DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION

GIRAMTHA Village

Ahmedabad District

PREPARED BY

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
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NARNARAYAN SHASTRI INSTITUE OF TECHNOLOGY

NODAL OFFICERS NAME:
PROF. SAMIR GAMI

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad– 382424 Gujarat.

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CERTIFICATE

This is to certify that the following student of Degree Engineering successfully submitted

Detail Project Report for,

VILLAGE: GIRAMTHA

DISTRICT: Ahmedabad

Under

Vishwakarma Yojana: Phase-VIII

In partial fulfillment of the project offered by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

During the academic year 2020-21.

This project work has been carried out by the supervision and guidance.

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College Name:	**NARNARAYAN SHASTRI INSTITUTE OFTECHNOLOGY**
College Stamp:	

ABSTRACT

Vishwakarma Yojana is one such initiative towards Urbanization of villages by Government of Gujarat that hinders such migrations. This Yojana aims at developing the village by providing all the urban facilities that a city may have, yet maintaining the Rural soul. This can be achieved by considering various aspects such as Physical, Social, and Renewable infrastructural facilities. The concept of Urbanization at regeneration and revitalization of both the physical as well as social environment in villages through a judicious and economic consumption of resources is the thought for betterment or the villages. It is designed to reduce and remove the rural-urban divide and to lead to process of rural transformation that is not exploitative. Vishwakarma Yojana is an approach towards Urbanization, it has been proposed to provide the benefit of real-world experience to engineering students and apply their technical knowledge in the planning, development and management of rural infrastructure facilities. Urbanization means urban facilities and amenities in rural area, developing village with help of rural soul and urban amenities. In this village on one hand some essential infrastructural facilities like Water Supply, Road Network and electricity, primary school, secondary and higher secondary school etc. have been good and sufficient on the other hand lacking of infrastructural facilities like drainage, public toilet, and public garden. Under this scheme the villages of Urban areas will be adopted by various engineering colleges under the Gujarat technological University. The engineering colleges would study the identified villages and make recommendations to achieve integrated and comprehensive development through technology application and project preparation and management

The name of the allocated village is Giramtha located in Daskroi taluka of Ahmedabad district of Gujarat state. This village has comprised of 1120 houses. It has a total population of 5500 with 2447 female population against 2653 males according census 2011 data. The main aspects for development of this village are sewage, public toilets etc. Some of the physical infrastructure like panchayat building, primary school, and well exist in the village and are properly maintained and utilized. More over post office, pond, canal is present but in bad condition.

In this village there is no sanitation process are doing for canal and pond. Water supplied to the people is sufficient but the drainage system is poor. The damping of Garbage is improper condition of roads is poor except entrance all the village roads are pucca roads.

The condition of village is gloomy in now days. The village is considered to be sub- developed so measure reasons as obtained from collect data compromise of the village lacking of basic facilities such as adequate public toilets, solid waste management and disposal recreational area.

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

Rural Development, Urbanization, Infrastructure facilities, Socioeconomic development, Sustainability, etc.

ACKNOWLEDGEMENT

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

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

We also express our gratitude to **Dr. K.N. Kher**, **Registrar, 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.

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We are also thankful to our **Dr. KIRITKUMAR BHATT Principal**, faculties of our colleges for their encouragement and support to complete this project work.

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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 Collegefor 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.

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CHAPTER 1: IDEAL VILLAGE VISIT FROM DISTRICT FOR GUJARAT STATE:

1.1 Background & Study Area Location

An ideal village visit is required to understand the development of the ideal village and the required development of the allocated village. As a part of Vishwakarma Yojana, we visited the ideal village Punsari, Sabarkantha district in the state of Gujarat on 14th September 2020. We observed the present condition of Punsari village and noted down some important elements related to various infrastructure, economic growth, population, electricity, water. supply, etc.

We also collected the data which were necessary for the Techno-economic survey. We met the Talati of Punsari village at the gram panchayat building and also interacted with the localities regarding the facilities and amenities of the village. We visited all the necessary places namely school, post office, mobile library, police station, banks, community hall etc.

The Sarpanch says that "When I took over, there was nothing in the village," he says. "Prime Minister Narendra Modi was the state chief minister at the time and his idea was to ebb the flow of migration from villages to cities by creating city-like infrastructure." Mr. Patel says the village council has spent 140m rupees ($2.28m; £1.43m) on development schemes between 2006 and 2012 if the idea was to stop migration out of the village, it has been a partial success. Mr. Patel says 15-20 families have returned to the village from the cities like Mumbai in recent years.

The current sarpanch of Punsari Sunandaben Patel is the first woman sarpanch of the village. she said the current state of Punsari is very good but she wishes to take it forward by providing livelihood to women and making them ‘Atmanirbhar’

The village is located about 80 km from the state capital, Gandhinagar. There has been used for advanced technology in education. Efforts have been made for the empowerment of women and increasing security in the village. Some of the facilities provided by the panchayat are also enabled WIFI facilities the village can get 30 Mbps data by registering themselves at the panchayat for 50 per month. CCTV cameras were installed at various places such as classroom and all the government offices in the village. The mini-bus now drops the women every morning and evening to the milk bank and back to them home. Villagers can go anywhere in the village in this van by paying a token amount of just 2 Rs

Number of Households	**1120**
Population	5500
Male Population	2653
Female Population	2447
Children Population	578
Literacy	79.43%
Male Literacy	89.62%
Female Literacy	68.42%
Scheduled Tribes	5
Scheduled Caste	410
Total Workers	2880
Main Workers	1650
Marginal Workers	1230

T-1.1 -A-PUNSARI _POPULATION DATA

Punsari

Village

Location of Punsari on the map of Gujarat

Show map of Gujarat
Show map of India
Show all

Coordinates: 23°20'59.46"N 73°8'12.48"E

Country	India
State	Gujarat
District	Sabarkantha
Government	
• **Type**	Panchayati Raj
• **Body**	Gram Panchayat
Population (2011)	
• **Total**	5,500
Languages	
• **Official**	Hindi, English, Gujarati
Time zone	UTC+5:30 (IST)
PIN	383307
Vehicle registration	GJ
Website	www.punsarigrampanchayat.in

T-1.1-B-PUNSARI_DATA

F-1.1-A-PUNSARI_MAP

F-1.1-B-PUNSARI_MAP

1.2 Concept: Ideal Village, Normal Village:

Ideal village: According to Gandhiji, the making of an ideal village is very simple.
He says: "An ideal Indian village will be so constructed as to lend itself to perfect sanitation. It will have cottages with sufficient light and ventilation built of material obtainable within a radius of five miles of it. The cottages will 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 avoidable dust. It will have wells according to its needs and accessible to all. 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 Panchayats for settling disputes. It will produce its grains, vegetables and fruit, and its own Khadi. This is roughly my idea of a model village... I am convinced that the villagers can, under intelligent guidance, double the village income as distinguished from individual income. There are in our villages' inexhaustible resources not for commercial purposes in every case but certainly for local purposes in almost every case. The greatest tragedy is the hopeless unwillingness of the villagers to better their lot. My ideal village will contain intelligent human beings. They will not live-in dirt and darkness as animals. Men and women will be free and able to hold their own against anyone in the world

➢ Objectives:

- Punsari is a village located in the sabarkantha District in the state of Gujarat, India.
- In this village 100% toilet & bathroom facility is available.
- Milk Dairy is also available in the village.
- Primary & Secondary education facility is there in the village.
- Water tanks & water supply is sufficient to supply the water to the village.
- Electricity is 24 hours available in the village.
- RCC roads are throughout the village made by Government Yojana.
- Solar Street lights provided in the streets of the village.
- Anganwadi is also available.
- The drainage system is work properly during the monsoon season.

Example/live case studies of the ideal village of India/Gujarat:

India's First Ideal Village: Harisal is a village situated in the Amravati district, Maharashtra, India. As of the 2011 census, it had a population of 1479 persons. Harisal is India's first digital village and has been adopted by Microsoft.
The village falls under the Dharni Tehsil and is governed by a tahsildar. As per the 2011 census, about 205 people are children between the ages of one and six.
Located in the Melghat region of Amravati district, the villages close to Harisal are Adhav, Duni, Kakarmal, Malur, and Mangiya. The surrounding Talukas to Harisal are Achalpur Taluka, Akot Taluka, Chikhaldara Taluka, and Khalwa Taluka.

Number of Households	**324**
Population	1479
Male Population	776
Female Population	706
Children Population one to six	205
Scheduled Tribes	141
Scheduled Caste	794

T-1.2-A-PUNSARI_DATA

1) Ankapoor, Telangana:

Ankapoor is located in the Nizamabad district in the state of Telangana. Ankapoor has been globally recognized as a "Model Agricultural Village" for its achievements in introducing modern technologies in agriculture while ensuring the participation of all the sections of the village community, particularly women. Organizations like the Indian Council for Agricultural Research (ICAR)International Rice Research Institute (IRRI), Manila and International Crops Research Institute for the Semi-arid Tropics (ICRISAT) have formally commended the developments in agriculture in the village.

2) Dharnai (Bihar) First fully solar-powered village:

Dharnai, a village in Bihar, beat 30 years of darkness by developing its solar-powered system for electricity. With the aid of Greenpeace, Dharnai declared itself an energy-independent village in July. Students no longer need to limit their studies to the day time; women no longer limit themselves to stepping out in the day in this village of 2400 residents.

3) Mawlynnong (Meghalaya) Asia's cleanest village:

Mawlynnong, a small village in Meghalaya, was awarded the prestigious tag of 'Cleanest Village in Asia' in 2003 by Discover India Magazine. Located at about 90 Km from Shillong, the village offers a skywalk for you to take in the beauty as you explore it. According to visitors, you cannot find a single cigarette butt/plastic bag lying around there.

➢ The Idea of a Model/ Smart Village:

- Smart Village refers to a concept developed in a 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. The smart village concept emerged due to some different characteristics between rural and urban.

- Smart village is a concept adopted by the national, state and local government of India. As an initiative focused on rural development, derived from Mahatma Gandhi vision of Adarsh.

- Himanshu Patel is the sarpanch of punsari – a village that has been declared by both the state and central government. He has been sarpanch of the village for the past 9 years taking on the task of the development of his village at the age of 24 after completing his study.

- The scheme was implemented in pilot mode in 1000 villages of Assam, Bihar, Himachal Pradesh, Rajasthan and Tamil Nadu, with an allocation of Rs 10 lakh per village. This limit was later raised to Rs 20 lakh per village. The target villages under the scheme were those with more than 50% of the population belonging to Scheduled Castes (SCs). Additionally, State governments have also taken steps in this direction. Himachal Pradesh launched a Mukhiya Mantri Adarsh Gram Yojana along similar lines in 2011, with the allocation of Rs 10 lakh per village.

- This research created a smart village model that was capable to be a guide for each village to develop towards a better future. The proposed smart village model was categorized into 6 dimensions including 1) Governance, (2) Technology, (3) Resources, (4) Village Service, (5) Living, and (6) Tourism. This research is expected to be applied to villages in other Regencies by adjusting the characteristics of each region.

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

- **History of Indian Villages:**

The history of Indian villages 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 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, the caste system of Hinduism was strictly maintained during that period.

India is a vast country with a majority of its total population living in the villages. Indian society is predominantly divided into two divisions like rural society and 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 the village was not present there in the ancient period. The Indus Valley civilization is so far known to be the ancient civilization in India and it mainly comprised two cities of Harappa and Mohenjo-Daro. However, the concept of the village seems to be absent during this era.

- **Structure of the Indian Village System:**

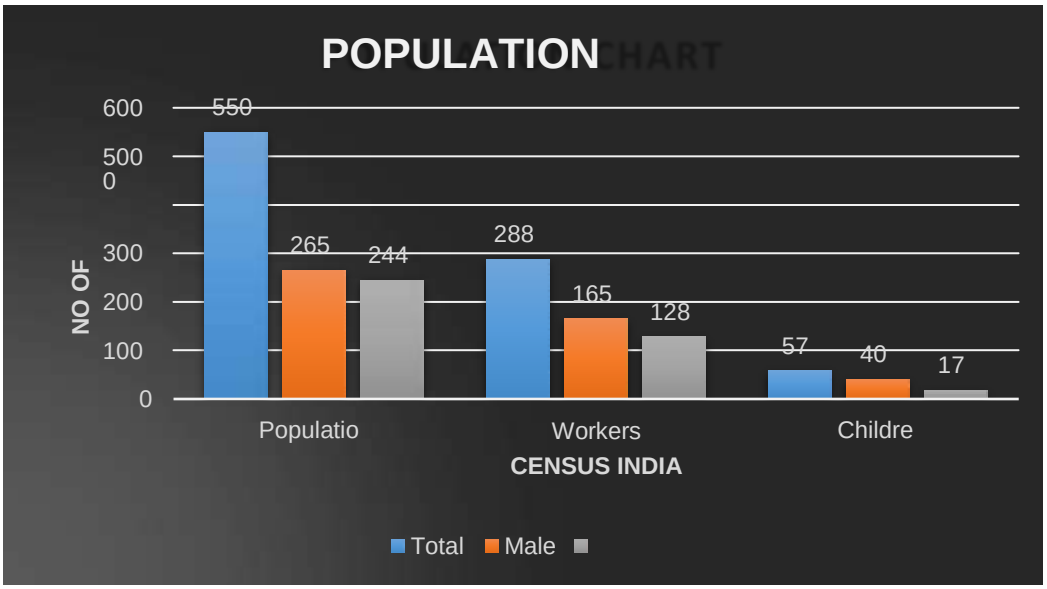
However, the social structure of the Indian villages changed drastically during the reign of Muslim emperors like the Mughals or Afghans. This period in the history of Indian villages saw the villagers being influenced by Islam and the equality for religious practice, among all parts of the society was also maintained. During the British period, the Indian villagers got influenced by the Christian religious culture and the rich diversity of several religions was seen during that period. The social structure in the Indian villages also changed accordingly with the change of religious and cultural scenarios

1.3 Detail study (Socioeconomic, physical, demographic and infrastructure details) of Ideal village PUNSARI with photograph:

Physical, Socioeconomic and Demographical Details:

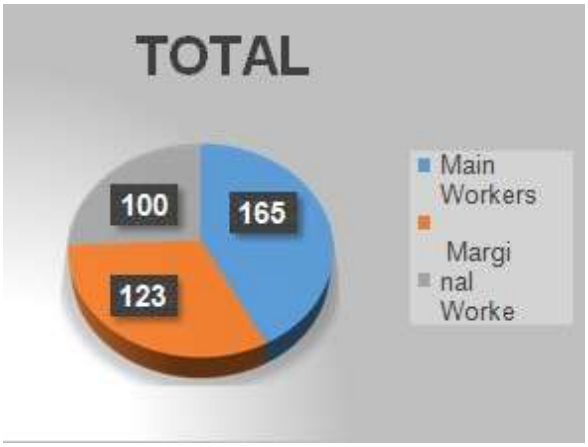
- Punsari is a village located in Sabarkantha District in the state of Gujarat, India The Punsari Village has a total population of 5500 of which are 2653 males while 2447 are females as per the report released by Census India 2011.

- The population of Children with age of 0-6 is 578 and male literacy ratio is 89.26% and female literacy ratio is 96.42% and the total literacy 79.43% and the scheduled castle is 410 and scheduled tribes are 5 and there are the main workers is 1650 and the marginal workers are 1230 and total workers are 2880 as per the report by census Indian 2011.



T-1.3-A-PUNSARI -BAR_CHART

- In this village 100% toilet & bathroom facility is available. And drainage system is work properly during monsoon season and the water tank & water supply is sufficient to supply to the water to the hole village and the RCC roads are throughout the village made by government yojana and also have solar street light provide in the streets of the village
- There is Milk Dairy is also available in the village. The Mini Bus now drops the women every morning and evening to the milk bank and back to their home. Villagers can go anywhere in the village in this van by paying a token amount of just 2 Rs only.
- There has been used for advanced technology in education. Efforts have been made for the empowerment of women and increasing security in the village. Some of the facilities provided by the panchayat are also enabled WIFI facilities the village can get 30 Mbps data by registering themselves at the panchayat for 50 per month. CCTV cameras were installed at various places such as classroom and all the government offices in the village.



F-1.3-A_PUNSARI_WORKER

- There is a 66 KW sub-station that supplies power in the village. The sarpanch is looking forward to getting Wi-Fi connectivity in the entire village so that the villagers can use unlimited internet once they purchase the subscription from the Panchayat office.
- Electricity is 24 hours available in the village. Punsari is 20km away from Parvati hills. Parvati hills is the largest top land of india.
- The Gram Panchayat has developed a system in which the village can pay their taxes online. They also have provided a Biometric attandence system for the govermemt employees. The gram panchayat digitalized all land records, which can be easily accessed at any time.

Punsari Infrastructures facilities (All Types):

Infrastructure and facilities	Details
PHC	1
Government Hospital	1
Private Hospital Clinic	7
CHC	1
Government dispensary	3
Anganwadi	2
Primary school	2
Second high school	1
ITI collage	NO
Private tuitions	Available
Community hall	1
Library	1
Public garden	1
Village pond	NO
Handpump	NO
Overhead tank	YES
Assembly polling station	Available
Post office	Available
Panchayat building	Available
UG Sump	No
Polling station	Available
Dairy	Available
Nursing home	No
Police stations & jail	Yes
Veterinary hospital small scale industries	Yes
Recreational center	No
Bus station	Yes
Telephone exchange office	Available
Electricity	Yes
Road network	Yes
Waste collection	Yes
Shops approximately	Yes
Bank	Yes
ATM	Yes
Local transportation	Yes
Gov. grocery shop	Available
UG Drainage	Yes

F.1.3-B-PUNSARI-GATE

F.1.3-C-PUNSARI-PRIMARY

F.1.3-D-PUNSARI-SOLAR

F.1.3-E-PUNSARI-WASTE COLLE

F.1.3-G-PUNSARI-MOBILE LIBRARY

F.1.3-E-PUNSARI-PANCHAYAT

1.4 SWOT analysis of ideal village Strengths

SWOT analysis is a technique to analyze the Strengths, Weakness, Opportunity and Threats of a decision, problem ad place etc. In community development or urban planning SWOT is often used at a community meeting to structure conversations about projects carrying out this analysis often illuminates what needs to be done and puts problems in perspective. 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 SWOT analysis provides a framework for visioning by helping the planners to identify and priorities the organization's GOAL Sand to further identifies the strategies of achieving them.

T-1.4-A-SWOT_ANALYSIS

Strengths: Pacca Houses, Proper Sanitation, Drinking water facilities, Hospital facilities, Recreational facilities, Education facilities, Bank facilities.

Weakness: Literacy rate**,** Communication with the peoples**,** Survey problem**,** Financial problem**,** Government approval.

Opportunity: Social attention, receive more grant for development, Good apparency, Good image, Use of solar panel, Advanced hospitals.

Threats: Theft of valuables, Wastage disposal system, Increasing pollution Poor Maintenance.

1.5 prospects of the Ideal Village:

We have done interaction with villagers and they have suggested some possible prospects of development of the PUNSARI village. They are going to the developed village with more technologies like rainwater harvesting system & Biogas plant, gas pipelines, cold storage area, working NGOs, Fire station, Reusing of seepage water.

A public declaration framework having two paths empowering to speak with individuals and make mindfulness about new government conspires and arranged gathering counting townspeople, and so forth Creating a data set which is simple for the agribusiness.

1.6 Benefits of visits:

The principle point behind the visit was to get an understanding of how the Gram Panchayat Mrs. Sunandaben Patel has changed and kept up it since numerous years and what are the following improvement she is searching for his town in the not do distant future.

Practically all the common advantages, for example, Water supply organization, Pucca streets, LED Street lights, Seepage organization, Waste removal, Water stockpiling tanks, squander assortment framework were noticed in the town.

By visiting the village, we got an understanding of:

- Importance of infrastructure facilities
- Working of village governing bodies
- Lifestyle of village
- Socioeconomic conditions of the village
- Culture of village people

1.7 Electrical concept of Ideal village / Smart Village:

➢ **From no electricity to the internet, Wi-Fi connection and bank:**

- The village is connected to Wi-Fi, and unlimited access to the Internet at 4 Mbps is unlimited, elected from the villagers.
- Villagers are using E-grams, social networks, the latest farming trends, Mandi prices, online tax payments, mobile apps and even Panchayat to send tax details via the way2sms service. Some villagers also purchase products online through various e-commerce media.
- Monitor the daily activities of the village online.

➢ **Education:**

- There are 5 elementary schools (1 to 8 principles) and 1 secondary school (9 to 12 norm). Of the three schools, three are keen classes and have shut circuit TV connected to versatile applications.
- The school's enlistment rate is 100% and the dropout rate is 0%. Essentially, the town has eight Anganwadi focuses, which select roughly 450 kids. Homerooms are furnished with projectors, general media helps and PC labs, instructing MS Excel, and Word utilizing the Internet.
- Just 32 kids concentrate outside the town and the rest are just in the village.
- The grade school has a CCTV camera that helps Panchayat and guardians screen understudy progress and assists Panchayat with giving close consideration to instructors. Gram Panchayat has additionally settled a portable library with more than 400 books (chiefly elementary school classes).
- It has planned a particular date or time in various areas in the town.

➢ **Garbage power plant:**

- The villagers use the cow dung waste produced by the family and the farm to generate electricity.
- A bio-power plant is installed, which supplies street lights and the remaining electricity is supplied to the home. LED lights have been set up for 400 LED street lights, which rely on solar energy and a 3gram maintenance contract to reduce costs by 50% (at the time of 70,000 rupees / - and now 35,000 rupees).
- Panchayat is bundled with GEDA, which supplies solar power to Yokes. Rs.7 per unit.

CHAPTER 2: GIRAMTHA VILLAGE LITERATURE REVIEW

2.1 Introduction Urban & Rural:

- **Urban village concept:**

The metropolitan town is a territory involved by the metropolitan local area that lives and lives in the metropolitan.

F-2.1-A-DIFFRE_URB-RUR

Climate as a gathering or in a specific gathering which was shaped or normally because of urbanization. The arrangement of the metropolitan town idea depends on two conditions, which is because of the impacts of urbanization and the aftereffect of the metropolitan town arrangement idea achieved by the arranging and the system of re-building up the metropolitan region. Subsequently, the metropolitan town development idea should take into thought the fundamental qualities of the metropolitan town climate, which comprise its topography, the foundation of the town, sort of town, the position or status of the town, customary practices and culture, neigh bour hood associations, the ensured status of the land title and the land, distance from the city penny government hold land was excluded from the meaning of the metropolitan town idea since this sort of settlement doesn't have affirmed qualities of a land title. The operational definition is significant as it decides the extension and study test that can be utilized in future.

- **Urban Area:**

- An urban area is a region surrounding a city.
- Most people in urban areas have non-agricultural jobs.
- Urban areas are very developed, meaning human structures are dense such as houses, commercial buildings, roads, bridges, and railways. "Urban area" can refer to towns, cities, and suburbs, roads, bridges, and railways. "Urban area" can refer to towns, cities, and suburbs

- **Rural village concept:**

Rustic regions are otherwise called the 'open country' or a 'town' in India. It has an exceptionally low populace thickness. In provincial territories, farming is the main wellspring of work alongside fishing, cabin enterprises, ceramics and so on the mission to find genuine rustic India proceeds in extraordinary sincere.
Nearly each monetary office today has a meaning of provincial India.
Here are a couple of definitions: According to the Planning Commission, a town with a most extreme populace of 15,000 is viewed as the country in nature.

In these zones, the panchayat settles on all the choices. There are five individuals in the panchayat. The Public Sample Survey Organization (NSSO) characterizes 'country' as follows:

- The area with a population density of up to 400 per square kilometer.
- Villages with clear surveyed boundaries but no municipal board.
- A minimum of 75% of the male working population involved in agriculture and allied activities.

➢ **Rural Area:**

- A rural areas population density is very low.
- Many people live in a city, or urban area.
- Rural areas may develop randomly based on natural vegetation and fauna available in a region, but urban settlements are proper, planned, built up according to a process called urbanization.
- Rural people have low living standards and the lack of basic physical amenities

2.2 Importance of Rural Development:

- Rural development is necessary not only for an overwhelming 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.
- It is a strategy package seeking to achieve enhanced rural production and productivity, greater socio-economic equity, and aspiration, balance in social and economic development.
- The primary task is to mitigate the hunger of about 70 per cent of the rural population, providing adequate and nutritious food.
- Then follow an adequate provision of clothing and footwear, a clean house in a clean environment, medical care, recreational facility, education, transport and communication.

➢ **Objectives**:

- To provide basic needs like education, healthcare, drinking water, connectivity of road, etc.
- To improve productivity and as well as the wages of rural people. To provide employment.

2.3 Ancient Village / Different Definition of Rural area/Villages:

- A rural area island outside the densely populated urban areas in a city or town. They have low population density, large open areas, a lower standard of facilities etc. The primary industry in such an area is agriculture.
- An urban area is a region surrounding a city. Most inhabitants of urban areas have nonagricultural jobs. The population density is quite high.
- Urban areas are very developed, meaning human structures are dense such as houses, commercial buildings, roads, bridges, and railways. “Urban area" can refer to towns, cities, and suburbs.
- An urban area includes the city itself, as well as the surrounding areas. Many urban areas are called metropolitan areas, when two or more metropolitan areas grow until they combine, the result may be known as a megalopolis.
- Rural areas are the opposite of urban areas.
- Rural areas often called "the country," have low population density and large amounts of undeveloped land. Usually, the difference between a rural area and an urban area is clear.

2.4 Scenario: Rural/Urban India& Gujarat as per Census 2011 and latest Population Growth:

A town is a little settlement normally found in a rustic setting. It is for the most part bigger than a villa yet more modest than a town.
The rustic town is a topographical region which is situated external town and urban communities and the populace is close to around 500 to 2500 occupants.

A spot that has a couple of homes and the populace thickness is low.

- Gujarat Population : 2011
- Total population: 60,439,692
- Total population of male: 31,491,260
- Total population of female: 28,948,432
- Total population growth in decade is 19.20%
- Out of the total population of Gujarat, 42.60% of people lives in the urban region and the rest in rural.

	2001	2011	Difference
INDIA	102.9	121.0	18.1
RURAL	74.3	83.3	9.0
URBAN	28.6	37.7	9.1

T-2.4-A-INDIA_POPUL_2011_DATA

2.5 Rural Development Issues-Concerns Measures:

- Market unavailable
- Sewage system
- Lower education
- Poor Health services
- Migration to urban areas
- Lower living standards
- No transportation facility
- The economy of the people living in rural areas is low.
- Fewer income opportunities.
- Less awareness
- Very fewer people are employed in rural areas.
- Lack of physical in rural

Description	Rural	Urban
Population	57.14	42.60%
Total population	34,649,60925	745,083
Male population	17,799,159	13,692,101
Female population	16,895,45012	052,982
Population Growth	9.31%	36.00%
Sex ratio	949	880
Literates	21,420,842	19,672,516
Average literacy	71.71%	86.31%

T-2.5-A-2011_DATA_INDIA

2.6 Various Measures for Rural development:

- Sustainable development.
- Physical infrastructure, social infrastructure, education, entrepreneurship, healthcare facilities all play an important role in the development of rural regions.
- Public transportation facilities are very limited in rural area, so by that, it creates a problem for them to travel from one to another place.
- They mainly depend on their vehicle for that public transportation should be added.
- Higher living standards, Enough basic physical amenities

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

DRDAs must themselves be more expert and should ready to collaborate adequately with different organizations. They organize with the line divisions, the banks, the Panchayati Raj Foundations and other monetary organizations, the NGO's just as the specialized foundations with a perspective on get-together the help and assets needed for destitution decrease exertion in the region. It will be their undertaking and objective to secure between sectoral, interdepartmental coordination and participation for decreasing neediness in the area. It is their capacity to arrange and bring a combination approach among various organizations for neediness easing that would separate them. Economic, physical, and social infrastructures are inter-related components for holistic and sustainable community development. Good and adequate social infrastructure is the key to achieve progressive communities. Social infrastructure can be defined as a system that creates a social safety net through the provision of health, education, public services and recreation.

The social infrastructure deals with the following aspects:

- Health-care Facilities
  - Education Facilities
  - Socio-Cultural Facilities
- Other Public-Semi-Public Facilities
  - Police Fire & Emergency Services
  - Communication (Postal Facility)
  - Recreational Facilities & Open Spaces
  - Distributive Services
  - Miscellaneous Facilities.

2.8 Other Projects / Schemes of Gujarat / Indian Government

Country advancement is an interaction of improving the personal satisfaction and monetary status of individuals living in towns. Instruction, business, actual foundation and social framework additionally play a job in building up the country districts. Provincial advancement is described by its accentuation on locally delivered monetary advancement techniques. The principal objective of the country advancement is to eliminate the neediness of individuals and fill the augmenting holes among rich and poor. Different arrangements and plan by the Legislature of India are:

- Pradhan Mantri Gram Sadak Yojana.
- Prime Minister of Rural Development Fellows Scheme.
- National Rural Employment Guarantee Act (NREGA).
- Sampoorna Grameen Rozgar Yojana (SGRY).
- Sarv Siksha Abhiyan.

Propagation of technology/schemes for rural development is slow and there is a lacking of wider participation of different stakeholders. An ideal approach may, therefore, include the government, panchayats, village personals, researchers, industries, NGOs and private companies to not only help in reducing this imbalance but also to have a multiplier effect on the overall economy.

CHAPTER 3. Smart Village Concept Idea

3.1 Introduction: Concepts, Definitions and Practices:

We have selected the smart village as Punsari. It is located in the Sabarkantha district in the state of Gujarat. We have visited Punsari Village.

- **Brief about Punsari:**

The Punsari Village has a total population of 5500 of which are 2653 males while 2447 are females as per the report released by Census India 2011.

The population of Children with age of 0-6 is 578 and male literacy ratio is 89.26% and female literacy ratio is 96.42% and the total literacy 79.43% and the scheduled castle is 410 and scheduled tribes are 5 and there are the main workers is 1650 and the marginal workers are 1230 and total workers are 2880 as per the report by census 2011.

F-3.1-DEVPLOPMENT-CHART-PUNSARI

In this village 100% toilet & bathroom facility is available drainage system is work properly during monsoon season, water tank & water supply is sufficient to supply to water to the hole village and the RCC roads are throughout the village msade by government yojana and also have solar street light provide in the streets of the village.

3.2 Vision-Goals, Standards and Performance Measurement Indicators:

Sr no.	Parameter	Benchmark
1.	**Transport**	• Maximum travel time of 30 minutes in small & medium size cities and 45 minutes in metropolitan areas. • Continuous unobstructed footpath for 2 m wide on either side of all street with Row 12 m more. • Dedicated and physically segregated bicycle tracks with a width of 2 m or more, one in each direction, should be provided on all streets with carriageway larger than 10m - High quality and high-frequency mass transport within 800 m (10-15-minute walking distance) of all residences in areas over 175persons / ha of built.
2.	**Spatial Planning**	• 175 persons per Ha along transit corridors. - 95% of residences should have daily needs retail, parks, primary schools and recreational areas accessible within 400m walking distance. • 95% of residences should have access to employment and public and institutional transport o or bicycle or walk.

		• At least 20% of all residential units to be occupied by economically weaker sections in each Transit Oriented Development Zone 800m from Transit Stations • At least 30% residential land 30 commercial/institutional in every TOD Zone within 800m of Transit Stations
3.	**Water supply**	• 24 x 7 supply of water - 100% household with direct water supply connections • 135 liters of per capita supply of water • 100% metering of water connections - 100% efficiency incollection of water-related Charges
4.	**Sewerage & Sanitation**	• 100% of households should have access to toilets • 100% of schools should have separate toilets for girls - 100% of households should be connected to the wastewater network • 100% efficiency in the collection and treatment of wastewater • 100% efficiency in the collection of sewerage network
5.	**Solid management**	• 100% of households are covered by the daily door-step Collection system • 100% collection of municipal solid waste • 100% segregation of waste at source, • i.e., biodegradable and non-degradable waste 100% recycling of solid waste
6.	**Storm storage**	• 100% coverage of the road network with the stormwater drainage network • The aggregate number of incidents of waterlogging reported ina Year = 0 - 100 % rainwater harvesting

T-3.2-A- Benchmark _of _smart cities

3.3 Technological Options:

Human culture is creating with fast energy and accomplished different triumphs for making its work better. Human progress is the observer to different changes identified with its improvement through various impetuses like the modern turn of events, green revaluation, science and innovation, and so forth India has over 72% of its populace living in towns.

Close around seven-decade had been passed since India got the opportunity, however, the situation in towns in our nation is as yet unaltered. On one side India has as of late chose 100 urban areas for the Brilliant City task and prepared to adjust all the trend-setting innovations for these savvy urban communities and then again towns in our nation are as yet battling for getting essential conveniences like 24 x 7 power. On one hand, 4G web innovation is being used everywhere on the metropolitan territories however then again towns in our nation are as yet looking for veritable versatile organizations.

Our Legislatures are holding hands with created nations like America, China, Japan to run projectile trains to associate enormous urban communities in India while towns in our nation are as yet detached and are inadequate with essential offices like drinking water, sound food, disinfection, latrines, transportation, training, and so forth.

F-3.4-A-OFF_GRID_SYST

- Various technologies for developing smart villages: Following various techniques can be promoted improving the life of people in villages and for the actual development of smart villages.

- Smart Energy, Smart mobility, Smart infrastructure, Smart public services
- Smart Sewage Management System and Sanitation
- Renewable Energy Sources and Solar Energy
- Latest and Affordable Medical Facilities
- Enhanced Use of Smart Phones and Optical Fiber Technology for Internet Techniques
- Mobile Library E-Education

F-3.3-PUNSARI_SOLAR_ SYSTEM

3.4 Road Map and Safe Guards for Smart villages Road plan:

- To become a digital city, governments will need
- An appropriate set of solutions that will help them advance to the next stage of ICT maturity.
- The more a city takes advantage of the potential offered by ICT in terms of the provision of digital services and an integrated urban network, the higher its level of ICT maturity.
- In many ways, this is easier for newer cities in emerging markets, which are just now investing in urban infrastructure.

F-3.4-PUNSARI-ROAD-NETWORK

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

- For example, Lusail City in Qatar, Masdar City in the UAE, and Songdo in South Korea are all making digital technology, networks, and apps a central part of how they operate and interact with citizens. By contrast, existing or brownfield metropolitan areas face clear challenges in moving up the ICT maturity ladder, as they need to modernize their existing infrastructure with embedded sensors and control systems and retrofit old buildings a complicated and expensive process.
- Indeed, in some cases, it is impossible as the buildings cannot accommodate new technologies. However, becoming a digital city is not so stark a choice that urban authorities either achieve this revolution or fail. Rather, even taking small steps, particularly for established cities, toward becoming more digitized and offering enhanced digital services provides a variety of benefits. In some cases, established cities can use the disruptive power of digitization to leapfrog some of the obstacles

3.5 Smart Villages: Issues & Challenges:

Key issues in the development of human being:

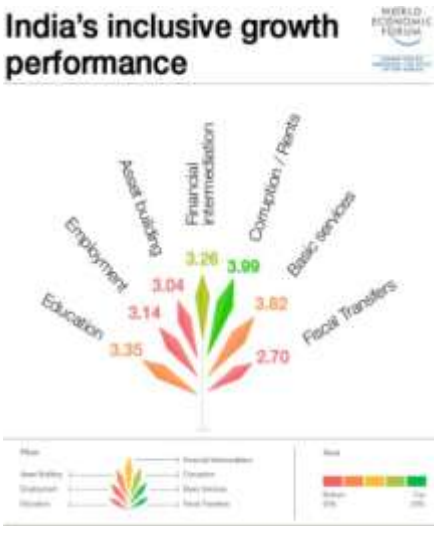
- **Abuse of assets** - We have been abusing assets since we don't have the foggiest idea why it is important and what it does over the long haul. It doesn't ring a bell as we have been doing for our entire lives. This incorporates cash.

F-3.5-SMT_VILL_VS_SMT_CITI

- **Mechanical development** - It has taken a risky turn and will come to chomp us in the ass. The interaction has just begun, things we used to find in films are turning into the severe reality of society. We need solace, simplicity and we are getting it at the expense of our civilization. Basic models - Social Media and Mobile Phones.

- **Religion and conviction framework** - If just our precursors were savvy and had a long vision, they would not have set out to compose blessed books. For the most part, we accept what our general public accepts without deduction or thinking. It has removed our opportunity and turned us against one another.

- **Our recklessness** - We don't assume liability for our activities. On the off chance that no one but we could consider what it means for everything later on. For what reason would we say we are expanding our populace just to leave the world to its horrendous destiny? We assume a part to shape our future if we understand it.



F-3.5-GROWTH-ANALYSI

There are incalculable issues this way. Every one of these issues can be evaded or tackled through a decent and legitimate schooling framework. The base of these issues lies in the developing psyche of a kid. It will require hundreds of years, yet can be accomplished on the off chance that we continue to attempt and are sufficiently diligent.

- **Funding:** One of the biggest challenges is having streamlined funding for the development of smart cities. It was decided that each Smart City will receive 500 Crore over 5 years by Central Government. But this amount won't be sufficient. To match the contribution of the central government there should be some contribution from the state government too to create sustainable funding to take the smart cities from pilot phase to execution and then completion. Many private firms are providing funding but it requires to be in proper process.

- **The problem of regulation and governance:** Owing to a large set of investors, the list of stakeholders in the project is growing. In case of any legal issues, there is a strong need for a separate legal framework in the stages of the smart city mission. When the project is big there is a need for effective communication between central government, state and local governments. Apart from this, there is also a need for statutory bodies to provide quick approvals so that no resources and time go waste.
- Smart building, mobility, Smart energy, Smart waste management, Smart health.

3.6 Smart Infrastructure:

- **Road:** India has developed a reasonably wide road network in the last few decades. World Road Statistics 2009 says that India's road density is 1.25 km/sq.km (2008), which is higher than that of China's 0.36 km/sq.km (2007) and Brazil's 0.20 km/sq.km (2004), and that it can be compared to France and the UK's road density of 1.72 km/sq.km (2007). As far as rural Indian concerned, the road network has been increased from 3, 54,530 km in 1971 to 24,50,559km in 2008 (including 10,61,809 lakh km roads constructed under Jawahar Rozgar Yojana and Pradhan Mantri Gram Sadak Yojana) registering an annual compound growth rate of5.4 per cent over this period. However, the rural surfaced road coverage is just 33 per cent of the total rural road network in India. The kutcha roads cover a large portion of the total rural road network, which are highly vulnerable and inaccessible particularly during the rainy season. Given the wide diversity in the physical structure of the country, the need for greater surfaced road connectivity is particularly important in the hilly terrains and low-lying areas.

F-3.6-A-PUNSARI_TRANSP

F-3.6-B-POWER

- **Power:** Electricity has become a necessity for every household. The governments at the Centre and States have been trying to push various reforms in the power sector to provide Electricity to people at affordable prices. However, the aim to provide Power to all by 2012 has not been fulfilled. According to the Central Electricity

Authority, Government of India, a total of 5,56,633 villages have been electrified, which stands at 87 per cent of total villages in the country at present. However, even within the electrified villages, many households are not connected to electricity. The Census 2011 indicates that 45 per cent of the rural households are not connected with electricity and depend on kerosene and other means for lighting. In terms of the per capita power consumption level, India continues to be among the low performing countries in the world. India's annual per capita electricity consumption stands at 670 kwh compared to China's 3310 kWh and the USA's 13,230 kWh in 2011. The Central Government has launched a few policies like provisioning of 1 kWh of free power per day to the BPL families. The hybrid electricity provisioning through off-grid connectivity and power supply from cogeneration, solar and micro-hydro projects.

- **Housing:** Every home in the village has toilets, there are two primary schools, a primary health centre, street lights and a drainage system. And that's not all. The entire village is WIFI enabled, has CCTV cameras installed at strategic points and a public address system that covers the entire population with the help of about 140 loudspeakers installed all over the village.

F-3.6-C- HOUSING

The housing conditions in rural India have not improved much. According to Census 2011, as much as 20.7 per cent of the total 206 million (or 20.6 crores) occupied rural houses are with thatched roofs. These houses are not safe for living, highly vulnerable to rainfall, wind blow, fire and many other accidents. Some of the government interventions, such as Indira Awas Yojana (IAY), operation of corpus funds like Rural Infrastructure Development Fund (RIDF) by the National Bank for Agriculture and Rural Development (NABARD) and Rural Housing Fund by the National Housing Bank, aim at promoting rural housing in the country. However, a lot more needs to be done to provide better housing facilities to the rural population.

- **Education:** We visit the school it is not far from his office - the children look tidy in their crisp uniforms; they eat their free lunch distributed through the central government's midday meals scheme. The headmistress, Bhagwati Behn Patel, says "there is a zero-incident of school dropouts in my school". The school is also WIFI-enabled and offers computer classes.

F-3.6-PUNSA_EDUCA_FACILI

The 8th All India School Education Survey (AISE) report shows that there are 6.75 lakh primary schools functioning in rural areas in the country. It presents a picture that on average every village in India has a primary

school. The survey reports that there are 3.04 lakh upper primary, 82.8 thousand secondary and 36.9 thousand higher secondary schools along with 1.18-thousand-degree colleges in the rural belt of India. However, average teacher availability in schools is quite low. For example, in primary schools, this is just 2.2 teachers per school. Even in terms of the number of classrooms, availability of safe drinking water facilities, toilet facilities etc. the school infrastructure in rural India needs a lot more improvement. Thereof governments at various levels need to be proactive to develop and maintain the infrastructure for the education in rural areas.

- **Health:** He utilized various Government Schemes for village welfare. He serves as a good coordinator for various development activities in his village. He can communicate with other villagers effectively. Because of his efforts, his village is having all the required basic amenities. He has done significant work in health care aspects. His work in solid waste management is also important. He could create awareness among villagers regarding solid waste management and healthcare.

F-3.6-PUNSA_PHC

Health infrastructure in rural India is still quite inadequate. As of March 2011, a total of 6.4 lakh villages in the country were covered with only 23,887 Primary Health Centers (PHCs) and 1,48,124 Sub-Centers. This shows that, on average, 4.3 villages have one sub-center and only one PHC exists for as many as 27 villages. Added to this, many health\ centers are also run without doctors (or absentee doctors) and in some cases treatment is done by unskilled healthcare workers. The absence of connectivity to the villages and an inadequate number of health center and skilled health workers still endangers the life of the rural population in the country.

- **Drinking-Water and Sanitation:** The panchayat has installed a reverse osmosis plant in 2010 to ensure the supply of clean drinking water to the villagers. During weddings and other ceremonies, water tankers are arranged. Drinking water taps are available for all. The village also has a proper sanitation and drainage system, which is completely underground.

Provisioning safe drinking water to every household should be one of the basic policy priorities. However, the Census 2011 reports a mere 30% of the rural area being covered with tapped water supply. Households in the remaining rural areas in the country depend on other means like hand pumps, bore well and fetching water from nearby rivers and canals etc. Census 2011 report reveals that 69.3% of rural households in the country still resort to open defecation. The Union Ministry of Drinking Water and Sanitation also reports that many Primary Schools and

F-3.6-PUNSA_RO_WATER_PURIF

Anganwadi Centers in rural areas do not yet have toilets. Hence, the provisioning of safe drinking water and sanitation facilities in rural areas need to be a top priority for the government now. We need to remember that the rural economy still plays a significant role in India's overall economy. The rural sector has a very high potential in terms of labour and natural resources

3.7 Cyber Security:

Cyber security in the context of Smart Cities is a hot topic. The objective of Smart Cities is to optimize the city in a dynamic way to offer a better quality of life to the citizens through the application of information and communication technology (ICT). The range of areas where cities can become smarter is extensive: it is an evolution of "Connected Cities" with the prevalence of data exchange at a larger scale.

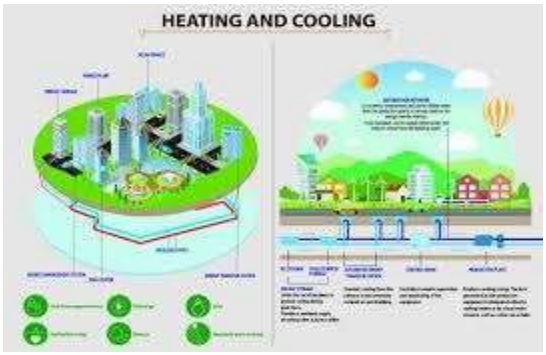
F-3.7-PUNSA_SECURITY

The benefits of Information and Computing Technologies (ICT) in a Smart City and of the Internet of Things are tremendous. Smart energy meters, security devices, smart appliances for health and domestic life: these and more offer unprecedented conveniences and improved quality of life. City infrastructures and services are changing with new interconnected systems for monitoring, control and automation. These may include water and sanitation to emergency responders and disaster recovery.

- **Methodology**:

- Several paradigms and categorical structures may be applied in analyzing the benefits and detriments of this data environment. An applicable paradigm used for this analysis is that of IBM that the Smart City, its components and its citizens are
- Instrumented
- Interconnected
- Intelligent.

3.8 District Cooling and Heating / Green Building:



F-3.8_COOLI_SYST

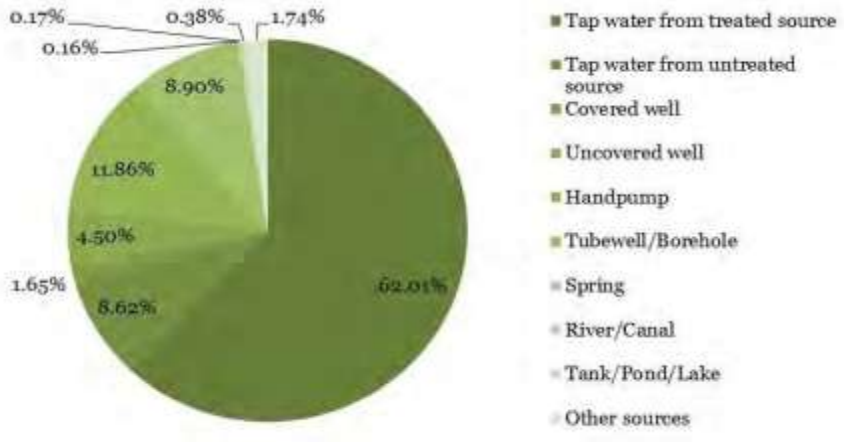
In the Southeast, air conditioners are almost crucial pieces of equipment for home comfort. However, it can be difficult to find the right air conditioner for your home, one that will provide enough cool air in the summer to cool your home without driving your energy costs through the roof. We can help! At Hammond Services, we can help you choose the perfect air conditioner for your home, install it professionally, and even maintain/repair it in the years ahead.

3.9 Strategic Options for Fast Smart city Development:

- The strategic components of area-based development in the Smart Cities Mission are city improvement (retrofitting), city renewal (redevelopment) and city extension (greenfield development) plus a Pan-city initiative in which Smart Solutions are applied covering larger parts of the city. Below are given the Deion's of the three models of Area-based smart city development.
- Retrofitting will introduce planning in an existing built-up area to achieve smart city objectives, along with other objectives, to make the existing area more efficient and livable. In retrofitting, an area consisting of more than 500 acres will be identified by the city in consultation with citizens. Depending on the existing level of infrastructure services in the identified area and the vision of the residents, the cities will prepare a strategy to become smart. Since existing structures are largely to remain intact in this model, it is expected that more intensive infrastructure service levels and a large number of smart applications will be packed into the retrofitted smart city. This strategy may also be completed in a shorter time frame, leading to its replication in another part of the city.

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

- Walking around Punsari, it is hard to see garbage lying around. Throughout the village, there are covered drains along the roadsides. The village has adopted a cleanliness drive in which people are motivated towards cleanliness. Every house has a lavatory leading to cleaner surroundings. Dustbins have been gifted to every household.
- 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.
- 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. households have no access to public supply and have to depend on other sources of water. Moreover, not all households that have access to public supply have access to it within the premise. Only 49 per cent of households have access to piped water supply within their premises.



T-3.10-WATER_SUPPLY

- Swachh Bharat Abhiyaan was launched by the Hon'ble Prime Minister of India on 2nd October 2015, which caught the attention of everybody not only in India but also in the

world. The government has taken various steps to create awareness among the masses for keeping the area surrounding them neat and clean.

- The government is also paying special attention to the cleaning of rivers, railway stations, tourist destinations and other public places.
- The percentage of households by access to water supply over the past two decades. The figure illustrates that there was a gradual increase from 1990 to 2008 in the percentage of households with access to 'improved' drinking water, but then a decline in 2011.
- However, this decline is due to the availability of fine-grained data. Earlier all tap water was taken as 'improved' whereas disaggregated data has become available in 2011 fortreated and untreated tap water categories.
- Similar is the case with water from wells. If untreated tap water and uncovered wells are included in the improved category, then the proportion of households that have access to improved sources would be 98 per cent in 2011.

Access to Improved Urban Water Supply (MDG and Census of India)						
Year	**Popu. India '000**	**% Urban Popu.**	**Total Improved**	**Piped**	**Other Improved**	**Unimproved**
1990	862	26%	**90%**	52%	38%	10%
2000	1042	28%	**93%**	50%	43%	7%
2008	1181	29%	**96%**	48%	48%	4%
2011	1210	31%	**84%**	62%	2%	16%
Source: JMP, Census, 2001, Census 2011						

T-3.10-WATER _USED_2011_DATA

3.11 Initiatives in village development by local self-government:

- As his tenure approaches its end, the sarpanch is concerned about the sustainability of the development in future. He feels regular employment generation and abiding by good fund management systems is the only key to sustainability. He has initiated a series of new projects to be implemented during his tenure. Some projects like an electricity-producing unit and Bank at the village are already in their advanced stage.
- The sarpanch has a plan to start cold storage for potatoes, as it is the prime crop at Punsari. He feels it will help villagers generate a higher price for their crop. He has a dream to empower the women of Punsari by initiating a women federation for generating regular employment.
- In the past "government as provider" approach, the priorities were to secure budget allocations and develop projects. The Housing Policy and the NCU statement implicitly give higher priority to two other requirements: first, the reform of policies and regulations that now inhibit development initiatives by the people; and second, more efficient resource management and the building of institutional capacity. Resource Management and Institutional Development.
- As discussed in Section 5, India's urban institutions cannot provide adequate services at present, let alone address the requirements of accelerated urban growth in the future. Proposals related to three types of institutions.

3.12 Smart Initiatives by District Municipal Corporation:

- Urban India faces an enormous challenge: managing its gigantic load of solid waste. It is not just a public health issue, but also turning out to be a serious law and order problem as people

resort to violent methods to protest waste being dumped in their backyard.

- But cities simply do not have space or the wherewithal to dispose of waste.
- The challenge is going to be tougher. With India's urban population growing at 3-3.5 per cent annually, the waste generated by cities is expected to increase by 5% every year.
- How are our cities managing this challenge? A survey by the Delhi-based non-profit Centre for Science and Environment (CSE) attempts to find this out.

3.13 Project contributed working by NGO: -

➢ **PROJECT PAHELI:**

- PAHELI Project PAHELI (People's Action for Health Education for Livelihood) is a project of the Gujarat state government supported by the corporate social responsibility wing of Tata Steel. The project aims to change the mindset of the villagers by the inculcation of self-discipline and a sense of pride for their village.
- The project has a special focus on health education. The project is working at the micro-level of a rural development change initiative. Ravindra Kumar, Executive from Tata Steel, a volunteer for PAHELI at Punsari says "Punsari has reached a certain level of development due to the relentless efforts of its sarpanch.
- It needs to be sustained by future panchayat." The Sarpanch, Mr Himanshu Patel has strongly supported the project to understand the development indicators for rural areas.

- He believes the development and growth of a village can be sustained by reducing the gap between needing the urgency of change at an institutional and personal level.
- ParthSarthi, a volunteer of TATA steel shares his experience at Punsari: ``Talking to people at Punsari reveals that the sarpanch has used relationship building as a tool for transformation. The villagers at Punsari share a strong value for creating the 'best village'. Sarpanch has been able to infuse confidence and a sense of urgency amongst the villagers. They are united and open to change.

3.14 How to implement other countries smart villages projects in the Indian village context:

A smart city and village are different. In the city, there are different opportunities to employ smart technologies.

These are limited in villages. However, one can employ such technologies to improve several aspects of rural life. Some examples are,

- Schooling – smart classrooms can improve the quality of education by providing access to a large number of educational resources.
- Health care – improving information available on the availability, location and cost of various types of health care.
- Agriculture – provide information to farmers on the types of the crop that can fetch.

CHAPTER: 4 ABOUT GIRAMTHA VILLAGE

4.1 Introduction:

4.1.1 Introduction about Giramtha village details:

Giramtha is a large village located in Daskroi Taluka of Ahmadabad district, Gujarat with a total of 856 families residing. The Giramtha village has a population of 4151 of which 2136 are males while 2015 are females as per Population Census 2011. In Giramtha village the population of children with age 0-6 is 578 which makes up 13.92 % of the total population of the village. The Average Sex Ratio of Giramtha village is 943 which is higher than Gujarat state average of 919. Child Sex Ratio for the Giramtha as per census is 920, higher than Gujarat average of 890. Giramtha village has a higher literacy rate compared to Gujarat. In 2011, the literacy rate of Giramtha village was 82.56 % compared to 78.03 % of Gujarat. In Giramtha Male literacy stands at 90.03 % while the female literacy rate was 74.68 %. As per the constitution of India and Panchayat Raj Act, Giramtha village is administrated by Sarpanch (Head of Village) who is elected representative of the village.

GIRAMTHA VILLAGE	
Gram Panchayat:	Giramtha
Block / Tehsil:	Daskroi
District:	Ahmedabad
State:	Gujarat
Pin code:	382425
Area:	735 Hectare's
Population:	4151
Households:	856

T-4.1- Giramtha _village detail

Caste Data as per Census 2011:

Schedule Caste (SC) constitutes 15.47 % while Schedule Tribe (ST) were 4.22 % of the total population in Giramtha village.

Working Population as per Census 2011:

In Giramtha village out of the total population, 1591 were engaged in work activities. 89.50 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 10.50 % were involved in Marginal activity providing a livelihood for less than 6 months. Of 1591 workers engaged in Main Work, 159 were cultivators (owner or co-owner) while 533 were Agricultural labourer.

