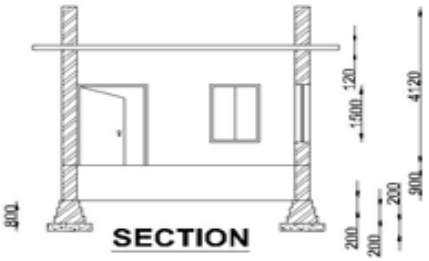
ALL DIMENSIONS ARE IN mm EXCEPT UNIT MENTIONED

VISHWAKARMA YOJANA PROJECT
DESIGN OF BANK
PREPARED BY:- GAURAV PAWAR DHARMENDRA PRAJAPATI
VILLAGE:- KHASA(BANASKATHA)

7) CLASSROOM



FLOOR PLAN



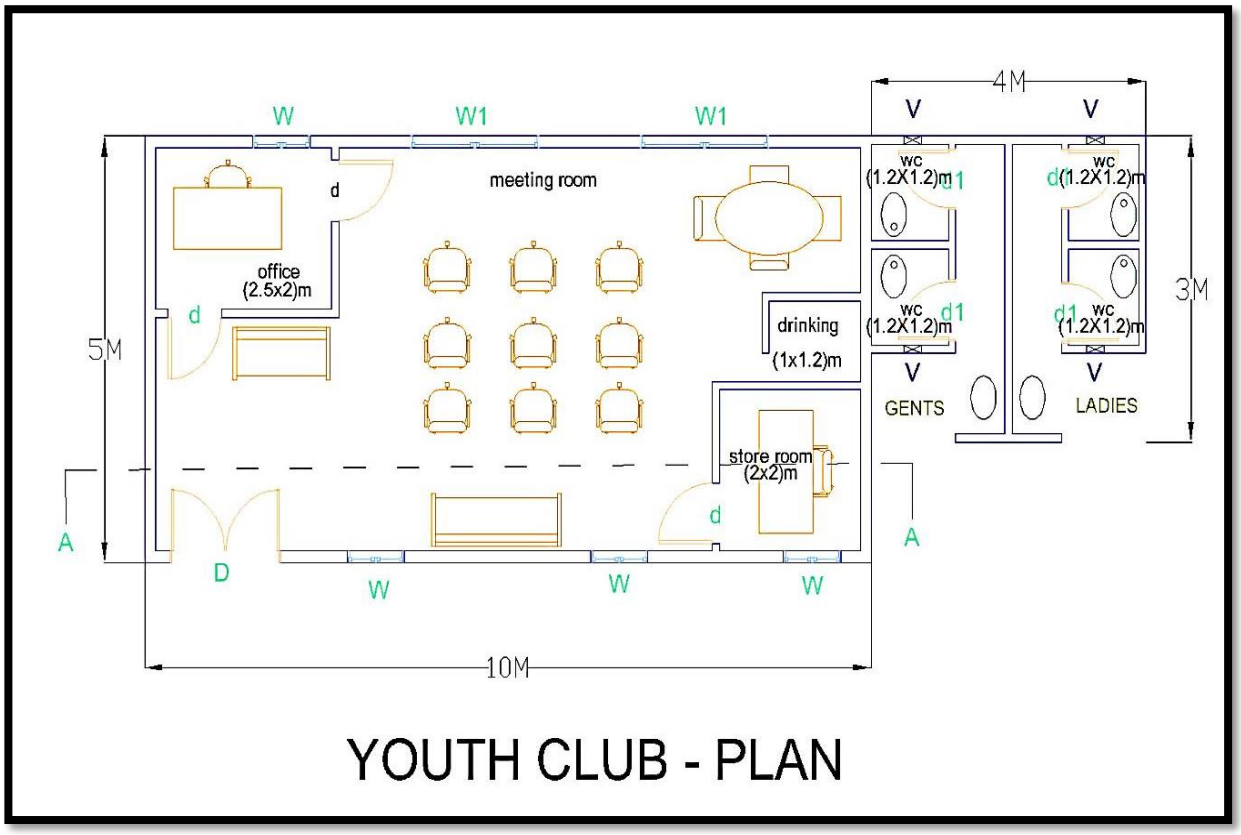
SECTION

SCHEDULE OF OPENINGS				
SR. NO	DETAILS	SYMBOL	NOS	SIZE
1	DOOR	D	1	(1.4*2.1)m
2	WINDOW	W	5	(1.0*1.2)m

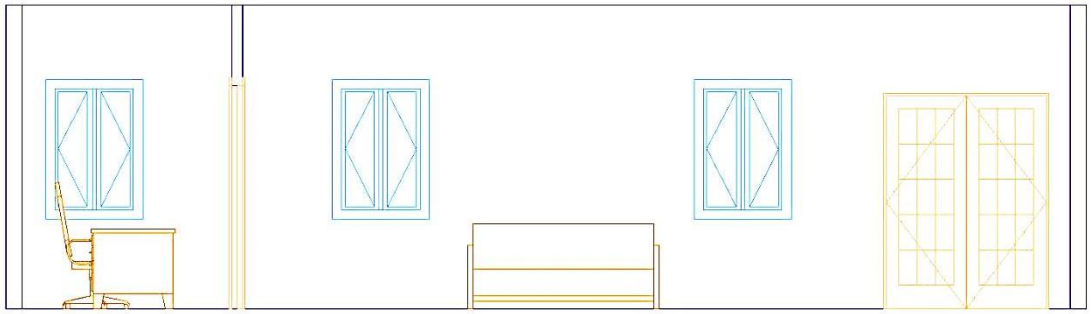
ALL DIMENSIONS ARE IN mm EXCEPT UNIT MENTIONED

VISHWAKARMA YOJANA PROJECT
DESIGN OF CLASSROOM
PREPARED BY:- GAURAV PAWAR DHARMENDRA PRAJAPATI
VILLAGE:- KHASA(BANASKATHA)