Giramtha Details:

Particulars	Total	Male	Female
Total No. of Houses	**856**	-	-
Population	**4,151**	2,136	2,015

Particulars	Total	Male	Female
Child (0-6)	**578**	301	277
Scheduled Caste	**642**	334	308
Scheduled Tribe	**175**	95	80
Literacy	**82.56 %**	90.03 %	74.68 %
Total Workers	**1,591**	1,23 5	356
Main Worker	**1,424**	-	-
Marginal Worker	**167**	58	109

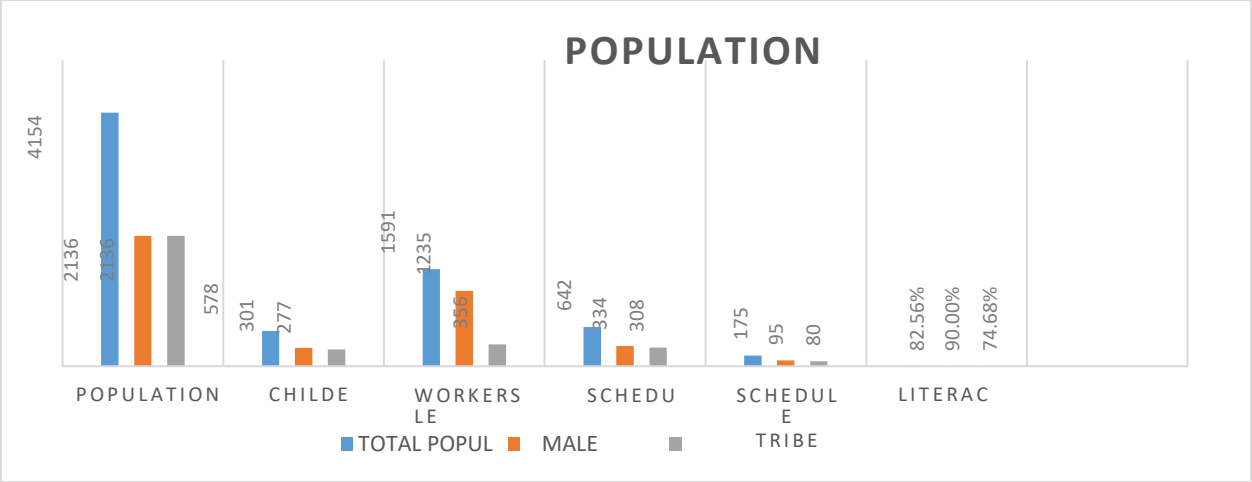
T-4.1-Giramtha _village _population detail

4.1.2 Justification / Need of study:

- Vishwakarma Yojana is one of the initiatives towards Urbanization by the Government of Gujarat, which was allotted as a pilot project to GTU. The students and Faculty Members meet all the stakeholders in a village, survey the existing facilities. Then they re-imagine and re-design the whole of the infrastructure of the village.
- The students and Faculty Members meet all the stake-holders in a village, survey the existing facilities. Then they re-imagine and re-design the whole of the infrastructure of the village. The students use their engineering skills to prepare detailed project reports for the infrastructure as a part of their Final Year project work.
- To the development of village compare to the city area in the basic facility to needed for people and their amenities and to study the whole village.
- For development, the basic needed and their requirement. It should develop gram-panchayat, Anganwadi, road, drainage, school, hospital, etc. To reduce migration from rural to urban areas. To provide basic and sustainable facilities to rural areas to reduce the pressure on urban areas.

4.1.3 Study area:

- Giramtha is a Village in Daskroi Taluka in the Ahmedabad District of Gujarat State, India. It is located 20 km away from Ahmedabad District. and 45 km away from the State capital Gandhinagar.
- Giramtha village pin code is 382425. Giramtha village is also a gram panchayat.
- The total geographical area of the village is 735 hectares.
- Giramtha has a total population of 4151 peoples.
- There are about 856 houses in Giramtha village. Ahmedabad is the nearest town to Giramtha which is approximately 20km away.



T-4.1.3-GIRAMTHA _CHART

4.1.4 Objectives of study:

- Fundamental Social system – Health and Education workplaces should be given and assurance suitable movement of workplaces to town inhabitants.
- Promote facilitated headway of country districts with a game plan of significant worth housing, better organization, work openings and supporting physical and social system.
- Reduce development from provincial to metropolitan districts as a result of the nonappearance of crucial organizations and sufficient monetary activities in nation zones.
- Internal roads inside town settlement, Efficient Mass Transportation structures to improve network among metropolitan and rural domains, Public transportation workplaces that ought to be made like transport stations, transport stop, etc
- Electricity affiliations like street lighting that is energy gainful and eco-obliging.
- Basic genuine system – Water Supply, Transport, Sewerage and Solid Waste Management should be the need place and be given.
- Refurbishing of town lakes, water tanks and wells, improvement of stormwater gathering structures for commonsense unforeseen development.
- To improve lifestyle for the town without changing its middle soul.
- Economy age is the key sections that the thought relies upon which should be familiar with the town.

4.1.5 Scope of study:

- By analyzing the present conditions we can improve the basic amenities and facilities like agriculture facilities, milk cooperative facility, education facility, health facility etc as per ideal villages.
- To improve the lifestyle of villagers by helping them to develop their skill by assisting them in implementing income-generating activities in close coordination and cooperation with national and international organizations.
- From the Gap analysis, development tactics for village development will be proposed and planning suggestions for physical infrastructure, social infrastructure and renewable energy source will be suggested for the village. This study will focus on the development of the village.

4.1.6 Methodology framework for the development of giramtha village:

Project roadmap: Method for development of village:

- **Part-I (Odd Semester) Includes:**
  - Visit Allocated Village
  - Literature Review
  - Visit Ideal Village
  - Data Collection – Techno-Economic Survey
  - Data Presentation
  - Suitable Design Planning Proposal (Post Office, PHC, Skill Development Center, Animal Hospital, Bank, Bus Stop)
  - Facilities Suggestion And Recommendation

- **Part-II (Even Semester) Includes:**
  - Gap Analysis
  - Design Proposal Of Another Structure
  - Recommendations And Suggestions For Village Development, Conclusion

4.2 Giramtha village study area profile:

4.2.1 Study area location:

- Giramtha village is located in Daskroi taluka of Ahmadabad district in Gujarat, India. It is situated 20km away from Ahmadabad.
- GTU allocated one village to us of Gujarat for surveying which is the "Giramtha" near Ahmedabad district.
- This is our study area to find a problem related to structure and general amenities.

Country	India
State	Gujarat
District	Ahmedabad
Subdistrict/Taluka	Daskroi
Nearest town	Ahmedabad
Area	576 hectares
Population	4151
Pin code	382425

T-4.2.1-A- Primary details of Giramtha village

F-4.2.1- Map Of Giramtha

4.2.2 Giramtha Village Base, Locaton map, Land map:

Types of Land	Area (in Hectors)
Total Area of Village	735 Hectors
Forest Area	0
Agricultural Land	576 Hectors
Residential Land	50 Hectors
Other Area	109 Hectors

T-4.2.2-A- Primary details of Giramtha

F-4.2.2 Map Of Giramtha

4.2.3 Physical & Demographical Growth:

Sr No.	Census	Population	Male	Female	Total Household
1	2011	4151	2136	2015	856

T-4.2.3-A-Physical & Demographical Growth

4.2.4 Economic Profile / Banks

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

- No banks available in Giramtha village
- About the economic profile of this village, many citizens work interest is farming and labour work. The village doesn't have any better facilities regarding infrastructure but has a good electrification system which distributed 24*7 hours for domestic use and 8 hours for agricultural use. Dairy and milk production is also a prime source of income.

4.2.5 Actual problem faced by villagers and smart solution:

- There are very few schools which are far and generally populated by boys as the old-fashioned approach of "girls being domesticated" prevails in most of the villages. This way, the chances of education for girls in villages are less, almost close to none. Then, these things happen because of illiteracy.
- There is a waterlogging problem during the rainy season,
- Lack of knowledge.
- Don't have a solid collection and solid waste management.
- Lacks adequate knowledge about birth-control or obsession to have a male child - couples have more children than they can handle leaving the boys to be favoured over the girls.
- The caste system and other such obsolete ideas still exist - so people believe that so-and- so caste should be favoured and the other ignored.
- Only recently has agricultural methods being taught to farmers, till then most didn't know how to economically handle their fields.
- The quality of water used in irrigation is very bed.
- Lack of knowledge of ways to complain when they get cheated. Think of the Kidney Scams where they were forcefully operated upon, illegally. Or land disputes where they get cheated out of acres of land by cooperation due to ignorance.

➢ **Poverty & Unemployment:**

- These two are the diehard followers of illiteracy. About 60% of the rules don't have the money even to eat two meals a day. And everyone knows employment opportunities in rural are like raindrops in a desert. Just to survive most of them start labouring which hardly keeps the family going.

➢ **Ideas to tackle:**

- Giving mutual rights to both men and women rather than treating women as 'domestic material'.
- Parents should be aware of the value of education and should push their children to learn and acquire knowledge.
- More schools and colleges should open with well-educated teachers to teach just to ensure that the children are in good hands.
- More programmers like 'Sabra Sikhs Bahujan' should be launched by the Govt. wherein rural can learn and eat for free, which will be helpful to educate people struck by poverty.
- More Employment programmers should be launched and undertaken to ensure rural is a also, a part of the country and they can be happy like we people.

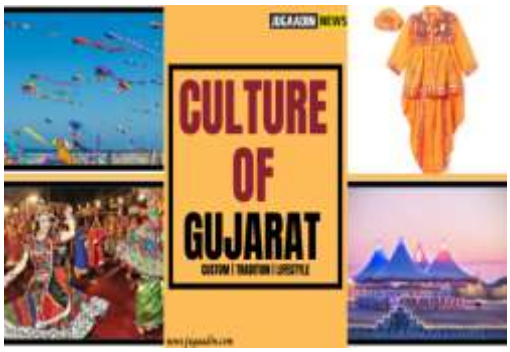
➢ **Other Problems and few solutions:**

1) The financial, manpower and managerial resources devoted to the implementation of rural development programmers are utterly inadequate.
2) Better implementation of rural development programmers can be ensured only if those responsible for actual implementation are paid reasonably well, appropriately trained, and sufficiently motivated. But this has not been done as yet.
3) It is being increasingly observed that the objectives of one programmed conflict with those of others, and there is no institutional mechanism for reconciling them. Consequently, many programmers utterly fail in fulfilling their objectives. Also, they affect other programmers.
4) In many cases, instruments of rural development are not properly selected, and their level is not consistent with the objectives they seek to achieve. This is results in the wastage of valuable public resources, and unnecessary delays in achieving the objectives.
5) Honesty, hard work, helping others, thrift and such other virtues indirectly help in economic development. In the Indian context, not much attention has been paid to this aspect of development.
6) The political parties have a vital role to play in rural development. But unfortunately, this role has not been effectively realized by any democratic political party so far. The political parties, today, are guided more by party interests rather than by national interests.

4.2.6 Social scenario – Preservation of Traditions, Festivals and cuision:

- It was found that all the people of this village are not very much connected with today's technology environment rather than their main major working area.
- The major crops produced in the village are cotton, Groundnut and Castor.
- The major population is getting income through farming and there are no other job opportunities. Education is limited to secondary school.

- **Cuisine:** The different parts of Gujarat have different tastes as the neighbouring state has always played a strong influence. In south Gujarat that shares borders with Maharashtra, Jowar is consumed while in Saurashtra and North Gujarat…Bajra and Maize are consumed. In Baroda…a fusion of all tastes is found. Most Gujarati are vegetarians and they consume a wide variety of lentils like Urad, Moong, Tovar, Rajma and mixed Deal. Some famous deal preparations are Khadi and Dal Dhokli, they eat vegetable dishes like stuffed Karela, Methi mutter, okra, tomato sav, cabbage peas, cauliflower peas, Undhiyu etc. Gujaratistend to put a hint of sweet flavour in their food. The Gujarati eat a variety of snacks like Chana Dal Vada, KutchiDabeli, Dal Vada, Dhokla, Handog, Kachori, Fafda, Chivda, Bhakarwadi, Jain Chivda, SevUsal, Chavanu, and Patra.



F-4.2.6.Culture of Gujarat

- Famous Gujarati sweets are Ghari, KajuKatli, BarfiChurmu, Khaja, Rabdi, dudh/moong dal halwa, badam/ pistachakki, wheat halwa, Mysore Pak. Puranpuri, shrikhand. Mohanthal, ladoo, magasandchikki are also quite famous in Gujarat.

- **Fairs and Festivals:**

- Gujarat is known as the land of fairs and festivals and more than 1000 festivals are celebrated here. Some famous fairs are Bhavnath Mahadev Mela that happens in February, DangsDarbar at Ahwa in July, ChitraVichitraMela in Gunbhakhari in March and theDhrang Fair near Bhuj in April. The TrineteshwarMahadeva Fair near Rajkot happens in October while the VauthaMela happens at the meeting point of river Sabarmati andVatrak in November. Other famous fairs are the Kutch Utsav, Sanskruti Kunj Fair andShamlaji Fair. Festivals unique to Gujarat are the MakarSankranti Kite Flying Festival in January and the Modhera dance festival in January. The Kutch Mahotsav festival in February I Bhuj is a large crowd-puller while the Bhadra Purnima Fair is a unique night farmers festival.

- **Handicrafts:**

- Needlework of Gujarat is world-famous with acari work, applique work, mirror embroidery (Abdala) and Chakli embroidery are the most famous styles. International exposure, widespread exports and instant recognition amongst the fashion designing community of India has been enjoyed by Gujarati needlework. Bandhan or tie and dye fabrics are the most famous. The famous colourful print and embroidery enhanced Gujarati Patola sarees are also very famous.

F-4.2.6.2 Hendi crafts

- Gujarat is also a silver jewellery hub with Bhuj and Kutch being famous for theirdistinctive styles of jewellery.

- Gujarati beadwork is very famous and the regions of Khambhat and Saurashtra have the tallest claims to fame. The Kathi tribes produce amazing beadwork that is demonstrated on a variety of items including Torans that are hung over doorways.
- Quilting, Kalamkari and embroidery are used in producing floor spreads (called Nomads) and Dhurries…. these are important handicraft export items.
- Clay utensils, terracotta toys and Aravali and Chotta Udaipur tribal made Gora Dev figures of Gujarat are very famous. Mud wall paintings that are fashioned into plaques and are then decorated with mirrors are another famous item.
- Zari industry of Surat is one of the oldest handicraft aspects of Gujarat and it dates back to the Mughal era. Surat is one of the biggest producers of Zari and the Chalak, Katori, Kangari, Tiki designs are variable in Saree, turbans, blouse pieces, Ghar Chola and planetary (Gujarat wedding dresses).

4.2.7 Migration Reason:

➢ To know the reasons for migration/trends of migration/problems and potentials of Migrants:

Years	Reason of migration
1981	Employment, Education, Family moved, Marriage, Other reasons
1991	Employment, Business, Education, Family moved, Marriage, Natural calamities, Other reasons
2001	Work / Employment, Business, Education, Marriage, Moved with birth, Moved with household, Other reasons

T-4.2.7_Reason for migration

4.3 Data Collection:

4.3.1 Methods of data collection:

1. Transportation survey
2. Educational survey
3. Techno-economic survey

4.3.2 Primary survey details of giramtha village:

- The Primary survey was conducted to identify the various general problems of the villagers by interacting with them and enquiring about the problems faced by them in daily life. They were asked to suggest the possible and desirable solutions for these problems as well as other infrastructural facilities they would like to have in their village.

➢ **Following questions were asked to the different age group and status of village people:**

- Do you have enough water supplies?
- Which type of irrigation facility you are using? Is it enough?
- Are you comfortable with your Road network facility?
- What are your Sources of the economy?
- Which type of medical facility is available?

- What is your primary need?
- Which type of facility did you want first?
- Where you dispose of your waste?
- Are comfortable with an available medical facility?

4.3.3 Avarage size of house – geo tagging:

- Giramtha village is located in Ahmedabad district. This village has a population of about 4151.
- Most of the houses in this village is an old house. There is not any type of geotagging in Giramtha village.

4.3.4 No. of human being in one house:

- In the village, there is an average of 4-5 persons per household.

4.3.5 Material available locally in the village and material outsource by the villagers:

- The materials like milk, other grocery materials, wheat, rice, cotton and other agricultural cereals are used locally as they are locally easily available.
- Most of the construction material available in our village like cement, sand, aggregate, steel etc.
- In Giramtha village more than 60% of peoples are depended on farming.
- So, if outer sourced material is needed, it is brought from the nearest village i.e.; JETALPUR.

4.3.6 Geographical details & Demographic details:

Country	India
State	Gujarat
District	Ahmedabad
Subdistrict/Taluka	Daskroi
Nearest town	Ahmedabad
Area	576 hectares
Population	4151
Pin code	382425
Mean Sea Level	35 m
Latitude	22.8829
Latitude	72.5619

T-4.3.6-A- Geographical details

Census	2011
Population	4151
Male	2136
Female	2015
Total Household	856
Schedule Cast	642
Scheduled Tribe	175
Worker	1591

T-4.3.6-B-Demographical details

4.3.7 Occupation detail::

- In this village, 60% of people are connected with agriculture activities, so it is the main source of income of the village.
- Apart from that, other peoples are connected with private jobs and dairy farming.

4.3.8 Agriculture detail:

- The main source of income in this village is farming. Irrigation water is supplied from pond, canal, and well. The main agriculture product is rice, wheat, cotton. The agricultural land area covers approximate 576 hectors.

4.3.9 Manufacture hub:

- Wheat, Cotton, Rice and Milk are the main manufacturing product of this village.

4.3.10 Tourism cluster:

- No tourism in this village.

4.4 Infrastructure Details:

4.4.1 Drinking water / Water Management Facilities:

- In Giramtha village, the main source of drinking water is from the Narmada river and that water is stored in a tank.
- Giramtha village has 2 number overhead water tank and 1 underground water tank.
- The capacity of one overhead water tank is 1.5 lakh litre and the underground water tank capacity: - 1 lakh litre.

4.4.2 Drainage Network / Santation Facilities:

- The giramtha village has an open drainage system and poor condition.
- No, sanitation facilities available.
- No, solid waste collection system available.

4.4.3 Transportation and Road Network Facilities:

- The main approach road of the village is RCC.
- The internal street of the village is WBM.
- Nearest National Highway – 48.
- Nearest Railway Station available at Maninagar.
- AMTS Public bus service available in the village.
- Private Transportation System was available like two, three, four wheeler.

Type	Status
Public Bus Service	Available within the village (AMTS)
Private Bus Service	Available within <5 km distance
Railway Station	Available within 10+ km distance

T-4.4.3 Transportation and Road Facili

F-4.4.3-A- Internal Street

F-4.4.3-B- Main road

4.4.4 House condition:

- There are 856 households in Giramtha.
- Kachcha and Pukka both types of the house available in Giramtha village.
- The ratio of kachcha and the pukka house is 40% and 60%.

4.4.5 Social Infrastructure Facility:

➢ **Health Facility: -**

- PHC and Privet Clinic Available for Health Facility.
- The condition of PHC is not good, so it required to redesigned or repair.

T-4.4.5-A- Giramtha PHC

➢ **Education Facility: -**

- For Education Purpose Primary School, Anganwadi and Secondary school is available in Giramtha village. For college education students goes to Ahmedabad city.

F-4.4.5.2-B- Aaganwadi

F-4.4.5.3-C- Primary School

F-4.4.5.3-D- Secondary

➢ **Community Hall: -**

- In Girarntha village, the community hall is not available.

➢ **Library Facility: -**

- There is no availability of the public library in Giramtha village.

4.4.6 Existing condition of public building and maintenance of existing public infrastructure:

- The Panchayat office's condition is good.
- Anganwadi and PHC need to be modified.
- The overhead water tank is also in good condition.
- Bank, Post office, Bus stand etc need to provide.
- Primary school is also in good condition.
- Secondary school is not available

4.4.7 Technology/Mobile/Wi-Fi, Internet Usage Details in %:

- Giramtha village is not a Wi-Fi village. Panchayat building has Wi-Fi in its building.

- Approximately 50-60% of people use technology or mobile or internet.

4.4.8 Sport activity as Gram Panchayat:

- There is no Any Sports Activity like Gram Panchayat.

4.4.9 Social-Culture Facility, Public Garden/Park/Playgroud/Pond/Another recreation facility:

➢ **Socio-cultural Facilities:**

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

➢ **Public garden/park/playground:**

- One public garden available in Giramtha.

➢ **Village pond/lake:**

- Pond available inside of giramtha village, but the condition of the pond is very poor.

F-4.4.9-A- Public Garden

Fig. 4.4.9.B Village Lake

➢ **Other recreation facility:**

- In the village, no recreational facilities available in Giramtha.

4.4.10 Other Facilities:

- Solar panel available on the gram panchayat building.
- In the village, the road facility needs maintenance.
- The waterlogging problem occurs every monsoon.
- Garbage collection tanks are needed as well as Door-to-Door garbage collection facilities are required.

4.4.11 Any Other Details:

- In the village, the internal road facility is not available Water logging problem occurs every monsoon.
- There are no sustainable facilities available in the village-like biogas plant, solid waste management plant and rainwater harvesting system.

4.5 Electric concept:

➢ **Renewable energy source planning particularly for villages:**

- There is a need for some Renewable energy sources like Bio-gas plant, soak pit &septic tank, solar street light etc.

➢ **Irrigation Facilities:**

- For irrigation purpose, most of the farmers depend on well and pond.
- There is also the availability of a canal.
- Pond available in giramtha but the quality of water is very bad, so it's required cleaning.

➢ **Electricity Facilities with Area:**

- There is a 24x7 electricity supply in every area in a village.

4.6 Existing Institution like - Village Administration – Detail Profile:

4.6.1 Bachat Mandali:

- There is not available any bachat mandali in the village.

4.6.2 Dudh Mandali:

- There is a small dudh mandali in the village.

4.6.3 Mahila Mandal:

- There is a small Mahila Mandal in the village.

4.6.4 Plantation For Air Polution:

- There is not any provision for plantation for air pollution.
- But that kind of activities is done in primary school by the students of the Giramtha village.

4.6.5 Rain Water Harvesting:

- In Giramtha village no one is using the system of rainwater harvesting and there is no anykind of wastewater recycling process done.

4.6.6 Agriculture Development:

- There is not a revolutionary development in an agricultural area.

4.6.7 Any Other:

- There is small development done is Giramtha village.
- There is no any other kind of institutions existing in the Giramtha village apart from the public library, government grocery shop, agricultural cooperative office building, mobile library etc.

CHAPTER: 5 Technical Options with Case Studies

5.1 Concept (Civil) :

➢ **Advance Sustainable Construction Technique: 3D Printing**

3D printing in construction can either involve the use of a 3D printer attached to an arm that actively builds a project on-site or the use of printers in a factory that create components of a building project that are assembled later.

3D printing (sometimes referred to as Additive Manufacturing (AM)) is the computer-controlled sequential layering of materials to create three-dimensional shapes. It is particularly useful for prototyping and the manufacture of geometrically complex components.

As a concept, 3D printing is not new – it was first developed in the 1980s. However, only in the last decade has the technology improved enough (and the costs declined sufficiently) for it to become mainstream.

F-5.1-NEW_INOVAT_3DPRINT

It was first developed in the 1980s, but at that time was a difficult and expensive operation and so had few applications. It is only since 2000 that it has become relatively straightforward and affordable and so has become viable

The sales of AM machines, or '3D printers' has grown rapidly and since 2005, the home use of 3D printers has become practical.3D printing systems developed for the construction industry are referred to as 'construction 3D printers'. A 3D digital model of the item is created, either by computer-aided design (CAD) or using a 3D scanner. The printer then reads the design and lays down successive layers of printing medium (this can be a liquid, powder, or sheet material) which are joined or fused to create the item. The process can be slow, but it enables almost any shape to be created. Depending on the technique adopted, printing can produce multiple components simultaneously, can use multiple materials and can use multiple colours.

Accuracy can be increased by a high-resolution subtractive process that removes material from an oversized printed item. Some techniques include the use of dissolvable materials that support overhanging features during fabrication. Materials such as metal can be expensive to print, and in this case, it may be more cost-effective to print a mould, and then to use that to create the item.

3D printers are not unlike your desktop inkjet printer. A software programme ‘tells’ the printer about the dimensions of the end product. The printer then injects material on a platform according to that plan. 3D printers often use liquid metals, plastics, cement and a variety of other materials which then cool or dry to form a structure. For 3D printing in construction, a CAD

BIM programme 'tells' the 3D printer what it needs to print, and the machines then begin layering out levels of material according to the plan.

In the construction industry, 3D printing can be used to create construction components or to 'print' entire buildings. Construction is well-suited to 3D printing as much of the information necessary to create an item will exist as a result of the design process, and the industry is already experienced in computer-aided manufacturing. The recent emergence of building information modelling (BIM) in particular may facilitate greater use of 3D printing.

Construction 3D printing may allow, faster and more accurate construction of complex or bespoke items as well as lowering labour costs and producing less waste. It might also enable construction to be undertaken in harsh or dangerous environments not suitable for a human workforce such as in space.

Benefits of 3D printing for construction:

- **Fast production:**

3D Printing in the construction industry means greatly reduced production time. That's because the machines themselves are very fast, some of them are capable of manufacturing 600 to 800-square-foot (55 to 75-square-meter) home in just 24 hours. Sounds amazing, doesn't it? 3D printers are also fully automated, which eliminates human error. The machine just needs to be monitored, but most of the production process doesn't involve any human help. Also, 3D printers don't use additional tooling. They have the construction programmed and they just produce it, there is no need for additional support, different materials, and other aspects to keep in mind that traditional methods require.

- **Almost zero material waste:**

The main advantage of using 3D printing in the construction industry is saving a lot of production costs on material waste. That's because a 3D printer, such as robotic arms, uses exactly the amount of material they need. Producing buildings layer by layer and with lattice structures inside allows for a huge cost reduction. Not only that, but they are also capable of using recycled materials. This factor also benefits the environment. 3D printing has a much smaller impact than traditional ways of manufacturing. An Italian company called WASP took 3D printing into a great development and designed one of the largest 3D printers in the world capable of producing homes out of local materials and using green energy (hydro, wind or solar power). This means much smaller emission, which is a big problem in today's construction industry. Last year we talked about the first family to move into a 3D printed house. The house in question was produced in Nantes, France and is called the Yhnova project. It took only 54 hours to print the house and the overall cost was about 20% cheaper than building a traditional house. Additive Manufacturing can help to build a better future for the construction industry.

- **Cost-effectiveness of 3D printing in the construction industry:**

As mentioned above, using Additive Manufacturing allows for less material usage and involves fewer people to work on construction. 3D printing is also a much faster technology. Those factors radically reduce the costs of building any 3D printed construction. While 3D printing structures, we use just the amount of material we need, therefore we are eco-friendly and save money. This aspect can bring costs down. 3D technologies also reduce supply costs.

We can also save a lot of time, 3D printers don't need to eat or sleep, their working hours are more adjustable and they are a lot faster than people. And the faster you build, the more money you save.

➢ **Innovative design:**

The last, but just as important benefit of using 3D printing in the construction industry, is all the innovative solutions it brings. 3D technologies can improve your project planning as they can be used already at the design stage. Starting from CAD plans of the buildings, which are technical drawings with all the parameters. Based on those drawings, a 3D model of the construction can be made to meet the clients' expectations and show them the best design solutions. Addressing the client's issues and presenting the right answers to their questions is crucial. Additive Manufacturing helps here. As we just mentioned with 3D technologies, you can present your clients with 3D visualizations of the structure, but that 3D model can be 3D printed. One of our clients, Valoptim, did just that! The family could imagine themselves already living in the house. Additive Manufacturing gives us new design freedom allowing for the production of new shapes and solutions to our needs. We have never had such a great possibility to customize structures. Not only the structures themselves but also the locations. It's easier to set up a 3D printer somewhere for a few days than move all the workers there. Also, some of the machines don't even need electricity as they run on green energy, which means that we can reach undeveloped areas easier.

➢ **Three Innovative Examples** :

1. **Dubai municipality office building, UAE:**

- In December 2019, 3D printing robot firm Apis Cor announced it had completed the world's largest individual 3D printed building. The office block, built in the UAE, is 9.5 metres in height and has a floor area of 640 m2. Apis Cor's 3D printer was moved around the open-air site by a crane as it built different parts of the structure.

2. **Office of the Future, UAE:**

- Another impressive 3D printed building in the UAE, the Office of the Future is a unique structure that is currently home (appropriately enough) to the emirate's Future Foundation. For this building, the printing itself was done offsite, with all the parts printed in 17 days. Workers installed the whole building in just 48 hours.

3. **3D printed houses by Win Sun, China:**

- Chinese 3D printing firm Win Sun also uses factory-based 3D printers to construct human dwellings. The firm has created a handful of home designs, including a small apartment block. The design's users can quickly and cheaply print the parts before installing them on-site.

The Technical Specifications of the BOD2:

➢ **Printer and Building Sizes**

- Maximum dimensions of the BOD2: 15 m wide, 10 m high and as long as you want.
- The largest BOD2 delivered can print buildings with almost 1,000 m² area over 3 floors.

F-5.1-3D_PRINTING MACHINE

- **Printing Speed:**
- The highest speed is 1 metre/second.
- We print at a speed of 25 cm/s for safety reasons and to ensure that we can continue to incorporate manual operations into the printing process.
- The BOD2 takes approx. 5 minutes to complete 1 m² of a hollow wall.

- **Printing materials:**
- Any locally sourced, 3D-printable mortar or concrete.

- **Safety Technology:**
- CE-certified and safe
- IP67-certified cabling and galvanised steel tracks
- Camera monitoring of the printing process and results

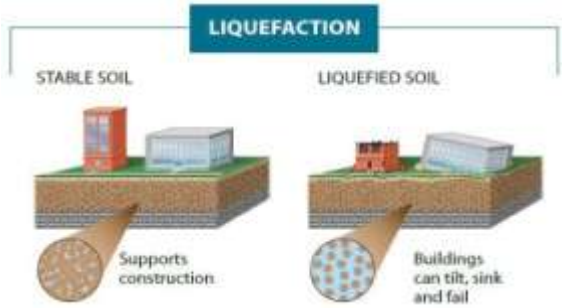
Advantages:	Disadvantages:
Flexible Design	Limited Materials
Rapid Prototyping	Restricted Build Size
Print on Demand	Post Processing
Strong and Lightweight Parts	Large Volumes
Fast Design and Production	Part Structure
Minimising Waste	Reduction in Manufacturing
Cost-Effective	Design Inaccuracies
Ease of Access	Copyright Issues
Environmentally Friendly	
Flexible Design	

T-5.1-PRINTER_ADVAN_DISADV

5.2 Soil Liquefaction:

"A Phenomenon whereby a saturated or partially saturated soil substantially loses strength and stiffness in response to an applied stress, usually earthquake shaking or other sudden change in stress condition, causing it to behave like a liquid" is called "**Soil Liquefaction".**

Soil liquefaction, also called **earthquake liquefaction**, ground failure or loss of strength that causes otherwise solid soil to behave temporarily as a viscous liquid. The phenomenon occurs in water-saturated unconsolidated soils affected by seismic waves (secondary waves), which cause ground vibrations during earthquakes. Although earthquake shock is the best-known cause of liquefaction, certain construction practices, including blasting and soil compaction and Vibro flotation (which uses a vibrating probe to change the grain structure of the surrounding soil), produce this phenomenon intentionally. Poorly drained fine-grained soils such as sandy, silty, and gravelly soils are the most susceptible to liquefaction.



F-5.1.2-A-LIQUEFACTION

Liquafication occurs when the structure of loose, saturated sand breaks down due to some rapidly applied loading. As the structure breaks down, the loosely packed individual soil particle attempt to move into a denser configuration.

There are two types of soil liquefaction:

1) Flow liquefaction:

Flow liquefaction is due to contractile response o loose soils, while cyclic mobility is related to the contractive and dilative response of granular soils. Those two failure mechanism may occur in a single soils, Depending on the density and confining pressure applied. Flow Liquefaction is a phenomenon in which the static is destroyed by static or dynamic loads in soil deposit with low residual strength of liquefied soil. Static loading, For example, can applied by new buildings on a slope that exert additional forces on the

Flow Liquefaction is a phenomenon in which the static is destroyed by static or dynamic loads in soil deposit with low residual strength of liquefied soil. Static loading, For example, can applied by new buildings on a slope that exert additional forces on the soil beneath the foundations. Earthquakes, blasting, and pile driving are all example of dynamic loads that could trigger flow liquefaction. Once trigged, the strength of a soil susceptible to flow liquefaction is no longer sufficient to withstand the static stresses that were acting on the soil before the disturbance.

F-5.1.2-B-FLOW LIQUE

2) Cyclic Mobility:

Cyclone mobility is a liquefaction phenomenon triggered by cyclic loading, occurring in soil deposits with static shear stresses lower than the soil strength.

Deformations due to cyclic mobility develop incrementally because of static and dynamic stresses that exist during an earthquake. Lateral
spreading, a common result of cyclic mobility can occur on gently sloping and on the flat ground close to rivers and lakes.

F-5.1.2CYCLIC_MOBILITY

Causes of liqueification:

- Soil liquefaction occurs when waterlogged soil behaves like a liquid. Some people refer to it as earthquake liquefaction. The vibrations of earthquake shockwaves in water-saturated soils trigger the phenomenon.
- Earthquakes are a very common origin of soil liquefaction damage, but other vibration-creating events can be a factor. This includes construction activities, such as blasting, soil compaction, and similar tasks. Sometimes, people insert a vibrating probe into the ground to induce the effect intentionally. This process is Vibro flotation.
- Soil liquefaction occurs most frequently in sandy, silt-laden, gravel-based, loose or poorly drained soils. Quick sand is an example of this phenomenon. The water-saturated sandy soil cannot bear the weight of items, causing them to sink.

➢ **Effects of Liquefaction:**

1. Sand Boiling: When liquefaction occurs below the surface that is fully compacted, the water pressure below the surface makes the water to break out like a bubble. These come out like boiling water. This is called sand boiling.

2. Damage to offshore structures: Liquefaction is common in soil that is submerged. These conditions cause huge damage to the bridge construction, structures supporting submerged soil deposits.

3. Failure of Dams and Retaining Walls: The soils supporting Dams and Retaining walls undergoes liquefaction, which results in the collapse of these structures. As the structures lose the ability to control the huge water it further results in uncontrollable floods.

4. Surface Landslides: The failure of water carrying bodies can result in surface landslides.

5. Failure of Structures under Earthquake: Liquefaction followed by earthquake forces makes the structures to lose their stability. They can either split or lean bringing complete collapse of the structure. Past earthquake records have shown a huge failure of building structures due to liquefaction. These hazards do not provide enough time for evacuation that it results in a huge loss of life and property.

➢ **Methods of Reducing Soil Liquefaction Hazards**

There are three methods of reducing liquefaction hazards:

1. By Avoiding Liquefaction Susceptible Soils:

Construction on liquefaction susceptible soils is to be avoided. It is required to characterize the soil at a particular building site according to the various criteria available to determine the liquefaction potential of the soil in a site.

2. Build Liquefaction Resistant Structures:
In certain situations, the construction over land that shows the chances of liquefaction are not avoidable.
Hence, foundation structures constructed must be designed in such a way as to resist the effects of liquefaction. The major reasons for constructing structures over liquefiable soil are space restrictions, favourable conditions, and other reasons.

3. Improve the Soil:
This involves mitigation of the liquefaction hazards by improving the strength, density and drainage characteristics of the soil. This can be done using a variety of soil improvement techniques.

➢ Steps were taken for preventing soil liquefaction:

- Since the cost of the damage by liquefaction is so high, especially in the loss of human life, researchers are testing new ways to prevent it. One of the oldest methods is replacing the loose soil with denser soil and material. This is an inefficient method, in cost or effectiveness.
- Often, builders set the footings of the foundation deeper than the layer of unstable soil. Wherever possible, builders try to set the footings onto bedrock. This is especially important for bridges, dams and other building sites near water. However, this is not always practical or possible.
- A newer method is Vibro flotation, which is proving to be effective prevention. Technicians insert vibrating probes into the soil at deep levels, and the trembling shakes the loose soil. The compression of the loose soil particles lessens the number of air pockets where water can settle.
- Another new method includes injecting the soil with stabilizing materials. Expert geologists and geotechnical engineers are studying the effectiveness of this process. If you would like more information on this technique, the City of Boston has an article describing the process in depth.

5.1.3 Sustainable Sanitation:

Maintainable sterilization is a disinfection framework intended to meet certain rules and to function admirably over the long haul. Feasible disinfection frameworks think about the whole "sterilization esteem chain", from the experience of the client, excreta and wastewater assortment strategies, transportation or movement of waste, treatment, and reuse or removal.

F-5.1.3-SANTAINABLE SYSTEM

The Sustainable Sanitation Alliance (Su Sana) incorporates five highlights (or rules) in its meaning of "manageable sterilization": Systems should be financially and socially satisfactory, actually and institutionally suitable and secure the climate and normal assets.

The motivation behind feasible sterilization is equivalent to disinfection all in all: to secure human wellbeing. In any case, "supportable sterilization" goes to all cycles of the framework: This incorporates techniques for gathering, moving, treating and the removal (or reuse) of waste.

5.1.4 Transport Infrastructure / System:

Transport infrastructure consists of the fixed installations necessary for transport and includes roads, railways, airways, waterways, and terminals. Transport is essential to the well-working of financial exercises and a vital aspect for guaranteeing social prosperity and union of populaces. Transport guarantees the ordinary versatility of individuals and is significant to the creation and dissemination of merchandise. A satisfactory foundation is an essential precondition for transport frameworks. In their undertaking to encourage transport, in any case, leaders in governments and global associations face troublesome difficulties.

These incorporate the presence of actual boundaries or preventions, like deficient or insufficient vehicle frameworks, bottlenecks and missing connections, just as the absence of assets to eliminate them. Tackling these issues is anything but a simple undertaking. It requires activity concerning the legislatures concerned, activities that are composed of different governments.

F-5.1.4 TRANSPORT-INFRA

5.1.5 Vertical Farming:

- Vertical farming is the practice of growing crops in vertically stacked layers. It often incorporates controlled-environment agriculture, which aims to optimize plant growth, and soilless farming techniques such as hydroponics, aquaponics, and aeroponics. Some common choices of structures to house vertical farming systems include buildings, shipping containers, tunnels, and abandoned mine shafts.

F-5.1.5 VERTICAL FARMING

- India is one of the largest producers of vegetables, fruits, and many other agricultural commodities.
- In India, vertical farming has been introduced in 2019. ICAR experts are working on the concept of 'vertical farming' in soil-less conditions, in which food crops can be grown even on multistoried buildings in metro cities like New Delhi, Mumbai, Kolkata, and Chennai without using soil or pesticides.
- In our village are not doing these types of producers like vertical farming and other farming, but in our village growing crops like wheat, cotton, rice etc.
- The main advantage of utilizing vertical farming technologies is the increased crop yield that comes with a smaller unit area of land requirement. Vertical farms also face large energy demands due to the use of supplementary light like LEDs.

- Because of its limited land usage, vertical farming is less disruptive to the native plants and animals, leading to further conservation of the local flora and fauna. Vertical farming technologies face economic challenges with large start-up costs compared to traditional farms. In Victoria, Australia, a "hypothetical 10 level vertical farm" would cost over 850 times more per cubic meter of arable land than a traditional farm in rural Victoria. Moreover, if non-renewable energy is used to meet these energy demands, vertical farms could produce more pollution than traditional farms or greenhouses.

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

➢ **Corrosion Mechanism:**

What do we mean by "mechanism of corrosion reaction"? We mean the behaviour of metal or the way a metal reacts with an environment. This behaviour may be simple and consist of one stage, for example, corrosion of iron in the oxygen atmosphere at high temperature.

➢ Types of Corrosion:

- Uniform Corrosion
- Pitting Corrosion
- Stress Corrosion Cracking

➢ **Prevention of Corrosion:**

- Use non-corrosive metals, such as stainless steel or aluminium.
- Alternative reinforcement and slab design method include 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.
- Make sure the metal surface stays clean and dry.
- Use drying agents.
- Use a coating or barrier product such as grease, oil, paint or carbon fibre coating.
- Lay a layer of backfill, for example, limestone, with underground piping.

F-5.1.6- Repair Measures of RCC structures

➢ **Repair Measures of RCC structures:**

- There are several methods of application of repair materials in the repair of concrete structures. Recasting with new concrete: Required design of special concrete mix, shrinkage compensating admixtures, need formwork and vibrators, restricted areas difficult to vibrate.

5.1.7 Sewage Treatment Plant:

A sewage treatment plant is a plant where wastewater is treated. Sewage treatment is the process of removing contaminants from municipal wastewater, containing mainly household sewage plus some industrial wastewater.

Physical, chemical, and biological processes are used to remove contaminants and produce treated wastewater (or treated effluent) that is safe enough for release into the environment.

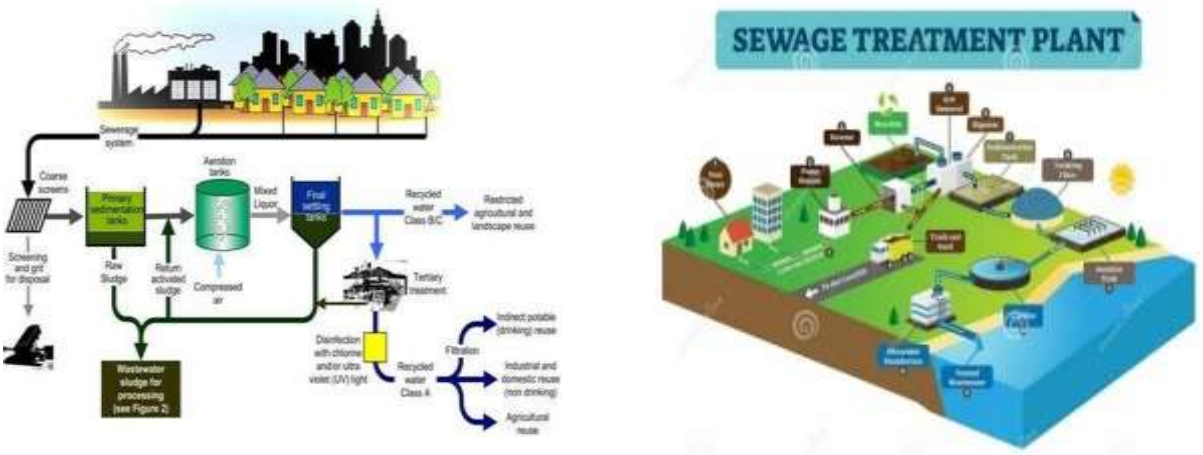
Essentially, a sewage treatment plant operates by circulating air to encourage the growth of bacteria to break down sewage.

The goal is to deliver much cleaner, more environmentally friendly effluent. It involves a similar process to a typical septic tank but has some key differences.

A result of sewage treatment is a semi-strong waste or slurry, called sewage slop. The muck needs to go through additional treatment before being reasonable for removal or application to land. Sewage treatment may likewise be alluded to as wastewater treatment. Notwithstanding, the last is a more extensive term that can likewise allude to modern wastewater.

For most urban areas, the sewer framework will likewise convey an extent of mechanical gushing to the sewage treatment plant that has typically gotten pretreatment at the industrial facilities to diminish the poison load.

On the off chance that the sewer framework is a consolidated sewer, it will likewise convey metropolitan spillover (stormwater) to the sewage treatment plant. Sewage water can go towards treatment plants through channelings and in a stream helped by gravity and siphons.



F-5.1.7-Sewage Treatment Plant

5.1.8 Technical Case Study On "Sardar Patel Stadium":

➢ INTRODUCTION OF SARDAR PATEL STADIUM:

- We have selected an already constructed structure site named the SARDAR PATEL STADIUM. The stadium was built in 1983. Sardar Patel Stadium,commonly known as Motera Stadium is a Cricket - Stadium in the Motera district of the Indian city of Ahmedabad in the state of Gujarat. It bears the name of Sardar Vallabhbhai Patel (1875– 1950).

- In October 2015, the stadium was demolished for reconstruction, though some media referred to it as a renovation. The total cost of reconstruction was estimated to be ₹700 crores. However, the final cost was reported at ₹800 crores. The redevelopment originally planned to be completed in 2019, finished in February 2020.

F-5.1.8-MAP_STADIUM

- President Ram Nath Kovind inaugurated the newly revamped Motera cricket stadium in Ahmedabad, which has been renamed the "Narendra Modi Stadium", on 24 February 2021 (Wednesday). The ground, which was earlier named the Sardar Patel Stadium, and more popularly known as the Motera stadium, has been renamed after the Prime Minister, who was also formerly a president of the Gujarat Cricket Association. Home Minister Amit Shah and Sports Minister Kiren Rijiju, along with the Board of Control for Cricket in India (BCCI) secretary Jay Shah, were also present at the even.

- The Narendra Modi Stadium - the largest cricket ground in the world will host its first international match on 24 February 2021, when India will take on England in the Day-Night Test. The stadium will be a part of the planned Sardar Vallabhbhai Patel Sports Enclave in the city.

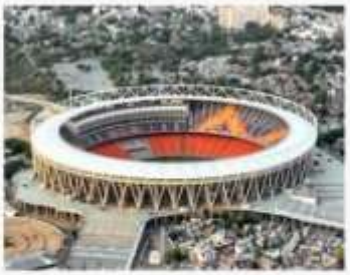
- They have a capacity of 1,10,000 spectators. A total of INR 800 crore was spent to revamp this grand stadium in Ahmedabad. It had hosted its first ODI back in 1984. There are a total of 76 corporate boxes in the stadium with a capacity of 25 each.

- All of these corporate boxes are air- conditioned. A total of 3,000 cars can be parked at the venue as well as 10,000 two-wheelers. Not just the capacity of the fans inside the stadium but the parking space is also the biggest all across the world.

- The ground is mesmerising but the venue also features a full-fledged cricket academy, numerous indoor pitches and many facilities for other sports like football, hockey, basketball etc.

- For the ease of commute of fans, the stadium has also been linked with the Ahmedabad metro, making it extremely easy for people to witnessing cricketing action at the venue without being stuck in traffic jams.
- There are three entry points to the stadium which has been spread across 63 acres of land in total. It is the first time that the field of an Indian cricket stadium has been fitted with LED lights.
- No other stadium has this feature. A built-in clubhouse with 55 rooms further adds to the stadium's glory.
- The clubhouse features both indoor & outdoor games, restaurants, an Olympic size swimming pool, gym as well as 3d projector theatre.

Motera Stadium



Full name	Sardar Patel Stadium
Former names	Gujarat Stadium
Location	Motera, Ahmedabad, Gujarat, India
Owner	Gujarat Cricket Association
Executive suites	76
Capacity	110,000(2020–present)[3] 54,000 (2006–2015)[4][5] 49,000 (1982–2006)
Record attendance	51,000 (India v Australia, 2011 Cricket World Cup) 100,000+ (temporary seating, Namaste Trump event in 2020)
Field size	162 yards x 170 yards[6]
Acreage	63
Surface	Australian Grass (Oval)
Construction	
Broke ground	1983 (former structure) 2017 (expansion)
Built	12 November 1983 (former structure) 24 February 2020 (post

➢ Old History: 1982–2006 (Early years):

- The original stadium was built in 1983 after the Indian cricket association BCCI repeatedly had problems with scheduling matches in the already existing stadium of the same name in the city.
- The facility offered 49,000 places and was equipped with floodlights from 2006 onwards.
- The two wicket ends were the Adani and the GMDC end.
- Formerly known as the Gujarat Stadium, the ground was renamed in tribute to Sardar Vallabhbhai Patel - India's first Home Minister and Deputy Prime Minister.
- Before the Sardar Patel Stadium, international cricket matches in the city were played at the Ahmedabad Municipal Corporation's stadium of the same name (Sardar Patel Stadium) in the Navrangpura area.
- In 1982, the Government of Gujarat donated a 100-acre (400,000 m^2) stretch of land on the banks of the Sabarmati River to build a new stadium.
- The construction of the Sardar Patel Stadium was completed in nine months. Since then, all International cricket fixtures for the city are hosted here.
- In the 1984-85 Australia-India series, Sardar Patel Stadium hosted its first ODI, in which Australia defeated India.

- Sunil Gavaskar was the first cricketer to score 10,000 runs in Test cricket against Pakistan in the stadium in 1987.
- In 1983, Kapil Dev took a nine-wicket haul against the West Indies 1983 and claimed his 432nd Test wicket at the stadium to become the highest wicket-taker in the world in 1995, which broke Sir Richard Hadlee's previous record.
- In 1996, the ground hosted a low-scoring Test match against South Africa, where the visitors lost 105–170. Javagal Srinath took six wickets in the fourth inning of the match.
- South Africa won in a rematch game when they bowled India out for 76 runs in the first session of the Test match in 2008 and won the game by an inning and 90 runs.

➢ **2006–2015 (Rise to prominence)**

- The stadium became a focal venue of the ICC Champions Trophy in 2006 and hosted five of the 15 games played. To host the tournament, the stadium was renovated to add three new pitches and a new outfield. Floodlights and covered stands were introduced at the stadium as a part of the renovation program. The capacity of spectators is 54000.
- The Sardar Patel Stadium has hosted games whenever India has hosted the Cricket World Cup, including the first match of the 1996 World Cup between England and New Zealand. However, while the stadium hosted only one game each in 1987 and 1996, it hosted three games in the 2011 World Cup, including the quarter-finals between Australia and India. Sachin Tendulkar became the first cricketer to score 18,000 runs in One Day Internationals. As of 19 August 2017, Sardar Patel has hosted 12 Tests, 23 ODIs and 1 T20I.

➢ **2015–2020 (Reconstruction)**

- In October 2015, the stadium was demolished for reconstruction, though some media referred to it as a renovation. The total cost of reconstruction was estimated to be ₹700 crores. However, the final cost was reported at ₹800 crores. The redevelopment originally planned to be completed in 2019, finished in February 2020.

	expansion)
Opened	12 November 1983 (former structure) 24 February 2020 (post expansion)
Renovated	24 February 2020
Expanded	24 February 2020
Closed	2015 (former structure)
Demolished	2015 (former structure)
Construction cost	₹800 crore (US$110 million) (reconstruction, 2017–2020)[1]
Architect	Populous (reconstruction) Shashi Prabhu[2] (former structure)
General contractor	Larsen & Toubro

Sardar Patel Stadium
New Motera stadium from riverside

Ground information	
Location	Motera
Capacity	110,000
Operator	Gujarat Cricket Association
End names	
Adani Pavilion End	
GMDC End	

T-5.1.8-A-DATA_FROM_GOOG

➢ Demolition:

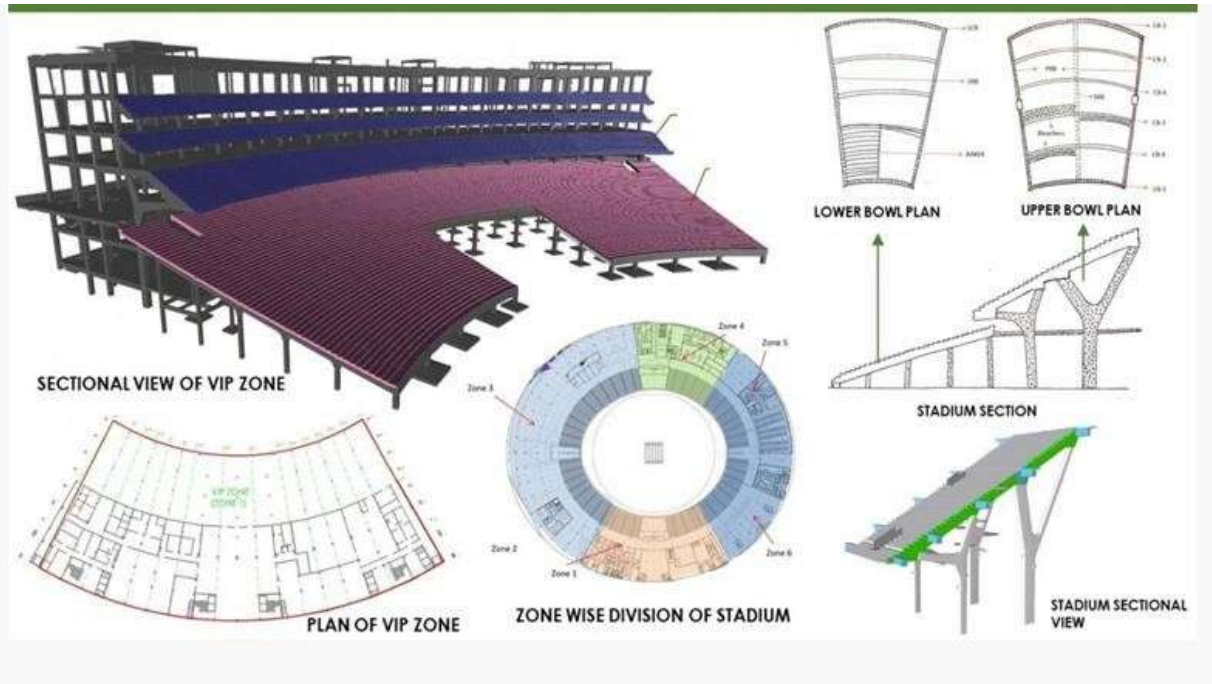
- The new design, construction plans and estimates of the new stadium were placed and unanimously approved in the executive committee of the Gujarat Cricket Association (GCA) today, they said. In coming years, the new stadium, when completed, will be of the international class having 1,10,000 spectators capacity.
- The demolition work of the current stadium has started today and the process of demolition will be completed within four months.
- Puja was organized before starting the demolition work of the existing cricket stadium.
- The stadium, at present, with six pavilions has an official capacity of 54,000 spectators, which does not seem enough taking into consideration the huge rush of local cricket lovers during cricket matches.
- GCA vice president Mr Nathwani added that the GCA has decided to increase the seating capacity to more than one lakh. He added that GCA wants to set up an international standard stadium with all modern facilities and amenities for players and spectators.
- GCA joint secretary Mr Jay Shah stated that the construction of the new stadium will take nearly two years starting from the day of the groundbreaking ceremony.
- In the new stadium the number of AC boxes, hospitality area and parking facilities will be increased, said Mr Shah.

➢ The conception of Redevelopment of the motor stadium:

- The idea to build the new stadium was allegedly proposed by Narendra Modi, the president of the Gujarat Cricket Association and the Chief Minister of Gujarat at the time. Shortly before Modi moved to Delhi after becoming the Prime Minister of India.
- There were discussions about minor upgrades to the stadium and development of the structure at the pavilion end. Modi asked the officials to build a new larger stadium instead of minor renovation work when he learned about the Melbourne Cricket Ground.
- Bids After starting demolition work at the end of 2015, the Gujarat Cricket Association issued a request for tender on 1 January 2016 in The Times of India and The Indian Express. Nine bidders showed interest and purchased the tender documents, out of which three submitted Technical and Financial bids on time; they were the Shapoorji Pallonji Group, Nagarjuna Construction Company, and Larsen & Toubro.
- A Tender Commercial Committee (TCC) of nine experts was formed to evaluate tenders. Additionally, STUP Consultants was appointed as the Project Management Consultant to evaluate proposals and technical details of each bid working with the TCC.
- Each of the three bidders presented their designs, models, and technical details of their concepts & designs. Because of the sheer size and complexity of the project, the bidders were evaluated on multiple parameters like efficiency, resources, the time frame of completion, ease of implementation, etc.
- The bidders were ranked and weighted on all of the parameters.

➢ Stadium design and facilities:

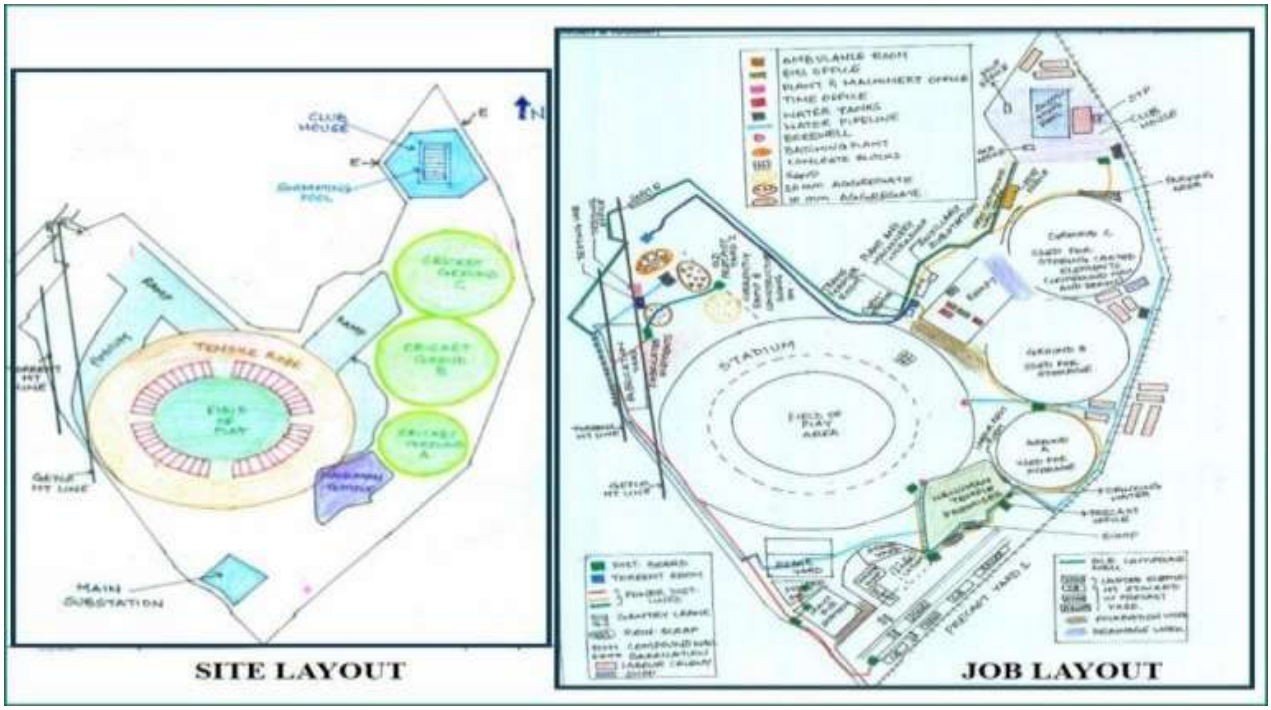
- The redesigned stadium occupies 63 acres of land, with three entry points compared to one in the old stadium, with a metro line at one of the entry points.
- It contains 76 corporate boxes that can hold 25 persons each, a 55-room clubhouse, an Olympic sized swimming pool, and four dressing rooms.
- A unique feature of the stadium is the LED lights on the roof instead of the usual floodlights at cricket grounds. The LED lights are installed on an



F-5.1.2-A-STADIUM_DESIGN

- Anti-bacterial, fireproof canopy with PTFE membrane that covers 30 out of 55 metres width of sitting area. The roof was done by the company Walter P Moore and was specifically designed to be lightweight and separate from the seating bowls to make it fairly earthquake resistant.
- The structure eliminates the need for pillars and gives spectators an unobstructed view of the entire field from any place in the Stadium.
- Outside of the main ground, the stadium can accommodate several other features, including an Olympic-sized swimming pool, an indoor cricket academy, badminton and tennis courts, a squash arena, a table tennis area, a 3D projector theatre, and a clubhouse with three practice grounds and 50 rooms.
- The parking lot can accommodate 3,000 cars and 10,000 two- wheelers. Sardar Patel Stadium also has a huge ramp designed to facilitate the movement of around 60,000 people simultaneously.
- The stadium has been designed such that patrons fill the lower levels of the ground for smaller events to maintain the crowd atmosphere when not at capacity.

- It has also been planned that the stadium will be connected to the metro station by a skywalk to decrease road congestion. The skywalk is planned to be completed after September 2020 and is a part of the Motera Metro Station project rather than the stadium's.
- The total area of the stadium is equivalent to 32 Olympic-size football fields put together. It is currently the only cricket stadium in the world to have four dressing rooms for the players, which makes it possible to playback to games on the same day.
- It is also the only stadium in the world with 11 centre pitches on the main ground



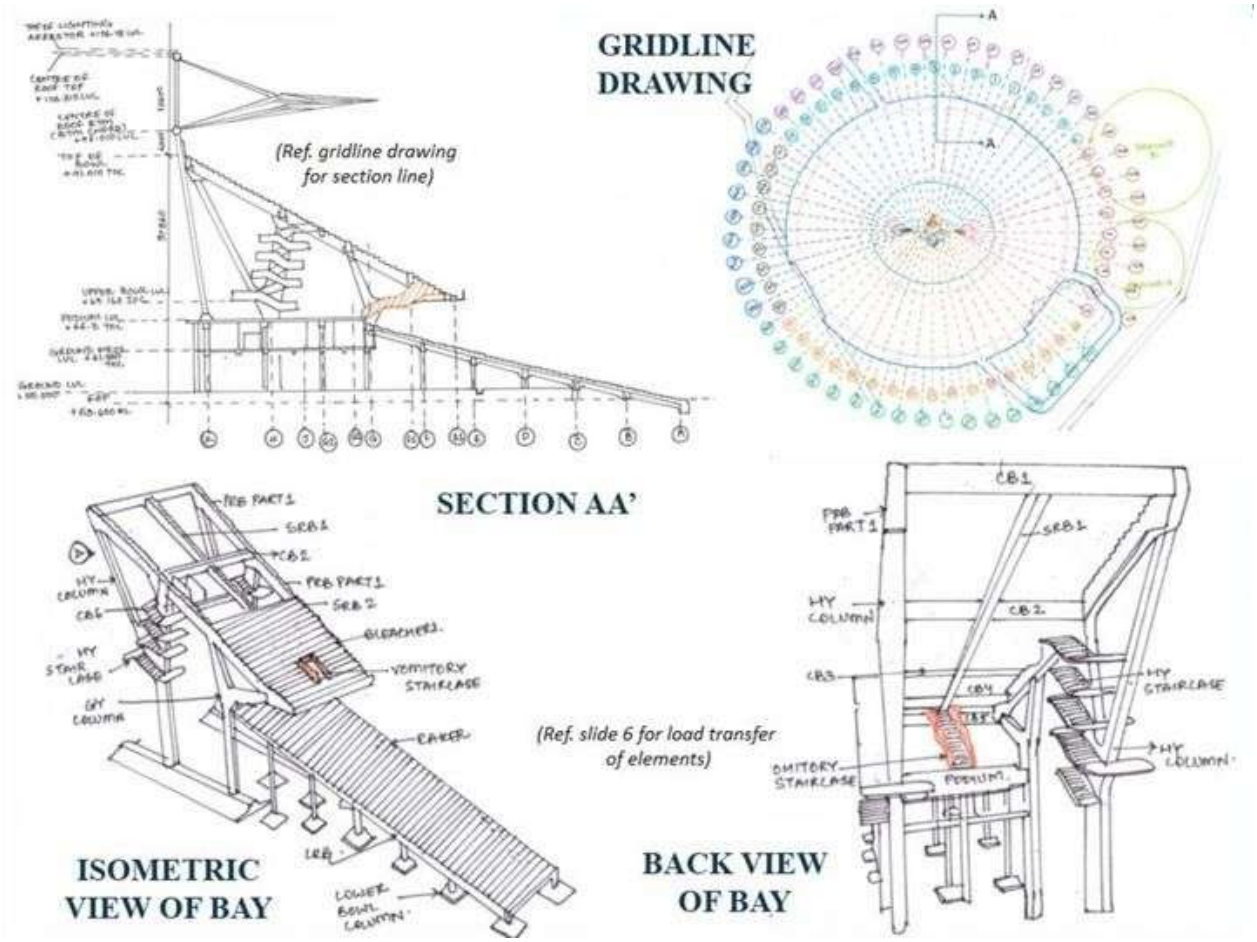
F-5.1.8-B-STADIUM_LAYOUT

BASIC STADIUM ELEMENTS

ELEMENT	SUB ELEMENTS
PODIUM	PRECAST BEAM AND PRECAST RIBBED SLAB
FOUNDATION	**ISOLATED AND COMBINED FOOTING**
COLUMNS	HY&GY COLUMNS PRECAST AND CAST IN SITU
BEAMS	**PRIMARY RADIAL BEAM(PRB), SECONDARY RADIAL BEAM (SRB) AND CIRCUMFERENTIAL BEAM (CB)**
LOWER BOWL	PRECAST BEAMS RAKERS. BLEACHERS AND COLUMNS

UPPER BOWL	PRECAST Y-COLUMNS PRECAST BEAMS AND BLEACHERS
ROOF	STRUCTURAL STEEL MEMBERS WITH PT CABLES AND PTFE MEMBRANE

T-5.1.8-B-BASIC_ELEMENT



F-5.1.8-C- STADIUM_DESIGN

The global architecture design firm started working on the Motera Stadium after L&T approached them for a collaboration in 2017. Having worked in India before, James knew that to win the client over for this he had to make sure the Gujarat Cricket Association liked the design, they met the criteria and everything while offering the best price. “Our design came in 20% less than the competitors. Having designed the best stadiums in the world, we knew exactly what was required and what was not,” said James.

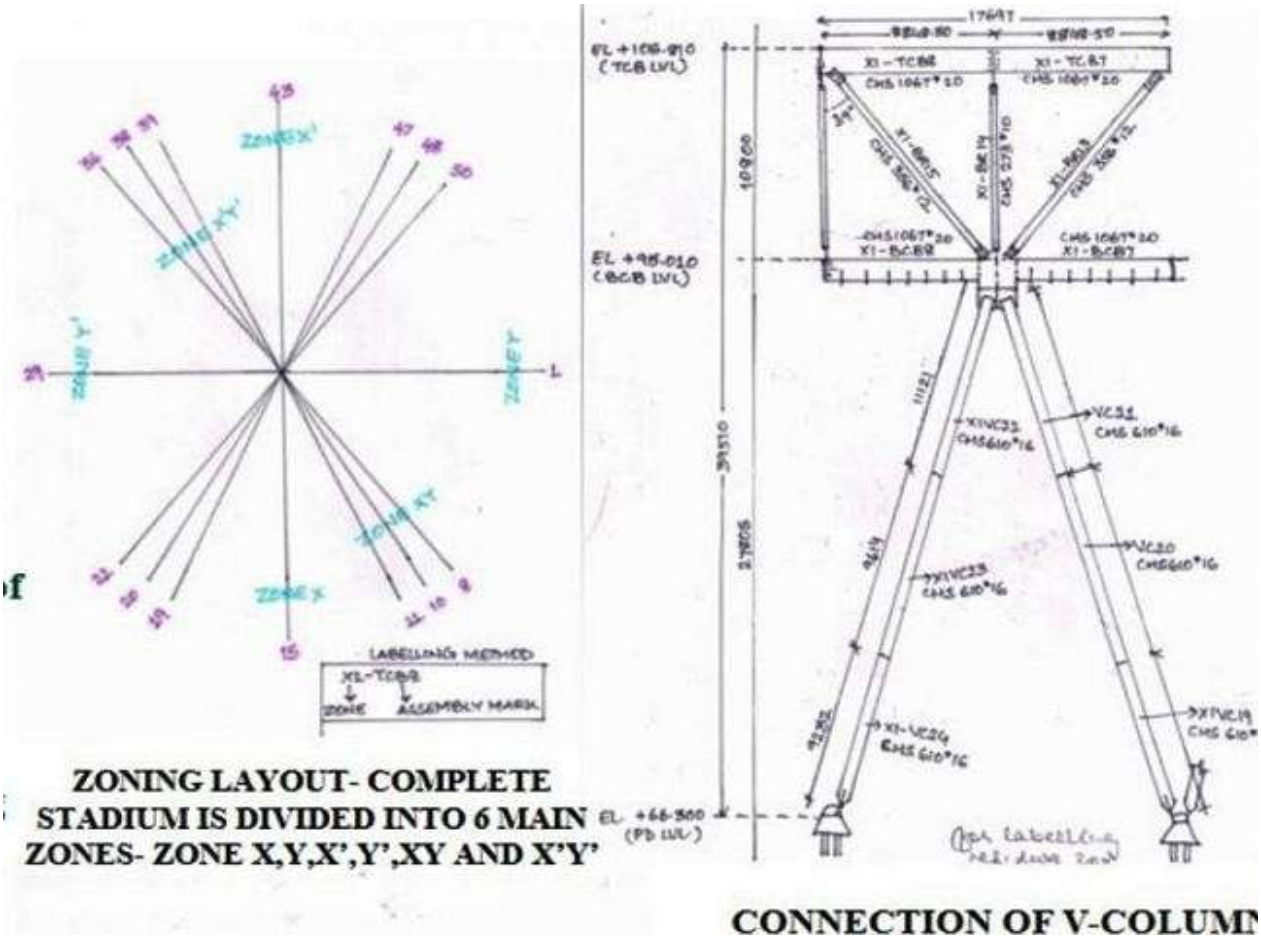
The redesigned stadium occupies 63 acres of land, with three entry points compared to one in the old stadium, with a metro line at one of the entry points. It contains 76 corporate boxes that can hold 25 persons each, a 55-room clubhouse, an Olympic sized swimming pool, and four dressing rooms. A unique feature of the stadium is the LED lights on the roof instead of the usual floodlights at cricket grounds. The LED lights are installed on an anti-bacterial, fireproof canopy with a PTFE

Membrane that covers 30 out of 55 metres width of the sitting area. The roof was done by the company Walter P Moore and was specifically designed to be lightweight and separate from the seating bowls to make it fairly earthquake resistant.

The structure eliminates the need for pillars and gives spectators an unobstructed view of the entire field from any place in the Stadium.

➢ Roof structure design:

- The structure is also designed to be kept seismically separate from the main bowl, to avoid vibrations transfer during an earthquake
- Comprises of structural steel members assemble and erection together.
- All sections are either circular hollow sections, square hollow sections, rectangular hollow sections and Plates.
- Joinery consists of welding and bolting only.
- Due to the volatile nature of the earthquake, it was necessary to design a lightweight roof structure.



F-5.1.8-D- STADIUM_DESIGN

➢ Tools and tackles required:

- Sling (6MTR, 8MTR, 14MTR LENGTH), DE-SHACKLES OF 10MT, 25MT AND 35MT, Strongback, Guide rope, Chain blocks of 5MT and 10MT, Spanners

➢ Material Required:

Structure steel circular hollow sections, Rectangle hollow sections, square hollow sections, Bolts, Nuts, Washer. Populous is a leading architectural design firm, which has designed several popular sporting venues including the Tottenham Hotspur stadium, Wembley Stadium as well as FIFA and Olympic Venues. But Motera was possibly one of the most challenging projects as the budget was about a sixth compared to other international peers.

Andrew James, the Lead Architect and senior principal at Populous, told Business Insider that the brief for Motera was simple – it has to be larger than the MCG. And having been the lead designer for the MCG as well, James got to work and designed Motera with 9,000 more seats In the end, L&T was finalized as the Principal Contractor to build and design the stadium.

SR NO	MAJOR SCOPE OF WORK	QUANTITY	UNITY
1	**EARTHWORK**	295000	M^3
2	**CONCRETING**	103000	M^3
3	**REINFORCEMENT**	12600	MT
4	**SHUTTERING**	536000	M^3
5	**BLOCKWORK**	75000	M^3
6	**PLASTERING**	140000	M^2
7	**FLOORING**	55000	M^2
8	**STRUCTURAL STEEL WORK**	2700	MT
9	**TENSILE CABLE**	300	MT
10	**PTFE ROOF MEMBRANE**	28000	M^2

T-5.1.8-C-MAJOR SCOPE_STRUCT

Bids Submitted for Sardar Patel's Reconstruction			
Bidder	**Bid**	**Evaluation**	**Notes**
Larsen & Toubro	₹677.19 crores (US$95 million)	Lowest-1 (L1)	Winning bid. Financially lowest and technically ranked first.
Shapoorji Pallonji & Co. Ltd.	₹847.88 crores (US$120 million)	Lowest-2 (L2)	
Nagarjuna Construction Co. Ltd.	₹1,065 crores (US$150 million)	Highest (L3)	

T-5.1.8-D-BIDS_SUBMITTED

➢ Work:

- L&T took over the construction work of the stadium in December 2016. On 16 January 2017, the Gujarat Cricket Association oversaw the project, which formally began on the same day.
- The stadium was planned to be finished in 2 years and the reconstruction project was estimated to cost around ₹ 7 billion. Finishing touches were given to the stadium in February 2020 and it is expected to host an England-India day-night test match by 2021.
- Mumbai-based Commercial Kitchen Consultants "Span Asia" was hired to work with Populous and L&T on all the F&B Related areas such as the Concession Counters, Main Stadium Kitchens, Player Kitchens, VIP/VVIP Boxes, Corporate Boxes, Press & Media Boxes, Pantries, GCA Club and Related areas.

➢ Construction Methodology:

The entire main stadium is divided into 8 zones:

I. Site mobilization of all resources including manpower and soil testing before commencingmen date.

II. Mobilization, Surveying and setting out the plan of the site.

III. Excavation and fountain works of VIP/Zone 1 and zone 2 in progress.

IV. Zone 1,2,3 and 4 podia in-process and zone 5 excavation in progress.

V. Zone 1,2,3,4 and 5 completion of the podium slab and zone 6 foundation works in progress.

VI. Zone 1,2, and 4 Upper bowl bleacher erection, VVIP (suite) level slab and then steel truss erection in progress. Zone 3,5 and 6 raker beam and bleacher erection in progress.

ZONE - 1	VIP Pavillion
ZONE - 4	Media Center
ZONE - 2,3,5, and 6	Typical bay construction
ZONE - 7,8	Ramp

T-5.1.8-E-DIVID_ZONES

VII. In zone 1,2 and 4 completion of upper bowl erection, inner lower bowl raker element erection in progress. Zone 3,5 and 6 upper bowl bleacher erection in progress.

VIII. Zone 1,2 and 4 completion of plant room level, inner bowl raker element erection in progress. Zone 3,5 and 6 upper bowl bleacher erection in progress.

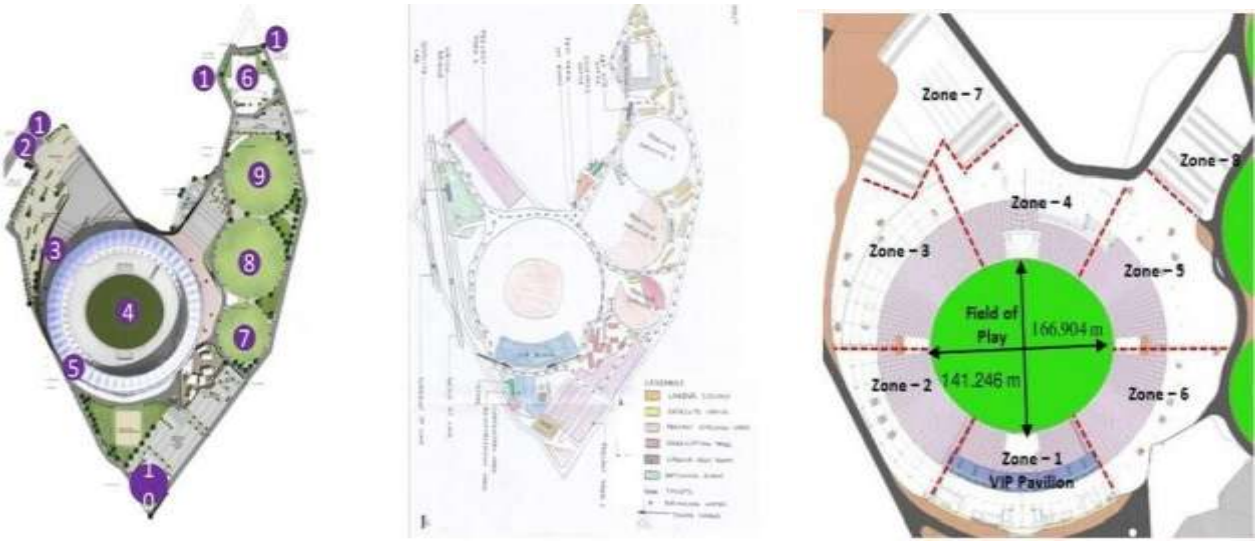
IX. Zone 1 steel roof erection started inner lower bowl raker element erection in progress. Zone 3, 5 and 6 completion of upper bowl bleacher, steel roof erection in progress.

X. Zone 1 steel roof erection in progress. Zone 6 lower bowl bleacher erection in progress.

XI. Completion of roof membrane erection.

XII. Overall completion of the stadium as well as other structures and then handling over.

- It has also been planned that the stadium will be connected to the metro station by a skywalk to decrease road congestion.
- The skywalk is planned to be completed after September 2020 and is a part of the Motera Metro Station project rather than the motera stadium



F-5.1.8-E-ZONE_WISE

Outside of the main ground, the stadium can accommodate several other features, including an Olympic-sized swimming pool, an indoor cricket academy, badminton and tennis courts, a squash arena, a table tennis area, a 3D projector theatre, and a clubhouse with three practice grounds and 50 rooms. The parking lot can accommodate 3,000 cars and 10,000 two-wheelers. Sardar Patel Stadium also has a huge ramp designed to facilitate the movement of around 60,000 people simultaneously. The stadium has been designed such that patrons fill the lower levels of the ground for smaller events to maintain the crowd atmosphere when not at capacity.

SR.NO	ITEM	AMOUNT (Cr.)
1	Civil Structure	265.65
2	Finishing & Interiors	199.27
3	MEP	125.89
4	Structural steel	99.39
5	External development	33.13
6	Operation and Maintenance	19.88
	TOTAL	662.62
7	Consultants (PMC)	33.13
8	Legal approvals	52
9	O&M	19.88
10	Other expense-overheads	32.37
	TOTAL	800

T-5.1.8-COST_BREAK-UP_PERCEN

➢ PRECAUTIONS FOR ACTIVITY:

- Working load limits must be considered for all the equipment underuse and load exceeding that limits must not be used.
- All shackles, slings ropes etc should be checked for any defect.
- Parts of crane and loads must operate at a safe permitted distance (mini 3 to 6 meters-based
- on voltage reading) from a live overhead power line.

- Shackles should be used (with a pin resting in the hook), wherever two or more rope eyes are needed to be placed in the book
- Loads to be lifted must be properly rigged and should be stable and balanced before them guide ropes must be used to keep the load under control
- Before life is started, the load line must be directly brought above the center of gravity of the element
- Member should be unhooked only after a safe landing
- The unused sling of multi-leg sling must be secured while life
- When using multi sling make sure that all the sling are made up of the same material
- Tying knots in the ropes must be avoided as items reduce ropes strength

QUANTIFICATION AND ANALYSIS

LABOUR PRODUCTIVITY FOR ROOF STRUCTURE ERECTIONIN KG/M

SR NO	ACTIVITY	TIME TAKEN IN HRS	QUANTITY	NO OF SKILLED LABOURS REQUIRED	PRODUCTIVITY KG/MAN HRS
1	TRANSPORTING -V COLUMNS	0.5	7318.061	8	152.460
2	ERECTION OF V-COLUMN	4	7318.061		
3	ALIGNMENT OF V-COLUMN	1.5	7318.061		
4	TRANSPORTING TRUSSLE	0.5	3764.48	8	280.582
5	ERECTION OF TRUSSELL	1	3764.48		
6	ANCHORNG THE TRUUSSLE	6	3764.48		
7`	ALIGNMENT OF TRUSSELL 1	1	3764.48		
8	ASSEMBLING THE COMPRESSION RING	72	30303.08	6	70.146
9	TILTING COMPRESSION PLATFORM	1.5	30303.08	8	244.386

10	LIFTING AND PLACING THE COMPRESSION RING	2	30303.08		
11	ALIGNMENT OF COMPRESSION RING	12	30303.08		

T-5.1.8-A-LABOUR_PRODUCTIVITY

EQUIPMENT REQUIRED

SR NO	EQUIPMENT TYPES	MAKE	MODEL	MAX CAPACITY	HIRED/ OWNERS
1	CRAWLER CRANE	LIEBHERR	1300	300MT	HIRED
2	CRAWLER CRANE	FUSHUN	120A	120MT	HIRED
3	HYDRAULIC CRAWLER CRANE	XCMG	QY100K	100MT	HIRED
4	CRAWLER CRANE	TEREX	CC-2800-1	600MT	HIRED
5	BOOM LIFT	JLG LIFT	120-SXJ	120 FT	HIRED
6	LOADING/ UNLOADING CRANE	ESCORTS	F-15	VARIES	HIRED
7	BOOM	JLG LIFT	1350-SJP	---	HIRED
8	BOOM	AUSTIN I	JLG LIFT-1350SJP	120 FT BOOM LENGTH	HIRED
9	TRAILER	JOSHI LOGISTICS	---	40FT LENGTH/20T CAPACITY	HIRED

T-5.1.8-B-EQUIPMENT _REQUIRED

F-5.1.8-F-NEW MODEL_STADIUM

CHAPTER: 6 SWACHH BHARAT ABHIYAN (CLEAN INDIA)

##Swachh Bharat Mission (SBM), Swachh Bharat Abhiyan (SBA), or Clean India Mission##

It is a country-wide campaign initiated by the Government of India in 2014 to eliminate open defecation and improve solid waste management (SWM). Phase 1 of the mission lasted till October 2019. Phase 2 will be implemented between 2020-21 and 2024-25.

Phase 2 will be implemented between 2020-21 and 2024-25. Initiated by the Government of India, the mission aimed to achieve an "open-defecation free" (ODF) India by 2 October 2019, the 150th anniversary of the birth of Mahatma Gandhi.

The objectives of the first phase of the mission also included eradication of manual scavenging, generating awareness and bringing about a behaviour change regarding sanitation practices, and augmentation of capacity at the local level. The second phase of the mission aims to sustain the open defecation free status and improve the management of solid and liquid waste. The mission is aimed at progressing towards target 6.2 of the Sustainable Development Goals Number 6 established by the United Nations in 2015.

The mission's true name is in Hindi. In English, it means "Clean India Mission". The mission was formally dispatched on 2 October 2014 at Rajghat, New Delhi by Prime Clergyman Narendra Modi. It is India's biggest tidiness drive to date with 3,000,000 government workers and understudies from all pieces of India taking an interest in 4,043 urban communities, towns, and rustic networks. At an assembly in Champaran, the Prime pastor called the mission Satyagrah se Swachhagrah about Gandhi's Champaran Satyagraha dispatched on 10 April 1916. The mission was part into two: provincial and metropolitan.

In provincial regions "SBM - Gramin" was financed and observed through the Ministry of Drinking Water and Sanitation; though "SBM - metropolitan" was administered by the Ministry of Housing and Urban Affairs.

As a component of the mission, volunteers, known as Swachhagrahis, or "Envoys of tidiness", advanced indoor pipes and local area ways to deal with sterilization (CAS) at the town level. Other exercises included public continuous observing and updates from non-legislative associations (NGOs) like The Ugly Indian, Waste Warriors, and SWaCH Pune (Solid Waste Assortment and Handling).

The public authority gave an endowment to the development of almost 110 million latrines between 2014 and 2019, albeit numerous Indians particularly in country regions decide to not utilize them. The mission was scrutinized for utilizing coercive ways to deal with power individuals to utilize latrines. Numerous families were undermined with a deficiency of advantages, for example, admittance to power or food qualifications through the general society circulation framework.

6.1 Swatchh needed in Giramtha village – Existing Situation with photograph:

In the covid situation we are not done any kind of activity in our village GIRAMTHA but we have done one survey on the existing condition of the village regarding swachhta. . The people are maintaining the cleanliness of the village but in some streets, there is no swachhata Because there is no clearness about pond and canal there is no proper maintenance in the canal there is animals and their solid wasted and plastic wasted.

- The strategy is to move toward a Swatch Bharat by making it a massive mass movement that seeks to engage everyone in the task of cleaning homes, street, workplaces, village, cities and surrounding locality.
- Our allocated village existing situation is not that good there is no awareness to clean village in village people.
- Swachh Bharat Abhiyan needed because the lake and canal are not clean and it looks like few years of no process to clean the lake.
- In situation Covid-19 we need to clean ourselves and maintained social distance and waste management awareness in this village to know the value of canal and lake for irrigation and clearness of the village for good health.
- And the awareness dry and solid waste of village with help of swachh Bharat Abhiyan app used it for our village goods

F-6.1-GIRAMTHA_CANAL

➢ **Swachh Bharat Abhiyan App:**

- He/ she will open this App and take picture of the waste/ garbage dump
- This picture will get uploaded on the Swachh Bharat National Server (Clean India National Server) along with its geo-location, time and date of upload
- National Server will process the image and grade this waste/ garbage dump as Red, Yellow or Green. Red for Urgent Action, Yellow for taking Notice and Green to indicate Clean.
- National Server hence places a "Tag" of respective colours on the Google Map (or on ISRO's BHAWAN) at that geo-location.
- Now consider that many persons have uploaded such information, all such Geo-Tags will be seen to anyone on Google Map (or on ISRO's BHAWAN)

6.2 Guidelines - Implementation in Giramtha Village with Photograph:

As indicated by Talati, Sarpanch and locals, individuals are cleaning their close-by territory consistently and gather that waste and discard it to out of the town and copy it. No consistent schedule squander assortment is there in the Giramtha town.

- Modern and Scientific Municipal Solid Waste Management
- To effect behavioural change regarding healthy sanitation practices.
- The villagers should have to keep their organic and inorganic in a different box.

- The villagers should have to keep their surrounding place clean and hygienic, by cleaning the street and collecting the waste from the streets.
- The Sarpanch should have to pay attention to clean the canal and lake and repair and maintenance to store clean water for irrigation.
- Also, take care of street light or roadside Repair and Maintenance Sarpanch pay attention so that there is no accident

➢ **Waste Disposal System of Giramtha Village:-**

F-6.2-B- Summary of the waste disposal system of Giramtha village

- In this photo, we can see that the people through the garbage in an open field, because there is not any type of garbage collection facilities. Due to this, a very bad smell and unhygienic atmosphere occur and it leads to the epidemic in the village.
- Need to implement waste collect and disposal system of Giramtha village.

6.3 Action for making our village clean:

In this semester we don't have done activity in our village but the next semester we start a campaign of awareness about swachhta and other activity and what is the tool required to a developed village.

- Due to the COVID-19 pandemic situation, we are not been able to perform any activity in that village, because of our and the villager's health concerns.
- Follow the government's rules and regulations.
- If someone is breaking the rule then make them aware of it.
- Spread awareness to keep our village clean.
- In future when this situation is under control, we will perform all the activities which are required.

CHAPTER: 7 Village condition due to Covid-19

- Regarding COVID 19 pandemic, the Ministry of Panchayati Raj, the Government of India right upfront cooperation with State Governments have taken different activities. Close counsel and direction of the State, just as District specialists, is being kept up to guarantee that lockdown conditions are not abused and standards of social removing are conscientiously followed to contain the spread of the illness. India has surpassed Brazil and become the second-most exceedingly awful influenced country on the planet by the Covid pandemic, with more than 4 million cases. Coronavirus had for the most part stayed in India's urban areas, yet the infection is presently spreading to rustic India – a region with more than 850 million individuals and far more awful medical care.
- The explanation behind this move seems, by all accounts, to be traveller labourers who have been getting back to their towns since the lockdown was facilitated toward the finish of June. The clinical reaction to stop the spread furthermore, treat those tainted has been lacking, as indicated by media reports. With one prepared specialist for every 1,497 individuals, against the World Health Organization suggested one for every 1,000, and public wellbeing consumption for 2018 at only 1.3% of GDP, India faces a daunting task in managing the pandemic.
- While 66% of India's populace lives in rustic zones, there are right around multiple times as numerous wellbeing labourers per individual in urban communities. Most rustic networks depend on undeveloped wellbeing labourers. More than 66% of these country wellbeing suppliers have no proper clinical preparing except for stay the as it were the alternative of clinical help for a large portion of the rustic populace.

7.1 Taken steps in Giramtha village related to existing situation:

During the collaboration with the Talati, he revealed to us that the isolated spot and home isolate office was actualized during the lockdown. As indicated by Talati, Sarpanch and residents; in the Giramtha town, the disinfection interaction was finished during the lockdown time frame when the principal instance of Coronavirus came in the town.

➢ Press Information Bureau by Government of India to the Ministry of Panchayati Raj:

- Village Panchayats undertake various measures to contain the spread of COVID-19 in the country concerning COVID 19 pandemic, Ministry of Panchayati Raj, Government of India in close collaboration with State Governments have taken various initiatives. Close consultation and guidance of the State, as well as District authorities, is being maintained to ensure that lockdown conditions are not violated and norms of social distancing are scrupulously followed to contain the spread of the disease.
- In all gram panchayats in the state, the use of Social Media WhatsApp group has been used to create awareness among the masses in the villages. Information at the grassroots level is being given to the people by putting posters everywhere.
- Face masks are being distributed to the citizens by Gram Panchayat members and social organizations and citizens are also being told not to touch their eyes, nose, and mouth, wash

hands with soap frequently and maintain personal distance. Along with ration distribution to villagers, fodder for abandoned cattle is also being provided by a social service organization.

- Rations are distributed by the Government in the village and the villagers are adopting the steps which are taken by the Government and Sarpanch.
- Due to the corona virus pandemic, various steps are taken in the village related to the condition.
- The village was fully sanitized so the situation is under control and there is not any kind of active case
- They ensure that they maintain lockdown conditions and are not violated and norms of social distancing are scrupulously followed to stop the spread of the disease.

7.2 Activities done by students for Giramtha village with a photograph:

- Due to the COVID-19 pandemic, we were not been able to go to the village, so it was the major step taken by villagers. And also due to this, we cannot take any major step in our village.
- But after the situation is under control, we will make sure that we do all the activities which make our village a Smart village.

7.3 Any other steps were taken by the students/villagers:

During the collaboration with the Talati, he disclosed to us that the isolated spot and home isolate office was actualized during the lockdown. In the COVID-19 circumstance cleaning, hazing and sterilization were done in the town.

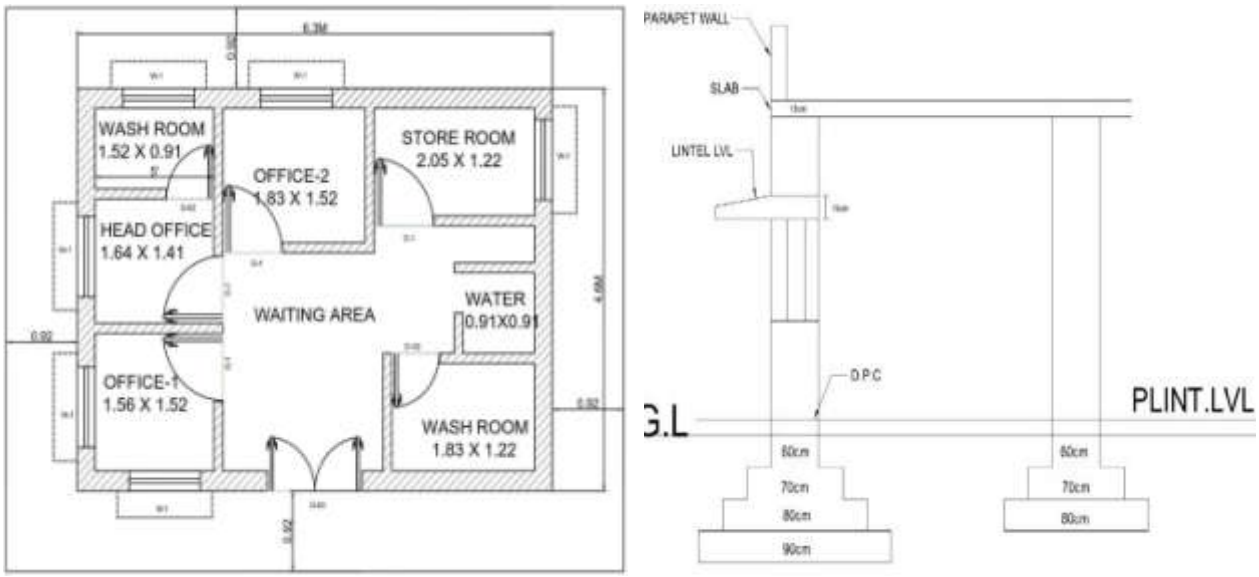
- Due to the COVID-19 pandemic, we were not been able to go to the village,
- As the Government and Sarpanch have talked about various rules and regulation regarding COVID-19, the villagers are strictly following all the norms like wearing masks, Appling sanitiser, social distancing, etc.
- Regular cleaning operations are being carried out and sodium hypochlorite is being sprayed on the roads in Gram Panchayat.

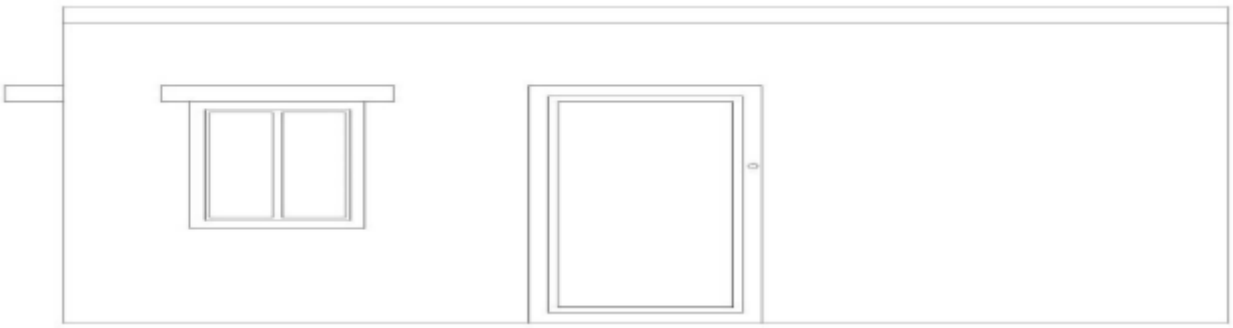
F-7.3-PRECAUTION AGAINST COVID

CHAPTER: 8
SUSTAINABLE DESIGN PLANNING PROPOSAL (Prototype Design)- Part- I

8.1 Design of POST - OFFICE:

- All dimensions in meter (m).





F.8.1 Public Health Center Drawings

MEASUREMENT SHEET

SR NO.	DESCRIPTION	NO	LENGTH M	WIDTH M	HEIGHT M	QUANTITY M^3	TOTAL QTY
1	Earthwork in excavation for the foundation:	1 1	16.37 16.07	0.9 0.8	1.2 1.2	17.63 15.43	33.06
2	P.C.C FOR FOUNDATION (1:4:8)	1	32.44	0.9	0.3	-	8.76
3	Brick masonry from the foundation up to ground level Main wall First footing Second footing Third footing Partition wall First footing Second footing		 16.82 17.27 17.72 17.02 17.32	 0.8 0.7 0.6 0.7 0.6	 0.3 0.3 0.3 0.3 0.3	 4.04 3.63 3.19 3.57 3.12	17.55
4	Providing Refilling of the ordinary soil in foundation trenches FORMULA:					33.06 – (19.62) =`	13.98 cu m
5	Providing and laying brick masonry up to the bottom of the slab Main wall Partition wall		 17.72 17.32	 0.6 0.6	 3.1 3.1	 32.96 32.22	65.18

	Deduction on doors And windows						
	d-00	1	2.1	0.6	2.5	31.5	19.42
	d-1	4	1.9	0.6	2.5	11.4	
	d-2	2	0.61	0.6	1.5	1.83	
	w-1	6	0.65	0.6	1.3	3.04	
	DEDUCTION FOR LINTEL LVL						
	DOOR D-00	1	2.7	0.6	2.5	4.05	
	D-1	4	2.5	0.6	2.5	3.75	9.864
	D-2	2	1.21	0.6	1.5	1.089	
	WINDOWS W-1	6	1.25	0.6	1.3	0.975	
	TOTAL DEDUCTION	-	-	-	-	-	29.28
	TOTAL B.W AFTER DEDUCTION 35.9 M^3						
6	RCC LINTEL @ 1% STEEL IN LINTEL ARE 9.864 M^3 CONCRETE QUANTITY						774.32 KGS NOTE: density of steel is 7850 kg
7	Providing R.C.C (1:2:4) WORK FO SLAB DIVIDED INTO TWO						
	GROUP		3.81	6.10	0.15	3.49	5.59
	PART – A		2.29	6.10	0.15	2.10	
	PART – B						
8	Providing laying Cement Plaster (1:4)		45.76	0.3	0.9	-	12.36

8	Providing and laying Brick Masonry C.M (1:4) for parapet wall		23.36	6.3	0.9	-	132.45

T-8.1 Measurement Sheet for Post-Office

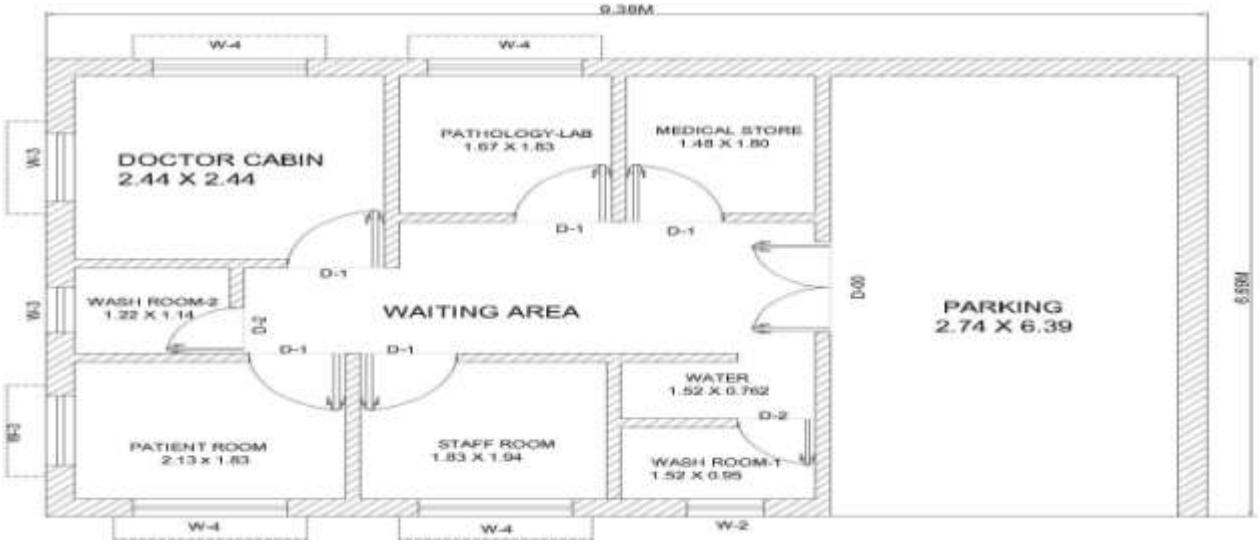
ABSTRACT SHEET

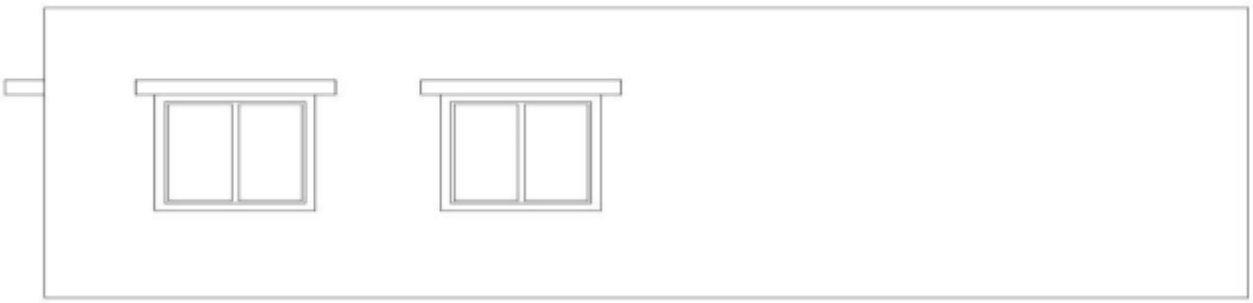
Sr. NO	Description of Items	QUANTITY	RATE	PER	AMOUNT
1	Excavation for a foundation in soft ordinary soil	33.06	110	cum	3636.6
2	Providing and laying foundation concrete P.C.C (1:4:8) @ Foundation	8.70	1500	cum	13050
3	Providing and laying brick masonry @ foundation	17.55	951	cum	16690.05
4	Refilling of the ordinary soil in foundation trenches	13.98	107	cum	1495.86
5	Providing and refilling of the yellow soil at plinth level	20.25	211	cum	4272.75
6	Providing and laying brick masonry up to the bottom of the slab and parapet wall	35.9	211	cum	7574.9
7	Providing and laying R.C.C work (1:2:4)	5.59	6128	cum	34255.52
8	Providing 12 MM thick cement Plaster in (1:4)	12.36	138	Cu.m	1705.68
	Total Cost in Rupees	-	-	-	82681.36

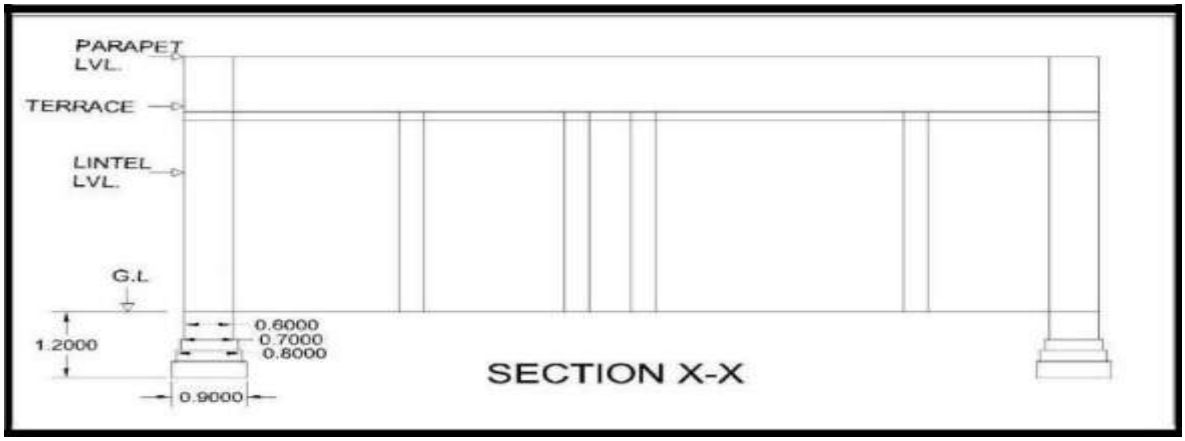
T-8.1- Abstract Sheet for Post-Office

8.2 Design of PUBLIC HEALTH CENTER:

- At least one health center is required in every village because in case of emergency people does not have to go to the other city for treatment.
- All dimensions in meter (m).







F. 8.2 Public Health Center Drawings

MEASUREMENT SHEET

SR NO	DESCRIPTION	NO	LENGTH M	WIDTH M	HEIGHT M	QUANTITY M^3	TOTAL QUANTITY
1	Earthwork in excavation for foundation: Total length 52.4m	1	52.4	0.9	1.2	56.59	_
2	P.C.C FOR FOUNDATIO N (1:4:8)	1	52.4	0.9	0.3	14.15	__
3	Brick masonry from the foundation up to ground level Main wall First footing Second footing Third footing	 1 1 1 _	 53.15 53.9 54.65 _	 0.8 0.7 0.6 _	 0.3 0.3 0.3 _	 12.76 11.32 9.84 _	104.66
4	Providing Refilling of the ordinary soil in foundation trenches:	-	-	-	-	56.59 – 48.07 =	8.52 cu m
5	Providing and laying brick masonry up to the bottom of the slab Deduction: Doors D- 00 D-1 D-2 Windows W-1 W-3 Ventilation V-1	 - 1 5 2 2 4 1 1 - 	54.65 - 1.2 1 0.61 0.65 0.80 0.41 0.50 - 	0.6 - 0.6 0.6 0.6 0.6 0.6 0.6 0.6 - 	3.1 - 2.1 2.1 2.1 1.3 1.3 0.45 0.45 - 	101.65 - 1.51 2 6.3 1.537 1.014 2.496 0.110 0.135 -	101.65 - 13.104

	V-2						
	DEDUCTION FOR LINTEL LVL DOOR D-00 D-1 D-2 WINDOWS W-1 W-2 VENTILATION V TOTAL DEDUCTION TOTAL B.W AFTER DEDUCTION 87.35M^3	 1 5 2 4 2 1 -	 1.8 1.6 1.21 1.24 1.2 1.1 -	 0.6 0.6 0.6 0.6 0.6 0.6 -	 0.15 0.15 0.15 0.15 0.15 0.15 -	 0.162 0.72 0.216 0.504 0.216 0.099 -	 1.917 14.30
6	RCC LINTEL@ 1% STEEL IN LINTEL ARE 1.917 M^3 CONCRETE QUANTITY REINFORCEMENT: Q = 1% of the quantity of concrete x density of steel Q = 150.48 kgs	–	–	–	–	–	**NOTE: density of steel is 7850 kg/m^3**
7	Providing R.C.C (1:2:4) WORK FO SLAB DIVIDED INTO TWO GROUP PART – A PART – B	 _ _	 2.78 3.39	 6.10 6.10	 0.15 0.15	 2.54 3.10	5.644
8	Providing laying Cement Plaster (1:4)		88.55	0.3	0.9	--	23.91
9	Providing and laying Brick Masonry C.M (1:4) for parapet wall		24.54	6.3	0.9	_	139.14

T-8.2-Measurement Sheet for Public Health Center

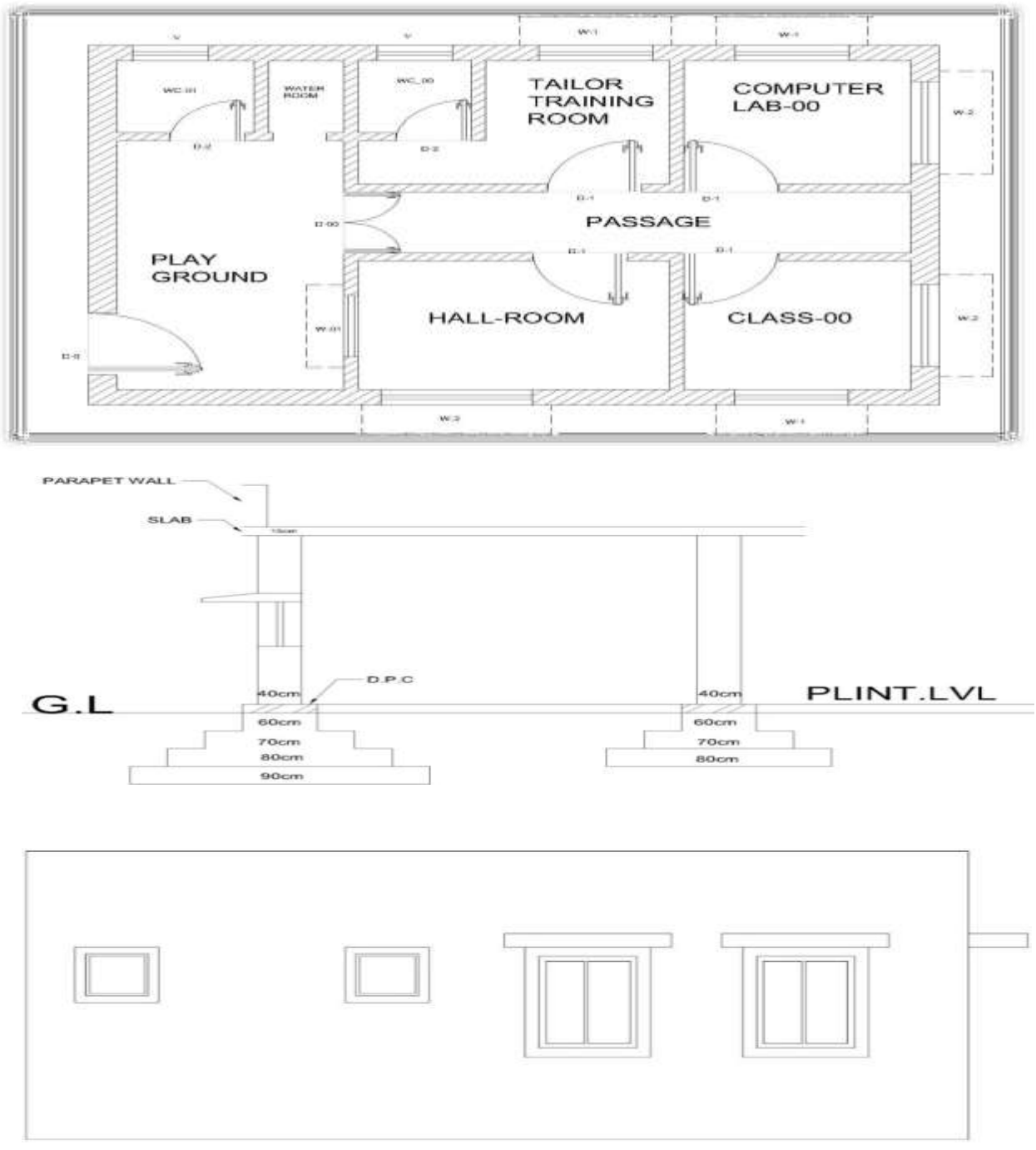
ABSTRACT SHEET

Sr. NO	Description of Items	QUANTITY	RATE	PER	AMOUNT
1	Excavation for a foundation in soft ordinary soil	56.59	110	CUM	6224.9
2	Providing and laying foundation concrete P.C.C (1:4:8) @ Foundation	14.15	1500	CUM	2122.5
3	Providing and laying brick masonry @ foundation	33.92	951	CUM	32257..92
4	Refilling of the ordinary soil in foundation trenches	8.52	107	CUM	911.64
5	Providing and refilling of the yellow soil at plinth level	15.25	211	CUM	3217.75
6	Providing and laying brick masonry up to the bottom of the slab	87.35	211	CUM	18430.85
7	Providing and laying R.C.C work (1:2:4)	150.48	6128	CUM	922141.44
8	Providing laying Cement Plaster (1:4)	23.91	138	CUM	3299.58
	Total Cost in Rupees	--	--	--	988606.58

T-8.2-Abstract Sheet for Public Health Center

8.3 Design of Skill Development Center:

- We will give the design of skill development classes for the village where lots of activity villagers do like women empowerment classes, karate classes, painting class etc.
  - All dimensions in meter (m).