8) **YOUTHCLUB**

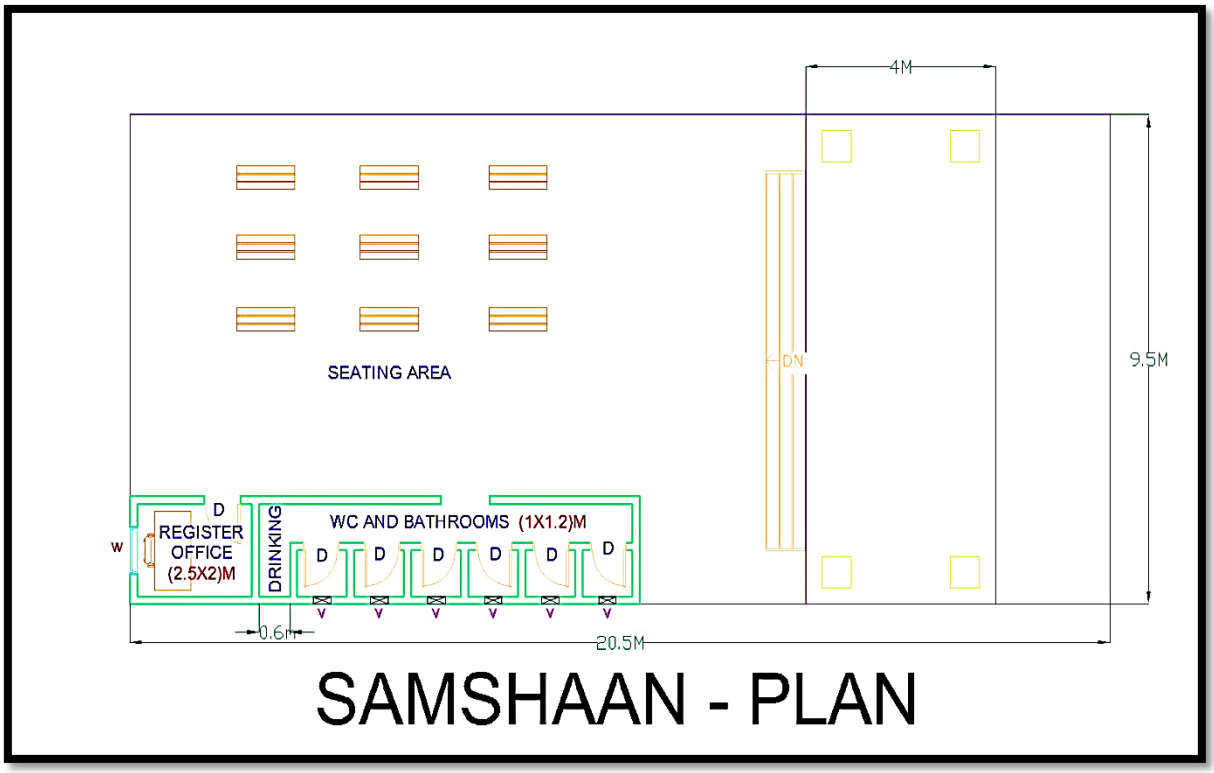


YOUTH CLUB - PLAN

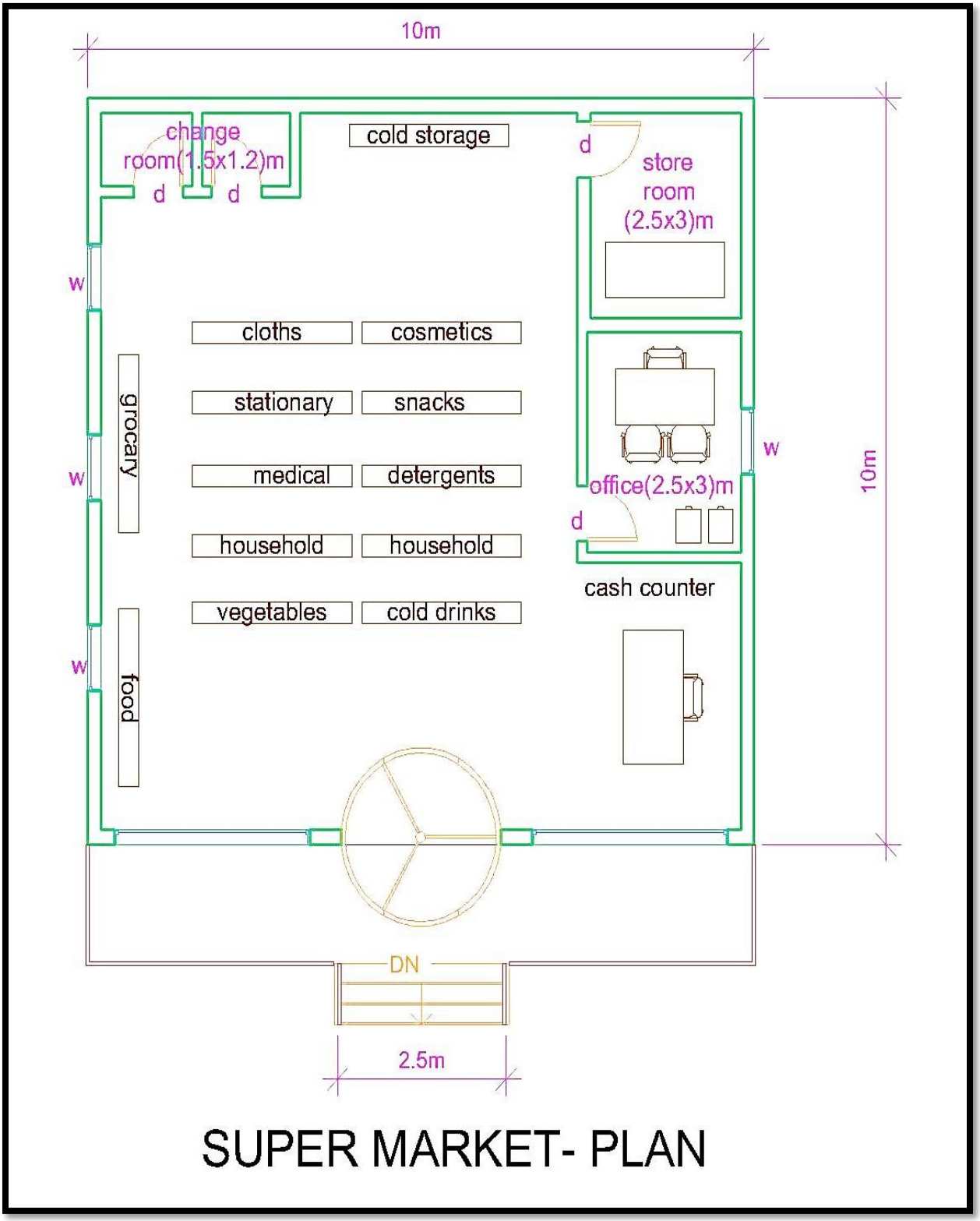


YOUTH CLUB - SECTION