F. 8.3 Skill Development Center Drawings

MEASUREMENT SHEET

SR NO	DESCRIPTION	NO	LENGTH	WIDTH	HEIGHT	QUANTITY	TOTAL QUANTITY
1	Earthwork in excavation for the foundation: Main wall 14.235m Partition wall 18.9m	 1 1	 15.25 18.9	 0.9 0.8	 1.2 1.2	 16.47 18.14	34.61
2	P.C.C FOR FOUNDATION (1:4:8)	1	34.15	0.9	0.3	--	9.22
3	Brick masonry from the foundation up to ground level Main wall First footing Second footing Third footing Partition wall First footing Second footing	 	 14.85 15.35 15.85 19.4 19.7	 0.8 0.7 0.6 0.7 0.6	 0.3 0.3 0.3 0.3 0.3	 3.564 3.223 2.853 4.07 3.54	17.25
4	Damp proof course (5 cm thick)		34.15	0.6	--	--	20.49
5	Providing Refilling of the ordinary soil in foundation trenches FORMULA:					34.61 – 26.47 =	8.14
5	Providing and laying brick masonry up to the bottom of the slab Deduction:	 1	35.35 1.04	0.4 0.4	3.0 2.1	-- 0.87	42.42

	Doors D-00	4	0.76	0.4	2.1	2.55	
	D-1	2	0.61	0.4	2.1	1.02	
	D-2	4	0.91	0.4	1.2	1.74	
	Windows W-1	3	1.22	0.4	1.2	1.76	
	W-3	2	0.41	0.4	0.45	0.15	8.09
	Ventilation V-1						
	DEDUCTION FOR						
	LINTEL LVL	1	1.44	0.4	0.15	0.086	
	DOOR D-00	4	1.16	0.4	0.15	0.278	
	D-1	2	1.01	0.4	0.15	0.121	
	D-2	4	1.31	0.4	0.15	0.314	
	WINDOWS W-1	3	1.62	0.4	0.15	0.291	
	W-2	2	0.81	0.4	0.15	0.097	1.187
	VENTILATION V						
		--	--	--	--	--	9.96
	TOTAL DEDUCTION						
	TOTAL B.W AFTER DEDUCTION 32.46 M^3						
6	RCC LINTEL @ 1% STEEL IN LINTEL ARE 1.187 M^3 CONCRETE QUANTITY						93.18 kgs
	REINFORCEMENT:						**NOTE: density of steel is 7850 kg/m^3**
7	Providing R.C.C (1:2:4)						
	WORK FO SLAB DIVIDED INTO						
	TWO GROUP		4.80	5.33	0.15	3.84	4.28
	PART – A		2.06	1.41	0.15	0.44	
	PART – B						

8	Providing laying Cement Plaster (1:4)		6.86	5.33	0.012	--	0.44
9	Providing and laying Brick Masonry C.M (1:4) for parapet wall		4.80	5.33	0.20	---	5.12

T-8.3 Measurement Sheet for Skill Development Center

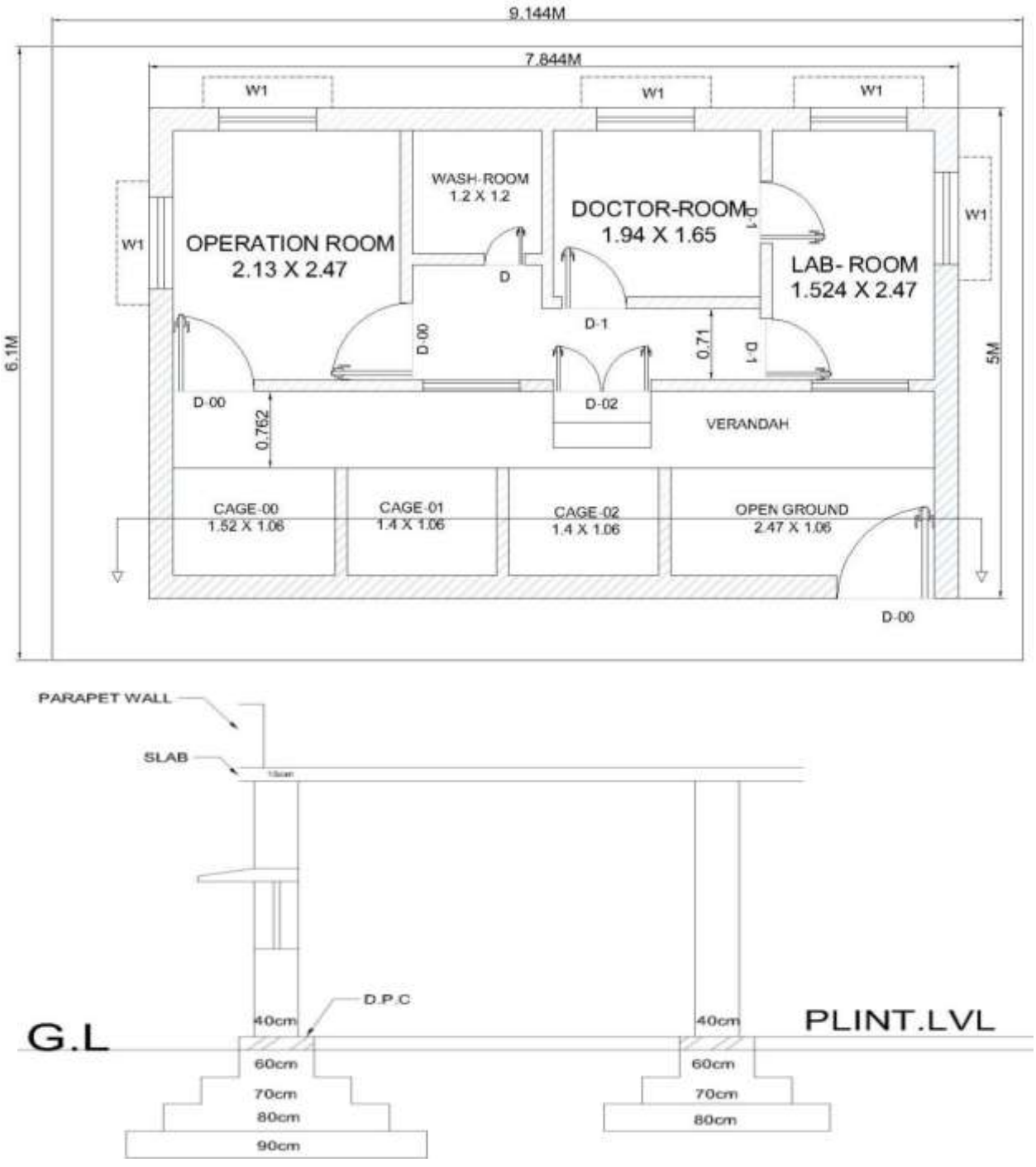
ABSTRACT SHEET

Sr. NO	Description of Items	QUANTITY	RATE	PER	AMOUNT
1	Excavation for the foundation in soft ordinary soil	34.61	110	CUM	3807.1
2	Providing and laying foundation concrete P.C.C (1:4:8) @ Foundation	9.22	1500	CUM	13830
3	Providing and laying brick masonry @ foundation	17.25	951	CUM	16404.75
4	Refilling of the ordinary soil in foundation trenches	8.14	107	CUM	870.98
5	Providing and refilling of the yellow soil at plinth level	13.65	211	CUM	2880.15
6	Providing and laying brick masonry up to the bottom of the slab and parapet wall	32.46	211	CUM	6849.06
7	Providing and laying R.C.C work	93.18	6128	CUM	571007.04
8	Providing laying Cement Plaster (1:4)	0.44	138	CUM	60.72
	Total Cost in Rupees	---	----	----	615709.8

T-8.3- Abstract Sheet for Skill Development Center

8.4 Design of ANIMAL – HOSPITAL:

- All dimensions in meter (m).



F. 8.4 Animal Hospital Center Drawings

MEASUREMENT SHEET

SR NO	DESCRIPTION	NO	LENGTH	WIDTH	HEIGHT	QUANTITY	TOTAL QUANTITY
1	Earthwork in excavation for the foundation: Total length 39.37m STEPS	1 2	39.37 1.20	0.9 0.9	1.2 0.10	42.52 0.216	42.74
2	P.C.C FOR FOUNDATION (1:4:8)	1	39.37	0.9	0.3	---	10.63
3	Brick masonry from the foundation up to ground level Main wall First footing Second footing Third footing Four footings up to G L G.L TO PLINTH STEP - 1 STEP – 2	 1 2	 40.72 41.17 41.62 42.07 42.07 0.90 0.9	 0.6 0.5 0.4 0.3 0.3 0.9 0.6	 0.3 0.3 0.3 0.3 0.3 0.15 0.15	 7.33 6.18 4.99 3.79 7.57 0.1215 0.81	30.79
4	Providing Refilling of the ordinary soil in foundation trenches					42.74 – 32.92 =	9.82
5	Damp proof course (2.5 cm thick)	1	42.07	0.3	--	12.62	
5	Providing and laying brick masonry up to the bottom of the slab	1	42.07	0.3	3.0	--	37.86
		3	1.20	0.3	2.10	2.268	
	Deduction:	1	1.0	0.3	2.10	0.63	
	Doors D-00	3	0.9	0.3	2.10	1.701	
	D-1	1	0.9	0.3	2.10	0.567	
	D-2	5	1.5	0.3	1.20	2.7	7.866
	D						
	Windows W-1						
		3	1.5	0.3	0.15	0.202	
	DEDUCTION FOR LINTEL	1	1.3	0.3	0.15	0.058	
		3	1.2	0.3	0.15	0.162	

	DOOR D-00 D-1 D-2 D WINDOWS W-1 TOTAL DEDUCTION TOTAL B.W AFTER DEDUCTION 29.11 M^3	1 5	1.2 1.8	0.3 0.3	0.15 0.15	0.054 0.405	0.882--- --------- 8.748
6	RCC LINTEL @ 1% STEEL IN LINTEL ARE 0.882 M^3 CONCRETE QUANTITY REINFORCEMENT: Q = 1% of the quantity of concrete x density of steel Q = 69.24 kgs						**NOTE: density of steel is 7850 kg/m^3**
7	Providing R.C.C (1:2:4) WORK FO SLAB DIVIDED INTO TWO GROUP PART – A		7.62	2.82	0.15	----	3.22
8	Providing laying Cement Plaster (1:4)		7.62	2.82	0.012	---	0.26
9	Providing and laying Brick Masonry C.M (1:4) for parapet wall		7.62	2.82	0.20	--	4.30

T-8.4- Measurement Sheet for Animal Hospital

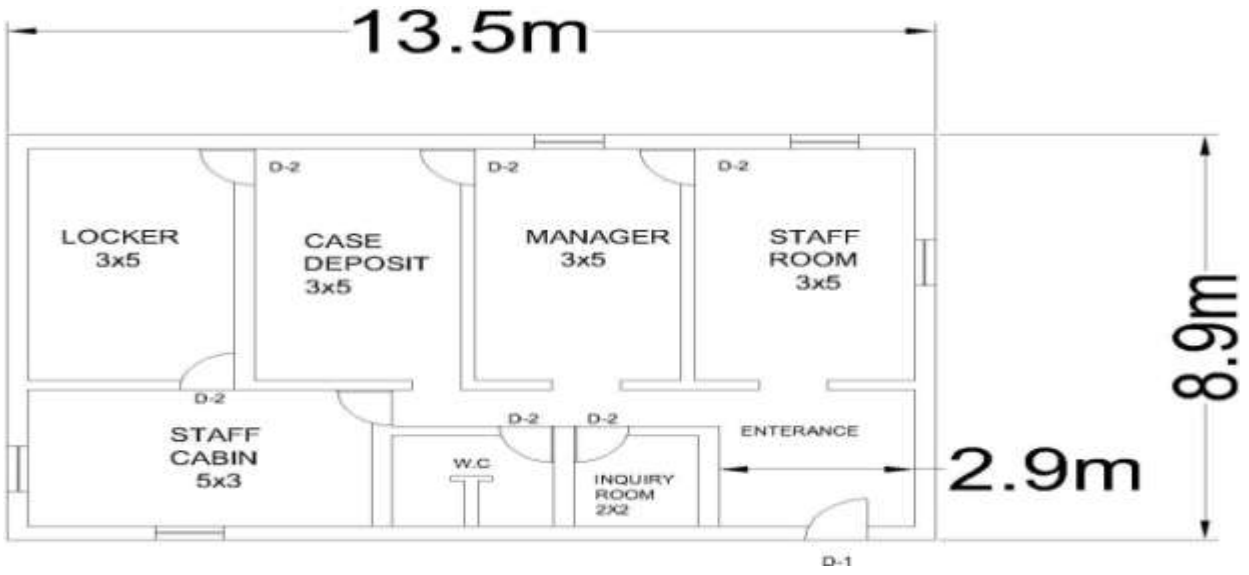
ABSTRACT SHEET

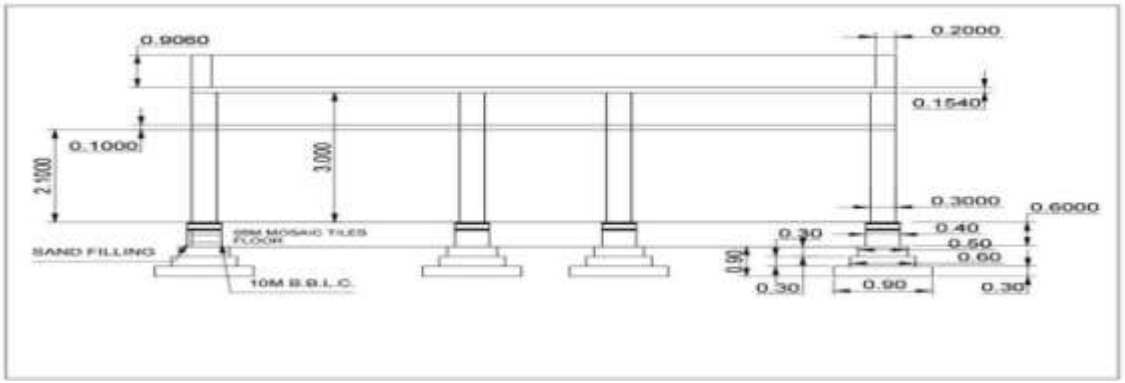
Sr. NO	Description of Items	QUANTITY	RATE	PER	AMOUNT
1	Excavation for the foundation in soft ordinary soil	42.74	110	Cum	4701.4
2	Providing and laying foundation concrete P.C.C (1:4:8) @ Foundation	10.63	1500	Cum	15945
3	Providing and laying brick masonry @ foundation	29.86	951	Cum	28396.86
4	Refilling of the ordinary soil in foundation trenches	9.82	107	Cum	1050.74
5	Providing and refilling of the yellow soil at plinth level	13.55	211	Cum	2859.05
6	Providing and laying brick masonry up to the bottom of the slab and parapet wall	29.11	211	Cum	6142.21
7	Providing and laying R.C.C work	69.24	6128	Cum	424302.72
8	Providing laying Cement Plaster (1:4)	0.26	138	Cum	35.88
	Total Cost in Rupees	-----	----	----	483434.31

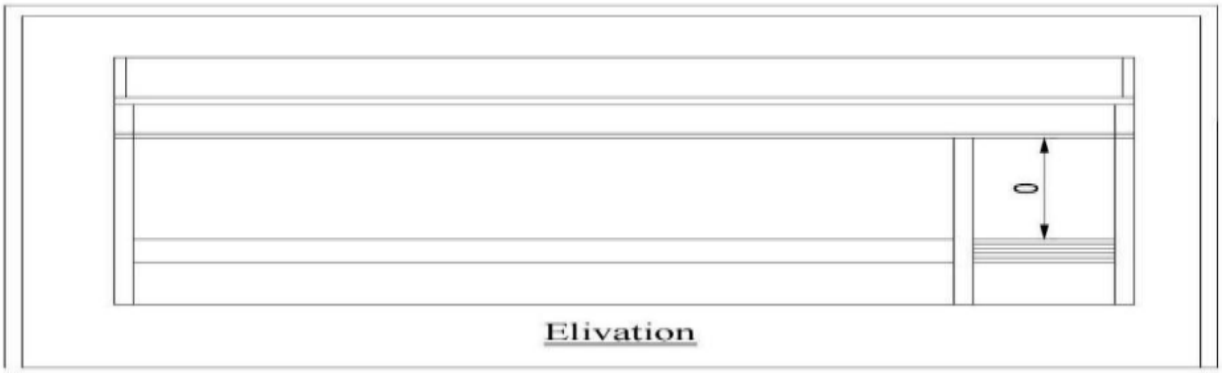
T-8.4- Abstract Sheet for Animal Hospital

8.5 Design of BANK:

- All dimensions in meter (m).







F.8.5 Bank Drawings

MEASUREMENT SHEET

NO.	DISCRIPTION	N	L	B	H	TQ
1	Excavation per foundation					
	up to 1.5 m depth					
		4	**14.4**	**0.9**	**0.9**	**45.68**
	LW1	**2**	**2.3**	**0.9**	**0.9**	**3.726**
	SW1	**4**	**1.4**	**0.9**	**0.9**	**4.536**
	SW2	**6**	**2.9**	**0.9**	**0.9**	**9.234**
	SW3	**1**	**0.6**	**0.9**	**0.9**	**0.486**
	SW4					
	Excavation for Steps	**1**	**2.8**	**0.9**	**0.9**	**0.378**
	L=2.8					
					TOTAL -	**64.04 CM³**
2	Providing and laying					
	P.C.C for foundation					
	LW1	**4**	**14.1**	**0.9**	**0.3**	
	SW1	**2**	**2.3**	**0.9**	**0.3**	**1.24**
	SW2	**4**	**1.4**	**0.9**	**0.3**	**1.51**
	SW3	**6**	**2.9**	**0.9**	**0.3**	**3.078**
	SW4	**1**	**0.6**	**0.9**	**0.3**	**0.162**
	Excavation for steps	**1**	**2.8**	**1.35**	**0.15**	**0.567**
					TOTAL -	**21.77 CM³**
3	First-class brick masonry for foundation CM (1:6)					
	1st step (60cm)					
	LW1	**4**	**14.1**	**0.6**	**0.3**	
	SW1	**2**	**3.2**	**0.6**	**0.3**	**1.15**
	SW2	**4**	**1.7**	**0.6**	**0.3**	**1.22**
	SW3	**6**	**1.9**	**0.6**	**0.3**	**2.05**
	SW4	**1**	**0.9**	**0.6**	**0.3**	**0.16**
	2nd step (50 cm)					
	LW1	**4**	**14.1**	**0.5**	**0.3**	**8.46**
	SW1	**2**	**3.3**	**0.5**	**0.3**	**0.99**
	SW2	**4**	**1.8**	**0.5**	**0.3**	**1.08**
	SW3	**6**	**2.8**	**0.5**	**0.3**	**2.52**

	SW4	**1**	**1**	**0.5**	**0.3**	**0.15**
					TOTAL -	**27.93 CM³**
4.	Backfilling in Foundation	**-**	**-**	**-**	**-**	**36.11 CM³**
5	First-class brick masonry					
	for W.L to P. L					
	LW1	**4**	**14.1**	**0.4**	**0.6**	**13.53**
	SW1	**2**	**3.4**	**0.4**	**0.6**	**1.63**
	SW2	**4**	**1.9**	**0.4**	**0.6**	**1.82**
	SW3	**6**	**2.9**	**0.4**	**0.6**	**4.17**
	SW4	**1**	**1.1**	**0.4**	**0.6**	**0.26**
					TOTAL –	**21.4 CM³**
	Steps –					
	1st		**1.25**	**0.30**	**0.15**	**0.056**
	2nd		**1.25**	**0.3**	**0.3**	**0.112**
	3rd		**1.25**	**0.3**	**0.45**	**0.168**
	4th		**1.25**	**0.3**	**0.60**	**0.225**
					TOTAL -	**0.562 CM³**
6	First-class brick masonry					
	For superstructure					
	CM (1:6)					
	LW1	**4**	**14.1**	**0.4**	**0.6**	**13.53**
	SW1	**2**	**3.5**	**0.4**	**0.6**	**1.68**
	SW2	**4**	**2**	**0.4**	**0.6**	**1.92**
	SW3	**6**	**3**	**0.4**	**0.6**	**4.32**
	SW4	**1**	**1.2**	**0.4**	**0.6**	**0.288**
					TOTAL -	**21.73 CM³**
7	20 CM thick parapet					
	LW	**2**	**15.3**	**0.2**	**0.9**	**5.076**

	SW	2	7	0.2	0.9	2.52
					TOTAL -	7.59 CM³
8.	Providing and laying R.C.C (1:2:4) for slab, beam, lintel, and Khaja					
	LINTEL	4	15.3	0.3	0.1	1.69
	LW1					
	SW1	2	3.5	0.3	0.1	0.21
	SW2	4	2	0.3	0.1	0.24
	SW3	6	3	0.3	0.1	0.54
	SW4	1	1.2	0.3	0.1	0.036
	Slab	1	15.3	7.9	0.15	18.1305 CM³
9.	Reinforcement quantity = 1% of the volume of a con. = (1/100) *20.84*7850 = 1635.94 kg					1635.94 kg
10.	5 CM thick mosaic tiles flooring					
	Cash deposit	1	3	3.5		10.5
	Locker room	1	3	3		9
	Staff room	1	3	2		6
	Manager room	1	2	3		6
	Staff cabin	1	5	3		15
	Inquiry room	1	2	3		6
	Passage	1				
	P1	1	1	3.3		3.3
	P2	1	1.2	11.4		13.68
	P3	1	2.3	2.3		5.29
	P4	1	2.5	3.3		8.25
					TOTAL -	83.02 M²
13.	B.B.L.C 10CM thick					
	Cash deposit	1	2.9	3.4	0.1	0.986
	Locker room	1	2.9	2.9	0.1	0.841
	Staff room	1	2.9	1.9	0.1	0.551

	Manager room	**1**	**1.9**	**2.9**	**0.1**	**0.551**
	Staff cabin	**1**	**4.9**	**2.9**	**0.1**	**0.421**
	Inquiry room	**1**	**1.9**	**2.9**	**0.1**	**0.551**
14.	Cash deposit	**1**	**2.9**	**3.4**	**0.45**	**4.43**
	Locker room	**1**	**2.9**	**2.9**	**0.45**	**3.78**
	Manager room	**1**	**1.9**	**2.9**	**0.45**	**2.47**
	Staff cabin	**1**	**4.9**	**2.9**	**0.45**	**6.39**
15.	**Tiles Staff toilet**					
	Wall 1	**4**	**1**		**2.1**	**8.4**
	Wall 2	**4**	**2**		**2.1**	**16.8**
	Toilet floor	**2**	**1**	**2**		**4**
					TOTAL –	**29.2 M²**

T-8.5-Measurement Sheet for Bank

ABSTRACT SHEET

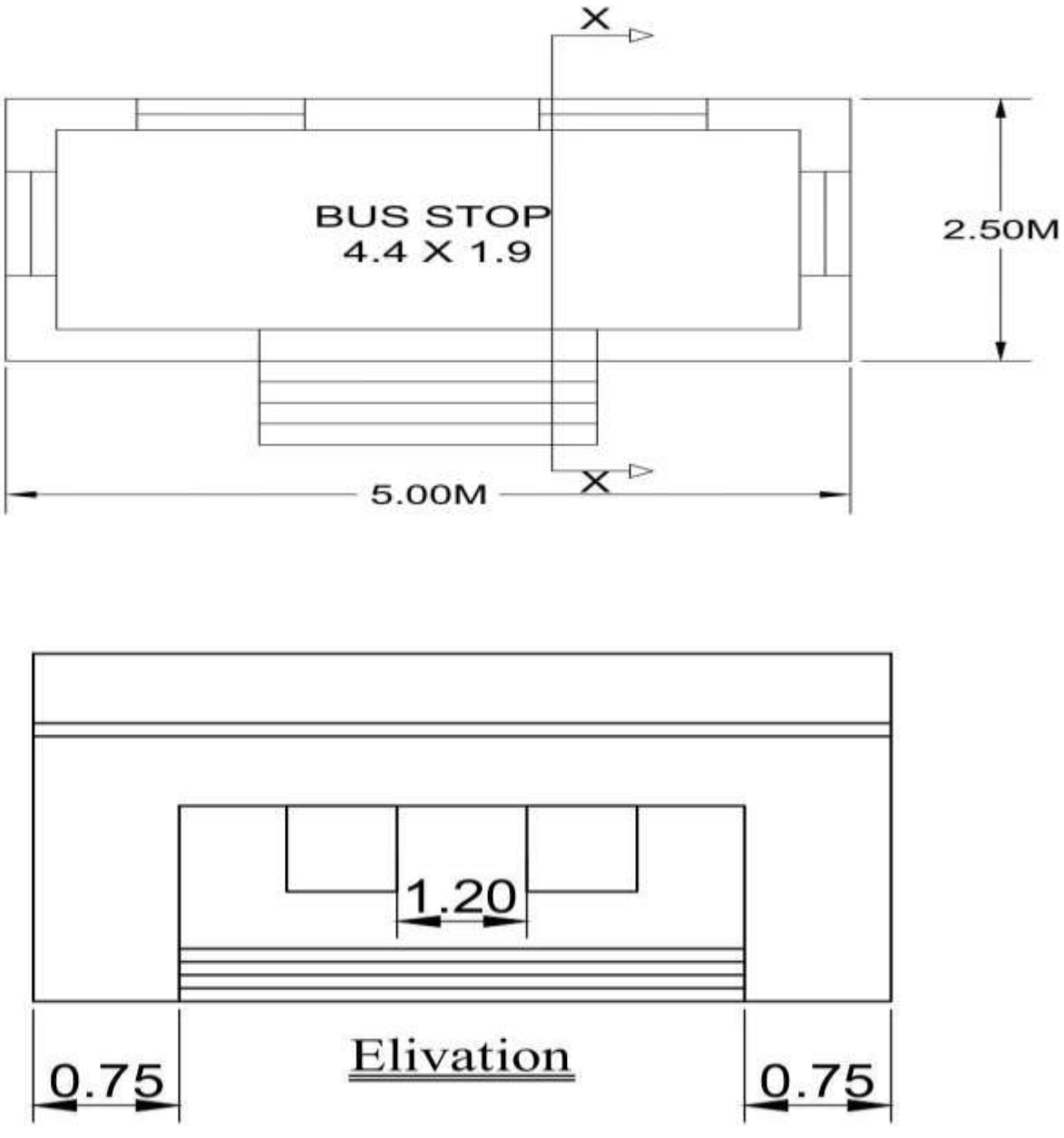
Item No.	**Description**	**Q PER**	**RATE**	**AMOUNT**
1.	Excavation per foundation up to 1.5 m	**64.04**	**92.55**	**5926.90**
2.	P.C.C for foundation	**21.77 M³**	**6259**	**136258.4**
3.	Brick masonry for foundation	**27.93 M³**	**5495.8**	**153497.6**
4.	Backfilling in foundation	**36.11 M³**	**150**	**5416.5**
5.	Brick masonry for super structure	**52.55 M³**	**7809**	**410362.9**
6.	Providing and laying R.C.C (1:2:4) for slab, beam, lintel, and Khaja	**20.84 M³**	**9500**	**197980**
7.	Reinforcement mild steel	**1635.94 M³**	**48**	**78525.12**
8.	5 CM thick mosaic tiles flooring	**83.02 M³**	**70**	**5811.40**
9.	B.B.L.C 10CM thick	**4.894 M³**	**2200**	**10766.8**
10.	Morrum sand filling	**22.01 M³**	**66.35**	**1460.36**
11.	Providing white glazed tiles	**27.52 M³**	**600**	**16512**

3% CONTIGENCIES = 30675.83
2% WATER CHARGE = 20450.35
10% CONTRACT PROFIT = 102251.78
Grand total = 1175895.94

T-8.5-Abstract Sheet for Bank

8.6 Design of BUS-STOP:

- All dimensions in meter (m).



F. 8.6 Bus Stand Drawings

MEASUREMENT SHEET

Sr No.	TOTAL CENTRE TIME = (4.7 X 2) + (2.2 X 2)	N	L	B	H	TQ
1.	Excavation per foundation up to 1.5	1	13.8	0.9	0.9	11.17
	m depth					
	L = 1.2+0.15 = 1.5	1	1.5	0.6	0.15	0.135
					TOTAL	11.305 M^3
2.	Providing & laying P.C.C (1:4:8) for	1	13.8	0.9	0.3	3.726
	foundation					
	Steps	1	1.5	0.9	0.15	0.202
					TOTAL	3.928 M^3
3.	First-class brick masonry for					
	foundation CM (1:6)					
	Step – 1	1	13.8	0.6	0.3	2.48
	Step – 2	1	13.8	0.5	0.3	2.07
					TOTAL	4.55 M^3
4.	Backfilling in foundation =					
	11.17+4.55=6.62M^3				TOTAL	6.62 M^3
5.	First-class brick masonry for W.L to					
	P. L					
	L=13.8	1	13.8	0.4	0.575	3.174
	Step 1	1	1.2	0.3	0.15	0.054
	Step 2	1	1.2	0.3	0.30	0.108
	Step 3	1	1.2	0.3	0.45	0.162

						TOTAL	**3.498 M^3**
6.	DPC (2.5 CM Thick)	**1**	**13.8**	**0.4**			**5.52**
	Deduction	**1**	**4.5**	**0.4**			**1.8**
						TOTAL	**3.72 M^2**
7.	First-class brick masonry for super						
	structure						
	L=13.8M	**1**	**13.8**	**0.3**	**3**		**12.42**
	Deduction						
	1. Lintel	**1**	**13.8**	**0.3**	**0.15**		**0.621**
	2. Opening (o)	**1**	**4.5**	**0.3**	**2.1**		**2.835**
	3. Window (w)	**4**	**0.9**	**0.3**	**1.2**		**1.295**
						TOTAL	**7.668 M^3**
8.	Providing and laying R.C.C (1:2:4)						
	for the slab, lintel						
	1. Lintel	**1**	**13.8**	**0.3**	**0.15**		**0.621**
	2. R.C.C slab	**1**	**6**	**3**	**0.1**		**1.8**
						TOTAL	**2.42 M^3**
	Providing mild steel reinforcement						
	for R.C.C work including binding &						
	bending & placing in position					**TOTAL**	**190.14 Kg**
	quantity = 1% of volume of concrete						
	= 2.421 x 78.54 = 190.14 Kg						
10.	**12mm thick plaster**						
	(A) Internal plaster						

	(1) ceiling		**1**	**5.4**	**2.4**		**12.96**
	(2) wall						
	(I)		**2**	**5.4**		**3**	**32.4**
	(ii)		**2**	**2.4**		**3**	**14.4**
	(B) **External Wall up to parapet top**					**TOTAL**	**59.76 M²**
	LW		**2**	**6**		**4.6**	
	SW						
			2	**3**		**4.6**	
	Parapet top						
	LW		**2**	**6**	**0.2**		
	SW						
			2	**2.6**	**0.2**		
	Parapet inside						
	LW		**2**	**5.6**		**0.9**	
	SW						
			2	**2.6**		**0.9**	
	Deduction: -					**TOTAL**	**101.02 M³**
	1. Opening (o)		**1**	**4.5**		**2.1**	**9.45**
	2. Window (w)		**1**	**0.9**		**1.2**	**1.08**
						TOTAL	**105.25 M²**
11.	5 CM thick mosaic tiles flooring						
	(I)		**1**	**5.4**	**2.4**		**12.96**
12.	B.B.L.C 10CM (1:2:4)						
	(I)		**1**	**5.3**	**2.3**	**0.1**	**1.22 M³**
13.	Sand filling/murmur						
	(I)		**1**	**5.3**	**2.3**	**0.45**	**5.49 M³**

T-8.6-Measurement Sheet for Bus Stand

ABSTRACT SHEET

Item No.	Description	Q PER	RATE	AMOUNT
1.	Excavation per foundation up to 1.5 m depth in ordinary soil	11.305	85	960.92
2.	Providing and laying P.C.C for foundation	3.928M³	1500	5892
3.	First-class brick masonry for foundation CM (1:6)	4.58M³	1600	7280
4.	Backfilling in foundation	6.62M³	50	331
5.	First-class brick masonry for W.L to P. L	3.498M³	1600	5596.8
6.	Providing & laying DPC	3.72M³	150	558
7.	First-class brick masonry for foundation CM (1:6) for superstructure	7.668M³	1500	11502
8.	Providing and laying R.C.C (1:2:4)	2.421M³	2500	6052.5
9.	Providing mild steel reinforcement for R.C.C work	190.14kg	35	6654.9
10.	12mm thick cement plaster	150.25M²	150	22537.5
11.	5 CM thick mosaic tiles flooring	12.96M²	200	2592
12.	B.B.L.C 10CM thick (1:2:4)	1.22M³	1000	1220
13.	Sand filling/murum	5.49M³	50	274.5
			TOTAL	71452.12
3% CONTIGENCIES = 2143.56				
2% WATER CHARGE = 1429.04				
10% CONTRACT PROFIT = 7145.212				
Grand total = 82162.93				

T-8.6-Abstract Sheet for Bus Stand

CHAPTER 9: FUTURE DEVELOPMENT OF THE VILLAGE:

(1) Community Hall:

- In community halls, members of the village tend to gather for group activities, social support, public information and other purposes.
- They may sometimes be open for the whole community or for a specialized group within the greater community.

(2) Super market:

- After making a super market in the village, the villagers don't have to go far for their daily need products. They get daily needs from their village only
- There are more availability of variety goods and freedom of selection for customers.
- The prices of all the goods at these markets are fixed and also are lower.

(3) Cyber Cafe:

- A cyber cafe is a infrastructure where computers are provided for accessing the internet, playing games, chatting with friends or doing other computer-related tasks.
- Now-a-days when there is necessity of computers in our day-to-day life, construction of cyber cafe is a good option in development of the village.

(4) Paver Block Road:

- In construction of making this road the cost is minimum.
- There is no requirement of heavy machinery to construct these type of roads
- It can be used also as paring area, street road, pathway, etc.

(5) Avedo:

- Avedo is constructed because the birds can take shelter when they are tired.
- In that they are protected from all the weathers and are also provided with food and water.

(6) Rain Shelter:

- Shelter is a basic human need crucial for survival in cases of natural hazards or conflict.
- Rain Shelter provides protection from the heavy rain.

CHAPTER 10: CONCLUSION OF THE ENTIRE VILLAGE ACTIVITIES OF PROJECTS:

We have visited the ideal village as well as a smart village are same so we can complete detail study about village lifestyle and infrastructure, technology and also studying/ survey the concept about smart/ideal village with help of techno-economic survey and gap analysis so we can better understand we were able to broadly define the requirement for people of allocated villagers Giramtha for developing smart village

The motive of Vishwakarma Yojana Phase – VIII is to uplift the lifestyle of the rural areas to its certain extent up to the level of an ideal village situated at the nearby location of that particular jurisdiction. It is an effective government scheme to develop rural areas under economical cost with good workability and efficiency during its usage.

The project tends to improve the physical, social as well as socio-cultural aspects of the village by implementing and improvising various infrastructures with regards to lesser or least hindrance to its rural authenticity.

With Gap Analysis, we conclude that some of the different Smart Village facilities are required as the basic or primary level which still lacks in the village. So, according to Gap Analysis of Giramtha village, we observed the condition of existing infrastructure facilities in a village such as - Water tank, Road network, Drainage networked.

Smart Village can solve its problem itself can become a smart village example to another village too We will give the design a heritage structure is make a good appearance on the people and preserve our culture. Waste management is essential nowadays but in villages, there is poor/ no solid waste management. Due to lack of solid waste management various kind of diseases, pollution of air & land is occurring and therefore that place is not desirable for living purpose.

Education is provided to small kids for a maximum of 5 to 7 years and also takes complete care of the kid’s diet by providing healthy and fresh food.

The bank facility is also there for the village peoples for financial help and also keeps village people updated by the latest various government schemes for business and also for farmers. Bus facilities are also provided by the government and for pick up there is a bus stand provided by the roadside of village

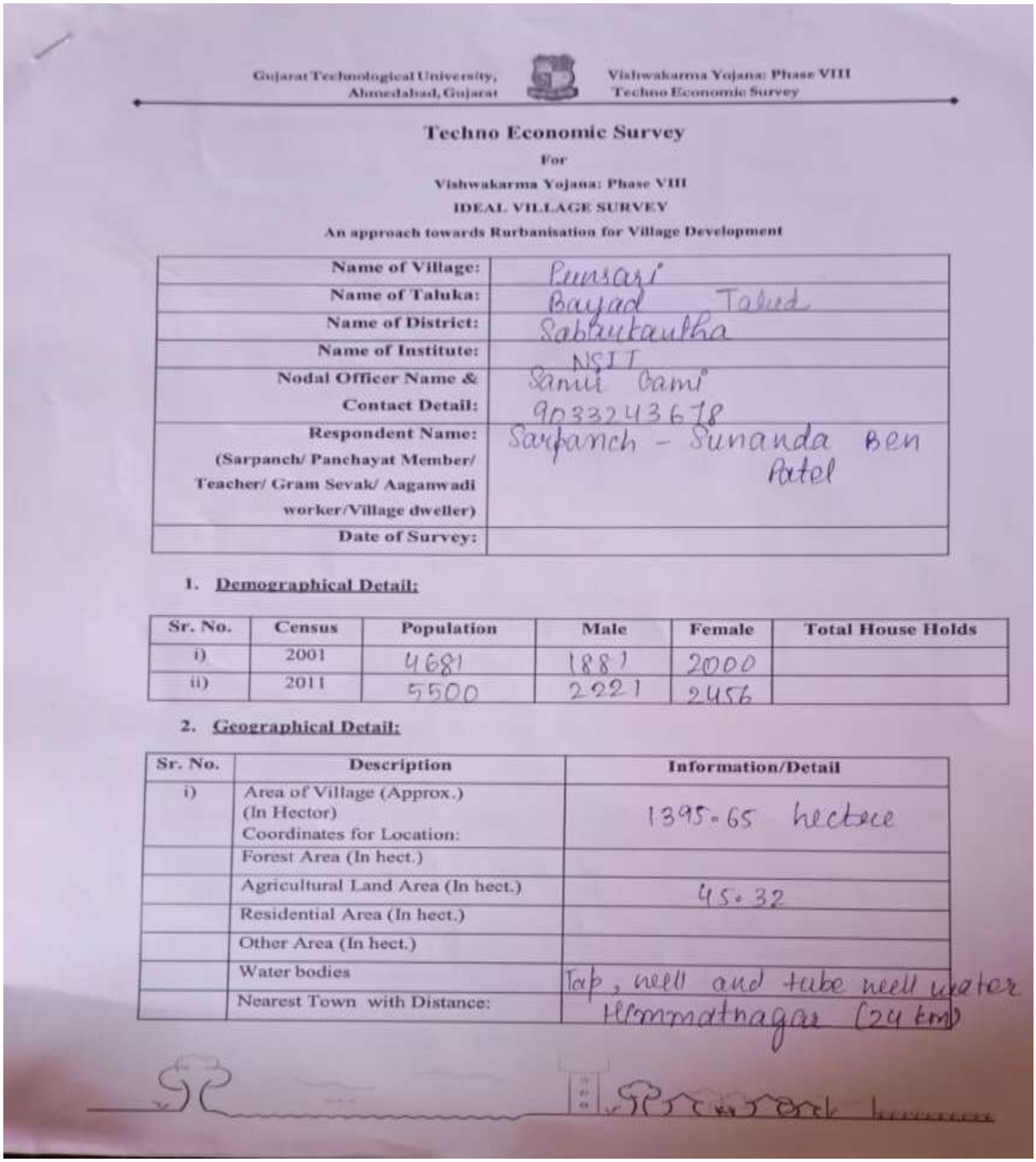
Avoids contamination of water sources and soil o Composting of human waste for use as a natural fertilizer o There is no need of emptying the pits It is applicable for waterlogged, water-scarce, coastal and rocky areas of Promotes soil fertility and improved crop production.

CHAPTER 11: REFERENCE OF REPORT:

- http://censusindia.gov.in- Census department website.
- UDPFI (Urban Development Plan Formulation &Implementation) Guidelines
- Schedule of rate
- http://theconstructor.org/practical-guide/rate-analysis
- Google maps
- www.vyojana.gtu.ac.in
- Village condition due to Covid-19: https://pib.gov.in/Pressreleaseshare.aspx?PRID=1614379
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6515742/#:~:text=According%20to%20Gandhiji%2C%20the%20making,of%20five%20miles%20of%20it.
- https://en.wikipedia.org/wiki/Harisal#:~:text=Harisal%20is%20a%20village%20situated,has%20been%20adopted%20by%20Microsoft.
- https://www.indianetzone.com/41/history_indian_villages.htm#:~:text=The%20concept%20of%20villages%20in,social%20system%20at%20that%20time.
- http://www.sciencepub.net/researcher/research0209/03_0682research0209_16_18.pdf
- 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
- URDPFI norms
- www.censusindia.gov.in
- www.researchgate.net
- www.villageinfo.in
- www.villagemaps.in
- www.ijser.org
- https://sswm.info/node/7722
- https://www.indianmirror.com/culture/states-culture/gujarat.html
- https://www.academia.edu/38054706/SUSTAINABLE_CONSTRUCTION_AN_INDIAN_PERSPECTIVE
- https://india.smartcitiescouncil.com/article/see-how-district-cooling-system-willmake-raiya-coolest-smart-city
- https://www.eurekalert.org/pub_releases/2014-06/uosf-iti061814.php
- http://smartcities.gov.in/upload/uploadfiles/files/What%20is%20Smart%20City.pdf

CHAPTER 12: ANNEXURE ATTACHMENT:

12.1 Survey Form of Ideal Village:



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

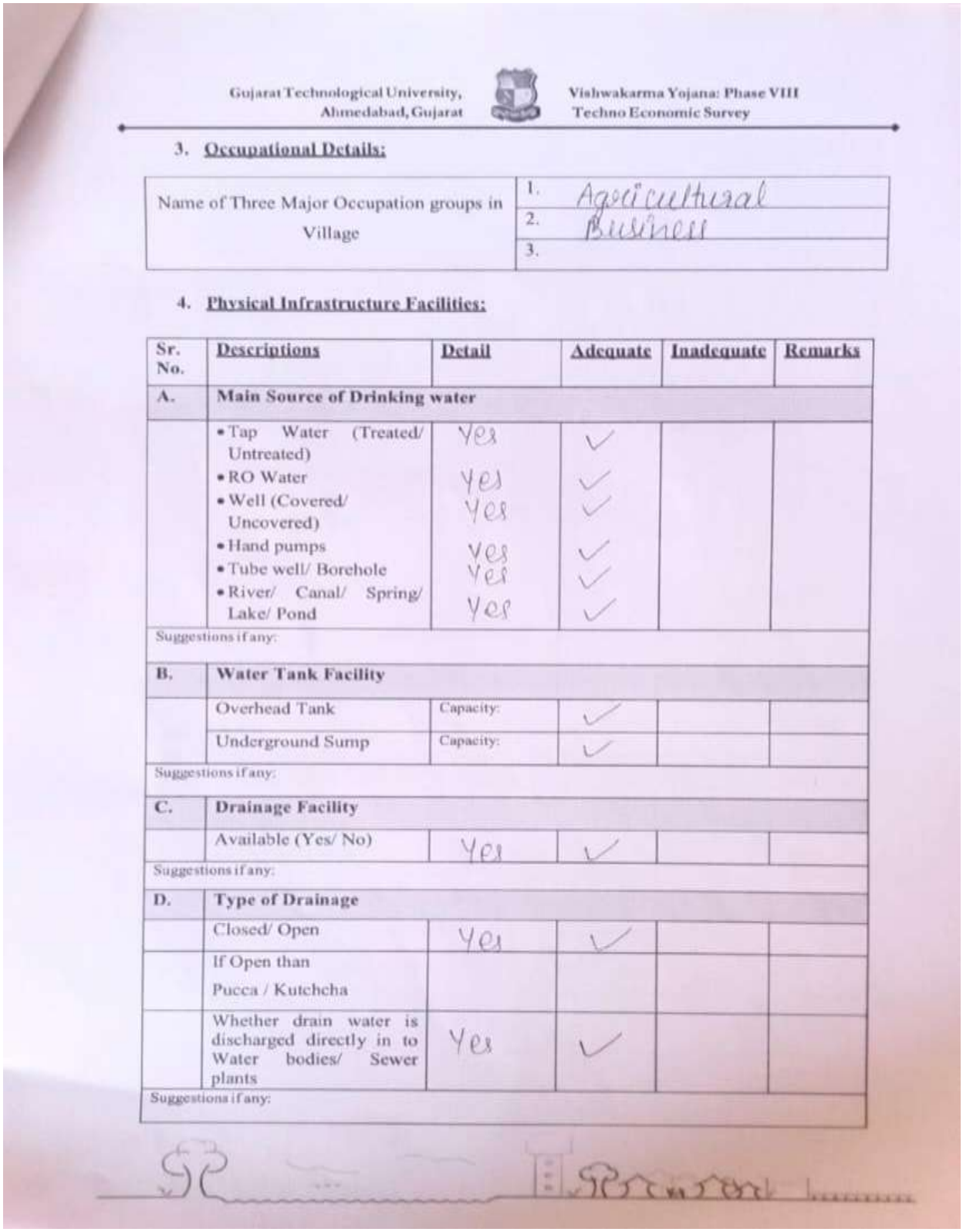
Name of Village:	Punsari
Name of Taluka:	Bavad Taluk
Name of District:	Sabarkantha
Name of Institute:	NSIT
Nodal Officer Name & Contact Detail:	Sanil Dani 9033243678
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Sarpanch - Sunanda Ben Patel
Date of Survey:	

1. Demographical Detail:

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	4681	1881	2000	
ii)	2011	5500	2221	2456	

2. Geographical Detail:

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	1395.65 hectare
	Forest Area (In hect.)	
	Agricultural Land Area (In hect.)	45.32
	Residential Area (In hect.)	
	Other Area (In hect.)	
	Water bodies	Tap, well and tube well water
	Nearest Town with Distance:	Himmatnagar (24 km)



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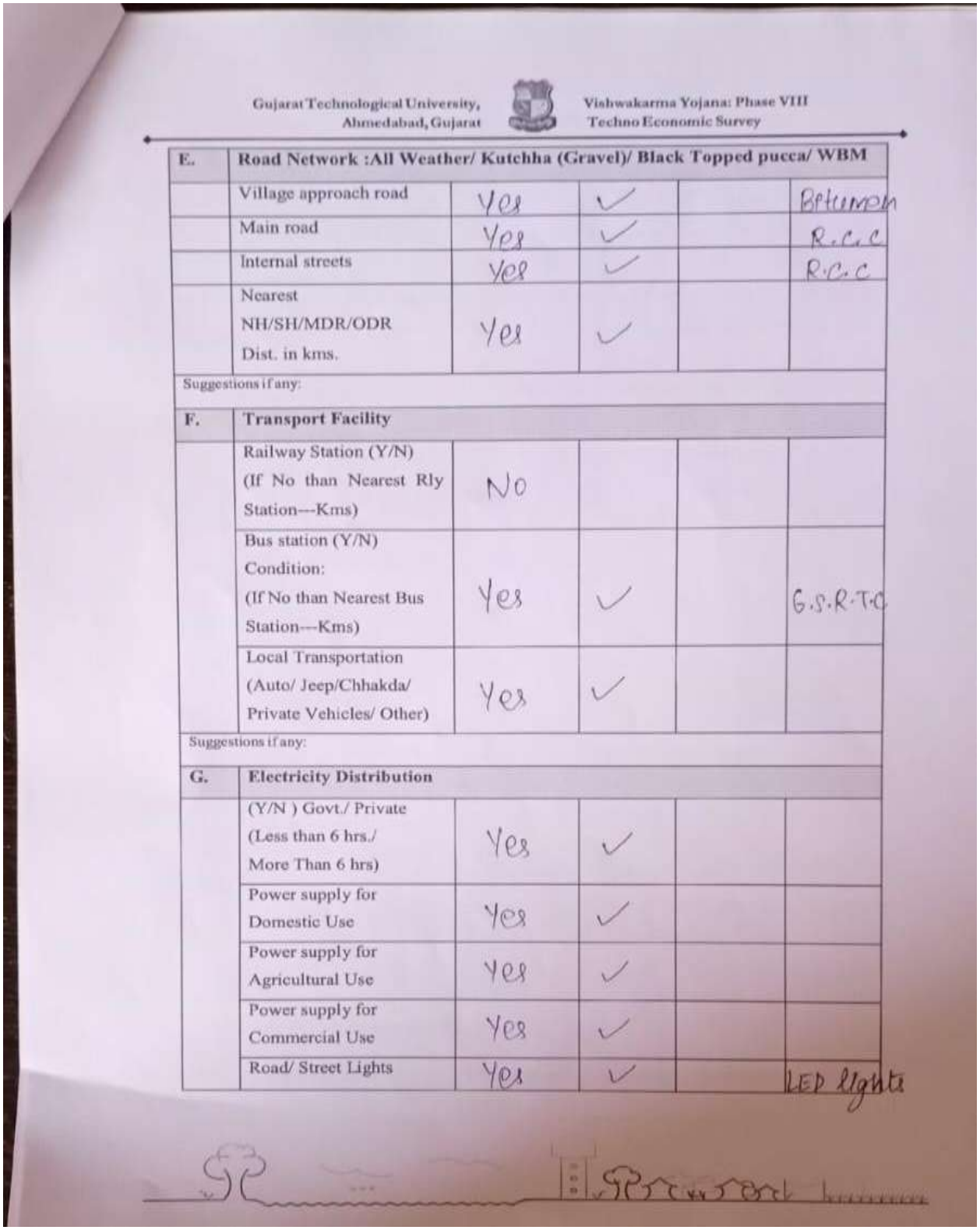
Techno Economic Survey

3. **Occupational Details:**

Name of Three Major Occupation groups in Village	1. Agricultural 2. Business 3.