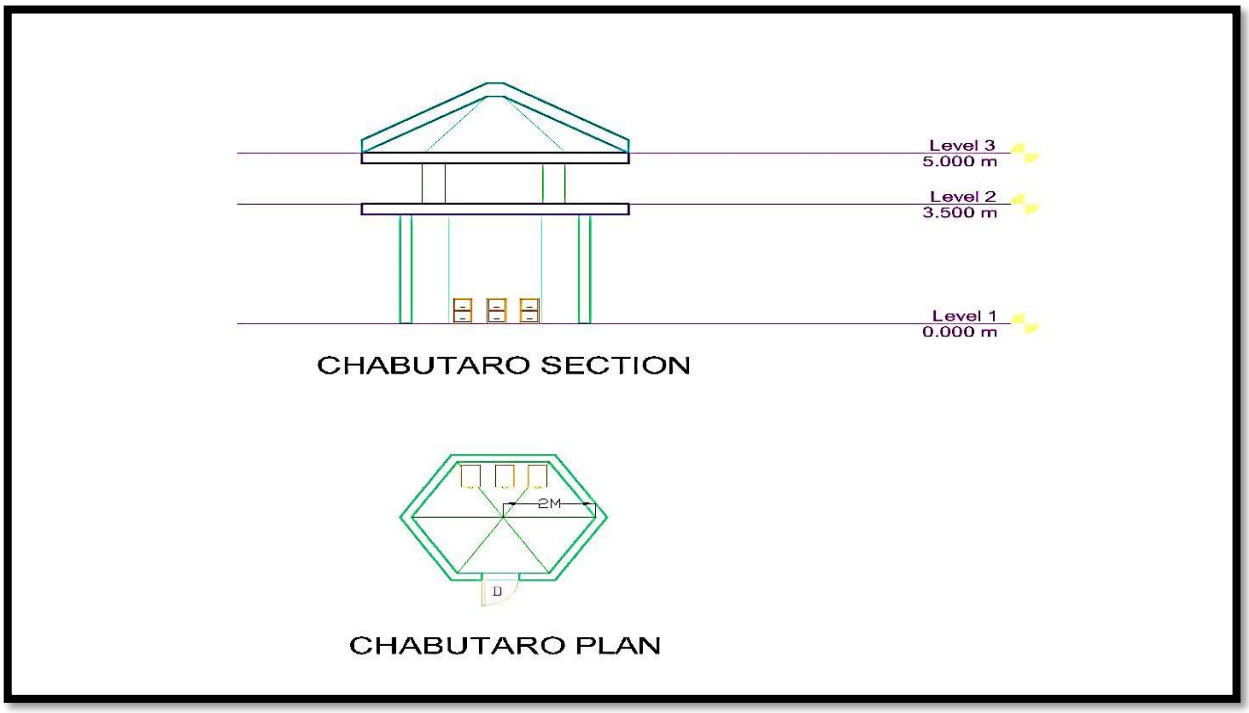
10) Cremation house



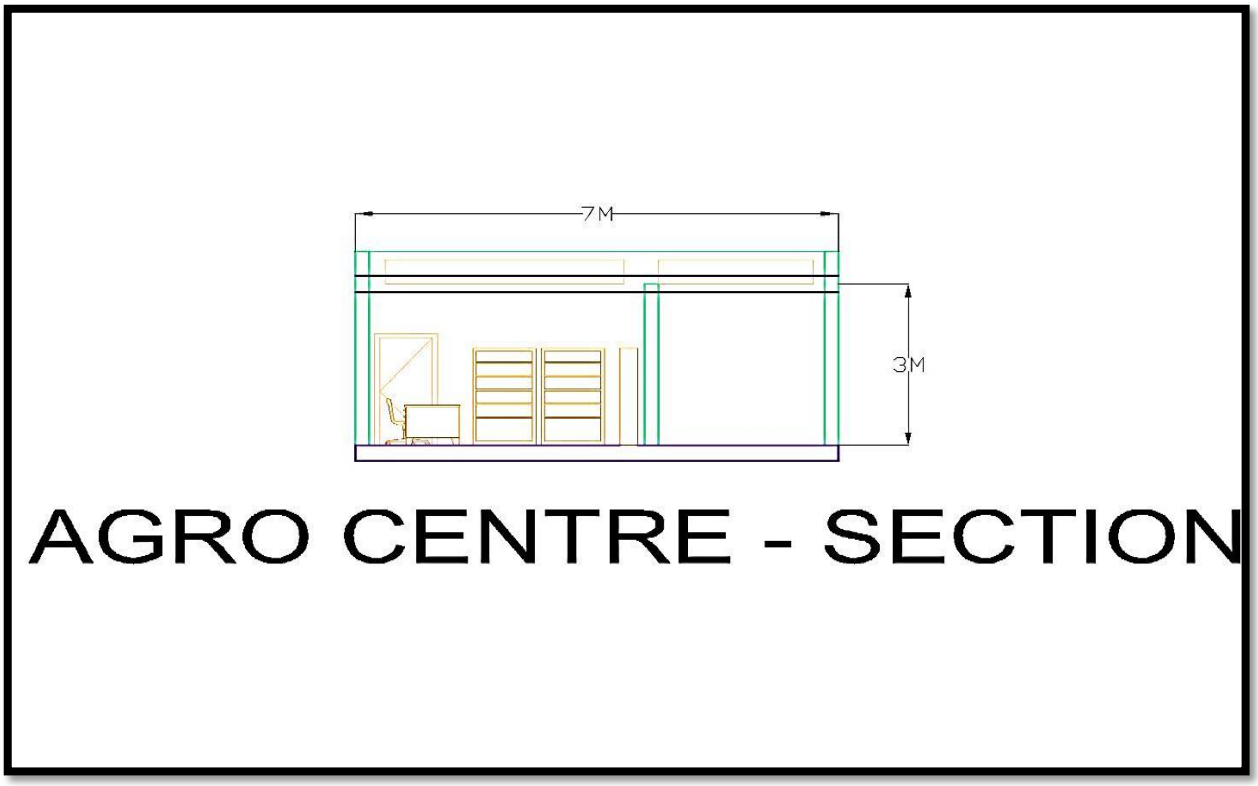
11) SUPER MARKET