4. **Physical Infrastructure Facilities:**

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



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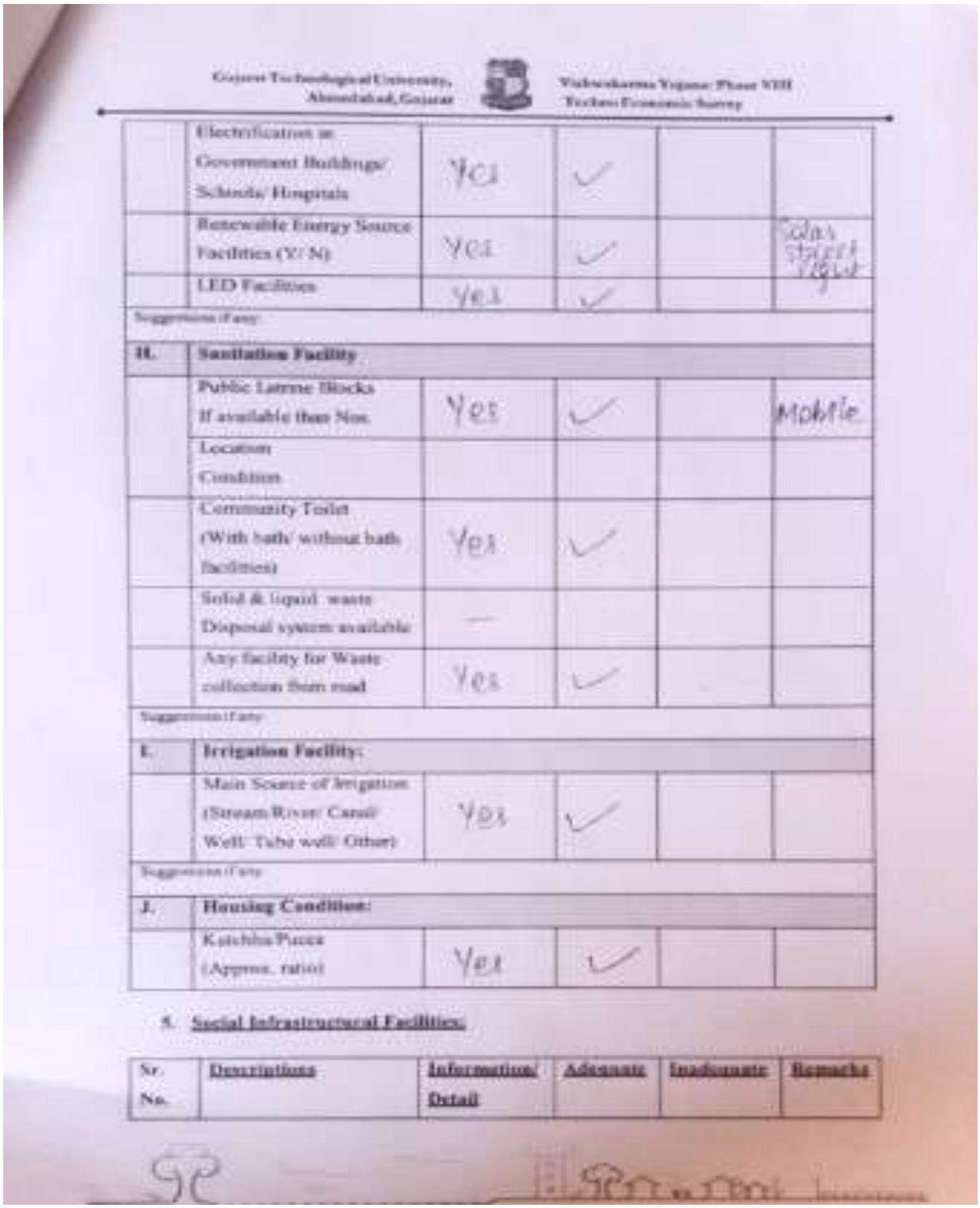
E.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Yes	✓		Bitumen
	Main road	Yes	✓		R.C.C
	Internal streets	Yes	✓		R.C.C
	Nearest NH/SH/MDR/ODR Dist. in kms.	Yes	✓		
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No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



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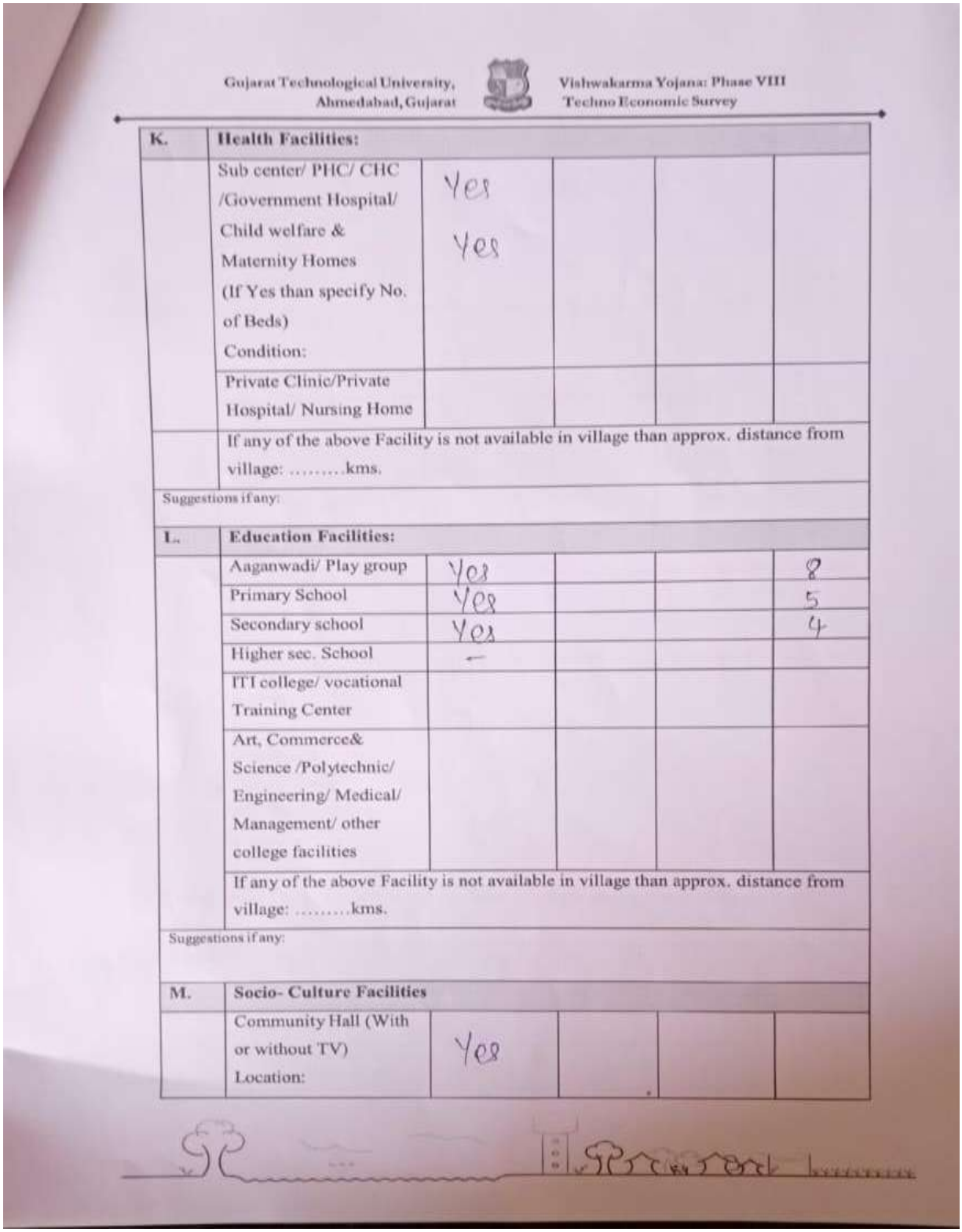
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
	Renewable Energy Source Facilities (Y/ N)	Yes	✓		Solar street light
	LED Facilities	Yes	✓		
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available then Nos.	Yes	✓		Mobile
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	Yes	✓		
	Solid & liquid waste Disposal system available	—			
	Any facility for Waste collection from road	Yes	✓		
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Yes	✓		
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Yes	✓		

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks



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K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	Yes Yes			
	Private Clinic/Private Hospital/ Nursing Home				
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
L.	**Education Facilities:**				
	Aaganwadi/ Play group	Yes			8
	Primary School	Yes			5
	Secondary school	Yes			4
	Higher sec. School	–			
	ITI college/ vocational Training Center				
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities				
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:	Yes			

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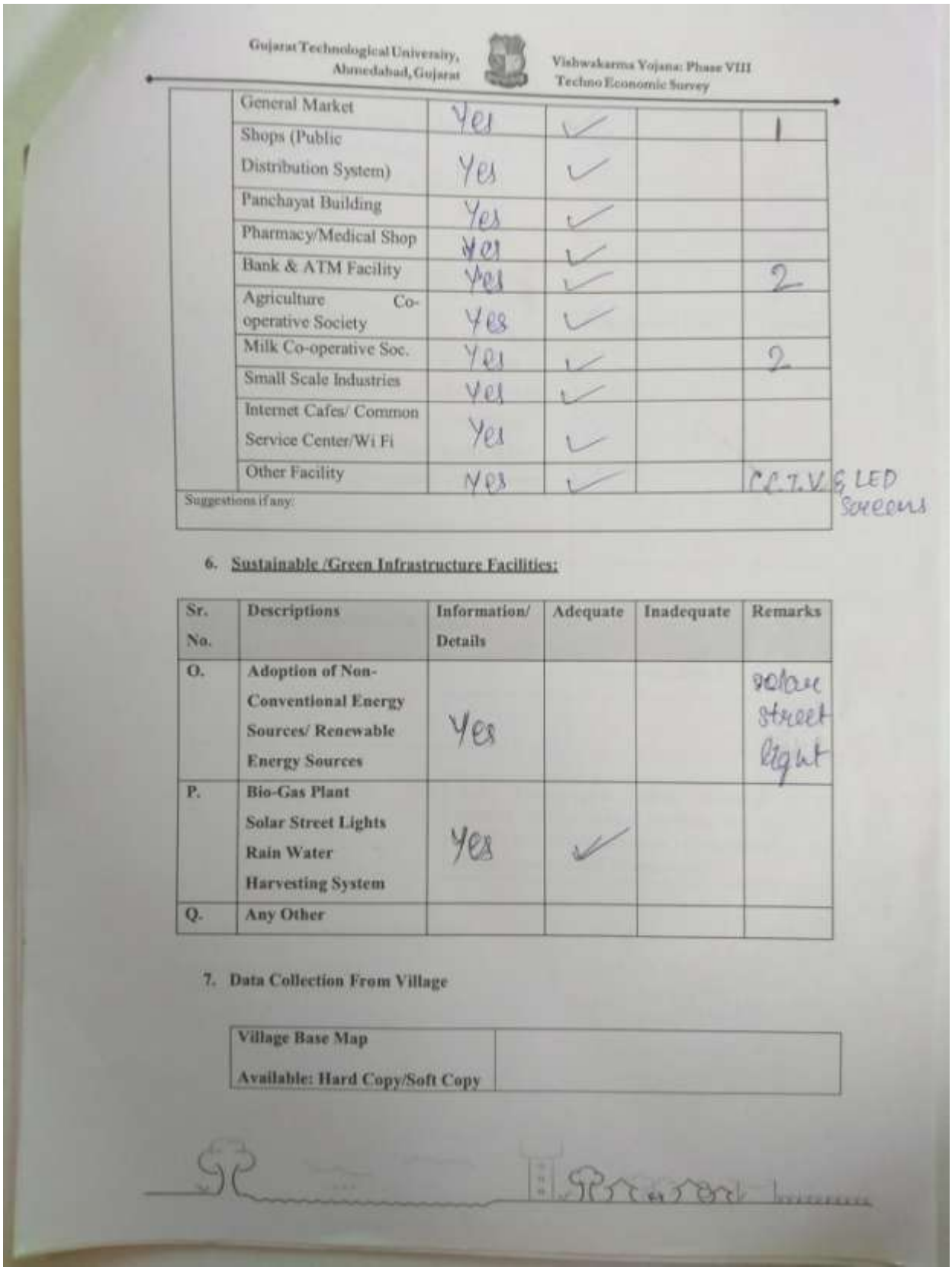
	Condition:				
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	Yes	✓		
	Public Garden Location: Condition:	No			
	Village Pond Location: Condition:	Yes	✓		
	Recreation Center Location: Condition:	Yes	✓		
	Cinema/ Video Hall Location: Condition:	No			
	Assembly Polling Station Location: Condition:	–			
	Birth & Death Registration Office Location: Condition:	Yes			
If any of the above Facility is not available in village than approx. distance from village: .....kms.					
Suggestions if any:					
N.	**Other Facilities**				
	Post-office	Yes	✓		1
	Telecommunication Network/ STD booth	Yes	✓		1



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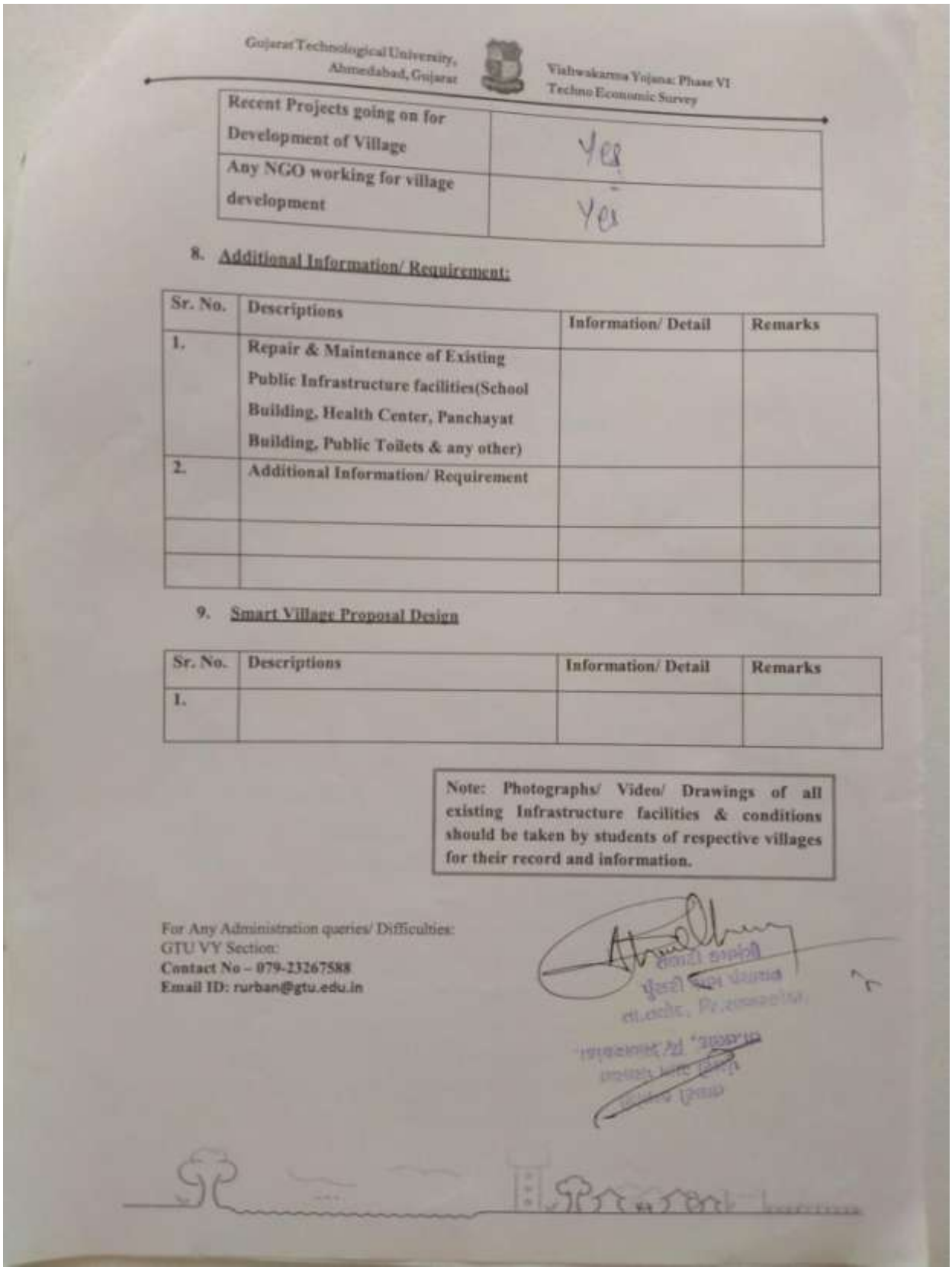
	General Market	Yes	✓		1
	Shops (Public Distribution System)	Yes	✓		
	Panchayat Building	Yes	✓		
	Pharmacy/Medical Shop	Yes	✓		
	Bank & ATM Facility	Yes	✓		2
	Agriculture Co-operative Society	Yes	✓		
	Milk Co-operative Soc.	Yes	✓		2
	Small Scale Industries	Yes	✓		
	Internet Cafes/ Common Service Center/Wi Fi	Yes	✓		
	Other Facility	Yes	✓		C.C.T.V & LED Screens
Suggestions if any:					

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

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

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	



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Vishwakarma Yojana: Phase VI
Techno Economic Survey

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

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		

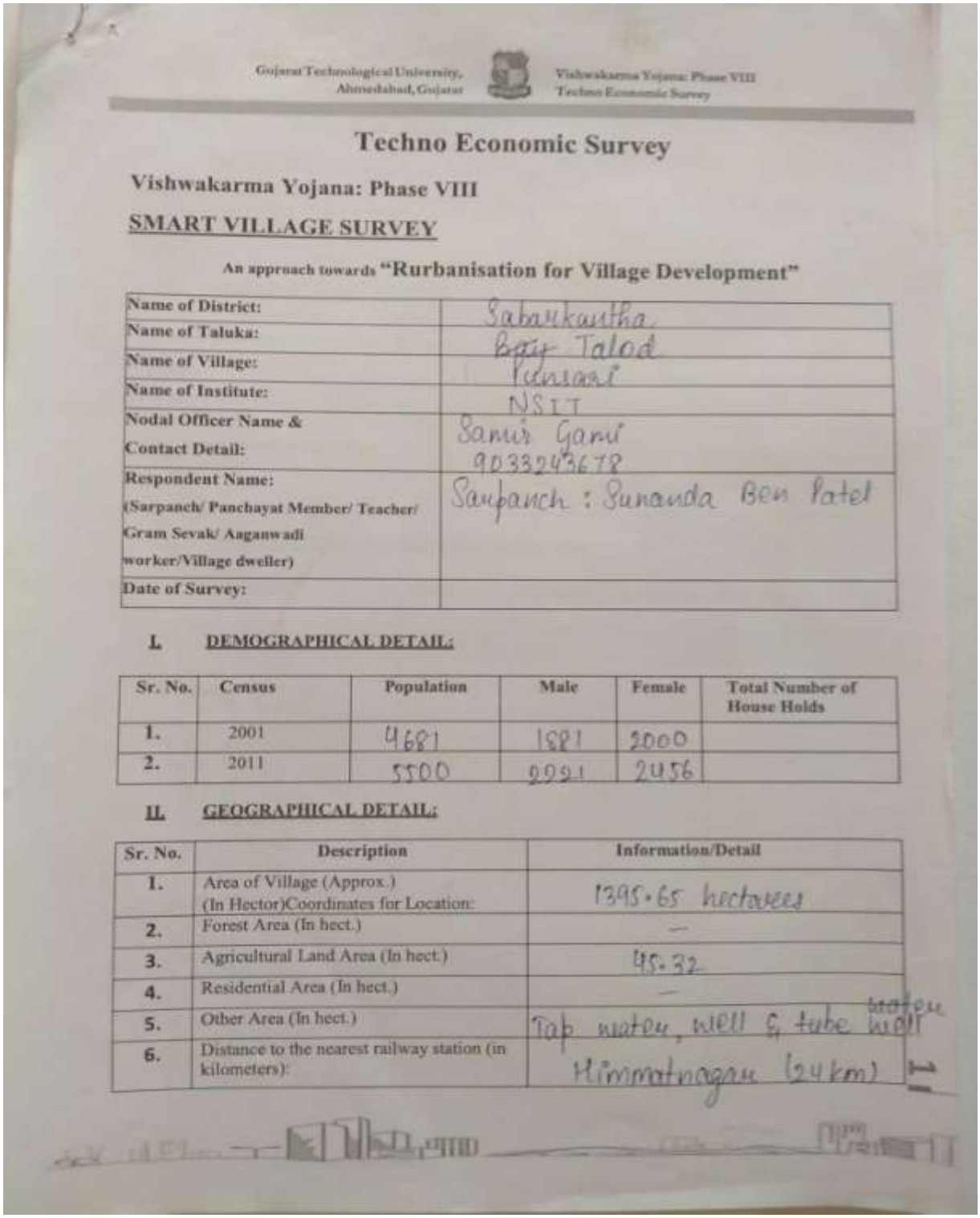
9. Smart Village Proposal Design

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:



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Vishwakarma Yojana: Phase VIII
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Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

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

Name of District:	Sabarkantha.
Name of Taluka:	Bayd Talod
Name of Village:	Giramtha
Name of Institute:	NSIT
Nodal Officer Name & Contact Detail:	Samir Gami 9033243678
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Sarpanch : Sunanda Ben Patel
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	4681	1881	2000	
2.	2011	5500	2921	2456	

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1395.65 hectares
2.	Forest Area (In hect.)	–
3.	Agricultural Land Area (In hect.)	45.32
4.	Residential Area (In hect.)	–
5.	Other Area (In hect.)	Tap water, well & tube well water
6.	Distance to the nearest railway station (in kilometers):	Himmatnagar (24 km)

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7.	Name of Nearest Town with Distance:	Himmatnagar (24km)
8.	Distance to the nearest bus station (in kilometers):	
9.	Whether village is connected to all road for the any facility or town or City?	Yes

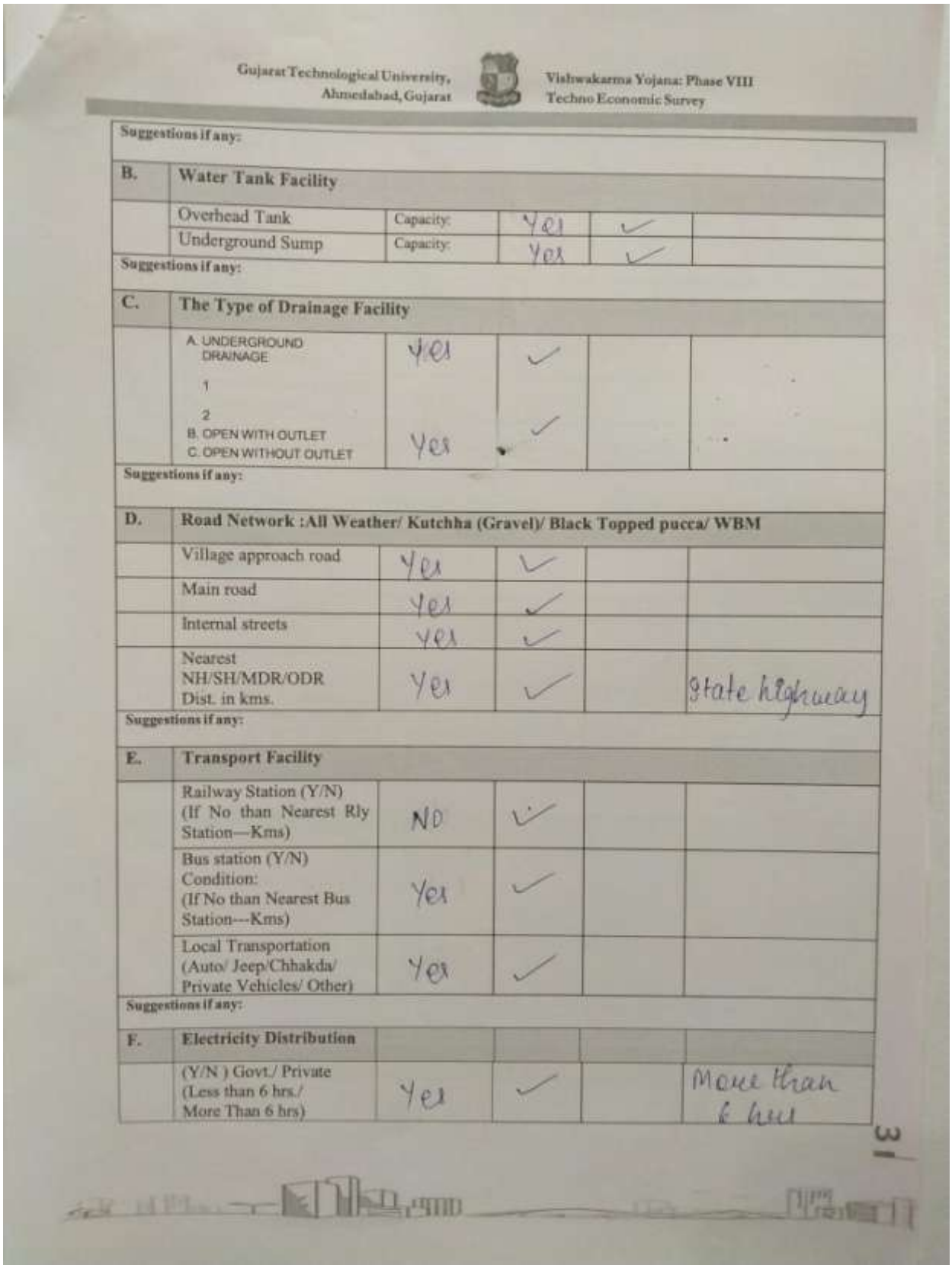
III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Agriculturel
	2.	Business
	3.	Household works
Major crops grown in the village:	1.	Wheat
	2.	Rice
	3.	Bajara

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

2



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Vishwakarma Yojana: Phase VIII
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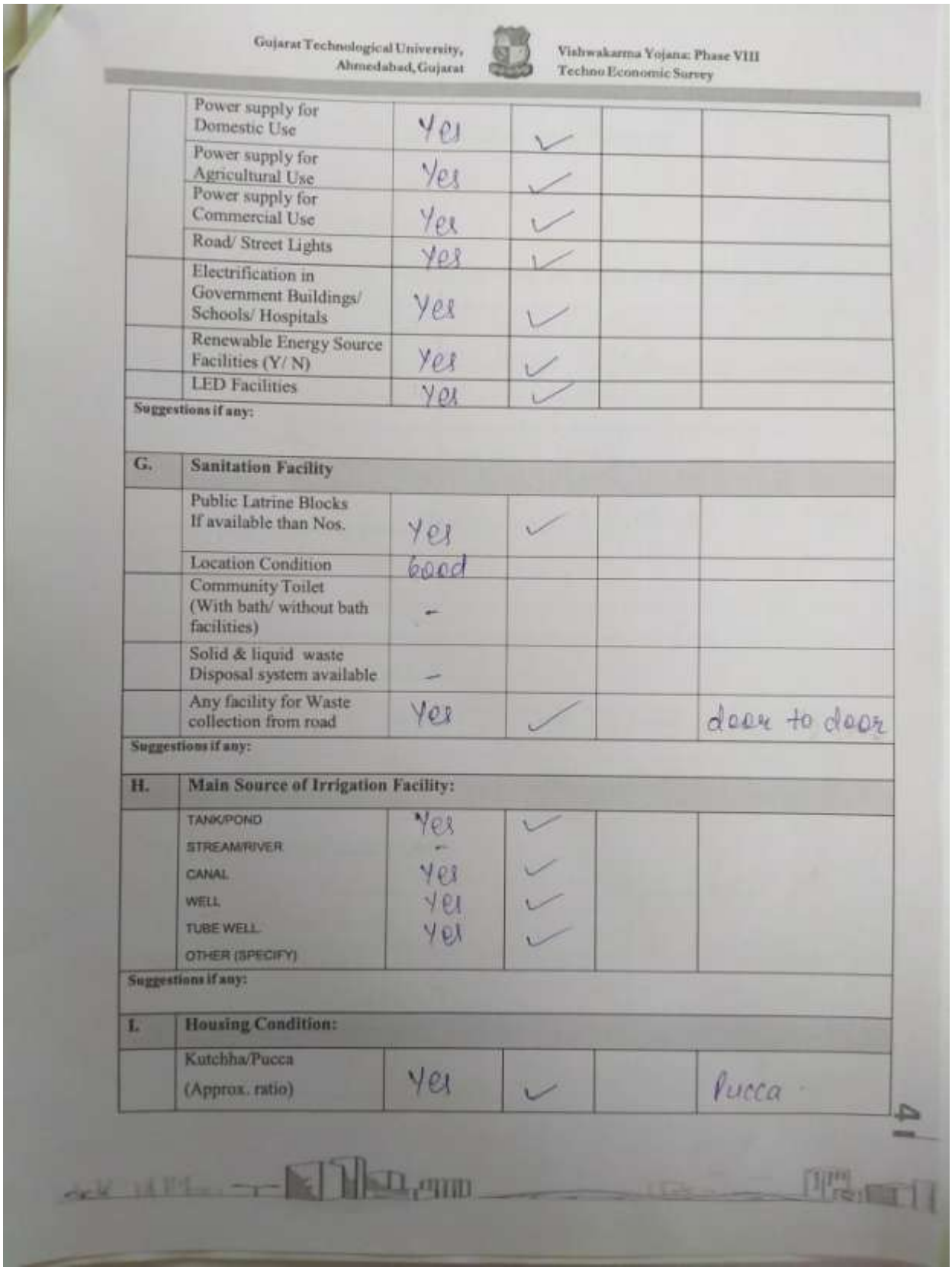
Suggestions if any:						
B.	**Water Tank Facility**					
	Overhead Tank	Capacity:	Yes	✓		
	Underground Sump	Capacity:	Yes	✓		
Suggestions if any:						
C.	**The Type of Drainage Facility**					
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	Yes Yes	✓ ✓			
Suggestions if any:						
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**					
	Village approach road	Yes	✓			
	Main road	Yes	✓			
	Internal streets	Yes	✓			
	Nearest NH/SH/MDR/ODR Dist. in kms.	Yes	✓		State highway	
Suggestions if any:						
E.	**Transport Facility**					
	Railway Station (Y/N) (If No than Nearest Rly Station—Kms)	NO	✓			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes	✓			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes	✓			
Suggestions if any:						
F.	**Electricity Distribution**					
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes	✓		More than 6 hrs	



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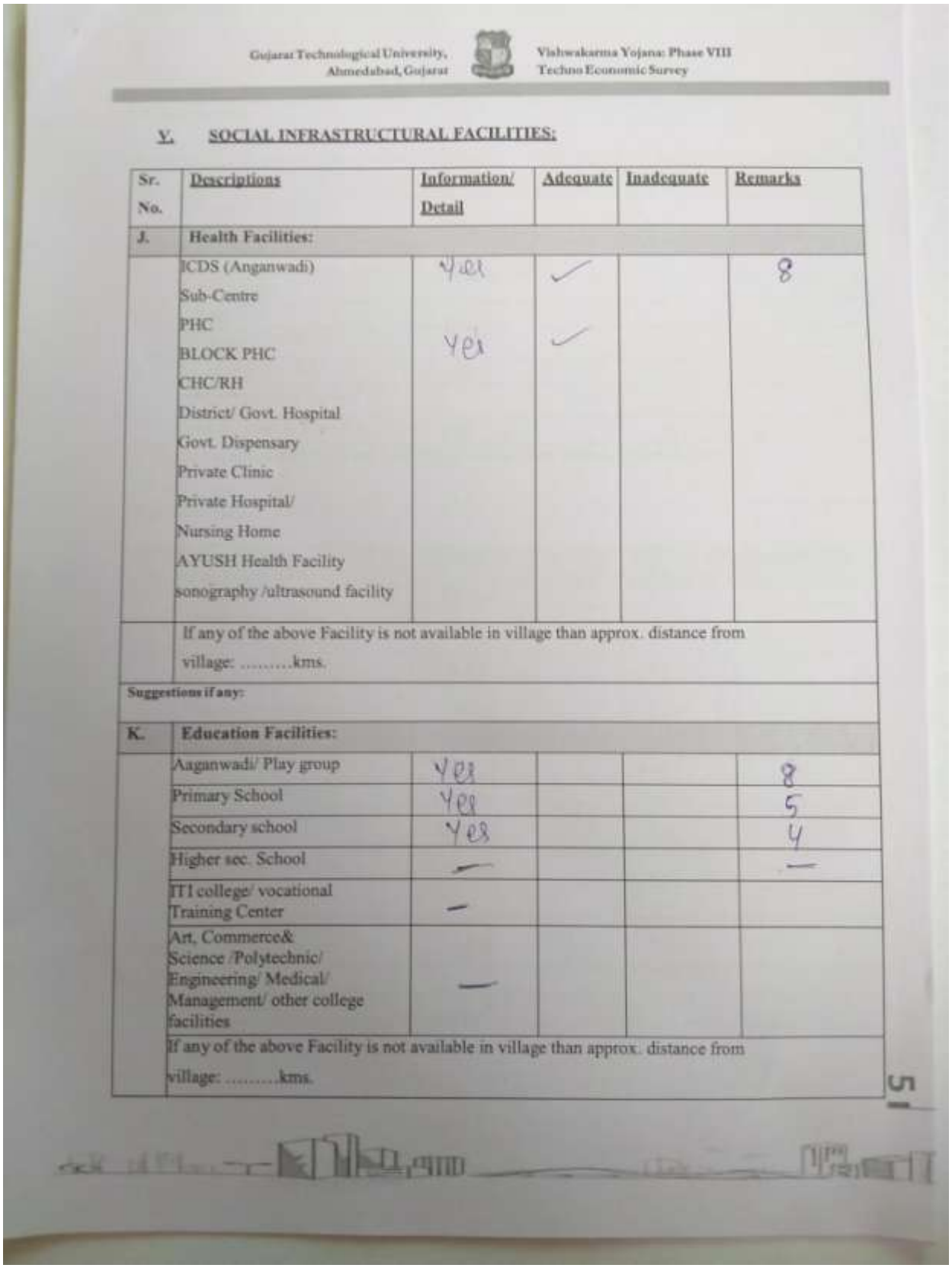
	Power supply for Domestic Use	Yes	✓		
	Power supply for Agricultural Use	Yes	✓		
	Power supply for Commercial Use	Yes	✓		
	Road/ Street Lights	Yes	✓		
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
	Renewable Energy Source Facilities (Y/ N)	Yes	✓		
	LED Facilities	Yes	✓		
Suggestions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



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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	Yes	✓		8
	Sub-Centre				
	PHC	Yes	✓		
	BLOCK PHC				
	CHC/RH				
	District/ Govt. Hospital				
	Govt. Dispensary				
	Private Clinic				
	Private Hospital/ Nursing Home				
	AYUSH Health Facility				
	sonography /ultrasound facility				
	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			8
	Primary School	Yes			5
	Secondary school	Yes			4
	Higher sec. School	—			—
	ITI college/ vocational Training Center	—			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	—			
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				

5

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Suggestions if any:

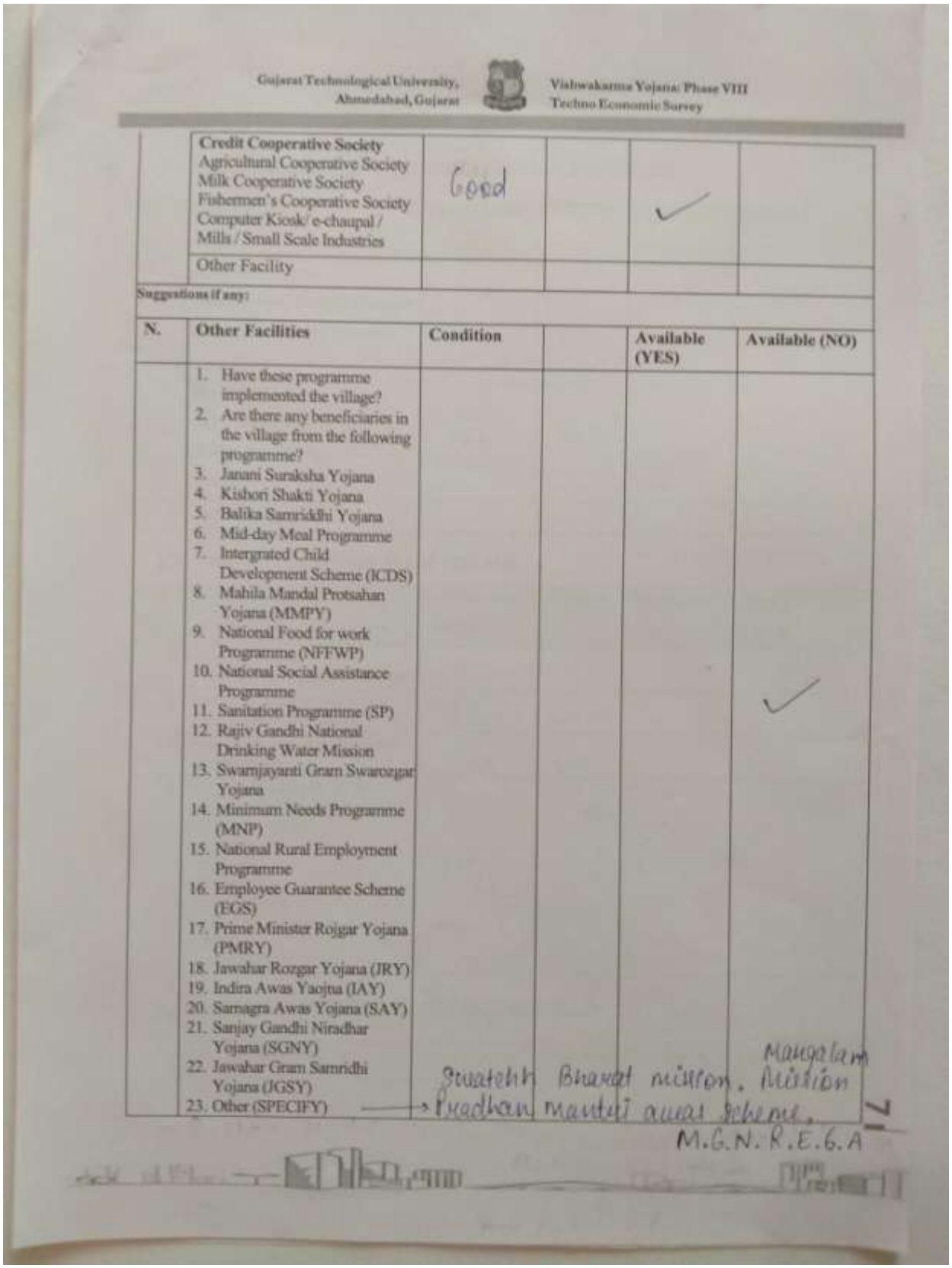
L.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)	Yes Good		✓	
	Public Library (With daily newspaper supply: Y/N)	Yes Good		✓	
	Public Garden				
	Village Pond				
	Recreation Center				
	Cinema/ Video Hall	No			✓
	Assembly Polling Station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

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

Suggestions if any:

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

19



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

Suggestions if any:

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

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Village Base Map Available: Hard Copy/Soft Copy				
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

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

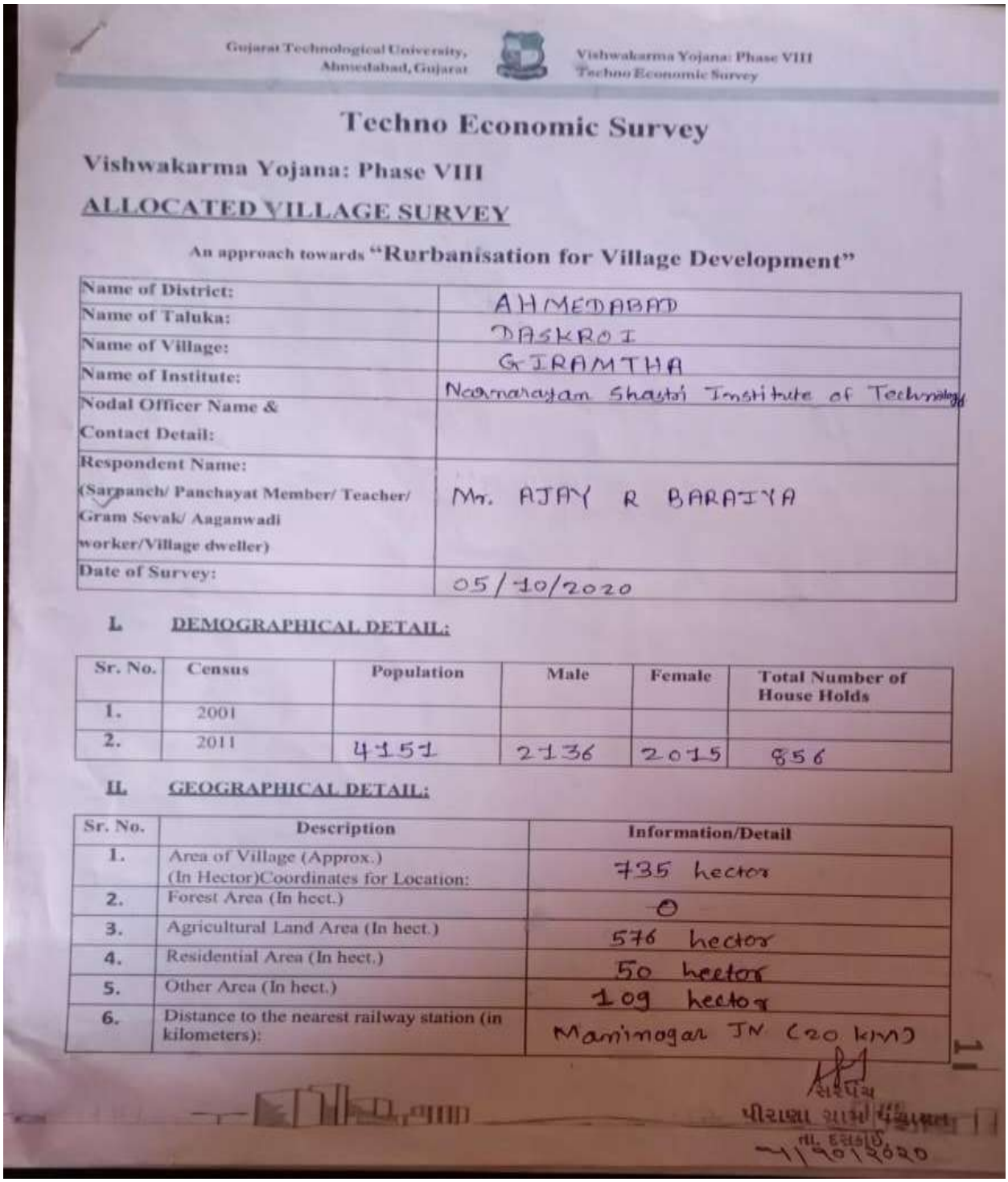
IX. Smart Village / Heritage Details

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

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

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

12.3 Survey Form of Allocated Village:



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ALLOCATED VILLAGE SURVEY

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

Name of District:	AHMEDABAD
Name of Taluka:	DASKROI
Name of Village:	GIRAMTHA
Name of Institute:	Narnarayan Shastri Institute of Technology
Nodal Officer Name & Contact Detail:	
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Mr. AJAY R BARAIYA
Date of Survey:	05/10/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	4151	2136	2015	856

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	735 hector
2.	Forest Area (In hect.)	0
3.	Agricultural Land Area (In hect.)	576 hector
4.	Residential Area (In hect.)	50 hector
5.	Other Area (In hect.)	109 hector
6.	Distance to the nearest railway station (in kilometers):	Maninagar JN (20 KM)

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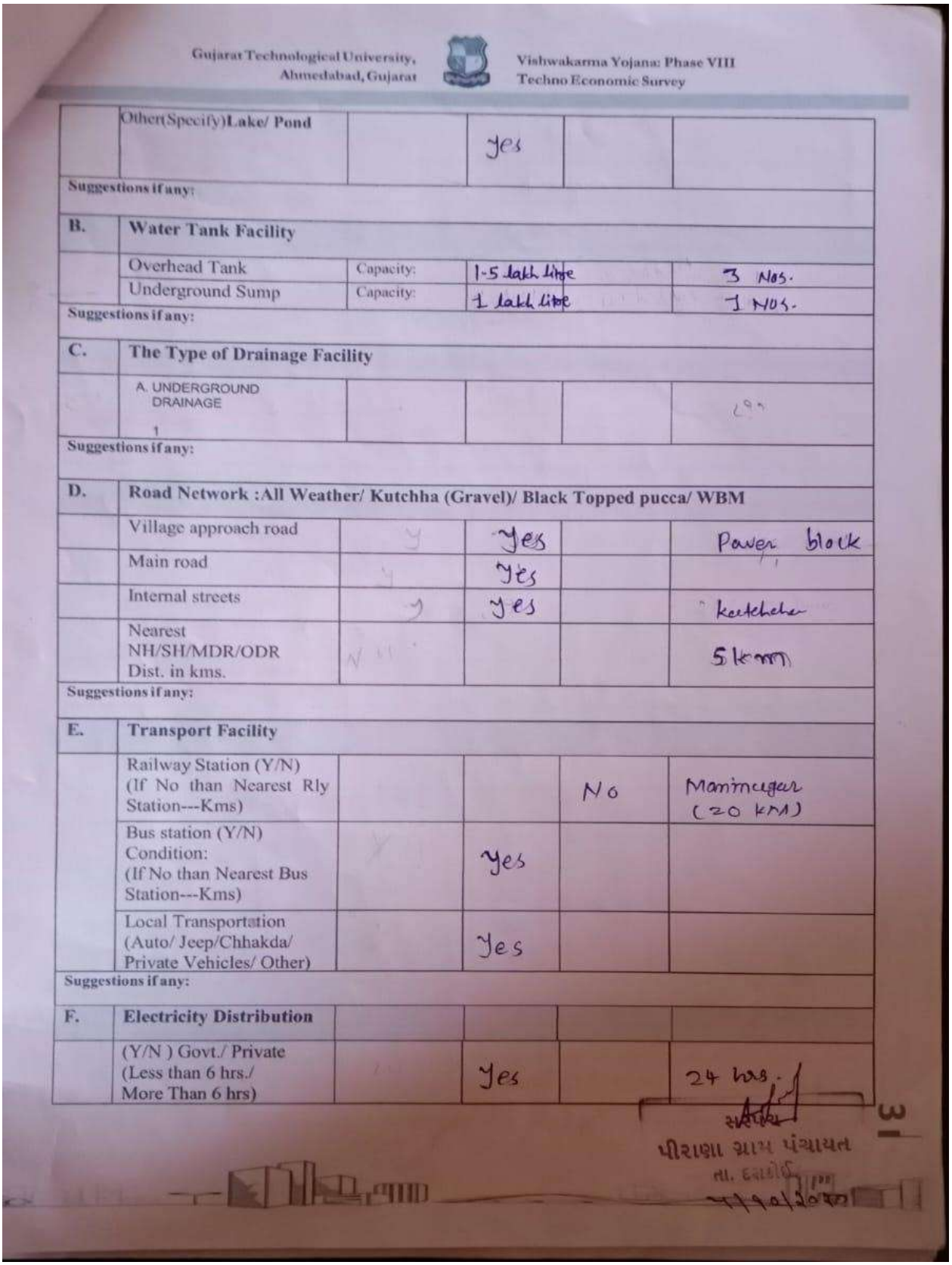
7.	Name of Nearest Town with Distance:	~~Piracma~~ Ahmedabad 30km
8.	Distance to the nearest bus station (in kilometers):	Piracma 10 km
9.	Whether village is connected to all road for the any facility or town or City?	yes

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1. Agriculture 2. Job 3. Bussiness
Major crops grown in the village:	1. Rice 2. Wheat 3. Cotton

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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



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	Other(Specify)Lake/ Pond		yes		
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	1-5 lakh litre		3 Nos.
	Underground Sump	Capacity:	1 lakh litre		1 Nos.
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1				
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Y	Yes		Paver block
	Main road	Y	Yes		
	Internal streets	Y	yes		kachcha
	Nearest NH/SH/MDR/ODR Dist. in kms.	N			5 kms
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)			No	Maninagar (20 KM)
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Y	yes		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)		yes		
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)		yes		24 hrs.

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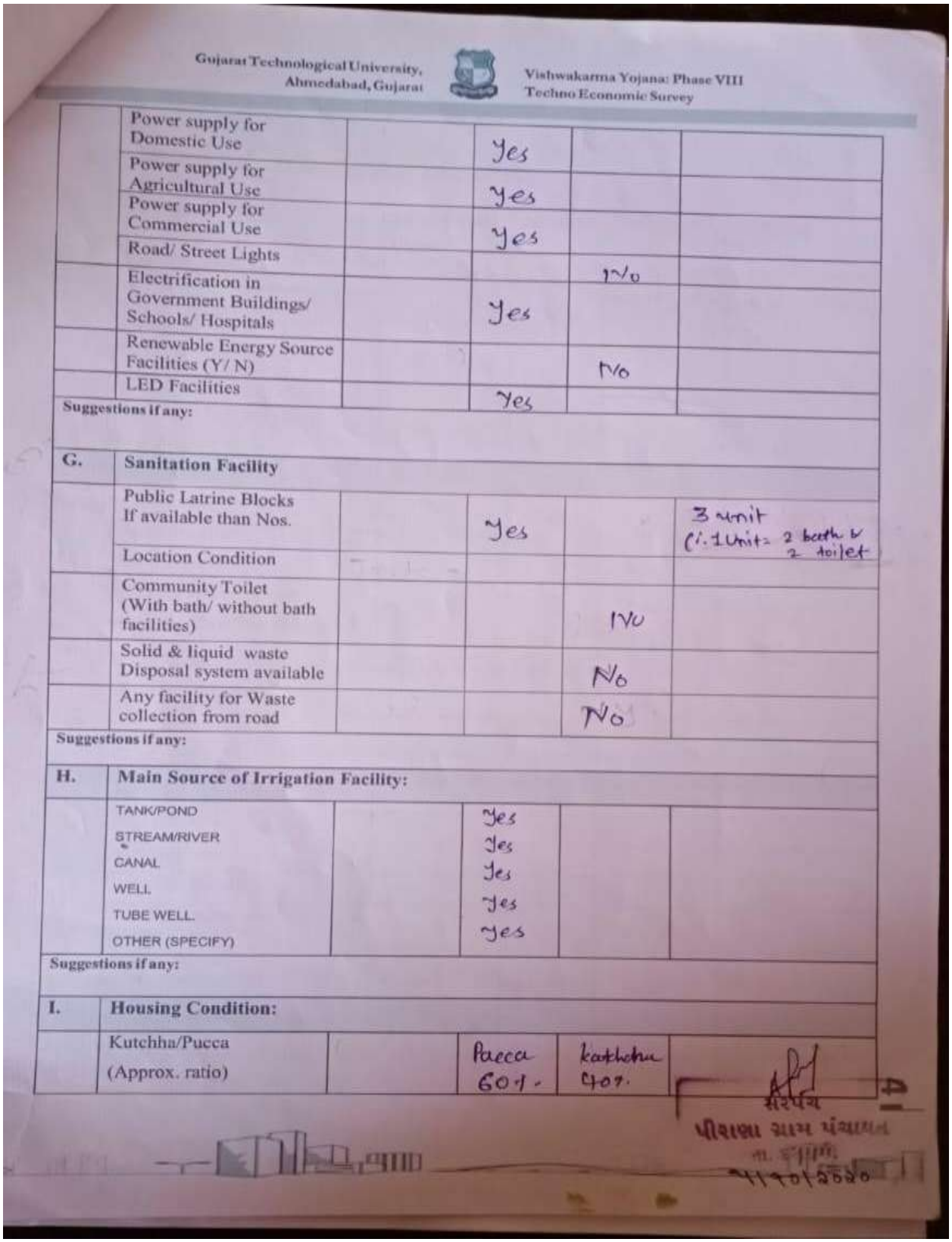

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	Power supply for Domestic Use		Yes		
	Power supply for Agricultural Use		Yes		
	Power supply for Commercial Use		Yes		
	Road/ Street Lights			No	
	Electrification in Government Buildings/ Schools/ Hospitals		Yes		
	Renewable Energy Source Facilities (Y/ N)			No	
	LED Facilities		Yes		

Suggestions if any:

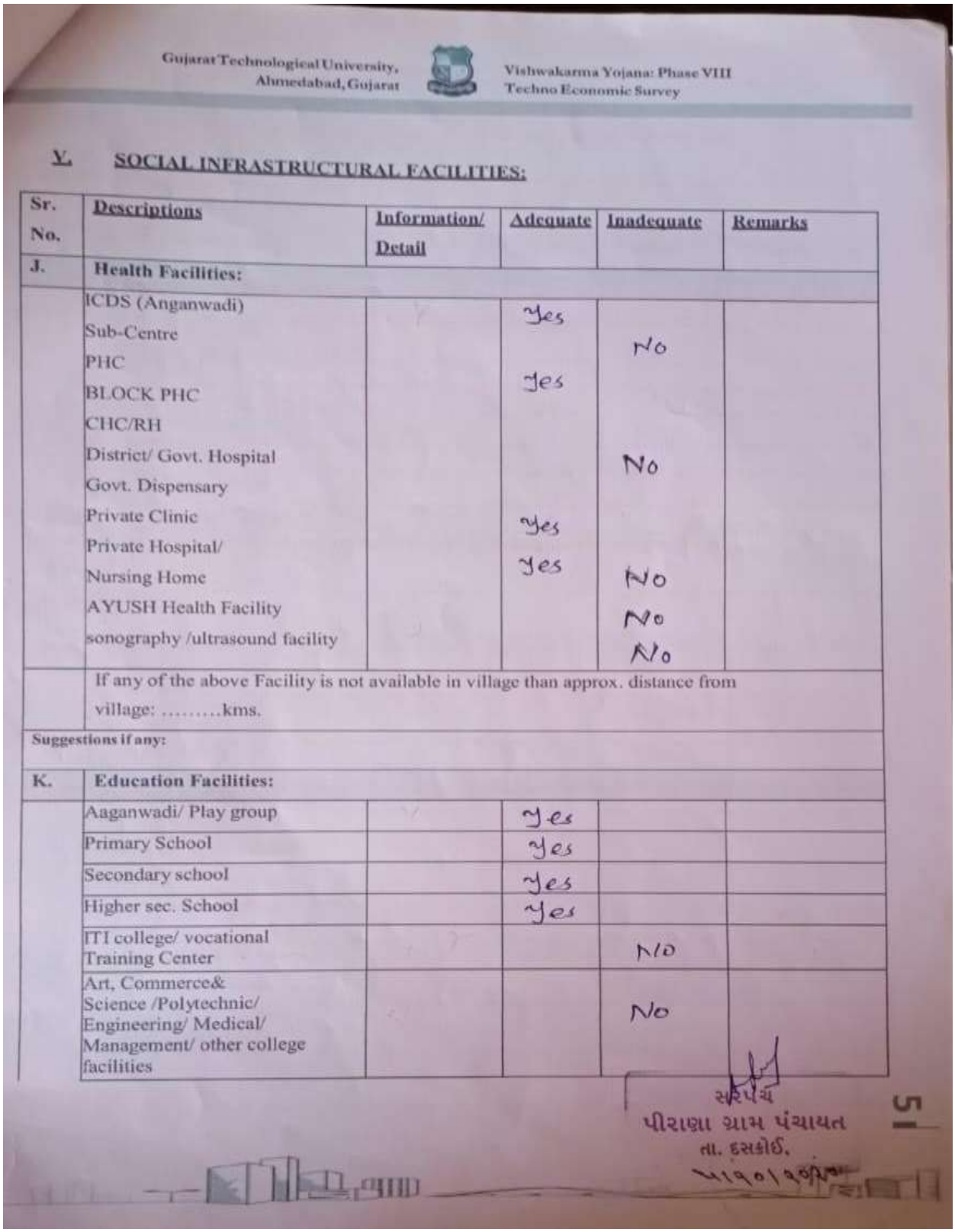
G.	Sanitation Facility				
	Public Latrine Blocks If available than Nos.		Yes		3 unit (1 Unit = 2 bath & 2 toilet
	Location Condition				
	Community Toilet (With bath/ without bath facilities)			No	
	Solid & liquid waste Disposal system available			No	
	Any facility for Waste collection from road			No	

Suggestions if any:

H.	Main Source of Irrigation Facility:				
	TANK/POND		Yes		
	STREAM/RIVER		Yes		
	CANAL		Yes		
	WELL		Yes		
	TUBE WELL		Yes		
	OTHER (SPECIFY)		Yes		

Suggestions if any:

I.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)		Pucca 60%	kachha 40%	



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V. SOCIAL INFRASTRUCTURAL FACILITIES:

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

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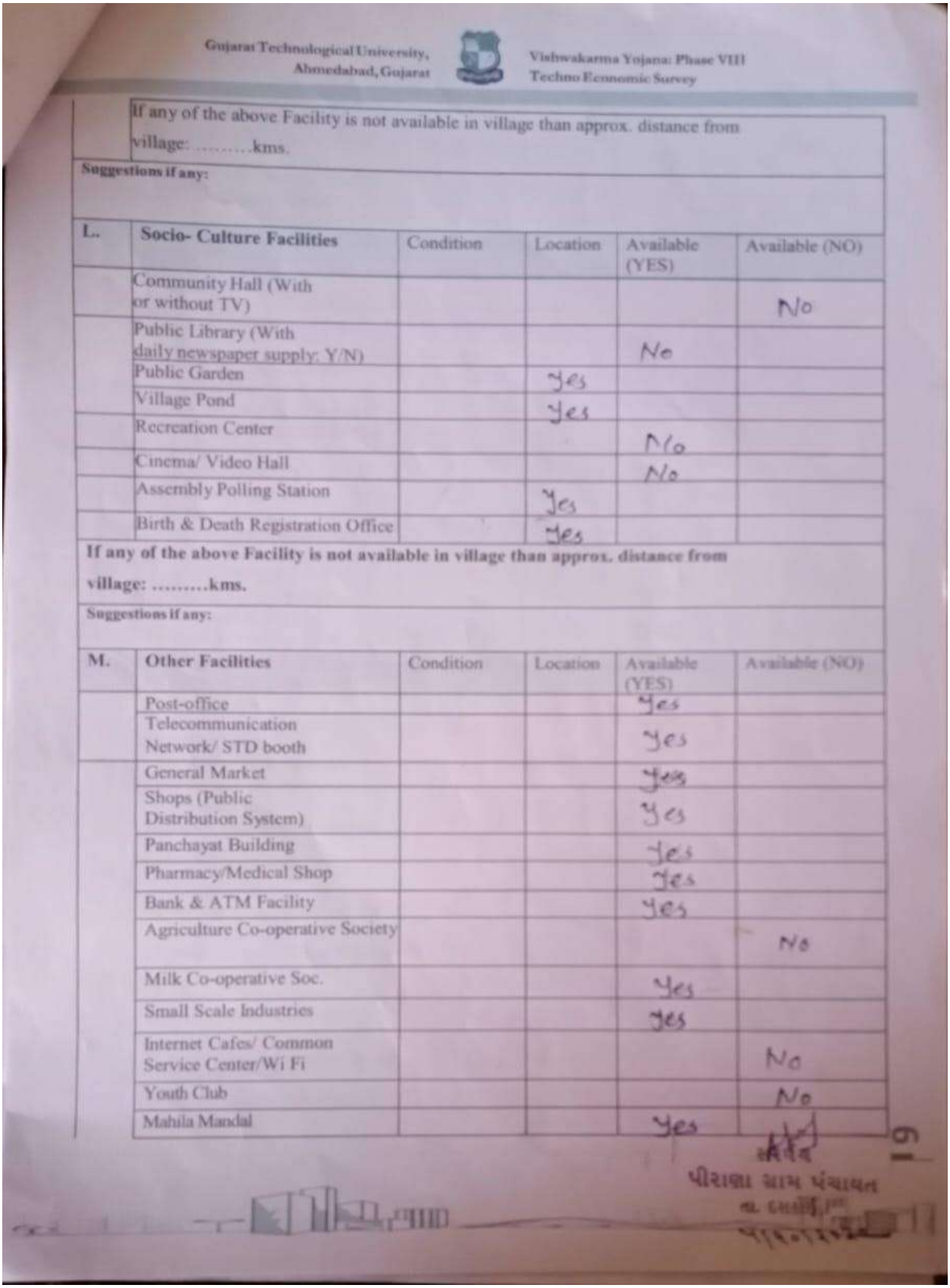

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	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
L.	**Socio- Culture Facilities**	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)				No
	Public Library (With daily newspaper supply: Y/N)			No	
	Public Garden		Yes		
	Village Pond		Yes		
	Recreation Center			No	
	Cinema/ Video Hall			No	
	Assembly Polling Station		Yes		
	Birth & Death Registration Office		Yes		
If any of the above Facility is not available in village than approx. distance from village: .....kms.					
Suggestions if any:					
M.	**Other Facilities**	Condition	Location	Available (YES)	Available (NO)
	Post-office			Yes	
	Telecommunication Network/ STD booth			Yes	
	General Market			Yes	
	Shops (Public Distribution System)			Yes	
	Panchayat Building			Yes	
	Pharmacy/Medical Shop			Yes	
	Bank & ATM Facility			Yes	
	Agriculture Co-operative Society				No
	Milk Co-operative Soc.			Yes	
	Small Scale Industries			Yes	
	Internet Cafes/ Common Service Center/Wi Fi				No
	Youth Club				No
	Mahila Mandal			Yes	

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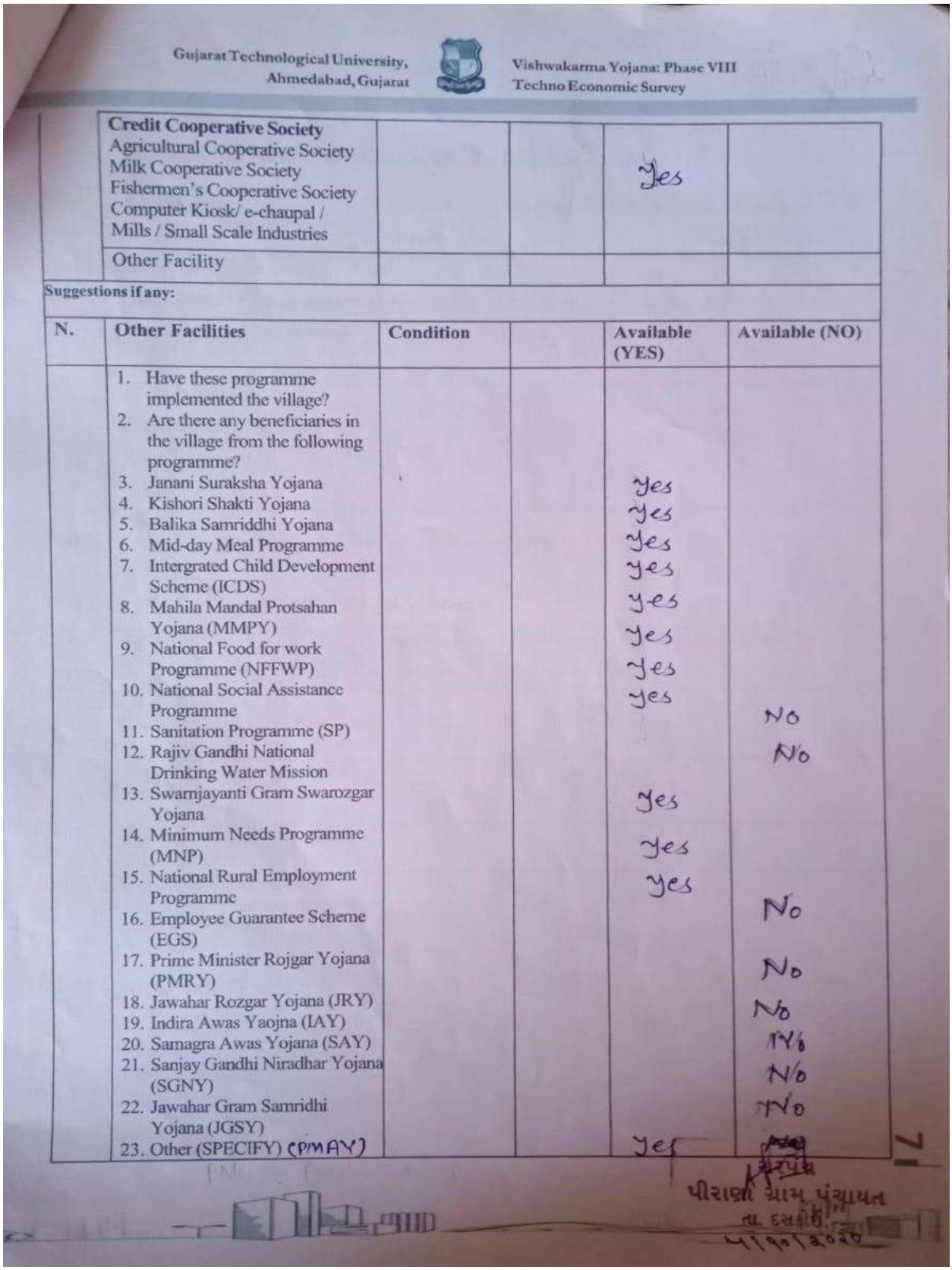

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	Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-chaupal / Mills / Small Scale Industries			Yes	
	Other Facility				

Suggestions if any:

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

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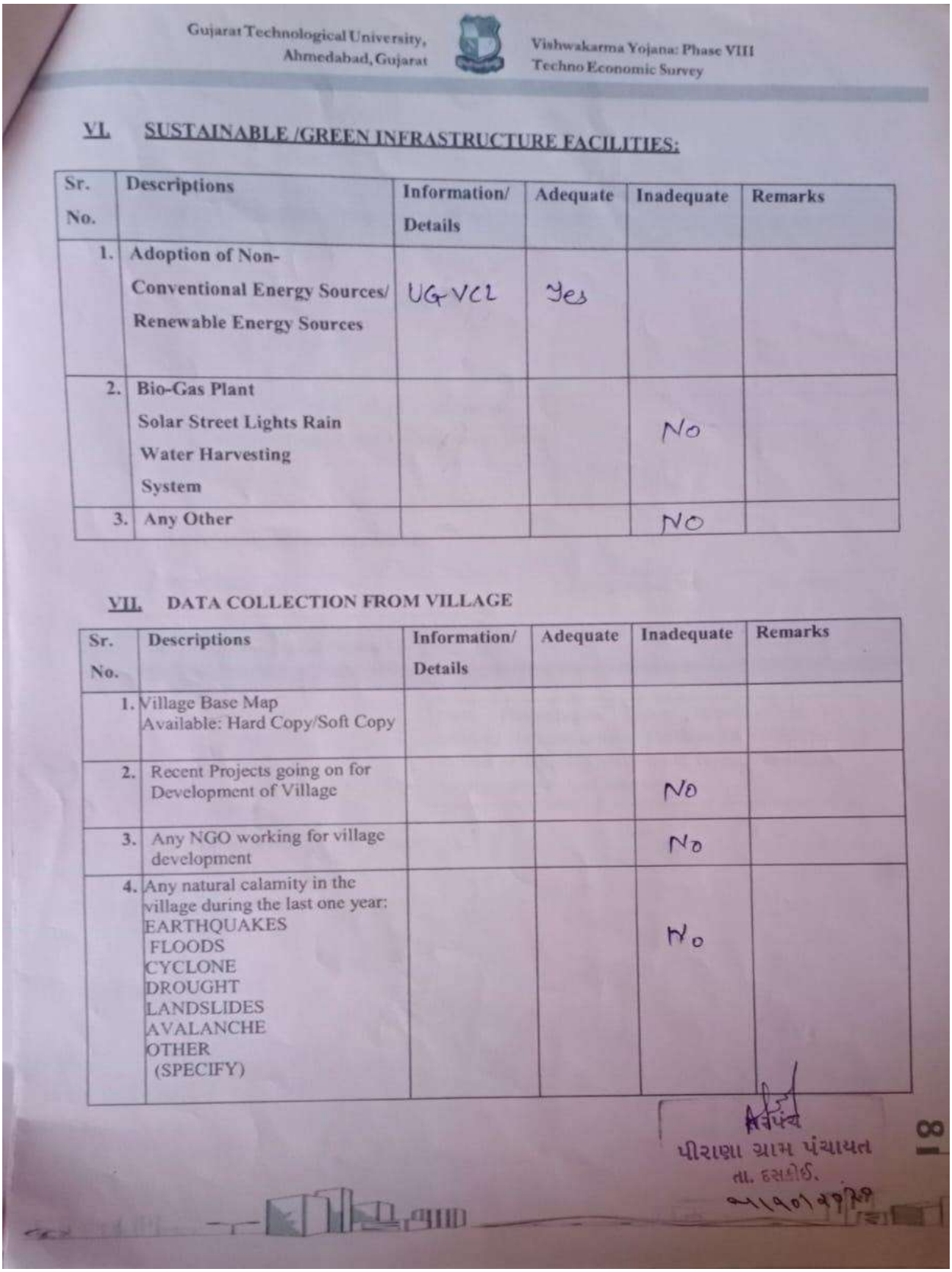

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VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

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12.4 Gap Analysis of the Giramtha Village:

VILLAGE GAP Analysis					
Village Facilities	**Planning Commission/ U DPFI Norms**	**Village name**	**Giramtha**		
		Population:		4151	
		Existing	**Required as per Norms**	**Smart Village / Cities / Heritage Future Projection Design**	**Gap**
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	1	1		Not required
Primary School	Each Per 2500 population	1	1		Not required
Secondary School	Per 7,500 population	0	1	1	Can be provided
Higher Secondary School	Per 15,000 Population	0	0	0	0
College	Per 125,000 Population	0	0	0	0
Tech. Training Institute	Per 100000 Population	0	0	0	0
Agriculture Research Centre	Per 100000 Population	0	0	0	0
Skill Development Center	Per 100000 Population	0	1	1	Can be provided
Health Facility					
Govt/Panchayat Dispensary or Sub PHC or Health Centre	Each Village	0	1	1	Can be provided
Primary Health & Child Health Center	Per 20,000 population	0	1	1	Can be provided
Child Welfare and Maternity Home	Per 10,000 population	0	0	0	0
Multi-specialty Hospital	Per 100000 Population	0	0	0	0

Public Latrines	1 for 50 families (if the toilet is not therein home, especially for slum pockets & kutcha house) **Physician**	2	0	0	Not required
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)		no		Bus station needs to be modified

		Adequate	**Inadequate**		
Drinking-Water (Minimum 70 plod)					
Over Head Tank	1/3 of Total Demand	yes	0		0
U/G Sump	2/3 of Total Demand	yes	0		0
Drainage Network - Open		-	-		-
Drainage Network - Cover		yes			Needs to be modify
Waste Management System			no		Needs to be provided

	Socio-Cultural Facilities	**Infrastructure**			
Community Hall	Per 10000 Population	0	1	1	Can be provided
community hall and Public Library	Per 15000 Population	0	1	1	can be provided
Cremation Ground	Per 20,000 population	0	0	0	0
Post Office	Per 10,000 population	1	1	1	Re design required
Gram Panchayat Building	Each individual/group panchayat	1	0	0	Not required
APMC	Per 100000 Population				

Fire Station	Per 100000 Population				
Public Garden	Per the village	0	1	1	Can be provided
Police post	Per 40,000Population				
Electrical Design					
Electricity Network					
Any Smart Village Facility					
Technology					
Solar street lights	-	no	-	-	-
Bio gas plant	-	no	-	-	Required
Wi-fi services	-	no	-	-	Required
Vehicles for waste collection	-	no	-	-	Required

T-12.4-Gap Analysis of the Allocated Village

12.5 VILLAGE INTERACTION REPORT WITH THE PHOTOGRAPHS:

- We present our work under Vishwakarma Yojana VIII. We explain various topic about Vishwakarma yojana VIII and also explain about the smart village and study data about the population in India, Gujarat, and our village Giramtha.
- We also survey the villages and collect all the necessary data and compare our village with the ideal village– Punsri. We provided all the facilities which are help full in development.
- We visited our allocated village GIRAMTHA which is situated in Daskroi Taluka in Ahmedabad District and met the sarpanch.
- Explained to him about the infrastructure we designed and explained to him about the features and the cost of various designs such as: -

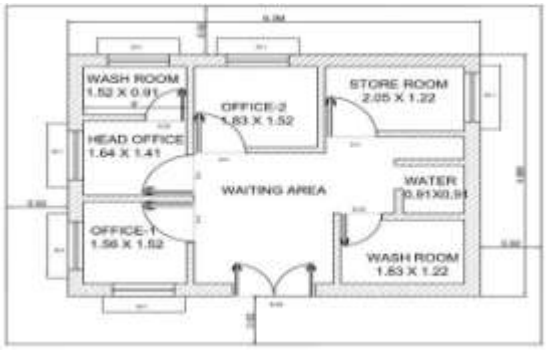


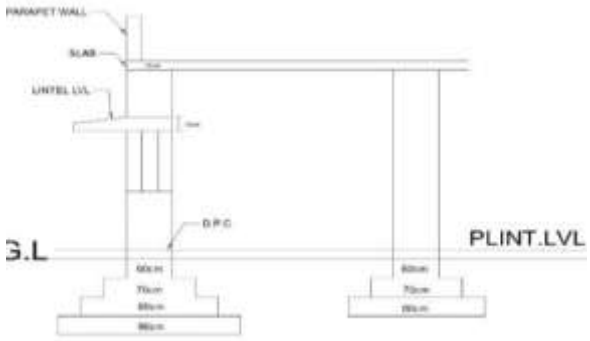
12.5-Interaction with Sarpanch of Giramtha Village

12.6 Summary Details of All the Villages Designs in Table Form:

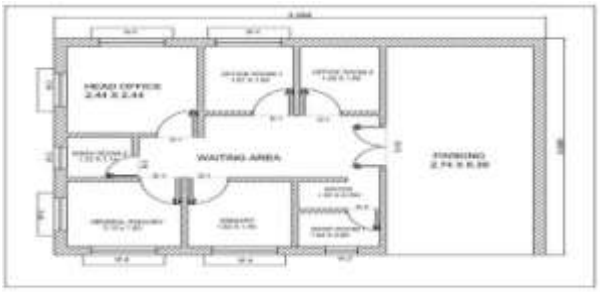
No.	Village Name	Discipline	DESIGN PART-1	DESIGN PART-2
1.	GIRAMTHA	CIVIL	Post Office	Community Hall
			PHC	Mini market
			Skill Development Center	Cyber café
			Animal Hospital	Paver block road
			Bank	Avado
			Bus Stand	Rain shelter
2	CHOSAR	CIVIL	Garden	Primary school
			Bank	Drainage work
			Scio-cultural	Bituminous road
			Community hall	Bio-gas
			PHC	Reconstructing the lake wall
			Post office	RO water

T-12.6-Summary Design of All the Village Design

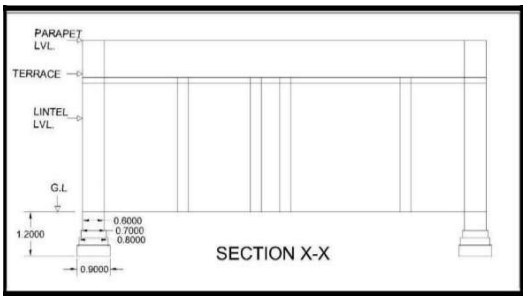




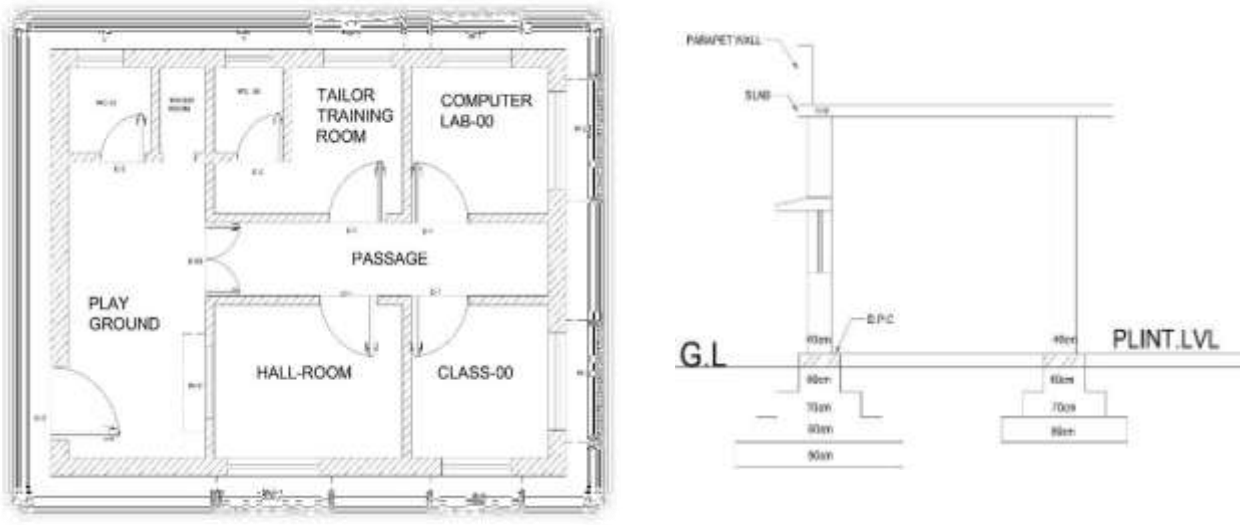
DESIGN OF POST OFFICE PLAN & SECTON X--X



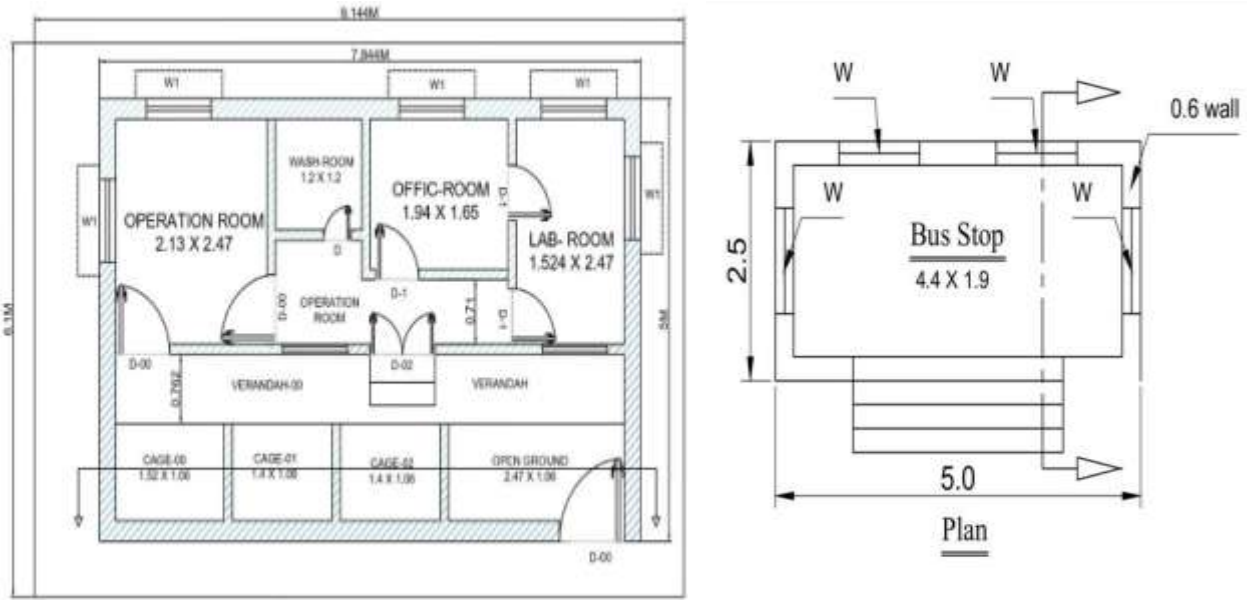
PUBLIC HEALTH CENTER-00



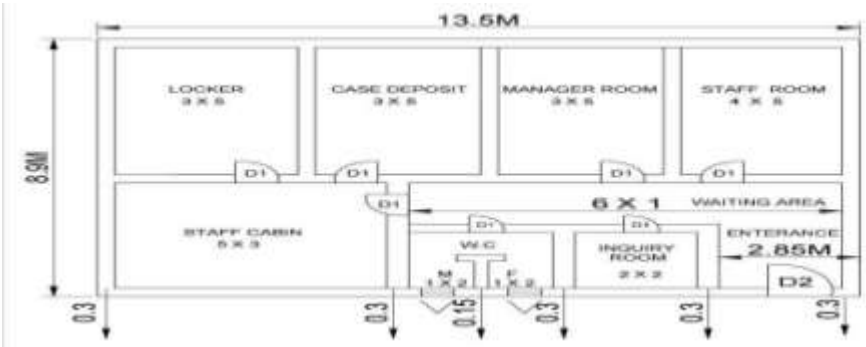
DESIGN OF PUBLIC HEALTH CENTER PLAN & SECTION X--X



DESIGN OF POST OFFICE PLAN & SECTION X--X



DESIGN OF SKILL DEVELOPMENT & BUS- STOP PLAN



T-12.6-Summary Design of All the Village Design

12.7 SUMMARY OF GOOD PHOTOGRAPHS IN TABLEFORMAT: -

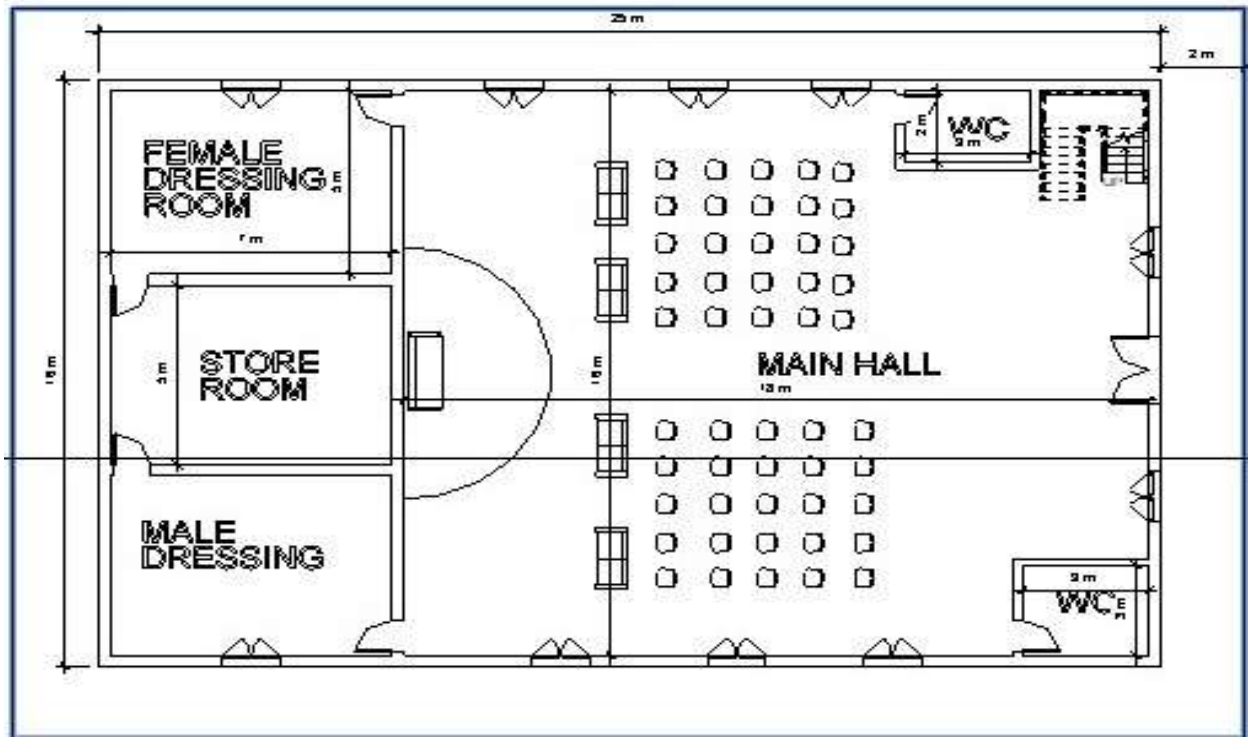


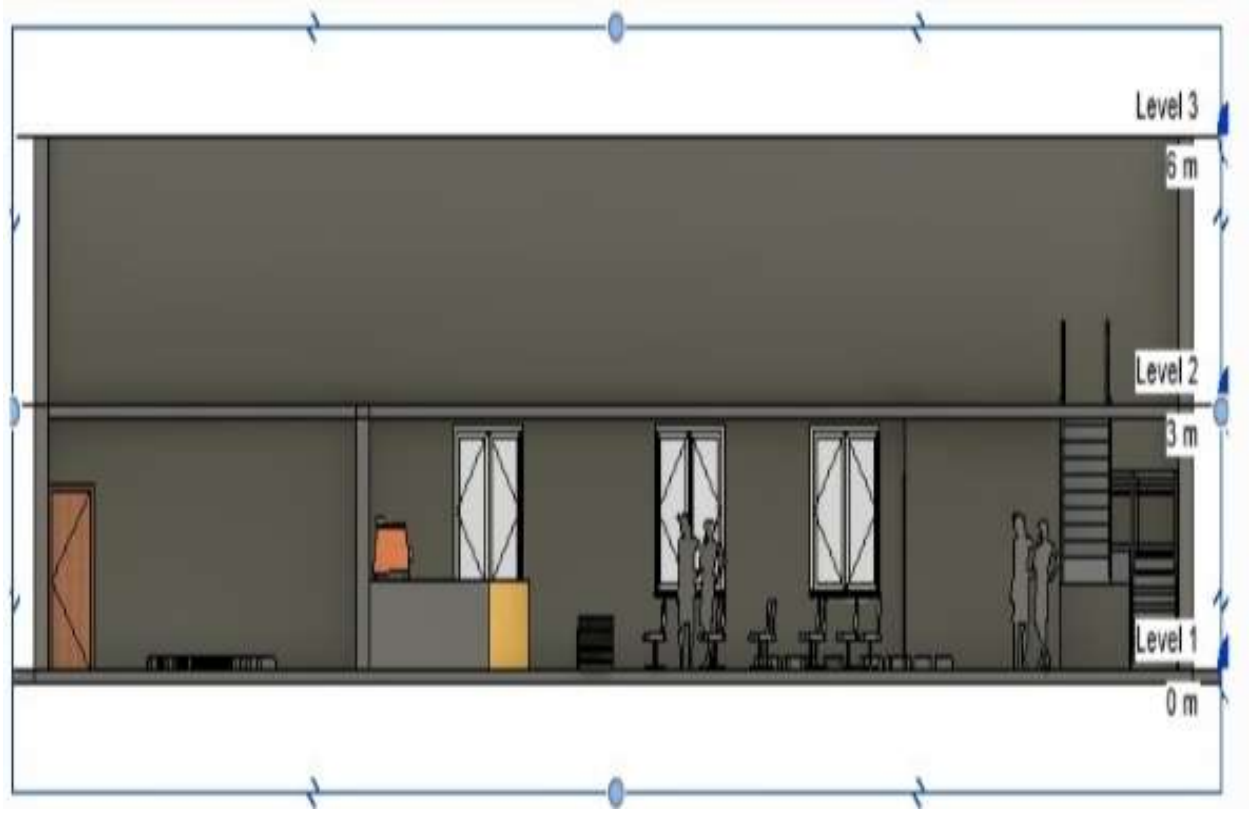


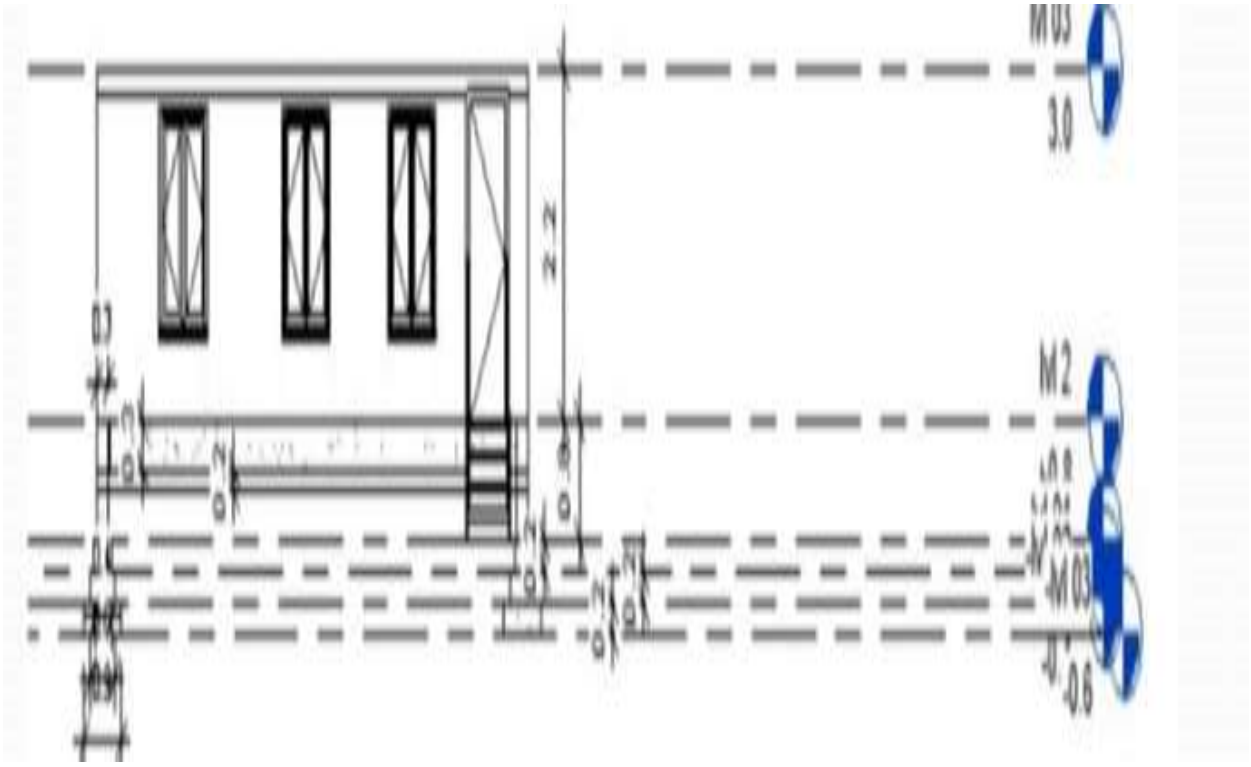

F. 12.7 Summary of Good Photographs

CHAPTER 13: ANNEXURE ATTACHMENT:

13.1.1 Design of Community Hall:







F.13.1.1 Design of Community Hall

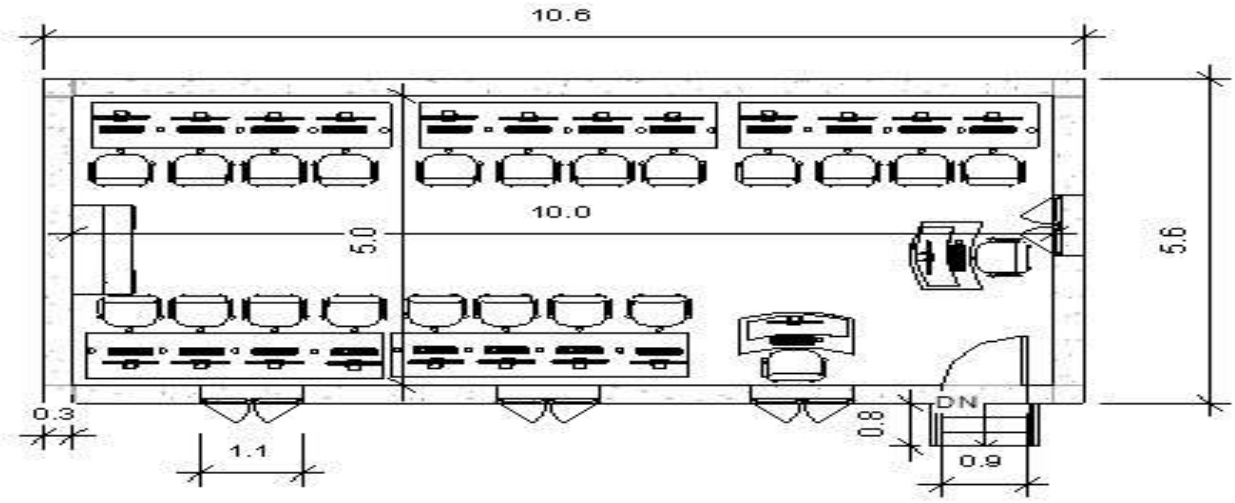
ABSTRACT SHEET

NO.	Description	Quantity	Per	Rate	Amount
1	Excavations for the foundation	403.71	M3	85	34315.4
2	PCC in foundation	37	M3	2700	99900
3	Brick Masonary upto plinth	16.9326	M3	3200	108352
4	Earth filling upto plinth	403.71	M3	50	20185.5
5	Brick masonryup for super structure	43.47	M3	3500	183330
6	Providing R.C.C Slab	51.57	M3	8800	453816
7	Brick masonry or parapet wall	3.61	M3	3500	23205
				=	923104
		3% CONTIGENCIES =			27700
		2% WATER CHARGE =			18500
		10% CONTRACT PROFIT =			92100
		Grand Total =			**1061404**

MEASUREMENT SHEET

NO.	Description	No	Length	Width	Height	Quantity M3
1	Excavation for the foundation	1	23.86	14.1	1.2	403.71
2	PCC in Foundation	1	23.86	14.1	0.11	37
3	Brick masonry upto plinth	1	49.08	0.23	1.5	16.9326
4	Earthfilling upto plinth		23.86	14.1	1.2	403.71
5	Brick masonry for super structure		75.92	0.23	3	52.38
	Deduction on doors & windows					8.91
					Total =	43.47
6	Providing RCC slab (1:2:4)	1	24.54	14.01	0.15	51.57
7	Brick masonry for parapet wall	1	24.54	0.15	1	3.681

13.1.2 Design of Cyber Cafe:



F.13.1.2 Design of Cyber Café

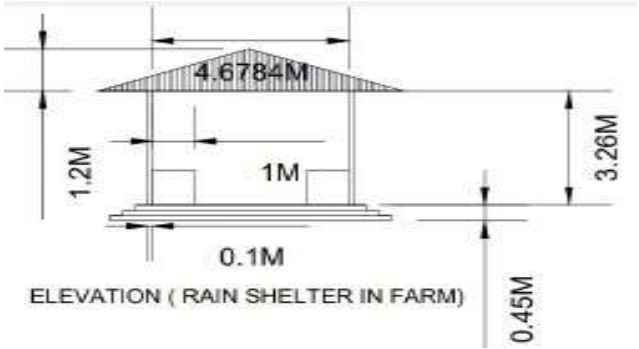
MEASUREMENT SHEET

NO.	Description	No	Length	Width	Height	Quantity M3
1	Excavation for the foundation	1	15.6	0.3	1.2	5.616
2	PCC in Foundation	1	15.3	0.8	0.125	1.53
3	Brick masonry upto plinth					8.5215
4	Earthfilling upto plinth	1	10.3	5.3	0.15	8.19
5	Brick masonry for super structure					9.3
6	Providing RCC slab (1:2:4)	1	10	5	0.15	7.5
7	Brick masonry for parapet wall	1	10.3	0.15	1.2	1.854

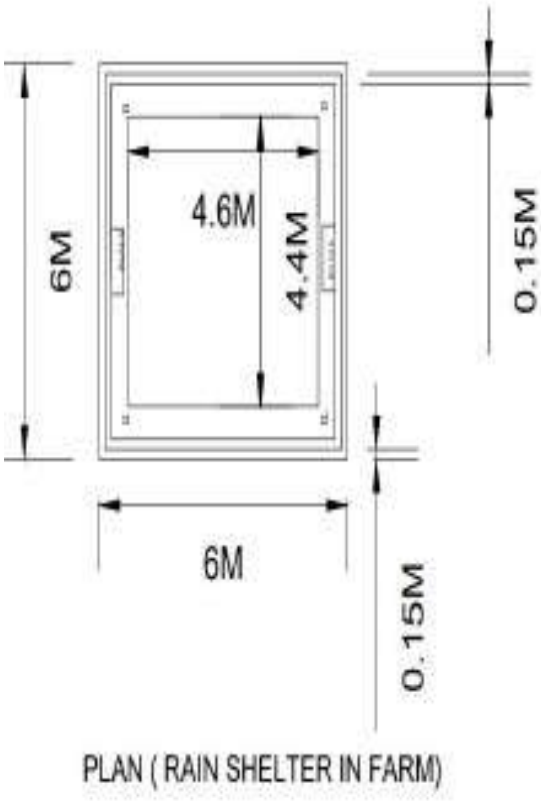
ABSTRACT SHEET

NO.	Description	Quantity	Per	Rate	Amount
1	Excavations for the foundation	5.616	M3	160	900
2	PCC in foundation	1.53	M3	2950	4515
3	Brick Masonary upto plinth	8.5215	M3	3600	30680
4	Earth filling upto plinth	8.19	M3	150	1230
5	Brick masonryup for super structure	9.3	M3	4000	37200
6	Providing R.C.C Slab	7.5	M3	8800	66000
7	Brick masonry or parapet wall	1.854	M3	3500	6490
				=	147014
		3% CONTIGENCIES =			4410
		2% WATER CHARGE =			2940
		10% CONTRACT PROFIT =			15000
		Grand Total =			**169364**

13.1.3 Design of Rain Shelter :



ELEVATION (RAIN SHELTER IN FARM)



F.13.1.3 Rain Shelter Drawings

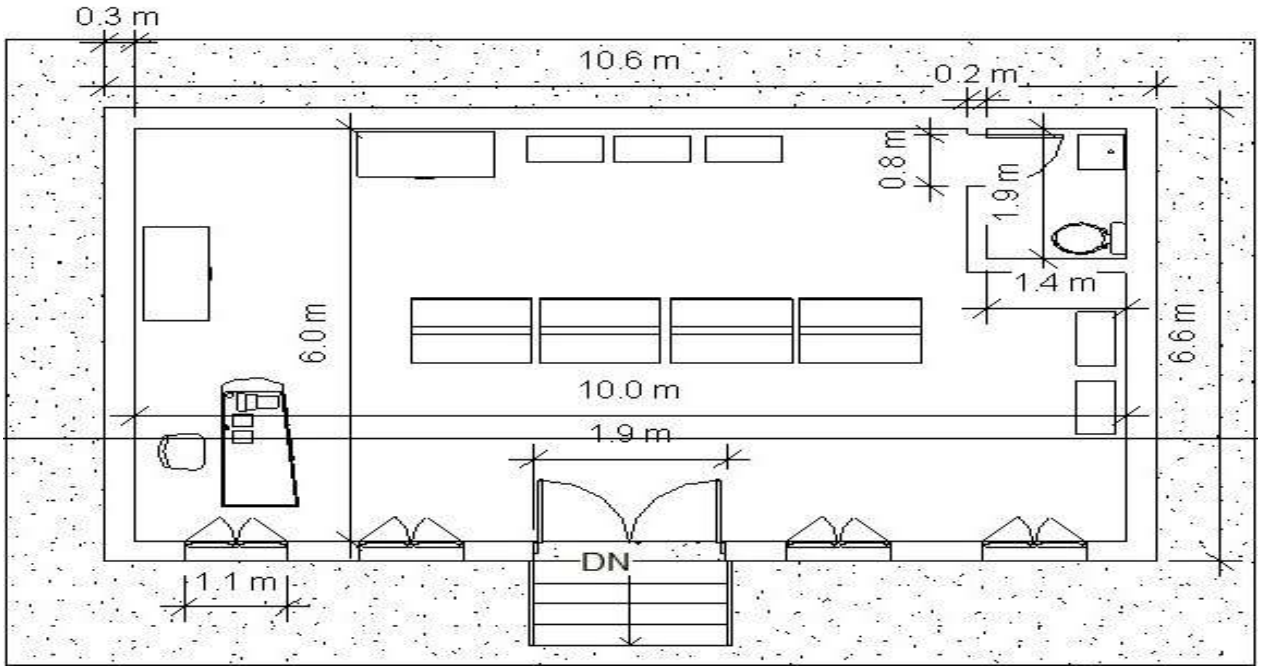
ABSTRACT SHEET

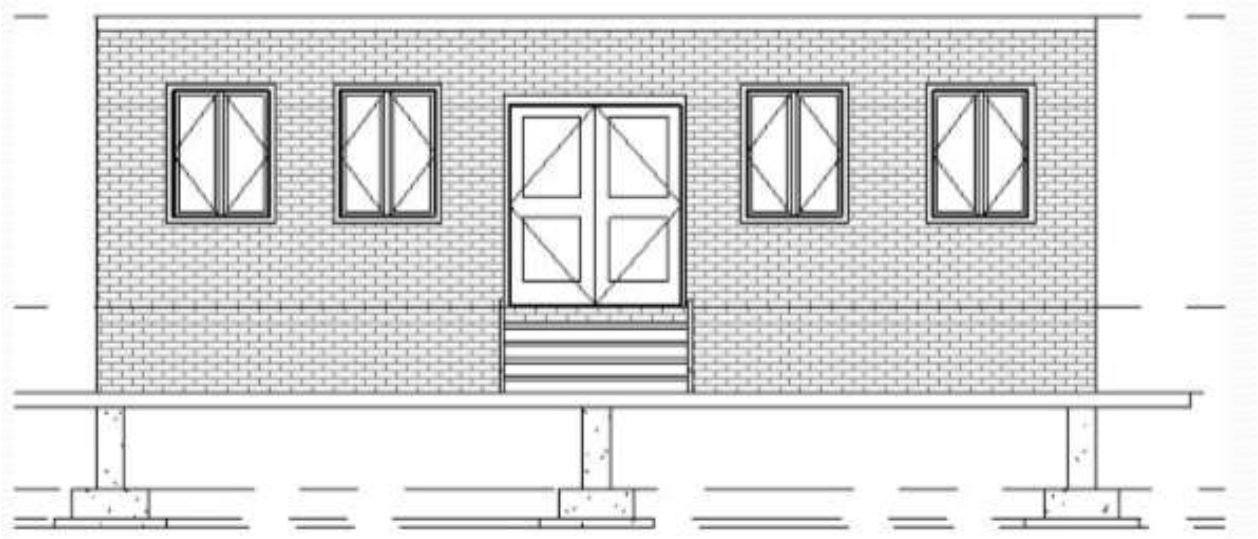
SR NO.	Description	Quantity	Per	Rate	Amount
1	PCC for the foundation	10.8	M3	6340	68472
2	Crushed Stone Backfilling	11.7	M3	180	2106
3	brick masonry for super structure	19.44	M3	8200	159408
4	12mm thick plaster internal+external	29	M2	145	4205
5	Total no. of Asbesots cement sheet	6	M	175	1050
6	Steel of Column	887.76	Kg	60	53265.6
				=	288506.6
		3% CONTIGENCIES =			8655.198
		2% WATER CHARGE =			5770.132
		10% CONTRACT PROFIT =			28850.66
		Grand Total =			**331782.6**

MEASUREMENT SHEET

NO.	Description	Quantity	Per
1	PCC for the foundation	10.8	M3
2	Crushed Stone Backfilling	11.7	M3
3	brick masonry for super structure	19.44	M3
4	12mm thick plaster internal+external	29	M2
5	Total no. of Asbesots cement sheet	6	M
6	Steel of Column	887.76	Kg

13.1.4 Design of Mini Market:





F.13.1.4 Mini Market Drawings

MEASUREMENT SHEET

Sr no.	Description	Total Quantity	Units
1	Excavation for foundation	41.44	m^3
2	P.C.C for foundation (1:4:8)	11.648	m^3
3	Brick masonry from foundation up to ground level	19.671	m^3
4	D.P.C (1:2:4) 5cm thick	10.98	m^2
5	Earth filling	31.482	m^2
6	Brick masonry plinth to slab	33.08	m^3
7	RCC Lintel	1.3176	m^3
8	RCC slab (1:2:4)	9.715	m^3
9	Providing laying cement plaster (1:4)	206	m^2
10	Brick masonry C.M (1:4) for parapet wall	1.555	m^3

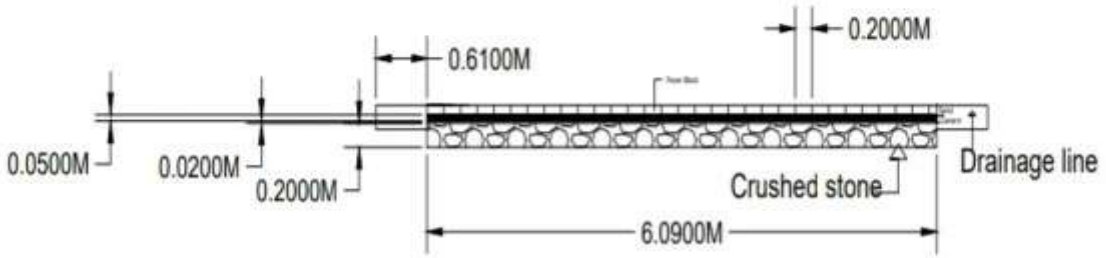
T-13.1.2-Measurement Sheet for Bus Stand

ABSTRACT SHEET

Item No.	Description	Quantity	Per	RATE	AMOUNT
1.	Excavation for the foundation in soft ordinary soil	41.44	CUM	85	3522.4
2.	Providing and laying foundation concrete P.C.C (1:4:8) in foundation	11.648	CUM	2700	31449.6
3.	Providing and laying brick masonry @ plinth	19.671	CUM	3200	62947.2
4.	D.P.C (1:4:8)	10.98	CUM	150	1647
5.	Earth filling	31.482	CUM	50	1574.1
6.	Brick masonry up to slab	33.08	CUM	3500	115780
7.	R.C.C lintel	1.3176	CUM	8800	11616
8.	R.C.C slab	9.715	CUM	8800	85360
9.	Providing laying cement plaster (1:4)	206	CUM	150	30900
10.	Brick masonry for parapet wall	1.555	CUM	3500	5425
				TOTAL	**348574.3**
	3% CONTIGENCIES = 10,457.229				
	2% WATER CHARGE = 6,971.48				
	10% CONTRACT PROFIT = 34,857.43				
	Grand total = 400,860.41				

T-13.1.2-Abstract Sheet for Bus Stand

13.1.5 Design of Paver Block Road :



Paver Block Road Cross - section

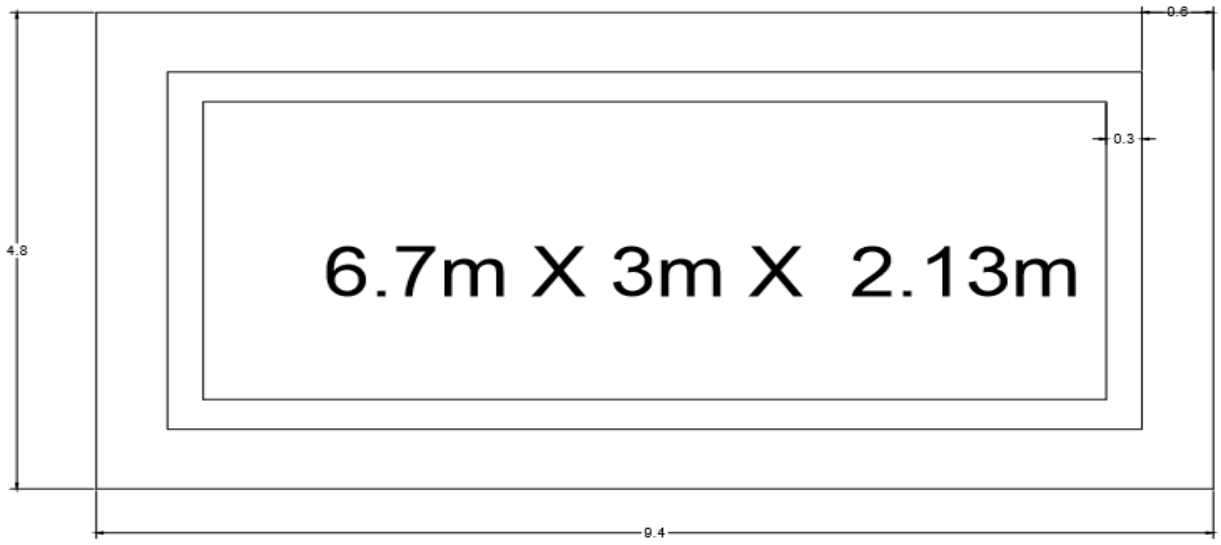
MEASUREMENT SHEET

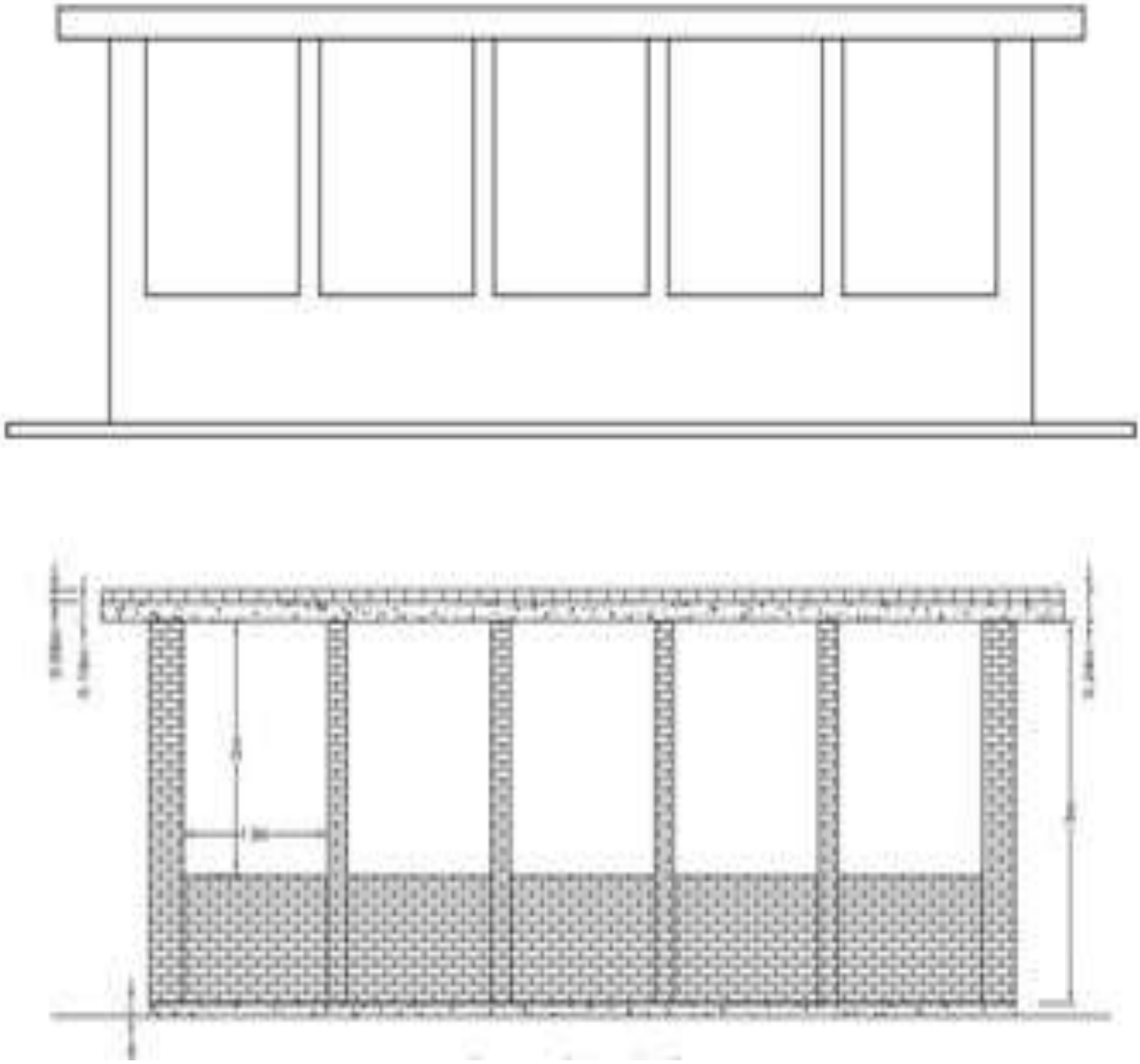
SR NO.	DESCRIPTION	NO.	L (m)	B (m)	H (m)	QUANTITY (m3)
1	**Crushed stone**	1	1000	6	0.2	1200
2	**Cement**	1	1000	6	0.02	120
3	**Sand**	1	1000	6	0.05	1300
4	**Paver Block**	214285.71				

ABSTRACT SHEET

SR NO.	DESCRIPTION	QUANTITY	PER	RATE	AMOUNT
1	**Crushed stone**	1200	m^3	1350	1620000
2	**Cement**	120	m^3	540	64800
3	**Sand**	1300	m^3	465	604500
4	**Paver Block**	214285.71	ft^2	18	3857142
			3% contingencies = 184390 2% water charge = 120000 10% contract profit = 614640		
			Grand Total : 6957472 Rs		

13.1.6 Design of Avado :





F.13.1.6 Avado Drawings

MEASUREMENT SHEET

SR NO.	DESCRIPTION	TOTAL QUANTITY
1	Providing and laying PCCfor foundation	5 m^3
2	First class brick masonry for superstructure CM(1:6)	75m^3
3	12mm thick plaster internal+external	191 m^2

ABSTRACT SHEET

Item no.	Description	Quantity	Per	Rate	Amount
1	Providing and laying PCC for foundation	5	M^3	6259	31295
2	First class brick masonry for super structure CM(1:6)	75	M^3	7809.25	585693.75
3	12mm thick plaster internal+ external	191	M^2	120	22920
		3% contingencies =19197.26 2% water charge =12798.175 10% contract profit = 63990.82			
	Grand Total :735895Rs				

13.2 Reason for students recommending this design:

1) Community Hall:

- In community halls, members of the village tend to gather for group activities, social support, public information and other purposes.
- They may sometimes be open for the whole community or for a specialized group within the greater community.

2) Super market:

- After making a super market in the village, the villagers don't have to go far for their daily need products. They get daily needs from their village only
- There are more availability of variety goods and freedom of selection for customers.
- The prices of all the goods at these markets are fixed and also are lower.

3) Cyber Cafe:

- A cyber cafe is a infrastructure where computers are provided for accessing the internet, playing games, chatting with friends or doing other computer-related tasks.
- Now-a-days when there is necessity of computers in our day-to-day life, construction of cyber cafe is a good option in development of the village.

(4) Paver Block Road:
- In construction of making this road the cost is minimum.
- There is no requirement of heavy machinery to construct these type of roads
- It can be used also as paring area, street road, pathway, etc.

(5) Avedo:
- Avedo is constructed because the birds can take shelter when they are tired.
- In that they are protected from all the weathers and are also provided with food and water.

(6) Rain Shelter:
- Shelter is a basic human need crucial for survival in cases of natural hazards or conflict.
- Rain Shelter provides protection from the heavy rain.

13.3 About designs suggestions / Benefits of the villagers:

(1) Community Hall:
- After constructing a community hall, it unites a community, provides volunteer opportunities, support for community projects, promotes healthy living, etc.
- And the community hall also helps in building strong, safe and inclusive communities.
- Social interaction among the villagers will also increase.

(2) Super market:
- Now the villagers don't have to go far for their daily needs.
- They get all their needs in one market only, so they don't have to travel at many places for the things.

(3) Cyber cafe:
- Now the community and passersby get the benefits of the internet cafe and are put in touch with the global market and happenings in the world.
- The students also get information related to their education.

(4) Paver Block Road:
- Paver block roads are very durable, and if they are adequately interlock, they can easily last for about 20 years.
- Paver block can withstand hefty vehicular load as well.
- And they are available in different shapes and colors, making it very versatile.

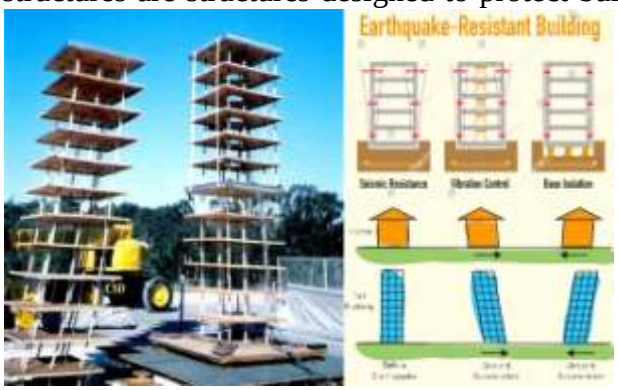
(5) Avedo:
- By constructing avedo, the birds don't have to go far, because they get food, water and shelter all at one place.

(6) Rain Shelter:
- Due to rain shelter the villagers are protected by rain, winds, cold, etc and are thus protected for the diseases.
- Sometimes these shelters are also helpful for the homeless, as they can rest their sometimes.