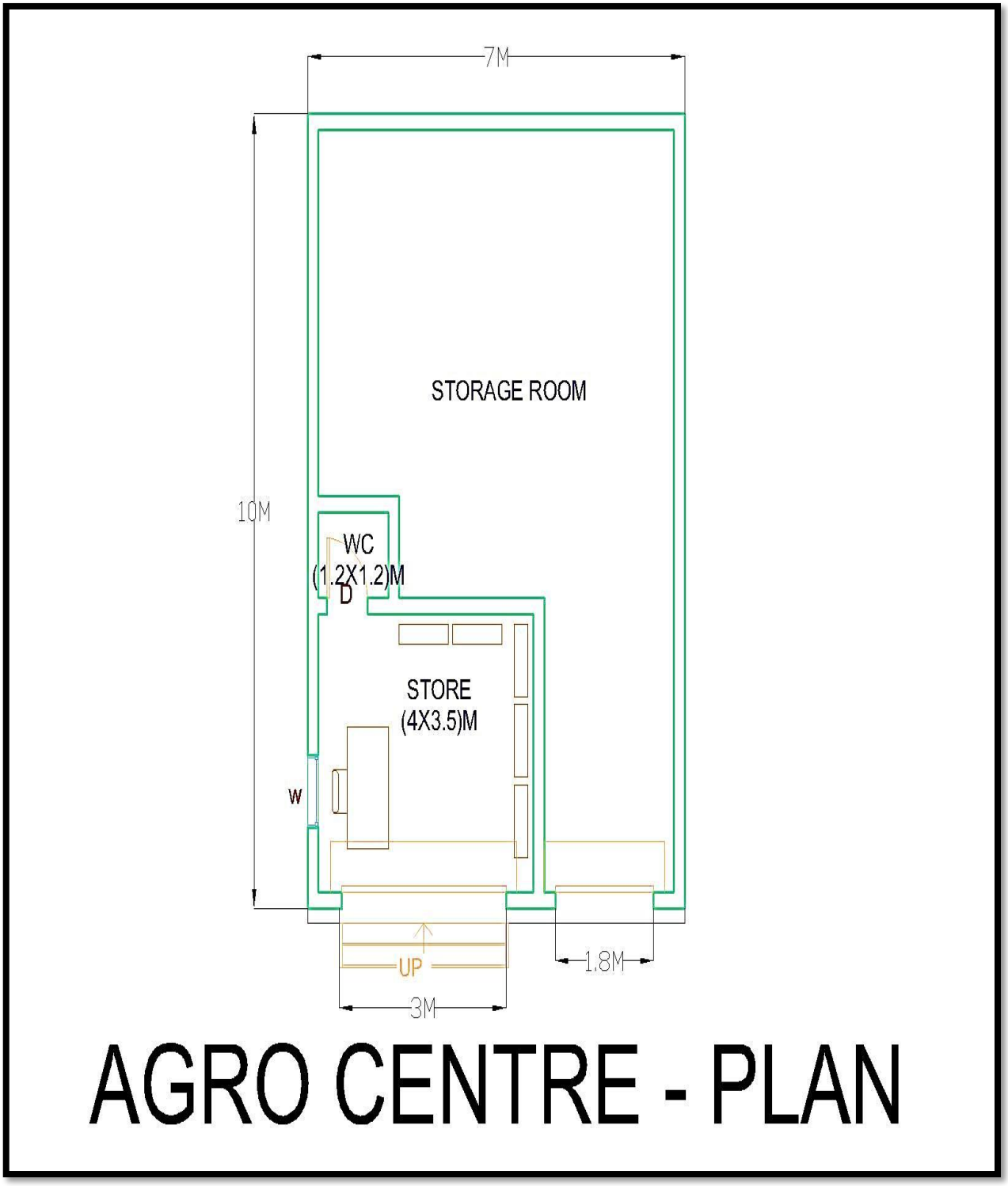


12) CHABUTARO

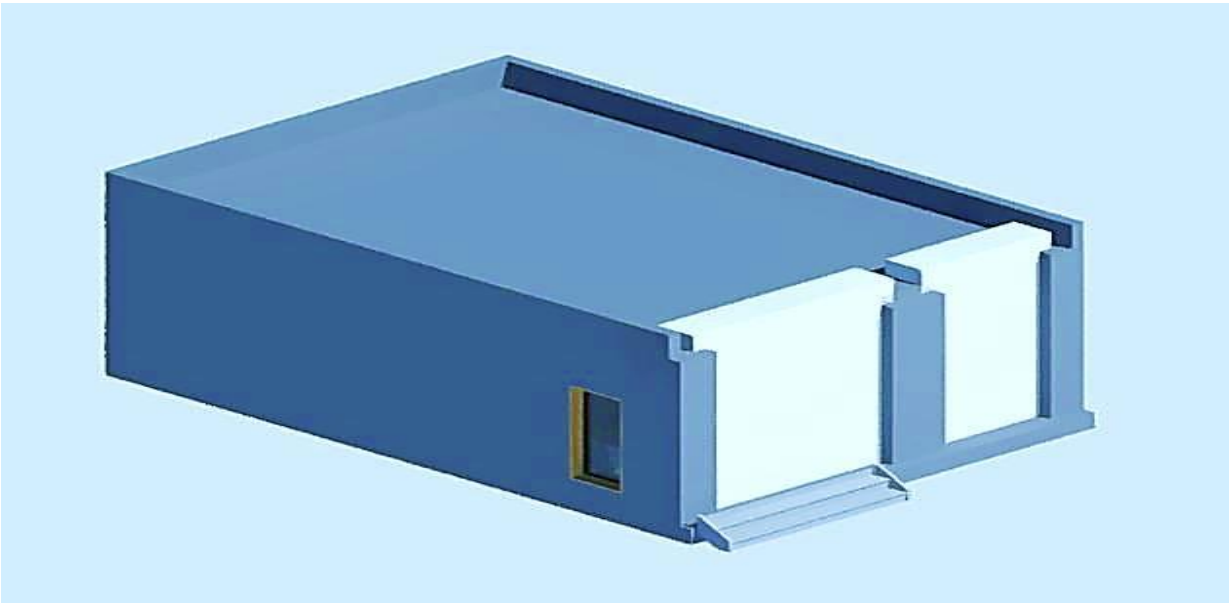


13) AGROCENTRE





AGRO CENTRE - PLAN



Conclusion: - Vishwakarma project led us to conclusion that the development of the any society or community or region will not be fulfilled until there is availability of proper infrastructure. Construction of provided proposals will lead village toward economically and socially growth rapidly.