CHAPTER 14: TECHNICAL OPTION WITH CASE STUDIES:

14.1.1 Advanced Earthquake Resistance:

- Earthquake-resistant or a seismic 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.
- To combat earthquake destruction, the only method available to ancient architects was to build their landmark structures to last, often by making them excessively stiff and strong.
- While the former is the method typically applied in most earthquake-resistant structures, important facilities, landmarks and cultural heritage buildings use the more advanced (and expensive) techniques of isolation or control to survive strong shaking with minimal damage. Examples of such applications are the Cathedral of Our Lady of the Angels and the Acropolis Museum.
- Earthquake-resistant structures are structures designed to protect buildings from earthquakes. While no structure can be entirely immune to damage from earthquakes, the goal of earthquake-resistant construction is to erect structures that fare better during seismic activity than their conventional counterparts. According to building codes, earthquake-resistant structures are intended to withstand the largest earthquake of a certain probability that is likely to occur at their location. Currently, there are several design philosophies in earthquake engineering, making use of experimental results, computer simulations and observations from past earthquakes to offer the required performance for the seismic threat at the site of interest.



F 14.1.1 Advanced Earthquake Resistance

- The science of structural and **Earthquake Engineering** helps enhance the seismic flexibility of civil structures and critical infrastructure through advanced engineering and management tools. While natural forces are extremely useful to mankind, natural disasters can wreak a havoc with hurricanes, earthquakes, tsunamis posing threat to life and infrastructure worth billions of dollars.

- **Techniques:**

1. Combined vibration control:

F.14.1.1. Combined Vibration Control

- Designed by architect Merrill W. Baird of Glendale, working in collaboration with A. C. Martin Architects of Los Angeles, the Municipal Services Building at 633 East Broadway, Glendale was completed in 1966. Prominently sited at the corner of East Broadway and Glendale Avenue, this civic building serves as a heraldic element of Glendale's civic center.
- In October 2004 Architectural Resources Group (ARG) was contracted by Nabih Youssef & Associates, Structural Engineers, to provide services regarding a historic resource assessment of the building due to a proposed seismic retrofit.
- In 2008, the Municipal Services Building of the City of Glendale, California was seismically retrofitted using an innovative combined vibration control solution: the existing elevated building foundation of the building was put on high damping rubber bearings.

2. Concurrent shake-table testing:

- Concurrent shake-table testing of two or more building models is a vivid, persuasive and effective way to validate earthquake engineering solutions experimentally.
- Thus, two wooden houses built before adoption of the 1981 Japanese Building Code were moved to E-Defense for testing (see both pictures aside). The left house was reinforced to enhance its seismic resistance, while the other one was not. These two models were set on E-Defense platform and tested simultaneously.

3. Steel plate walls system:

F.14.1.1.3 Steel Plate Wall System

- A steel plate shear wall (SPSW) consists of steel infill plates bounded by a column-beam system. When such infill plates occupy each level within a framed bay of a structure, they constitute a SPSW system. SPSW was invented entirely to withstand seismic activity.
- SPSW behavior is analogous to a vertical plate girder cantilevered from its base. Similar to plate girders, the SPSW system optimizes component performance by taking advantage of the post-buckling behavior of the steel infill panels.
- The Ritz-Carlton/JW Marriott hotel building, a part of the LA Live development in Los Angeles, California, is the first building in Los Angeles that uses an advanced steel plate shear wall system to resist the lateral loads of strong earthquakes and winds.

4. Seismic test of seven-story building:

- A destructive earthquake struck a lone, wooden condominium in Japan.[12] The experiment was webcast live on July 14, 2009 to yield insight on how to make wooden structures stronger and better able to withstand major earthquakes.
- The Miki shake at the Hyogo Earthquake Engineering Research Center is the capstone experiment of the four-year NEES Wood project, which receives its primary support from the U.S. National Science Foundation Network for Earthquake Engineering Simulation (NEES) Program.
- "NEES Wood aims to develop a new seismic design philosophy that will provide the necessary mechanisms to safely increase the height of wood-frame structures in active seismic zones of the United States, as well as mitigate earthquake damage to low-rise wood-frame structures," said Rosowsky, Department of Civil Engineering at Texas A&M University. This philosophy is based on the application of seismic damping systems for wooden buildings. The systems, which can be installed inside the walls of most wooden buildings, include strong metal frame, bracing and dampers filled with viscous fluid.

5. Super frame earthquake proof structure:

- The proposed system is composed of core walls, hat beams incorporated into the top-level, outer columns, and viscous dampers vertically installed between the tips of the hat beams and the outer columns. During an earthquake, the hat beams and outer columns act as outriggers and reduce the overturning moment in the core, and the installed dampers also reduce the moment and the lateral deflection of the structure. This innovative system can eliminate inner beams and inner columns on each floor, and thereby provide buildings with column-free floor space even in highly seismic regions.

14.1.2 Seismic Retrofitting of 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.

F. 14.1.2 Seismic Retrofitting Of Building

- Prior to the introduction of modern seismic codes in the late 1960s for developed countries (US, Japan etc.) and late 1970s for many other parts of the world (Turkey, China etc.), many structures were designed without adequate detailing and reinforcement for seismic protection. In view of the imminent problem, various research work has been carried out.
- State-of-the-art technical guidelines for seismic assessment, retrofit and rehabilitation have been published around the as the ASCE-SEI 41 and the New Zealand Society for Earthquake Engineering (world – such NZSEE)'s guidelines.
- These codes must be regularly updated; the 1994 Northridge earthquake brought to light the brittleness of welded steel frames.
- 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.

➢ **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 recognises 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 recognising 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.

➢ **Objectives:**

- Public safety only. The goal is to protect human life, ensuring that the structure will not collapse upon its occupants or passersby, and that the structure can be safely exited. Under severe seismic conditions the structure may be a total economic write-off, requiring tear-down and replacement.
- Structure survivability. The goal is that the structure, while remaining safe for exit, may require extensive repair (but not replacement) before it is generally useful or considered safe for occupation.
- This is typically the lowest level of retrofit applied to bridges.

- Structure functionality. Primary structure undamaged and the structure is undiminished in utility for its primary application. A high level of retrofit, this ensures that any required repairs are only "cosmetic" – for example, minor cracks in plaster, drywall and stucco. This is the minimum acceptable level of retrofit for hospitals.
- Structure unaffected. This level of retrofit is preferred for historic structures of high cultural significance.

➢ Techniques:

1. External post-tensioning

- The use of external post-tensioning for new structural systems have been developed in the past decade. Under the PRESS (Precast Seismic Structural Systems), a large-scale U.S./Japan joint research program, unbonded post-tensioning high strength steel tendons have been used to achieve a moment-resisting system that has self-centering capacity. An extension of the same idea for seismic retrofitting has been experimentally tested for seismic retrofit of California bridges under a Caltrans research project and for seismic retrofit of non-ductile reinforced concrete frames. Pre-stressing can increase the capacity of structural elements such as beam, column and beam-column joints. External pre-stressing has been used for structural upgrade for gravity/live loading since the 1970s.

2. Base isolators:

- Base isolation is a collection of structural elements of a building that should substantially decouple the building's structure from the shaking ground thus protecting the building's integrity and enhancing its seismic performance. This earthquake engineering technology, which is a kind of seismic vibration control, can be applied both to a newly designed building and to seismic upgrading of existing structures. Normally, excavations are made around the building and the building is separated from the foundations. Steel or reinforced concrete beams replace the connections to the foundations, while under these, the isolating pads, or base isolators, replace the material removed. While the base isolation tends to restrict transmission of the ground motion to the building, it also keeps the building positioned properly over the foundation.

3. Supplementary dampers:

- Supplementary dampers absorb the energy of motion and convert it to heat, thus damping resonant effects in structures that are rigidly attached to the ground. In addition to adding energy dissipation capacity to the structure, supplementary damping can reduce the displacement and acceleration demand within the structures. In some cases, the threat of damage does not come from the initial shock itself, but rather from the periodic resonant motion of the structure that repeated ground motion induces. In the practical sense, supplementary dampers act similarly to Shock absorbers used in automotive suspensions.

4. Tuned mass dampers:

- Tuned mass dampers (TMD) employ movable weights on some sort of springs. These are typically employed to reduce wind sway in very tall, light buildings. Similar designs may be employed to impart earthquake resistance in eight to ten story buildings that are prone to destructive earthquake induced resonances.

5. Slosh tank:

- A slosh tank is a large container of low viscosity fluid (usually water) that may be placed at locations in a structure where lateral swaying motions are significant, such as the roof, and tuned to counter the local resonant dynamic motion. During a seismic (or wind) event the fluid in the tank will slosh back and forth with the fluid motion usually directed and controlled by internal baffles – partitions that prevent the tank itself becoming resonant with the structure, see Slosh dynamics.
- The net dynamic response of the overall structure is reduced due to both the counteracting movement of mass, as well as energy dissipation or vibration damping which occurs when the fluid's kinetic energy is converted to heat by the baffles. Generally the temperature rise in the system will be minimal and is passively cooled by the surrounding air. One Rincon Hill in San Francisco is a skyscraper with a rooftop slosh tank which was designed primarily to reduce the magnitude of lateral swaying motion from wind.
- A slosh tank is a passive tuned mass damper. In order to be effective the mass of the liquid is usually on the order of 1% to 5% of the mass it is counteracting, and often this requires a significant volume of liquid. In some cases these systems are designed to double as emergency water cisterns for fire suppression.

6. Active control system:

- Very tall buildings ("skyscrapers"), when built using modern lightweight materials, might sway uncomfortably (but not dangerously) in certain wind conditions.
- A solution to this problem is to include at some upper story a large mass, constrained, but free to move within a limited range, and moving on some sort of bearing system such as an air cushion or hydraulic film.
- Hydraulic pistons, powered by electric pumps and accumulators, are actively driven to counter the wind forces and natural resonances.
- These may also, if properly designed, be effective in controlling excessive motion – with or without applied power – in an earthquake.
- In general, though, modern steel frame high rise buildings are not as subject to dangerous motion as are medium rise (eight to ten story) buildings, as the resonant period of a tall and massive building is longer than the approximately one second shocks applied by an earthquake.

7. Adhoc addition of structural support/reinforcement:

- The most common form of seismic retrofit to lower buildings is adding strength to the existing structure to resist seismic forces.
- The strengthening may be limited to connections between existing building elements or it may involve adding primary resisting elements such as walls or frames, particularly in the lower stories.
- Common retrofit measures for unreinforced masonry buildings in the Western United States include the addition of steel frames, the addition of reinforced concrete walls, and in some cases, the addition of base isolation.

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

➢ Modern Techniques:

1. Precast Flat Panel System:

- This method of construction involves the procedure of making floor and wall units off site. For this, separate factory outlets and facilities is required. Once the panel units are made as per the design specification and requirements, they are brought to the site and placed. This method is best suited for repetitive construction project activities.
- The panels manufactured has the services of windows, doors and the finishes. This method also brings building envelope panels which are provided with insulation and decorative cladding that is fitted by the factory which can also be used as load – bearing elements.

F. 14.1.3.1 Precast Flat Panel System

2. 3D Volumetric Construction:

- As the name implies, the 3D volumetric construction involves the manufacture of 3D units in the form of modules in off site. At the time of installation, they are brought to the site and assembled module by module. Each modular unit manufactured are 3D units, hence this construction is called as 3D volumetric construction or modular construction.
- The transportation of the modules can be carried out in various forms or methods. This can involve the transportation of the basic structure or a completed unit with all the internal and external finishes, services installed within it, that the only part remaining is the assembly. The factory construction brings different unit of same product maintaining their quality throughout. Hence this method is best suited for repetitive projects so that rapid assembly of the products is possible.

F.14.1.3.2 3D Volumatric Construction

3. Precast Concrete Foundations:

- For the rapid construction of foundation, the precast concrete system can be employed. This method is more suited for a bespoke design. Here, the elements required for the construction of foundation are constructed separately in the factory (off site) and brought to the site and assembled. The manufactured product must have the assured quality as specified by the designer.

F. 14.1.3.3 Precast Concrete Foundations

4. Twin Wall Technology:

F.14.1.3.4 Twin Wall Technology

- The twin wall technology is a hybrid solution of wall system that combines the qualities of erection speed and precast concrete with the structural integrity of in-situ concrete. This type of wall system guarantees structural integrity and waterproof reliability for the structure.
- The twin wall system has two walls slabs that are separated as shown in the figure. The two slabs are separated by a cast in lattice girders. The procedure involves:

1. The wall units are placed in the site.
2. The twin units are propped temporarily.
3. The wall units are later joined by means of reinforcing.
4. The gap between the wall units are filled by means of concrete.

5. Precast Cladding Panels:

F.14.1.3.5 Precast Cladding Panels

- The cladding system is the installation of a material over another that finally act as a skin or a layer.
- This system of layer is not only intended for aesthetics, but it can help in controlling the infiltration of the weather elements.

- No kind of waterproof condition is provided by the cladding. Instead, the cladding is a control measure against water penetration. This safely help in directing the water or the wind so that there is control of the runoff. This helps to prevent the infiltration into the building structure.

6. Insulating Concrete Formwork:

F.14.1.3.6 Insulating Concrete Formwork

- The system of insulating concrete formwork (ICF) have twin walled panels that are either polystyrene panels or blocks are employed. These are built quickly to create the formwork as the wall of the buildings.

- The formwork that is made is filled with concrete. This concrete is factory produced that have quality assurance so that a ready – mixed concrete.

- Mostly the mix is ready mix concrete. Higher level of thermal insulation is provided by expanded polystyrene blocks. The concrete core will provide good robustness and better sound insulation.

14.1.4 Engineering aspects of Soil Mechanics – Environment impact Assessment :

- An Environmental Impact Assessment is a formal method of judging the impact that any new developmental project would have on the environment and its constituents. This can include changes that the project would create in the physical aspects of existing geography, chemical changes to the atmosphere including air and water, biological changes that affect plant, animal and human life, cultural impact of a project on the society in the area, and other socio-economic effects that the project can have.
- Such an assessment allows problems to be foreseen, so that the design and planning of the projects is modified to reduce any negative effects. It is now fashionable to build green buildings which have a positive effect on the environment.
- There is historical precedent for the now mandatory Environmental Impact Assessments (EIA). Past efforts by governments have resulted in bans on activities that caused noxious odors, garbage dumps were positioned at places far away from habitation, and commercial activities were restricted to town centers.
- Environmental Impact Assessment (EIA) is a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse.
- UNEP defines Environmental Impact Assessment (EIA) as a tool used to identify the environmental, social and economic impacts of a project prior to decision-making. It aims to predict environmental impacts at an early stage in project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers.
- The Ministry of Environment, Forests and Climate Change (MoEFCC) of India has been in a great effort in Environmental Impact Assessment in India. The main laws in action are the Water Act(1974), the Indian Wildlife (Protection) Act (1972), the Air (Prevention and Control of Pollution) Act (1981) and the Environment (Protection) Act (1986), Biological Diversity Act(2002). The responsible body for this is the Central Pollution Control Board.
- Environmental Impact Assessment (EIA) studies need a significant amount of primary and secondary environmental data. Primary data are those collected in the field to define the status of the environment (like air quality data, water quality data etc.). Secondary data are those collected over the years that can be used to understand the existing environmental scenario of the study area. The environmental impact assessment (EIA) studies are conducted over a short period of time and therefore the understanding of the environmental trends, based on a few months of primary data, has limitations. Ideally, the primary data must be considered along with the secondary data for complete understanding of the existing environmental status of the area. In many EIA studies, the secondary data needs could be as high as 80% of the total data requirement. EIC is the repository of one-stop secondary data source for environmental impact assessment in India.
- The Environmental Impact Assessment (EIA) experience in India indicates that the lack of timely availability of reliable and authentic environmental data has been a major bottleneck in achieving the full benefits of EIA. The environment being a multi-disciplinary subject, a multitude of agencies are involved in collection of environmental data. However, no single organization in India tracks available data from these agencies and makes it available in one place in a form required by environmental impact assessment practitioners.

- Further, environmental data is not available in enhanced forms that improve the quality of the EIA. This makes it harder and more time-consuming to generate environmental impact assessments and receive timely environmental clearances from regulators. With this background, the Environmental Information Centre (EIC) has been set up to serve as a professionally managed clearinghouse of environmental information that can be used by MoEF, project proponents, consultants, NGOs and other stakeholders involved in the process of environmental impact assessment in India. EIC caters to the need of creating and disseminating of organized environmental data for various developmental initiatives all over the country.
- EIC stores data in GIS format and makes it available to all environmental impact assessment studies and to EIA stakeholders.
- In 2020, the Government of India proposed a new EIA 2020 Draft, which was widely criticized for heavily diluting the EIA. Many Environmental groups started a campaign demanding the withdrawal of the Draft, in face of these campaigns, the Government of India resorted to banning/blocking the websites of these groups.
- Environment Impact Assessment in India is statutorily backed by **the Environment Protection Act, 1986** which contains various provisions on EIA methodology and process.

➢ The EIA Process: EIA involves the steps mentioned below. However, the EIA process is cyclical with interaction between the various steps:

1. **Screening:** The project plan is screened for scale of investment, location and type of development and if the project needs statutory clearance.
2. **Scoping:** The project's potential impacts, zone of impacts, mitigation possibilities and need for monitoring.
3. **Collection of baseline data:** Baseline data is the environmental status of study area.
4. **Impact prediction:** Positive and negative, reversible and irreversible and temporary and permanent impacts need to be predicted which presupposes a good understanding of the project by the assessment agency.
5. **Mitigation measures and EIA report:** The EIA report should include the actions and steps for preventing, minimizing or by passing the impacts or else the level of compensation for probable environmental damage or loss.
6. **Public hearing:** On completion of the EIA report, public and environmental groups living close to project site may be informed and consulted.
7. **Decision making:** Impact Assessment Authority along with the experts consult the project-in-charge along with consultant to take the final decision, keeping in mind EIA and EMP (Environment Management Plan).
8. **Monitoring and implementation of environmental management plan:** The various phases of implementation of the project are monitored.
9. **Assessment of Alternatives, Delineation of Mitigation Measures and Environmental Impact Assessment Report:** For every project, possible alternatives should be identified, and environmental attributes compared. Alternatives should cover both project location and process technologies. Once alternatives have been reviewed, a mitigation plan should be drawn up for the selected option and is supplemented with an Environmental Management Plan (EMP) to guide the proponent towards environmental improvements.
10. **Risk assessment:** Inventory analysis and hazard probability and index also form part of EIA procedures.

➢ **Methods of Environmental Impact Assessment:**

- Industrial products – Product environmental life cycle analysis (LCA) is used for identifying and measuring the impact of industrial products on the environment. These EIAs consider activities related to extraction of raw materials, ancillary materials, equipment; production, use, disposal and ancillary equipment.
- Genetically modified plants – Specific methods available to perform EIAs of genetically modified organisms include GMP-RAM and INOVA.
- Fuzzy logic – EIA methods need measurement data to estimate values of impact indicators. However, many of the environment impacts cannot be quantified, e.g. landscape quality, lifestyle quality and social acceptance. Instead, information from similar EIAs, expert judgment and community sentiment are employed. Approximate reasoning methods known as fuzzy logic can be used. A fuzzy arithmetic approach has also been proposed and implemented using a software tool (TDEIA).

14.1.5 Water Supply – Sewarage System – Waster Water – Sustainable Development Techniques :

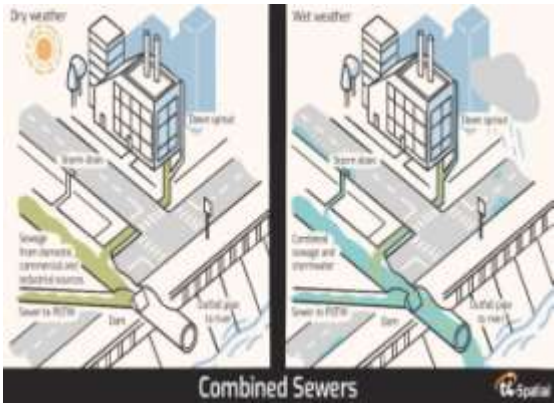
➢ **Water Supply:**

- Water supply is the provision of water by public utilities, commercial organizations, community endeavors or by individuals, usually via a system of pumps and pipes. Aspects of service quality include continuity of supply, water quality and water pressure. The institutional responsibility for water supply is arranged differently in different countries and regions (urban versus rural). It usually includes issues surrounding policy and regulation, service provision and standardization.
- The cost of supplying water consists, to a very large extent, of fixed costs (capital costs and personnel costs) and only to a small extent of variable costs that depend on the amount of water consumed (mainly energy and chemicals). Almost all service providers in the world charge tariffs to recover part of their costs
- Sustainable water supply is meeting the present-day need for safe, reliable, and affordable water, which minimise adverse effects on the environment, whilst enabling future generations to meet their requirements.
- With growing numbers of people on our planet, it is essential that clean water is provided to people across the globe in a sustainable and fair manner. We need to use water efficiently and to achieve water sustainability we need to;
  - Make sure there is a balance between what is consumed and what is used
  - Ensure that water remains of a good quality and avoid pollution of our water sources
  - Allow for stores to be built up for drier periods in our changing climate
  - Manage the water that falls in places effectively
- If we can do this we will have sustainable water supply which meets the present-day need for safe, reliable, and affordable water, which minimises adverse effects on the environment, whilst enabling future generations to meet their requirements.
- With children particularly at risk from water-related diseases, access to improved sources of water can result in better health, and therefore better school attendance, with positive longer-term consequences for their lives.

➢ **Sewerage System:**

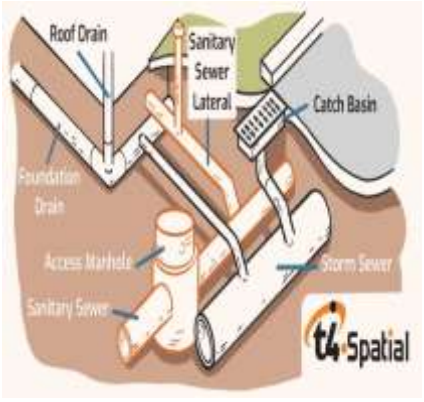
- A sewerage system, or wastewater collection system, is a network of pipes, pumping stations, and appurtenances that convey sewage from its points of origin to a point of treatment and disposal.
- There are three types of modern sewerage systems: Sanitary sewers (also called foul sewers), storm sewers (also called surface water sewers), and combined sewers.

(1) Combined Sewers:



- Combined sewers are well….combined! That is, they use a single pipe to carry both wastewater and storm runoff water to wastewater plants. They aren't used much anymore because when it rains a lot the system can't handle both the surface water and the wastewater and this causes the sewer to overflow. Because of this, new systems separate storm sewers from sanitary sewers.
- In this image both the wastewater from buildings and the storm runoff water flow into the same pipe. During dry weather the combined wastewater and storm water flow toward the wastewater treatment plant and not into the river.
- In wet weather the increased runoff water combined with the wastewater from buildings is too much for the pipe to handle and the result is that some of it spills out into the river. These are called combined sewer overflow. In other words, during extremely wet weather combined sewers are dumping raw sewage and industrial waste into rivers and other bodies of water. This results in contaminated drinking water and other types of environmental damage. In some cases, it might even be necessary to boil water before it is safe to drink or use.
- Combined sewer overflow events can also cause too much wastewater to reach sewage treatment plants. When this happens the plant is not able to treat the wastewater properly.
- Even worse, during extremely severe weather events combined sewers can even cause wastewater – including raw sewage – to back-up into inhabited buildings. The cost to clean up this stinky mess is no insignificant amount.

(2) Sanitary Sewers:



- Sanitary sewers carry wastewater from homes and businesses to wastewater treatment plants. They consist of pipes, manholes, and pumping stations and their role is to maintain water quality because it's necessary for good public health.
- When you flush the toilet or wash dishes in the kitchen sink that water is carried away from your home through relatively small pipes to the sewer main in the street or to your septic system. The pipes that take waste from your home (or business) to the sewer main are only large enough to remove toilet paper and human waste.

- From there it continues on until it reaches a wastewater treatment plant where the wastewater is treated so as to remove pollutants before it returns to the environment.
- When non-biodegradable items are flushed, such as sanitary wipes, this interferes the public wastewater system (potentially causing blockages and overflows) and with processes at the plant.
- Usually, sanitary sewers use gravity to carry the wastewater away.
- However, in low-lying areas pumps are sometimes used when the wastewater needs to reach an area that's at a higher elevation.
- Sanitary sewers are accessed via manholes for routine maintenance and repair.
- Clean-outs located on your property provide access to the part of the sanitary sewer that goes from your home to the sewer main in the street.
- If there's a blockage in this pipe it can be accessed via the clean-out.

(3) Storm Sewers:

- Storm sewers (also called surface sewers) carry rainwater and melting snow (storm sewers are not designed to carry wastewater) from roofs and roads and channel it into streams, rivers, and other bodies of water.
- When it rains (or when snow melts) water enters storm sewers via manholes, pipes, storm drain inlets, open ditches, etc.
- This water is then carried away until it eventually flows directly into streams, rivers, and waterways without having been treated.
- This is why you should never put any kind of hazardous waste down a storm drain. This includes things like paint, solvents, used motor oil, and cleaning liquids. They can damage rivers, lakes, wetlands, and even poison wildlife.
- Storm sewers can also get clogged with leaves, litter, and other debris and when this happens there can be flooding.

➢ **Waste Water:**

- Wastewater is any water used to transport waste, and is most commonly a synonym for sewage (also called domestic wastewater, municipal wastewater) - this is wastewater that is produced by a community of people.
- Black water (waste), household wastewater that only contains the discharge from toilets.
- Grey water, household wastewater excluding the discharge from toilets. Fecal sludge, household wastewater generated from certain types of onsite sanitation systems
- Wastewater is used water that has been affected by domestic, industrial and commercial use.
- The composition of all wastewaters is thus constantly changing and highly variable, which is why it is so difficult to pinpoint a singular definition of the word itself.
- The composition of wastewater is 99.9% water and the remaining 0.1% is what is removed.
- This 0.1% contains organic matter, microorganisms and inorganic compounds.
- Wastewater effluents are released to a variety of environments, such as lakes, ponds, streams, rivers, estuaries and oceans.
- Wastewater also includes storm runoff, as harmful substances wash off roads, parking lots and rooftops.

➢ **Types of Waste Water:**

1) Sewage Water:

- Sewage is wastewater that comes from domestic activities. That includes houses, public toilets, restaurants, schools, hotels and hospitals. These buildings all produce a lot of wastewater on a daily basis, which generally contains urine and faeces.

2) Non-sewage water:

- Non-sewage covers all other types of wastewater. That includes rainwater and stormwater from flooding, water from commercial activity like garages or laundrettes and water from industrial plants.

➢ **Sources of Waste Water:**

1. **Sewage (Waste Water)** - Sewage is another name for waste water from domestic and industrial processes. Despite strict regulatory control, the Environment Agency data shows that the water and sewage industry accounted for almost a quarter of the serious water incidents in England and Wales in 2006.
2. **Agricultural Pollution** - The agriculture industry covers 76% of the land area of England and Wales. Agricultural processes such as uncontrolled spreading of slurries and manure, disposal of sheep dip, tillage, ploughing of the land, use of pesticides and fertilisers can cause water pollution. Accidental spills from milk dairies can also affect the quality of water.
3. **Oil Pollution** - Every year there are about 3,000 pollution incidents involving oil and fuels in England and Wales. Oil spillages affect water quality in a number of ways. Oil can make drinking water unsafe to drink. A substantial amount of oil released into oceans and seas will destroy wildlife and the ecosystems that sustain them. Oil spills also reduce oxygen supplies within the water environment. The main causes of oil related water pollution are: loss from storage facilities, spillage during delivery and deliberate disposal of waste oil to drainage systems.
4. **Radioactive Substances** - Radioactive waste is another source of water pollution. Radioactive substances are used in nuclear power plants, industrial, medical and other scientific processes. They can be found in watches, luminous clocks, television sets and x-ray machinery. There are also naturally occurring radioisotopes from organisms and within the environment. If not properly disposed of, radioactive waste can result in serious water pollution incidents.
5. **River dumping** - Lots of people dump supermarket trolleys, bicycles, garden cuttings and electronic waste into rivers or river banks. This is illegal and offenders may be charged for fly-tipping if caught. River dumping not only causes water pollution; it also harms wildlife and increases the risk of flooding. Fly-tipping (this includes river dumping) is a criminal offence. In the most severe cases, it can attract a maximum fine of £50,000 or a 5 year jail term.
6. **Marine Dumping** - The Worldwide Fund for Nature (WWF) estimates that a staggering amount of waste enters into the sea every year. Part of this is due to deliberate dumping of waste into coastal waters. Other sources of waste at sea include plastics and other materials blown or washed from land. Marine dumping is illegal under international and UK legislation. For more information visit the Marine Pollution page.

➢ **Treatment of Waste Water:**

- Once water is used, that doesn't mean it has to be disposed of completely. After all, there's only so much water on the earth. Instead, wastewater is treated to remove contaminants so it can be reused. Of course, to be reused, it has to meet certain standards and criteria – depending on the nature of reuse.
- One such criteria is the water's organic load, which can be monitored using the Total Organic Carbon in the water. The e-learning session 'Transforming wastewater treatment with TOC monitoring' will explore how this parameter can be used to further optimise performance for wastewater plants.

(4) Sustainable Development Techniques:

- Sustainable Development is the practice of using guidelines for environmentally responsible and energy savings to create new development projects and to maintain and retrofit older projects.
- It can include using green materials in new construction, designing projects that can harvest their own energy to reduce the load on a power grid, or that incorporate green space in order to counterbalance the green space removed to build the onsite facilities.
- In other words, "Sustainable development is the organizing principle for meeting human development goals while simultaneously sustaining the ability of natural systems to provide the natural resources and ecosystem services on which the economy and society depend. The desired result is a state of society where living conditions and resources are used to continue to meet human needs without undermining the integrity and stability of the natural system. Sustainable development can be defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs."
- There are 3 components of sustainable development – economic growth, environmental stewardship, and social inclusion.

➢ **Methods of Sustainable Development:**

1. Integrated Automated Building Systems (IoT):

- The Internet of Things (IoT) gives facility managers access to data that they did not previously have access to. These small connected sensors can integrate with automated building systems to improve the sustainability of operations. For example, IoT sensors can dynamically adjust the required ventilation and lighting levels inside the building based on temperature, weather and CO2 readings. The facility manager doesn't need to manually stay on top of these adjustments or input data from multiple pieces of equipment.

2. Synthetic Roof Underlayment:

- The underlayment on roofs is typically asphalt-based, which breaks down relatively quickly. Replacing this layer is necessary to keep moisture out of the building's interior. Synthetic roof underlayment offers an alternative that weighs less and holds up to the wear and tear of an exterior environment. This material uses polymer that comes from recycled scrap materials. It also eliminates VOCs from the underlayment.

3. Green Roofs:

- Another innovation for the top of commercial properties comes from green roofs. Grass, plants, flowers, bushes and other greenery grows on the roofing material.

4. Grid Hybrid System:

- Renewable energy sources provide a sustainable way for organizations to power their commercial properties, but many grid systems lack storage to power facilities during times of low solar availability.
- A hybrid system stores excess energy and allows the renewable source to function at night, during overcast days and in other conditions that aren't ideal.

5. Passive Solar:

- Another way to leverage a sustainable solar energy source is to construct the building based on the passive solar concept. The facility's location and design maximize solar energy for heating during winter, while reducing its impact during warmer months.

6. Grey water Plumbing Systems:

- Grey water systems reduce the facility's need for fresh water, as everything except for toilet streams can be processed for reuse. The most common uses for this water include irrigation and supplying toilets with water.

7. Electro chromic Glass:

- Electro chromic glass can shift from clear to opaque based on external stimuli such as an electrical current or UV rays. It eliminates the need for shades and other window treatments, while adapting to current conditions passively. Additional benefits include blocking the vast majority of UV rays.

8. Solar Thermal Cladding:

- Solar thermal cladding is a passive solar building method designed specifically to hold heat during the winter. The sun's energy is stored within this material and passed through to the building for heat retention purposes.

9. Structural 3D Printing:

- Creating and moving building materials to the job site can have heavy environmental costs. As structure 3D printing begins moving forward, it becomes easier to cut down on shipping costs or reduce the weight of components.

10. Self-healing Concrete:

- This material is in its early stages, but once it's commercially viable it opens up many sustainable possibilities. Everything from roads to walkways can benefit from concrete that heals itself. Road crews would no longer need to shut down busy streets and highway lanes to address potholes and cracks.

➢ **Goals of Sustainable Development Techniques:**

There are three primary goals of sustainable development:

1. To minimize the depletion of natural resources when creating new developments.
2. To create a development that can be maintained and sustained without causing further harm to the environment.
3. To provide methods for retrofitting existing developments to make them environmentally friendly facilities and projects.

CHAPTER 15 : Smart and Sustainable Feature of Chapter 8&13, Impact on Society:

➢ Reasons for Students recommending this design:

(1) Community Hall: In community halls, members of the village tend to gather for group activities, social support, public information and other purposes. They may sometimes be open for the whole community or for a specialized group within the greater community.

(2) Super market: They get daily needs from their village only. There are more availability of variety goods and freedom of selection for customers. The prices of all the goods at these markets are fixed and also are lower.

(3) Cyber Cafe: A cyber cafe is a infrastructure where computers are provided for accessing the internet, playing games, chatting with friends or doing other computer-related tasks. Now-a-days when there is necessity of computers in our day-to-day life, construction of cyber cafe is a good option in development of the village.

(4) Paver Block Road: In construction of making this road the cost is minimum. There is no requirement of heavy machinery to construct these type of roads. It can be used also as paring area, street road, pathway, etc.

(5) Avedo: Avedo is constructed because the birds can take shelter when they are tired. In that they are protected from all the weathers and are also provided with food and water.

(6) Rain Shelter: Shelter is a basic human need crucial for survival in cases of natural hazards or conflict. Rain Shelter provides protection from the heavy rain.

➢ About designs Suggestions/Benefit of the villagers

(1) Community Hall: It unites a community, provides volunteer opportunities, support for community projects, promotes healthy living, etc. And it also helps in building strong, safe and inclusive communities. Social interaction among the villagers will also increase.

(2) Super market: Now the villagers don't have to go far for their daily needs. They get all their needs in one market only, so they don't have to travel at many places for the things.

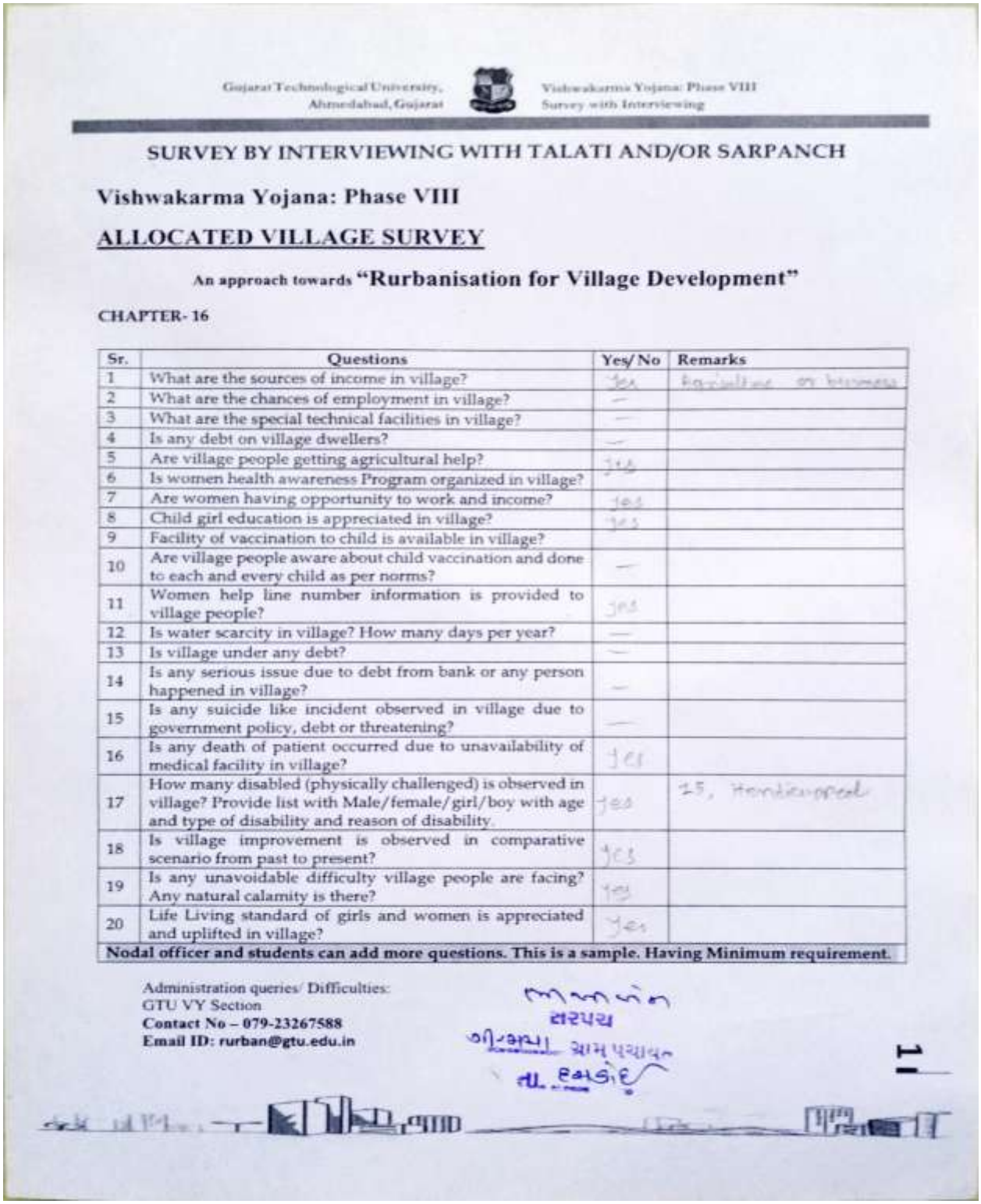
(3) Cyber cafe: Now the community and passersby get the benefits of the internet cafe and are put in touch with the global market and happenings in the world. The students also get information related to their education.

(4) Paver Block Road: Paver block can withstand hefty vehicular load as well. And they are available in different shapes and colors, making it very versatile.

(5) Avedo: By constructing avedo, the birds don't have to go far, because they get food, water and shelter all at one place.

(6) Rain Shelter: These shelters are also helpful for the homeless, as they can rest their sometimes.

CHAPTER 16 : Survey by Interviwing with Talati or Surpanch:



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 or business
2	What are the chances of employment in village?	—	
3	What are the special technical facilities in village?	—	
4	Is any debt on village dwellers?	—	
5	Are village people getting agricultural help?	Yes	
6	Is women health awareness Program organized in village?		
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?		
10	Are village people aware about child vaccination and done to each and every child as per norms?	—	
11	Women help line number information is provided to village people?	yes	
12	Is water scarcity in village? How many days per year?	—	
13	Is village under any debt?	—	
14	Is any serious issue due to debt from bank or any person happened in village?	—	
15	Is any suicide like incident observed in village due to government policy, debt or threatening?	—	
16	Is any death of patient occurred due to unavailability of medical facility in village?	Yes	
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.	yes	25, Handicapped
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	
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 / Agriculture Activities and Agro Industry, Alternate Techniques and Solution :

- **Agriculture Activities:**

- Agriculture is the backbone of Indian economy. Agriculture is the practice and science of growing crops by cultivating the land.

- Agricultural activities are as follows :

(1) Primary activities : In primary activities, agricultural activities are included such as to grow food grains, pulses, vegetables, sugarcane, cotton, oilseeds, jute, etc.

(2) Secondary activities : Allied activities areincluded in it as animal husbandary, poultry farm, dairy farming, etc.

- **Techniques of Agriculture Activities:**

1. **Crop Rotation** – It is one of the most powerful techniques of sustainable agriculture. Its purpose is to avoid the consequences that come with planting the same crops in the same soil for years in a row. It helps tackle pest problems, as many pests prefer specific crops. If the pests have a steady food supply, they can greatly increase their population size. Rotation breaks the reproduction cycles of pests. During rotation, farmers can plant certain crops, which replenish plant nutrients. These crops reduce the need for chemical fertilizers.

2. **Permaculture** – It is a food production system with intention, design, and smart farming to reduce waste of resources and create increased production efficiency. Permaculture design techniques include growing grain without tillage, herb and plant spirals, garden beds, keyhole, sheet mulching, each plant serving multiple purposes, and creating swales on contour to hold water high on the landscape. It focuses on the use of perennial crops such as fruit trees, nut trees, and shrubs all together to function in a designed system that mimics how plants in a natural ecosystem would function.

3. **Cover crops** - Many farmers choose to have crops planted in a field at all times and never leave it barren; this can cause unintended consequences. By planting cover crops, such as clover or oats, the farmer can achieve his goals of preventing soil erosion, suppressing the growth of weeds, and enhancing the quality of the soil. The use of cover crops also reduces the need for chemicals such as fertilizers.

4. **Soil Enrichment** - Soil is a central component of agricultural ecosystems. Healthy soil is full of life, which can often be killed by the overuse of pesticides. Good soils can increase yields as well as help create more robust crops. It is possible to maintain and enhance the quality of the soil in many ways. Some examples include leaving crop residue in the field after a harvest, and the use of composted plant material or animal manure.

5. **Bio intensive Integrated Pest Management** - Integrated Pest Management (IPM) is an approach, which essentially relies on biological as opposed to chemical methods. IMP also emphasizes the importance of crop rotation to combat pest management.

6. **Natural Pest Predators** - In order to maintain effective control over pests, it is important to view the farm as an ecosystem as opposed to a factory. For example, many birds and other animals are, in fact, natural predators of agricultural pests. Managing your farm so that it can harbor populations of these pest predators is effective as well as a sophisticated technique. The use of chemical pesticides can result in the indiscriminate killing of pest predators.

7. **Polyculture Farming** - This technique is similar to crop rotation that tries to mimic natural principles to achieve the best yields. It involves growing multiple crop species in one area. These species often complement each other and helps produce a greater diversity of products at one plot while fully utilizing available resources. High biodiversity makes the system more resilient to weather fluctuations, promotes a balanced diet and applies natural mechanisms for maintaining soil fertility.

8. **Agroforestry** - Agroforestry has become one of the powerful tools of farmers in dry regions with soils susceptible to desertification. It involves the growth of trees and shrubs amongst crops or grazing land, combining both agriculture and forestry practices for long-lasting, productive, and diverse land use when approached sustainably. Trees have another important role that maintains the favorable temperature, stabilizes soils and soil humidity, minimizes nutrient runoff and protects crops from wind or heavy rain. Trees in this farming system are additional sources of income for farmers with the possibilities for product diversification.

9. **Biodynamic Farming** - Biodynamic farming incorporates ecological and holistic growing practices based on the philosophy of "anthroposophy." It focuses on the implementation of practices such as composting, application of animal manure from farmed animals, cover cropping or rotating complementary crops for generating the necessary health and soil fertility for food production. Biodynamic practices can be applied to farms that grow a variety of produce, gardens, vineyards, and other forms of agriculture.

10. **Better Water Management** - The first step in water management is the selection of the right crops. Local crops that are more adaptable to the weather conditions of the region are selected. Crops that do not demand too much water must be chosen for dry areas. There should be well-planned irrigation systems; otherwise, other issues like river depletion, dry land and soil degradation will develop. The application of rainwater harvesting systems by storing rainwater can be used in drought prevailing conditions. Apart from that, municipal wastewater can be used for irrigation after recycling.

- **Solutions of Agriculture Activities:**

1. **Adopting Nutrient Management Techniques:** Farmers can improve nutrient management practices by applying nutrients (fertilizer and manure) in the right amount, at the right time of year, with the right method and with the right placement.
2. **Using Conservation Drainage Practices:** Subsurface tile drainage is an important practice to manage water movement on and through many soils, typically in the Midwest. Drainage water can carry soluble forms of nitrogen and phosphorus, so strategies are needed to reduce nutrient loads while maintaining adequate drainage for crop production. Conservation drainage describes practices including modifying drainage system design and operation, woodchip bioreactors, saturated buffers, and modifications to the drainage ditch system.

3. **Ensuring Year-Round Ground Cover:** Farmers can plant cover crops or perennial species to prevent periods of bare ground on farm fields when the soil (and the soil and nutrients it contains) are most susceptible to erosion and loss into waterways.
4. **Planting Field Buffers:** Farmers can plant trees, shrubs and grasses along the edges of fields; this is especially important for a field that borders water bodies. Planted buffers can help prevent nutrient loss from fields by absorbing or filtering out nutrients before they reach a water body.
5. **Implementing Conservation Tillage:** Farmers can reduce how often and how intensely the fields are tilled. Doing so can help to improve soil health, and reduce erosion, runoff and soil compaction, and therefore the chance of nutrients reaching waterways through runoff.
6. **Engaging in Watershed Efforts:** The collaboration of a wide range of people, stakeholders and organizations across an entire watershed is vital to reducing nutrient pollution to our water and air. Farmers can play an important leadership role in these efforts when they get involved and engage with their State governments, farm organizations, conservation groups, educational institutions, non-profit organizations, and community groups.
7. **Managing Livestock Access to Streams:** Farmers and ranchers can install fence along streams, rivers and lakes to block access from animals to help restore stream banks and prevent excess nutrients from entering the water.

➢ Agro Industry:

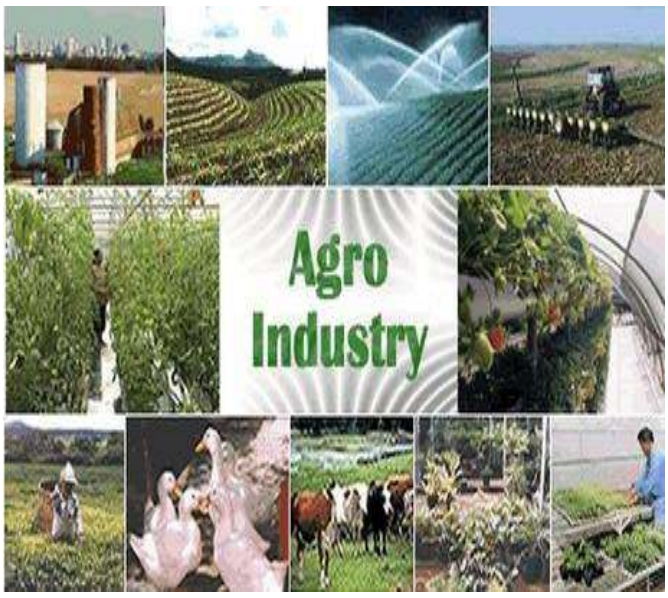
- An agro-industry is an enterprise that processes bio-mass, i.e. agricultural raw materials, which include ground and tree crops as well as livestock and fisheries, to create edible or usable forms, improve storage and shelf life, create easily transportable forms, enhance nutritive value, and extract chemicals for other uses.
- As the products of agro-industries are both edible and non-edible, the agro-industries can be classified as agro-food industries (or merely food processing industries) and agro-non-food industries.

➢ Agro Industry Techniques:

- High Quality seeds
- Organic Fertilizers
- Intercropping/Polyculture
- Strategic Irrigation
- Better Monitoring Technology
- Green methods for pest control

➢ Agro Industry Solutions:

- AgriBot-Autonomous Tractor
- One Water-Smart Irrigation
- Saga Robotics-Autonomous Harvesting
- Desamis-Livestock Monitoring
- Plastomics-Genetic Editing



CHAPTER 19 :Giramtha Village SAGY Questionarairs Survey Form With the Sarpanch Signature :

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Giramtha Gram Panchayat: Giramtha Ward No. 5A (Tribal)

Block: _____ District: Ahmedabad

State: Gujarat L S Constituency: _____

1. Family Identity and Size

Name of Head of Household	Sumankanna							Male/ Female	M
SECC Survey ID:		Family Size	5	Over 18	2	6 to 18	3	Under 6	0

2. Category & Entitlement Details (Tick as appropriate)

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

2. Adults (above 18 years)

Name	Age	Sex M/F/O	Disability Status Y/N	Marital Status[3]	Education Status[4]	Adhaar Card (Y/ N)	Bank A/C (Y/N)	Social Security Pension[5]
Sumankanna	44	M	N	Married	4th 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
Dharmik Shah	9	M	N	—	Studying	Y	4	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: 2
Type: Kutcha / ~~Semi Pucca~~ / Pucca	
Toilet: Private / ~~Community~~ / ~~Open Defecation~~	
Drainage linked to House: ~~Covered~~ / ~~Open~~ / ~~None~~	
Waste Collection System	~~Door Step~~ / ~~Common Point~~ / ~~No Collection System~~
Homestead Land: Yes / No	Kitchen Garden : Yes / No
Compost Pit: ~~Individual~~/ ~~Group~~/ ~~None~~	Biogas Plant: ~~Individual~~/ ~~Group~~/ ~~None~~

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

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

11. Source of Lighting and Power

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

12. Landholding (Acres)

1. Total	335 Acres	2. Cultivable Area	
3. Irrigated Area	326 Acres	4. Uncultivable Area	

13. Principal Occupations in the Household

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

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

15. Agriculture Inputs

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

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

Name	Unit	Quantity

17. Livestock Numbers

Cows: 246	Bullocks: 309	Calves: ____
Female Buffalo: ____	Male Buffalo: ____	Buffalo Calves: ____
Goats/ Sheep: 315	Poultry/ Ducks: ____	Pigs: ____
Any other: Type _____		No. ____
Shelter for Livestock: Pucca / Kutcha / None		
Average Daily Production of Milk(Litres): ____		

18. What games do Children Play

19. Do children play musical instrument (mention)

Schedule Filled By:
Principal Respondent:
Date of Survey:

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

I. Basic Information

a. Gram Panchayat: Giramtha

b. Block: _____

c. District: Ahmedabad

d. State: Gujarat

e. Lok Sabha Constituency: _____

f. Number of Wards in the Gram Panchayat: _____

g. Number of Villages in the Gram Panchayat: _____

h. Names of Villages:

Demographic Information

Number of Households 454 Total Population 4151 Male 2136 Female 2015

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)	Y	
c.	Nearest Community Health Centre (CHC)		
d.	Nearest Post Office	Y	
e.	Nearest Bank Branch (Any)		
f.	Nearest Bank with CBS Facility		
g.	Nearest ATM		
h.	Nearest Primary School	Y	
i.	Nearest Middle School	Y	
j.	Nearest Secondary School	Y	
k.	Nearest Higher Secondary School / +2 College	N	
l.	Nearest Graduate College	N	
m	Nearest ITI / Polytechnic Centre	N	
n	Kisan Seva Kendra		

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	
p	Nearest Agro Service Centre	N	
p	MSP based Government Procurement Centre	N	
q	Milk Cooperative /Collection Centre	N	
r	Veterinary Care Centre	Yes	
s	Ayurveda Centre	N	
t	E – Seva Kendra	N	
u	Bus Stop	N	
v	Railway Station	N	
w	Library	N	
x	Common Service Centre	N	

IV. Sports Facilities in the Gram Panchayat

a. Number of Play Grounds in the GP: Total No Public_____ Private_____

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 4

b. Number of villages without Angan Wadi Centres_____

Names of such villages: _____

_____

c. Schools (Number)

Primary Private: 2 Primary Govt.: 2

Middle Private: 2 Middle Govt.: 2

Secondary Private: 2 Secondary Govt.: 0

Higher Secondary Private: _____ Higher Secondary Govt: 1

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

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Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

VII. Coverage of Villages under different Facilities & Services

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

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	576 hect	d.	Pasture / Grazing Land	209 Hect	g.	Check Dam	0
b.	Irrigated Land	576 hect	e.	Forests/ Plantations	0	h.	Wells/Bore Wells	0
c.	Un-irrigated Land	16 Hect	f.	Other Common Land	0	i	Tanks /Ponds	2

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

3

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

IX. Parameters relating to Households & Institutions

		Number
a)	Number of eligible Households for pension (old age, widow, disability)	—
b)	Number of Households receiving pension (old age, widow, disability)	20
c)	Number of eligible Households who are not receiving pension	—
d)	Number of Households eligible for Ration Card	—
e)	Number of eligible HHs having ration cards	-
f)	Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	15
g)	Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	10
h)	Number of active Job Card holders under MGNREGA	35
i)	Number of Job Card holders who completed 100 days of work during 2013-14	-
j)	Number of shops selling alcohol	NO
k)	Number of BPL families	378
l)	Number of landless households	—
m)	Number of IAY beneficiaries	-
n)	Number of FRA[2] beneficiaries	—
o)	Number of Community Sanitary Complexes	NO
p)	Number of Households headed by single women	150
q)	Number of Households headed by physically handicapped persons	15
r)	Total number of Persons with Disability in the village	15
s)	Number of SHGs	No
t)	Number of active SHGs	No
u)	Number of SHG Federations	No
v)	Number of Youth Clubs	No
w)	Number of Bharat Nirman Volunteers	No

Name and Signature of Surveyor and Respondent'

Surveyor	PRI Respondent (Preferably Gram Panchayat Chairperson)	Official Respondent (Preferably senior most Government official in the Gram Panchayat)	Date of Survey
Pathan Sadikkhan Faiyaz Abbasali	તલાટી કમ મંત્રી ગિરમથા ગામ પંચાયત	સરપંચ ગિરમથા ગામ પંચાયત	

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

4

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

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

i. Names of Habitations / Hamlets:

Demographic Information

Number of Households 856 Total Population 4151 Male 2136 Female 2015

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	Y	
c.	Nearest Secondary School	N	
d.	Kisan Seva Kendra	N	
e.	Milk Cooperative /Collection Centre	Y	
g.	Health Sub Centre	Y	
h.	Bank	N	
i.	ATM	N	
j.	Bus Stop	N	
k.	Railway Station	N	

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

1

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

ii. Road Connectivity

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

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

iii. Drinking Water Facilities

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

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

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

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

iv. Coverage of Habitations under Waste Management System

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

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

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

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

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

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

v. Coverage of Habitations under Electrification

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

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

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

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

vi. Sports Facilities in the Village

a.Number of Play Grounds in the Village (minimum size 200 square meters): _____

b.Mini Stadium : No Yes(Y) /No (N)

vii. Education, ICDS

a. Number of Anganwadi Centres: 4

c. Schools (Number)

Primary Private: 2 Primary Govt.: 2

Middle Private: 2 Middle Govt.: 2

Secondary Private: 2 Secondary Govt.: 2

Higher Secondary Private: _____ Higher Secondary Govt: 1

2

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

viii. Land Category		Area in Acres		Land Category	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	735 hectare	d.	Pasture / Grazing Land	109 hect	g.	Check Dam	-
b.	Irrigated Land	576 hect	e.	Forests/ Plnatations	0	h.	Wells/Bore Wells	-
c.	Un-irrigated Land	36 hect	f.	Other Common Land		I	Tanks /Ponds	2

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

Name and Signature of Surveyor and Respondent'

Pathan Oveshkhan Saiyad Asbarali Surveyor	તલાટી કમ મંત્રી ગિરમથા ગામ પંચાયત તા. દસક્રોઈ PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	સરપંચ ગિરમથા ગ્રામ પંચાયત તા. દસક્રોઈ Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey

3

CHAPTER 20 TDO-DDO-Collector email sending Soft copy attachment in the report

8/23/2021 Narnarayan Shastri Institute of Technology Mail - Existing & Development scenario of "GIRMATHA" village, DASKROI,AHMEDABAD

Samir Gami <samir.gami@nsitgurukul.com>

Existing & Development scenario of "GIRMATHA" village, DASKROI,AHMEDABAD

1 message

Samir Gami <samir.gami@nsitgurukul.com> Mon, Aug 23, 2021 at 5:36 PM
To: Ajaybaraiya925@gmail.com, collector-ahd@gujarat.gov.in, dish-ahd@gujarat.gov.in, ddo-ahd@gujarat.gov.in, tdo-ahm@gujarat.gov.in, colahmed@guj.nic.in, gpdaskroi-gj@gov.in, do-dish-ahd@gujarat.gov.in
Cc: rurban <rurban@gtu.edu.in>

Respected Sir/Madam,

We are students of Narnarayan Shastri Institute of Technology, Jetalpur, Ahmedabad affiliated to Gujarat Technological University-GTU. GTU has been assigned to Vishwakarma Yojana-VY in which students survey various villages and design various amenities to deliver it to them making them ideal for living a better life as per requirements and village problem statements.

As a part of Vishwakarma Yojana's guidelines, we have been asked to inform all the respected officers about our project in which we will shortly notify about "GIRMATHA" village profile of issues for development and our design work for them which is as below.

Village : Giramtha

Population: 5500 (as of census 2011)

Key issue	Remarks	Given Design Proposal
Sustainable Infrastructure	Bus Stop is a necessity in our day to day life. People can travel at any place in bus at low cost and reach safely at their destination.	Bus Stop
Physical Infrastructure	There is no bank in Giramtha village. Visitors face many problems in Giramtha, therefore we design bank. For overall development of the village a bank is required.	Bank
Social Infrastructure	There is no animal hospital in the village. The animals which are injured or have any kind of health related problems must need a hospital for their treatment.	Animal Hospital
Socio-economic Infrastructure	There is already a facility of PHC in our village Giramtha but its condition is very bad. So it needs to be modified as soon as possible.	PHC
Smart Village Infrastructure	In skill development classes there are lots of activity villagers do like women empowerment classes, karate classes, painting classes etc.	Skill Development Center
Heritage Infrastructure	There is no requirement of post office in our village. Post office is one of the main needs in day to day life. So we design one post office for our village.	Post Office

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Sr no.	Design name	Periods (months)	Amount Expenditure (Rs)	Benefit
1	Bus Stop	1	82162.93	To get bus easily
2	Bank	6-7	1175895.94	Security purpose
3	Animal Hospital	8-9	483434.31	Saving lives of animals
4	PHC	8-9	988606.58	To facilitate good health
5	Skill Development Center	5-6	615709.8	For proper skill development
6	Post Office	6-7	82681.36	Good facilities
7	Community Hall	5-6	1061404	For arranging functions
8	Super Market	8-9	400860.41	For better availability of products.
9	Cyber Cafe	1-2	169364	For easement of villagers
10	Paver Block Road	1	5734729.15	Better transportation
11	Avedo	1	5734729.15	For protection of birds
12	Rain Shelter	1-2	314185.136	For protection in heavy rains

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SAMIR M. GAMI.
CIVIL ENGINEERING DEPARTMENT
NSIT, JETALPUR
AHMEDABAD

GIRAMTHA VILLAGE FINAL REPORT.pdf
6027K

CHAPTER 21 Comprehensive Report for the entire village :

ABSTRACT

Vishwakarma Yojana is one such initiative towards Urbanization of villages by Government of Gujarat that hinders such migrations. This Yojana aims at developing the village by providing all theurban facilities that a city may have, yet maintaining the Rural soul. This can be achieved by considering various aspects such as Physical, Social, and Renewable infrastructural facilities. The concept of Urbanization at regeneration and revitalization of both the physical as well as social environment in villages through a judicious and economic consumption of resources is the thought for betterment or the villages. It is designed to reduce and remove the rural-urban divide and to leadto process of rural transformation that is not exploitative. Vishwakarma Yojana is an approach towards Urbanization, it has been proposed to provide the benefit of real-world experience to engineering students and apply their technical knowledge in the planning, development and management of rural infrastructure facilities. Urbanization means urban facilities and amenities in rural area, developing village with help of rural soul and urban amenities. In this village on one handsome essential infrastructural facilities like Water Supply, Road Network and electricity, primary school, secondary and higher secondary school etc. have been good and sufficient on the other hand lacking of infrastructural facilities like drainage, public toilet, and public garden. Under this schemethe villages of Urban areas will be adopted by various engineering colleges under the Gujarat technological University. The engineering colleges would study the identified villages and make recommendations to achieve integrated and comprehensive development through technology application and project preparation and management

The name of the allocated village is Giramtha located in Daskroi taluka of Ahmedabad district of Gujarat state. This village has comprised of 1120 houses. It has a total population of 5500 with 2447 female population against 2653 males according census 2011 data. The main aspects for developmentof this village are sewage, public toilets etc. Some of the physical infrastructure like panchayat building, primary school, and well exist in the village and are properly maintained and utilized. Moreover post office, pond, canal is present but in bad condition.

In this village there is no sanitation process are doing for canal and pond. Water supplied to the people is sufficient but the drainage system is poor. The damping of Garbage is improper conditionof roads is poor except entrance all the village roads are pucca roads.

The condition of village is gloomy in now days. The village is considered to be sub- developed so measure reasons as obtained from collect data compromise of the village lacking of basic facilities such as adequate public toilets, solid waste management and disposal recreational area.

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

Rural Development, Urbanization, Infrastructure facilities, Socioeconomic development, Sustainability, etc.

Introduction about Giramtha village details

Giramtha is a large village located in Daskroi Taluka of Ahmadabad district, Gujarat with a total of 856 families residing. The Giramtha village has a population of 4151 of which 2136 are males while 2015 are females as per Population Census 2011. In Giramtha village the population of children with age 0-6 is 578 which makes up 13.92 % of the total population of the village. The Average Sex Ratio of Giramtha village is 943 which is higher than Gujarat state average of 919. Child Sex Ratio for the Giramtha as per census is 920, higher than Gujarat average of 890. Giramtha village has a higher literacy rate compared to Gujarat. In 2011, the literacy rate of Giramtha village was 82.56 % compared to 78.03 % of Gujarat. In Giramtha Male literacy stands at 90.03 % while the female literacy rate was 74.68 %. Giramtha village is administrated by Sarpanch (Head of Village) who is elected representative of the village.

GIRAMTHA VILLAGE	
Gram Panchayat:	Giramtha
Block / Tehsil:	Daskroi
District:	Ahmedabad
State:	Gujarat
Area:	735 Hectare's
Population:	4151
Households:	856

Caste Data as per Census 2011: Schedule Caste (SC) constitutes 15.47 % while Schedule Tribe (ST) were 4.22 % of the total population in Giramtha village.

Working Population as per Census 2011: In Giramtha village out of the total population, 1591 were engaged in work activities. 89.50 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while
10.50 % were involved in Marginal activity providing a livelihood for less than 6 months. Of 1591 workers engaged in Main Work, 159 were cultivators (owner or co-owner) while 533 were Agricultural labourer.

Study area location:

- Giramtha village is located in Daskroi taluka of Ahmadabad district in Gujarat, India. It is situated 20km away from Ahmadabad.
- GTU allocated one village to us of Gujarat for surveying which is the "Giramtha" near Ahmedabad district.
- This is our study area to find a problem related to structure and general amenities.

Country	India
State	Gujarat
District	Ahmedabad
Subdistrict/Taluka	Daskroi
Nearest town	Ahmedabad
Area	576 hectares
Population	4151
Pin code	382425

Objectives of study:

- Fundamental Social system – Health and Education workplaces should be given and assurance suitable movement of workplaces to town inhabitants.
- Promote facilitated headway of country districts with a game plan of significant worth housing, better organization, work openings and supporting physical and social system.
- Reduce development from provincial to metropolitan districts as a result of the nonappearance of crucial organizations and sufficient monetary activities in nation zones.
- Internal roads inside town settlement, Efficient Mass Transportation structures to improve network among metropolitan and rural domains, Public transportation workplaces that ought to be made like transport stations, transport stop, etc
- Electricity affiliations like street lighting that is energy gainful and eco-obliging.
- Basic genuine system – Water Supply, Transport, Sewerage and Solid Waste Management should be the need place and be given.
- Refurbishing of town lakes, water tanks and wells, improvement of stormwater gathering structures for commonsense unforeseen development.
- To improve lifestyle for the town without changing its middle soul.
- Economy age is the key sections that the thought relies upon which should be familiar with the town.

Scope of study:

- By analyzing the present conditions we can improve the basic amenities and facilities like agriculture facilities, milk cooperative facility, education facility, health facility etc as per ideal villages.
- To improve the lifestyle of villagers by helping them to develop their skill by assisting them in implementing income-generating activities in close coordination and cooperation with national and international organizations.
- From the Gap analysis, development tactics for village development will be proposed and planning suggestions for physical infrastructure, social infrastructure and renewable energy source will be suggested for the village. This study will focus on the development of the village.

Actual problem faced by villagers and smart solution:

- There are very few schools which are far and generally populated by boys as the old-fashioned approach of “girls being domesticated” prevails in most of the villages. This way, the chances of education for girls in villages are less, almost close to none. Then, these things happen because of illiteracy.
- There is a waterlogging problem during the rainy season.
- Lack of knowledge.
- Don’t have a solid collection and solid waste management.
- Lacks adequate knowledge about birth-control or obsession to have a male child - couples have more children than they can handle leaving the boys to be favoured over the girls.
- Only recently has agricultural methods being taught to farmers, till then most didn't know how to economically handle their fields.
- The quality of water used in irrigation is very bed.
- Lack of knowledge of ways to complain when they get cheated. Think of the Kidney Scams where they were forcefully operated upon, illegally. Or land disputes where they get cheated out of acres of land by cooperation due to ignorance.

➢ **Poverty & Unemployment:**

- These two are the diehard followers of illiteracy. About 60% of the rules don't have the money even to eat two meals a day. And everyone knows employment opportunities in rural are like raindrops in a desert. Just to survive most of them start labouring which hardly keeps the family going.

➢ **Ideas to tackle:**

- Giving mutual rights to both men and women rather than treating women as 'domestic material'.
- Parents should be aware of the value of education and should push their children to learn and acquire knowledge.
- More schools and colleges should open with well-educated teachers to teach just to ensure that the children are in good hands.
- More programmers like 'Sabra Sikhs Bahujan' should be launched by the Govt. wherein rural can learn and eat for free, which will be helpful to educate people struck by poverty.
- More Employment programmers should be launched and undertaken to ensure rural is a also, a part of the country and they can be happy like we people.

Gap Analysis of the Giramtha Village:

Village Gap Analysis

Village Facilities	Planning Commission/ U DPFI Norms	Village name	Giramtha		
		Population:		4151	
		Existing	Required as per Norms	Smart Village / Cities	Gap
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	1	1		Not required
Primary School	Each Per 2500 population	1	1		Not required
Secondary School	Per 7,500 population	0	1	1	Can be provided
Higher Secondary School	Per 15,000 Population	0	0	0	0
College	Per 125,000 Population	0	0	0	0
Tech. Training Institute	Per 100000 Population	0	0	0	0
Agriculture Research Centre	Per 100000 Population	0	0	0	0
Skill Development Center	Per 100000 Population	0	1	1	Can be provided

Health Facility					
Govt/Panchayat Dispensary or Sub PHC or Health Centre	Each Village	0	1	1	Can be provided
Primary Health & Child Health Center	Per 20,000 population	0	1	1	Can be provided
Child Welfare and Maternity Home	Per 10,000 population	0	0	0	0
Multi-specialty Hospital	Per 100000 Population	0	0	0	0

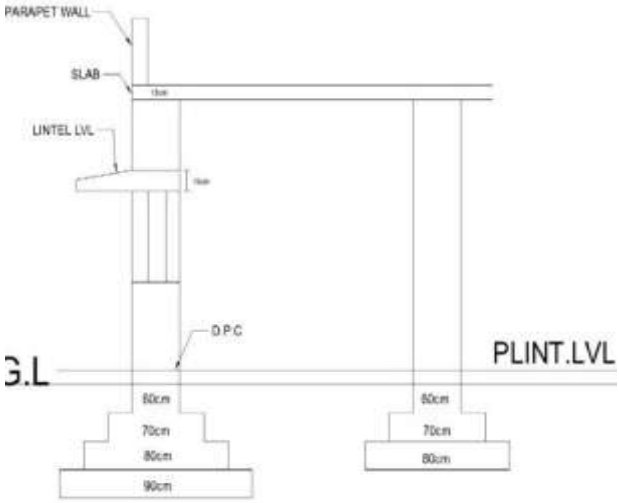
Public Latrines	1 for 50 families (if the toilet is not therein home, especially for slum pockets & kutcha house) **Physician**	2	0	0	Not required
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)		no		Bus station needs to be modified

		Adequate	**Inadequate**		
Drinking-Water (Minimum 70 plod)					
Over Head Tank	1/3 of Total Demand	yes	0		0
U/G Sump	2/3 of Total Demand	yes	0		0
Drainage Network - Open		-	-		-
Drainage Network - Cover		yes			Needs to be modify
Waste Management System			no		Needs to be provided

Socio-Cultural Facilities	Infrastructure				
Community Hall	Per 10000 Population	0	1	1	Can be provided
community hall and Public Library	Per 15000 Population	0	1	1	can be provided
Cremation Ground	Per 20,000 population	0	0	0	0
Post Office	Per 10,000 population	1	1	1	Re design required
Gram Panchayat Building	Each individual/group panchayat	1	0	0	Not required
APMC	Per 100000 Population				
Fire Station	Per 100000 Population				
Public Garden	Per the village	0	1	1	Can be provided
Police post	Per 40,000Population				
Electrical Design					
Electricity Network					
Any Smart Village Facility					
Technology					
Solar street lights	-	no	-	-	-
Bio gas plant	-	no	-	-	Required
Wi-fi services	-	no	-	-	Required
Vehicles for waste collection	-	no	-	-	Required

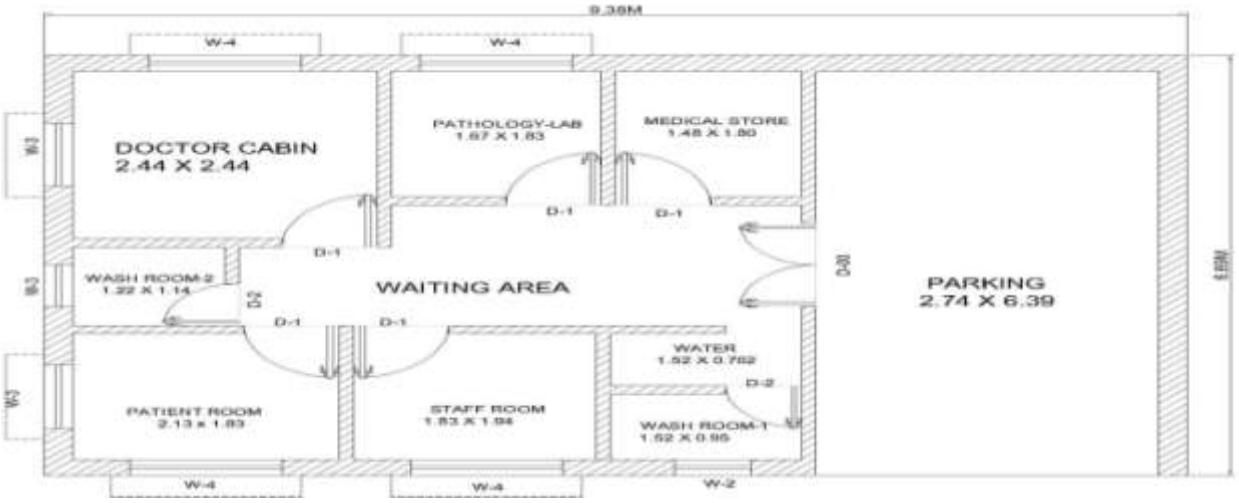
Designs for Giramtha Village:

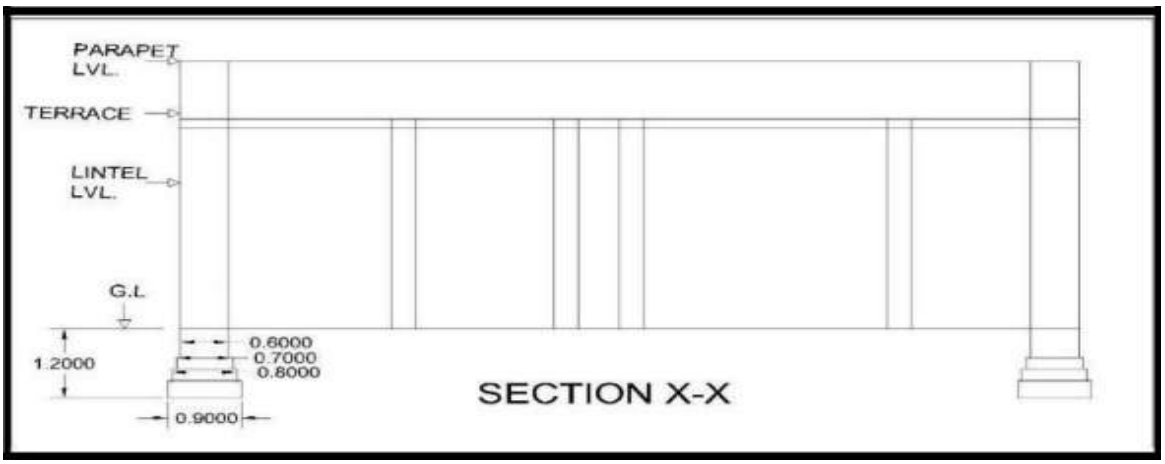
1. Post-Office



NO	Description of Items	QUANTITY	RATE	PER	AMOUNT
1	Excavation for a foundation	33.06	110	cum	3636.6
2	P.C.C (1:4:8) @ Foundation	8.70	1500	cum	13050
3	Brick masonry @ foundation	17.55	951	cum	16690.05
4	Refilling of the ordinary soil in foundation	13.98	107	cum	1495.86
5	Providing and refilling of the yellow soil at plinth level	20.25	211	cum	4272.75
6	Brick masonry up to the bottom of the slab and parapet wall	35.9	211	cum	7574.9
7	Providing and laying R.C.C work (1:2:4)	5.59	6128	cum	34255.52
8	Providing 12 MM thick cement Plaster in (1:4)	12.36	138	Cu.m	1705.68
	Total Cost in Rupees	-	-	-	**82681.36**

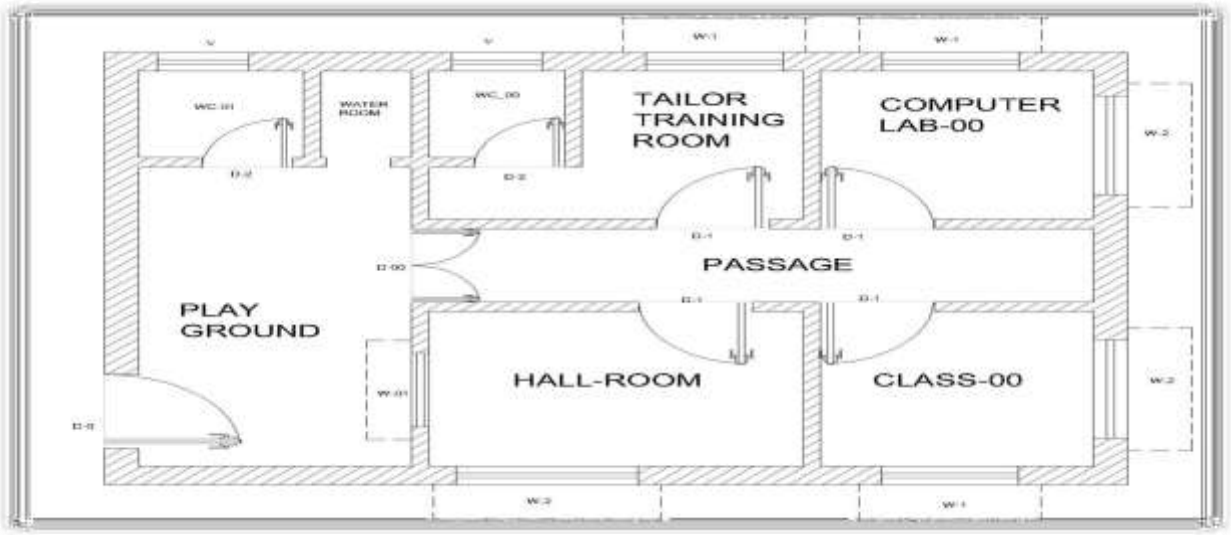
2. PUBLIC HEALTH CENTER:

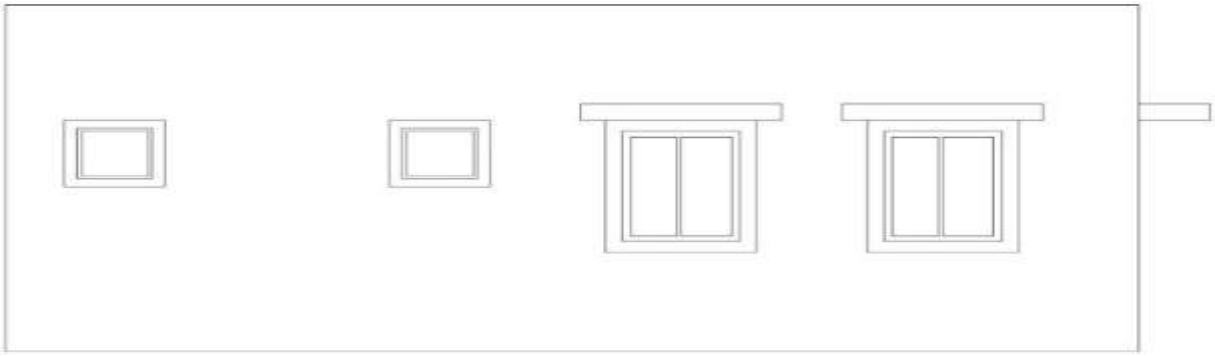




NO	Description of Items	QUANTITY	RATE	PER	AMOUNT
1	Excavation for a foundation	56.59	110	CUM	6224.9
2	P.C.C (1:4:8) @ Foundation	14.15	1500	CUM	2122.5
3	Brick masonry @ foundation	33.92	951	CUM	32257..92
4	Refilling of the ordinary soil in foundation	8.52	107	CUM	911.64
5	Refilling of the soil at plinth level	15.25	211	CUM	3217.75
6	Brick masonry up to the bottom of the slab	87.35	211	CUM	18430.85
7	Providing and laying R.C.C work (1:2:4)	150.48	6128	CUM	922141.44
8	Providing laying Cement Plaster (1:4)	23.91	138	SQ.M	3299.58
	Total Cost in Rupees	--	--	--	**988606.58**

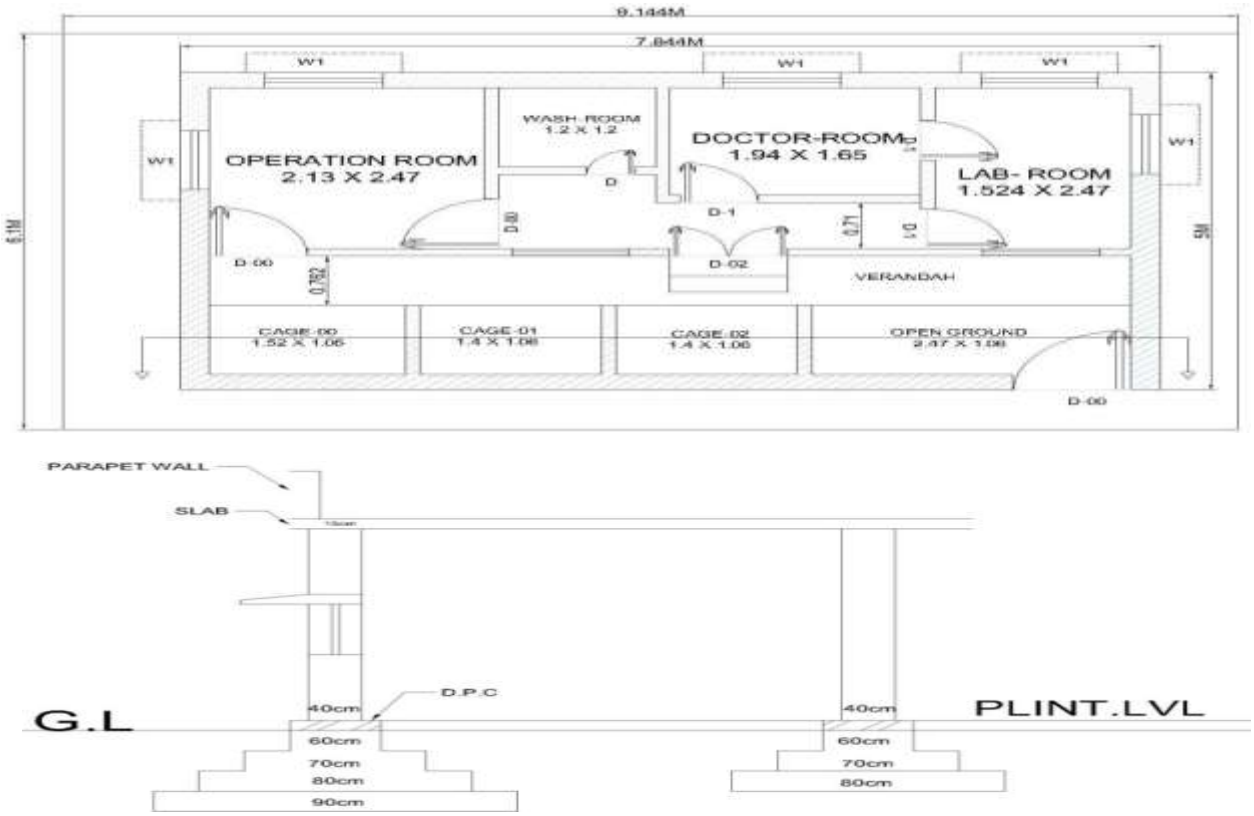
3. Skill Development Center:





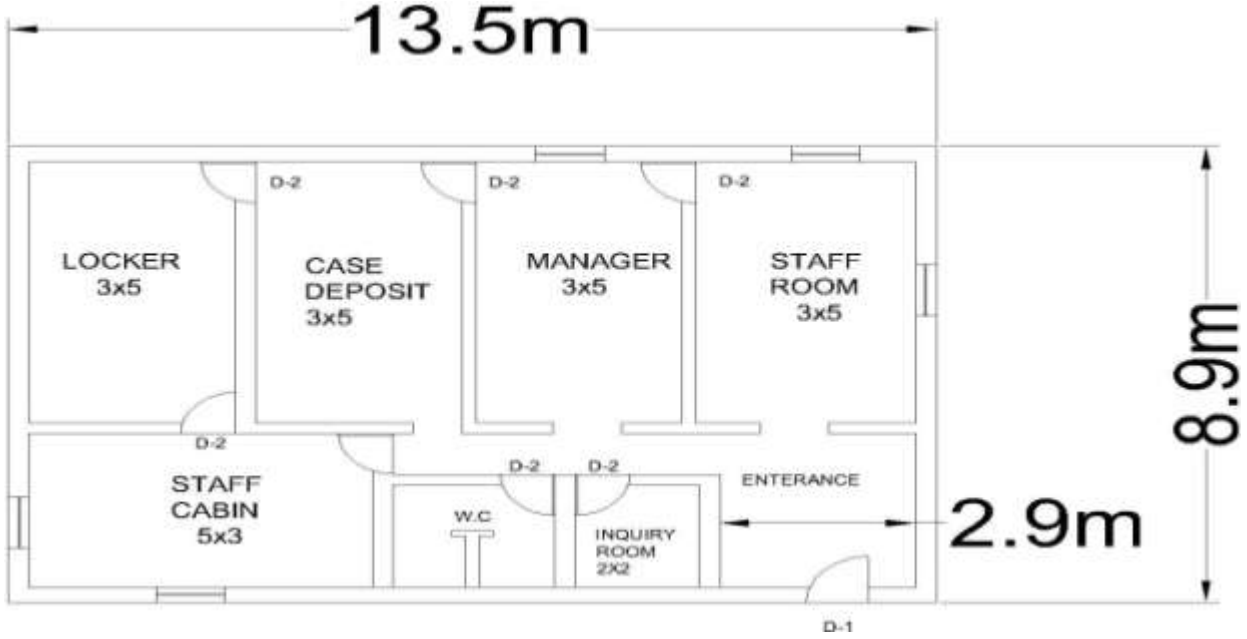
NO	Description of Items	QUANTITY	RATE	PER	AMOUNT
1	Excavation for a foundation	34.61	110	CUM	3807.1
2	P.C.C (1:4:8) @ Foundation	9.22	1500	CUM	13830
3	Brick masonry @ foundation	17.25	951	CUM	16404.75
4	Refilling of the ordinary soil in foundation	8.14	107	CUM	870.98
5	Refilling of the soil at plinth level	13.65	211	CUM	2880.15
6	Brick masonry up to the bottom of the slab	32.46	211	CUM	6849.06
7	Providing and laying R.C.C work (1:2:4)	93.18	6128	CUM	571007.4
8	Providing laying Cement Plaster (1:4)	0.44	138	SQ.M	60.72
	Total Cost in Rupees	--	--	--	**615710**

4. ANIMAL – HOSPITAL:



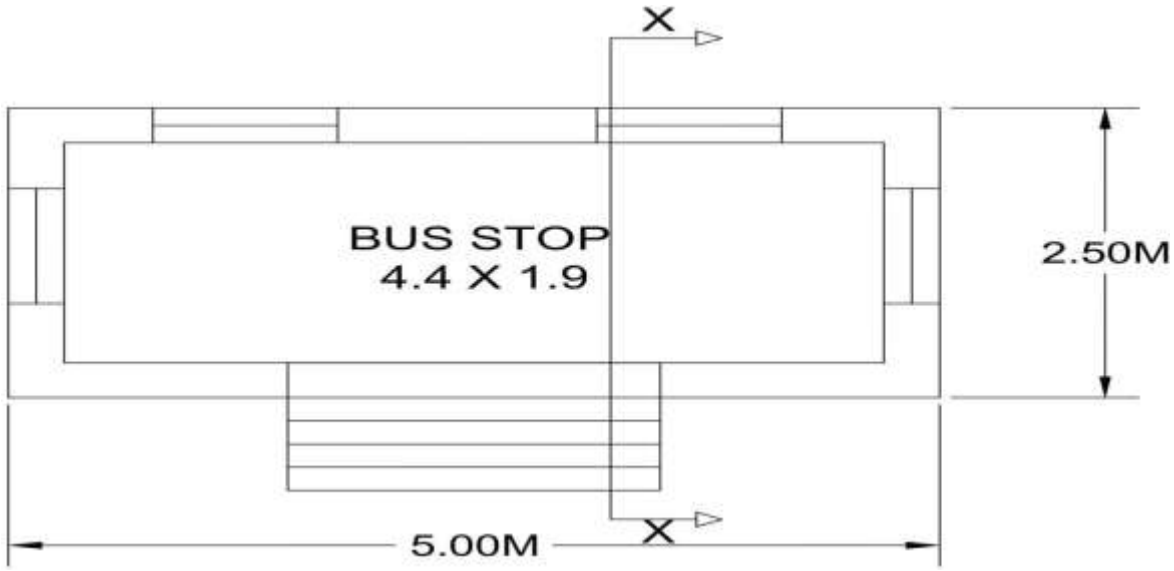
NO	Description of Items	QUANTITY	RATE	PER	AMOUNT
1	Excavation for a foundation	42.74	110	CUM	4701.4
2	P.C.C (1:4:8) @ Foundation	10.63	1500	CUM	15945
3	Brick masonry @ foundation	29.86	951	CUM	28396.86
4	Refilling of the ordinary soil in foundation	9.82	107	CUM	1050.74
5	Refilling of the soil at plinth level	13.55	211	CUM	2859.05
6	Brick masonry up to the bottom of the slab	29.11	211	CUM	6142.21
7	Providing and laying R.C.C work (1:2:4)	69.24	6128	CUM	424302.72
8	Providing laying Cement Plaster (1:4)	0.26	138	SQ.M	35.88
	Total Cost in Rupees	--	--	--	**615710**

5. BANK:



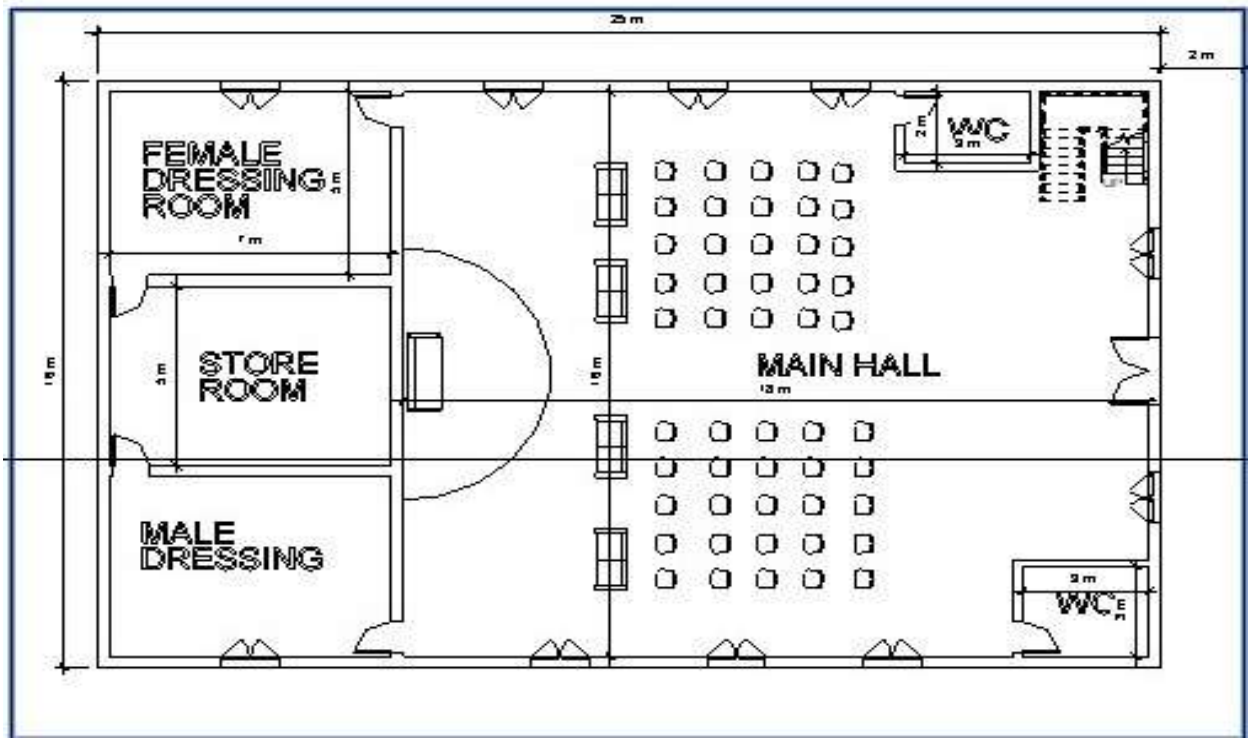
Item No.	Description	Q PER	RATE	AMOUNT
1.	Excavation per foundation up to 1.5 m	64.04	92.55	5926.90
2.	P.C.C for foundation	21.77 M^3	6259	136258.4
3.	Brick masonry for foundation	27.93 M^3	5495.8	153497.6
4.	Backfilling in foundation	36.11 M^3	150	5416.5
5.	Brick masonry for super structure	52.55 M^3	7809	410362.9
6.	Providing and laying R.C.C (1:2:4) for	20.84 M^3	9500	197980
	slab, beam, lintel, and Khaja			
7.	Reinforcement mild steel	1635.94 M^3	48	78525.12
8.	5 CM thick mosaic tiles flooring	83.02 M^3	70	5811.40
9.	B.B.L.C 10CM thick	4.894 M^3	2200	10766.8
10.	Morrum sand filling	22.01 M^3	66.35	1460.36
11.	Providing white glazed tiles	27.52 M^3	600	16512

6. BUS-STOP:



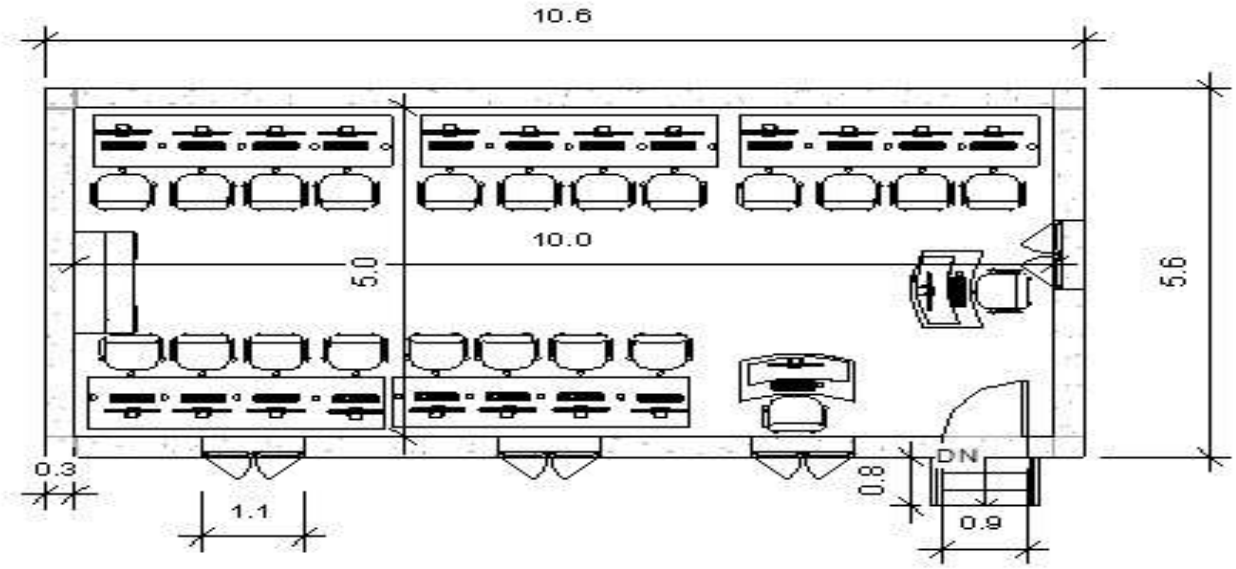
No	Description	Q PER	RATE	AMOUNT
1.	Excavation for foundation	11.305	85	960.92
2.	P.C.C for foundation	3.928M³	1500	5892
3.	First-class brick masonry	4.58M³	1600	7280
4.	Backfilling in foundation	6.62M³	50	331
5.	First-class brick masonry for W.L to P. L	3.498M³	1600	5596.8
6.	Providing & laying DPC	3.72M³	150	558
7.	Brick masonry for superstructure	7.668M³	1500	11502
8.	R.C.C (1:2:4)	2.421M³	2500	6052.5
9.	Reinforcement for R.C.C	190.14kg	35	6654.9
10.	12mm thick cement plaster	150.25M²	150	22537.5
11.	5 CM thick mosaic tiles flooring	12.96M²	200	2592
12.	B.B.L.C 10CM thick (1:2:4)	1.22M³	1000	1220
13.	Sand filling/murum	5.49M³	50	274.5
			TOTAL	71452.12
3% CONTIGENCIES = 2143.56				
2% WATER CHARGE = 1429.04				
10% CONTRACT PROFIT = 7145.212				
Grand total = 82162.93				

7. Community Hall



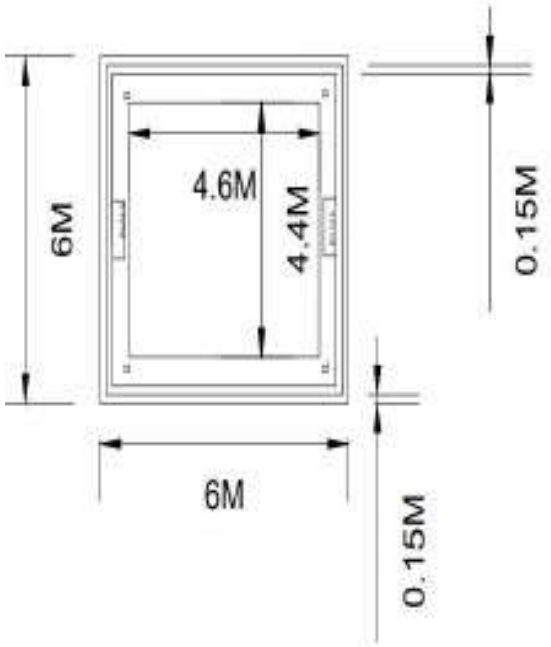
NO.	Description	Quantity	Per	Rate	Amount
1	Excavations for the foundation	403.71	M3	85	34315.4
2	PCC in foundation	37	M3	2700	99900
3	Brick Masonary upto plinth	16.9326	M3	3200	108352
4	Earth filling upto plinth	403.71	M3	50	20185.5
5	Brick masonryup for super structure	43.47	M3	3500	183330
6	Providing R.C.C Slab	51.57	M3	8800	453816
7	Brick masonry or parapet wall	3.61	M3	3500	23205
				=	923104
		3% CONTIGENCIES =			27700
		2% WATER CHARGE =			18500
		10% CONTRACT PROFIT =			92100
		Grand Total =			**1061404**

8. Cyber Cafe



NO.	Description	Quantity	Per	Rate	Amount
1	Excavations for the foundation	5.616	M3	160	900
2	PCC in foundation	1.53	M3	2950	4515
3	Brick Masonary upto plinth	8.5215	M3	3600	30680
4	Earth filling upto plinth	8.19	M3	150	1230
5	Brick masonryup for super structure	9.3	M3	4000	37200
6	Providing R.C.C Slab	7.5	M3	8800	66000
7	Brick masonry or parapet wall	1.854	M3	3500	6490
				=	147014
		3% CONTIGENCIES =			4410
		2% WATER CHARGE =			2940
		10% CONTRACT PROFIT =			15000
		Grand Total =			**169364**

9. Rain Shelter

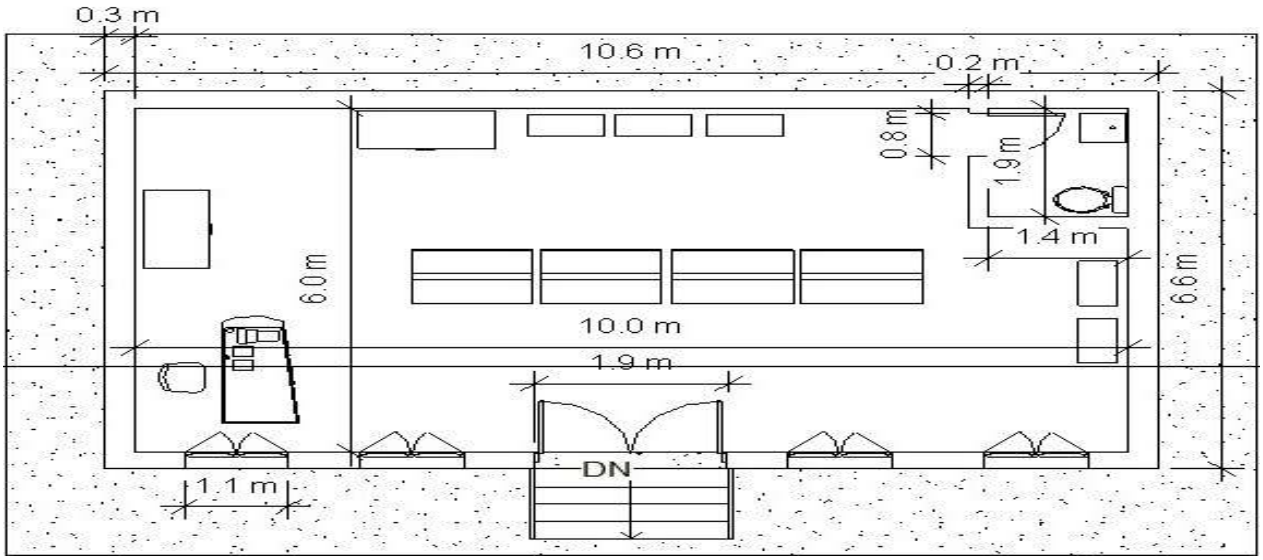


PLAN (RAIN SHELTER IN FARM)

SECTION (RAIN SHELTER IN

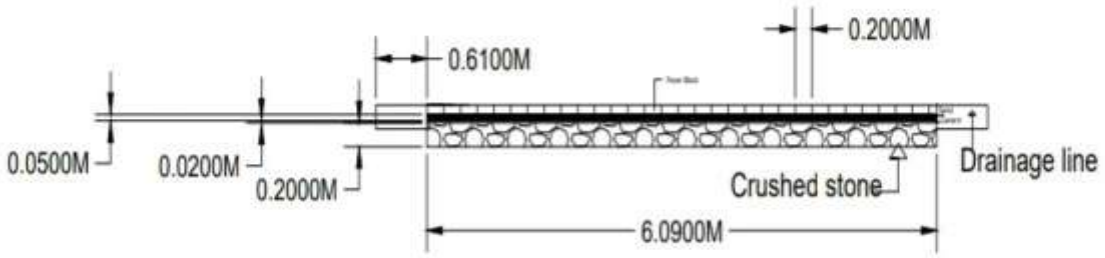
SR NO.	Description	Quantity	Per	Rate	Amount
1	PCC for the foundation	10.8	M3	6340	68472
2	Crushed Stone Backfilling	11.7	M3	180	2106
3	brick masonry for super structure	19.44	M3	8200	159408
4	12mm thick plaster internal+external	29	M2	145	4205
5	Total no. of Asbesots cement sheet	6	M	175	1050
6	Steel of Column	887.76	Kg	60	53265.6
				=	288506.6
		3% CONTIGENCIES =			8655.198
		2% WATER CHARGE =			5770.132
		10% CONTRACT PROFIT =			28850.66
		Grand Total =			**331782.6**

10.Mini MArket



Item No.	Description	Q PER	Per	RATE	AMOUNT
1.	Excavation for the foundation in soft ordinary soil	41.44	CUM	85	3522.4
2.	Providing and laying foundation concrete P.C.C (1:4:8) in foundation	11.648	CUM	2700	31449.6
3.	Providing and laying brick masonry @ plinth	19.671	CUM	3200	62947.2
4.	D.P.C (1:4:8)	10.98	CUM	150	1647
5.	Earth filling	31.482	CUM	50	1574.1
6.	Brick masonry up to slab	33.08	CUM	3500	115780
7.	R.C.C lintel	1.3176	CUM	8800	11616
8.	R.C.C slab	9.715	CUM	8800	85360
9.	Providing laying cement plaster (1:4)	206	CUM	150	30900
10.	Brick masonry for parapet wall	1.555	CUM	3500	5425
				TOTAL	**348574.3**
	3% CONTIGENCIES = 10,457.229				
	2% WATER CHARGE = 6,971.48				
	10% CONTRACT PROFIT = 34,857.43				
	Grand total = 400,860.41				

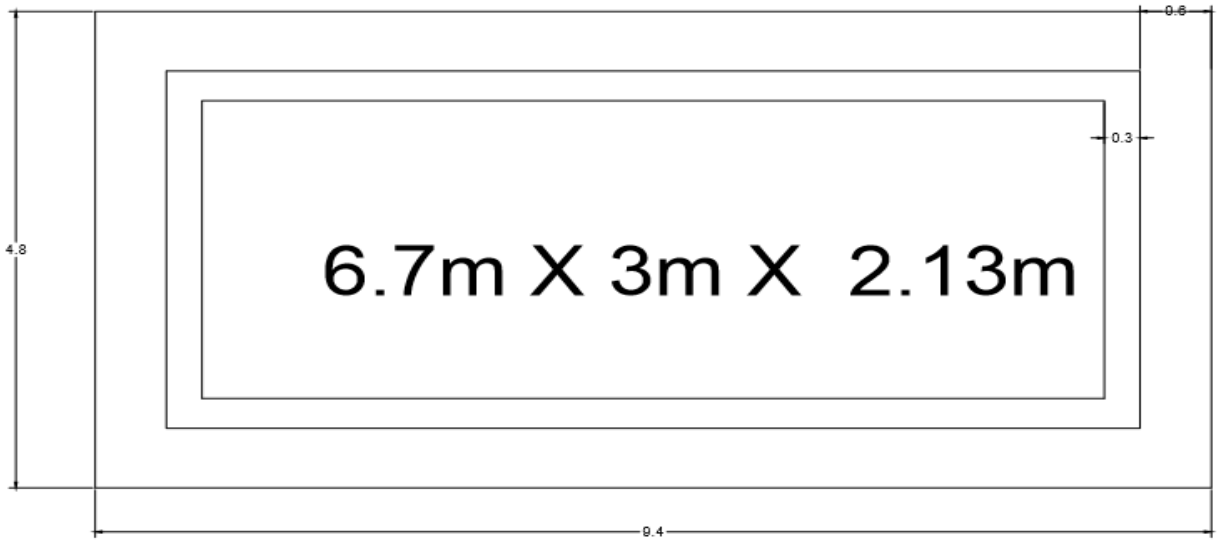
11. Paver Block Road:



Paver Block Road Cross - section

SR NO.	DESCRIPTION	QUANTITY	PER	RATE	AMOUNT
1	**Crushed stone**	1200	m^3	1350	1620000
2	**Cement**	120	m^3	540	64800
3	**Sand**	1300	m^3	465	604500
4	**Paver Block**	214285.71	ft^2	18	3857142
			3% contingencies = 184390 2% water charge = 120000 10% contract profit = 614640		
			Grand Total : 6957472 Rs		

12. Avado:



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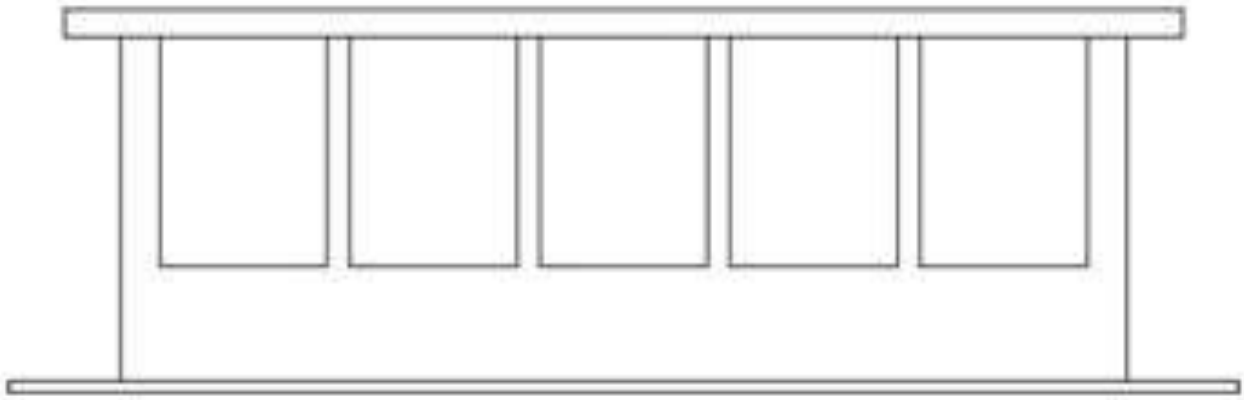

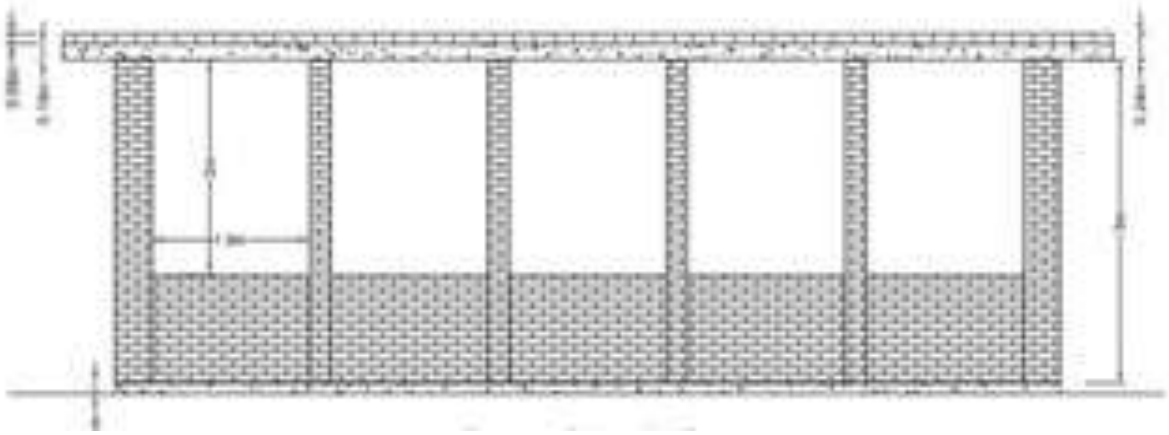

No.	Description	Quantity	Per	Rate	Amount
1	Providing and laying PCC for foundation	5	M^3	6259	31295
2	First class brick masonry for super structure CM(1:6)	75	M^3	7809.25	585693.75
3	12mm thick plaster internal+ external	191	M^2	120	22920
		3% contingencies =19197.26 2% water charge =12798.175 10% contract profit = 63990.82			
	Grand Total :735895Rs				

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Conclusion:

- We have visited the ideal village as well as a smart village are same so we can complete detail study about village lifestyle and infrastructure, technology and also studying/ survey the concept about smart/ideal village with help of techno-economic survey and gap analysis so we can better understand we were able to broadly define the requirement for people of allocated villagers Giramtha for developing smart village.

- The motive of Vishwakarma Yojana Phase – VIII is to uplift the lifestyle of the rural areas to its certain extent up to the level of an ideal village situated at the nearby location of that particular jurisdiction. It is an effective government scheme to develop rural areas under economical cost with good workability and efficiency during its usage.

- The project tends to improve the physical, social as well as socio-cultural aspects of the village by implementing and improvising various infrastructures with regards to lesser or least hindrance to its rural authenticity.

- With Gap Analysis, we conclude that some of the different Smart Village facilities are required as the basic or primary level which still lacks in the village. So, according to Gap Analysis of Giramtha village, we observed the condition of existing infrastructure facilities in a village such as - Water tank, Road network, Drainage networked.

- Smart Village can solve its problem itself can become a smart village example to another village too We will give the design a heritage structure is make a good appearance on the people and preserve our culture. Waste management is essential nowadays but in villages, there is poor/ no solid waste management. Due to lack of solid waste management various kind of diseases, pollution of air & land is occurring and therefore that place is not desirable for living purpose.
- Education is provided to small kids for a maximum of 5 to 7 years and also takes complete care of the kid's diet by providing healthy and fresh food.

- The bank facility is also there for the village peoples for financial help and also keeps village people updated by the latest various government schemes for business and also for farmers. Bus facilities are also provided by the government and for pick up there is a bus stand provided by the roadside of village.

- Avoids contamination of water sources and soil o Composting of human waste for use as a natural fertilizer o There is no need of emptying the pits It is applicable for waterlogged, water-scarce, coastal and rocky areas of Promotes soil fertility and improved crop production.