DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII

AN APPROACH TOWARDS RURBANISATION

Manpur Village

Junagadh District

PREPARED BY

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
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Gajera jenil vinodbhai	Electrical	186950309512

NODAL OFFICERS NAME
Prof. Mr. Rahul B. Chandegara
Prof. Mr. Dashan J. Parmar

DR. SUBHASH TECHNICAL CAMPUS

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad – 382424 Gujarat

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ON

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CERTIFICATE

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

Detail Project Report for,

VILLAGE: Manpur

DISTRICT: Junagadh

Under

Vishwakarma Yojana: Phase-VIII

in partial fulfillment of the project offered by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

during the academic year 2020-21.

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

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
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Date of Report Submission:	
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Internal(Evaluator) Guide Name and Signature:	**Prof. Mr. Rahul B. Chandegara**
College Name:	**Dr. Sub hash Technical Campus**
College Stamp:	

ABSTRACT

Vishwakarma yojana is one of the initiatives towards rurbanization by government of Gujarat which was allotted as a pilot project to GTU. the students and faculty members meet all the stake- holders 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. through the yojana, the students of GTU are getting real work experience and are able to apply their technical knowledge and practices to a real problem.

According to census 2011 information the location cod or village code of Manpur village is 362260. Manpur village is located in Mendarada tehsil of Junagadh district in Gujarat, India. It is situated 13 away from sub-district headquarter Mendarada and 18 km away from district headquarter Junagadh. As per 2009 stats, Manpur village is also a manpur gram panchayat. the total geographical area of village is 1103.19 hectares. Manpur has a total population of 1560 peoples.

There are about 320 houses in Manpur village. Mendarada is nearest town to Manpur which is approximately 13 KM away. The village condition is moderate their road is made of C.C. but some area is broken of road some of the houses are well developed and some are made but cow dung. The village boundary is so week and full of rubbish and waste materials.

In Manpur village development is needed some of the road is broken and the drainage system isles. so, we need to put an open channel for slop road. and also put a solar street light. and also suggest that the India is going to smart India so we put CCTV camera and WI-FI facility. and also provide 24x7 power & water supply.

The study will focus the development trend, intensity of growth of the village, and find out the problems related to the Socio- Cultural or physical development of the area, social infrastructures services, and the administrative systems of the village. Project proposal and sustainability aspect aren't considering in micro level, it is only guiding the way. The study of village gives the reason where there is need of sustainable facilities like infrastructure facilities, community hall, primary health center, post office, general market, pure drinking water, road network, schools, electricity, sanitation, library, Anganwadi, overhead tank, police station, fire station, etc. are available or no. In Manpur village development use idea infrastructure facilities, community hall, primary health center, post office, general market, pure drinking water, road network, schools, electricity, sanitation, library, Anganwadi, overhead tank etc.

Key Words: Smart Village Development, Sustainable Infrastructure Rural Development, Urbanization

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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.

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

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ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
DDO	District Development Officer
GEDA	Gujarat Energy Development Authority
IEC	Information, Education and Communication
HRD	Human Resource Development
MOHRD	Ministry of HRD
BPL	Below Poverty Line
NGP	Nirmal Manpur gram panchayat
PIP	Programmed Implementation Plan
CFL	Compact Flurocent Lamp
LLDF	Light Lumen Depreciation Factor
LDDF	Light Dirt Depreciation Factor
SC/ST	Schedule Cast & Schedule Tribes
SWOT	Strength Weakness Opportunists Threats
IT	Information Technology
GIFT	Gujarat International Finance Tec-City
GRIHA	Green Rating for Integrated Habitat Assessment.
OM	Operation & Managements
PWD	Public Works Department
SOR	Schedule of Rates
WHO	World Health Origination
UNICEF	United Nations International Children's Emergency Fund
Km	Kilo meter
Govt	Government
LPG	Liquefied Petroleum Gas
Kv	Kilo Watt
CC	Cement Concrete
PHC	Primary Health Centre
CSS	Centrally Sponsored Schemes
RO	Reverse Osmosis
Hrs.	Hours
LED	Light Emitted Diode
PPP	Public Private Partnership
NIIF	National Investment and Infrastructure Fund
HPEC	High Power Expert Committee
PCIC	Per Capita Investment Cost
GDP	Growth Domestic Products
SMEs	Small and Medium Enterprise
JMC	Junagadh Municipal Corporation
JUDA	Junagadh Urban Development Authority
SIR	Special Investment Region
IGBC	Indian Green Building Council
CCTV	Close Circuit Television
IPS	Intrusion Prevention System

VPI	Virtual Private Network
CHPH	Combined Heat & Power Plant
STD	Subscribers Trunk Dialing
BOD	Biological Oxygen Demand
RTTS	Rural Travel & Transport Surveys
SBATSC	Swatchh Bharat Abhiyan Total Sanitation Campaign
TDO	Taluka Development Officer
IDD	Infrastructure Development Department

Chapter 1
Ideal village visit from District of Gujarat State (Civil & Electrical Concept)

1.1 Background & Study Area Location Shapur Village:

Shapur is a Village in Mendarada Taluka in Junagadh District of Gujarat State, India. It is located 10 km towards south from district headquarters Junagadh, 381 km from state capital Gandhinagar. Shapur Pin code is 362205 and postal head office is Kalavani (4 km), Rangpur (5 km), Kaneri (5 km), Raningpara (5 km), Fagli (6 km) are the nearby villages to Shapur. Shapur is surrounded by Mendarda taluka towards east, Mendarada Taluka towards north, Malia Taluka towards south, Mangrol taluka towards west. Shapur local language is Gujarati. Shapur village total population is 6191 and number of houses are 1379. Female population is 48.3%. village literacy rate is 72.5% and the female literacy rate is 31.4%.

NIRMAL GRAM PURSAKAR has been awarded to on attaining full sanitation coverage in households, Schools, Anganwadis, etc and for outstanding contribution in promotion of Rural Sanitation by His Excellency Dr. A. P. J. Abdul Kalam President of India on 4th May,2007.

SWARNIM AWARD has been awarded to on attaining Best Manpur gram panchayat of Talukalevel by **Shree Narendra Modi** Chief Minister of Gujarat on Year of 2010-11.

Census Parameter	Census Data
Total Population	8108
Total No of Houses	1798
Female Population %	47.7 % (3871)
Total Literacy rate %	72.2 % (5850)
Female Literacy rate	30.7 % (2488)
Scheduled Tribes Population %	3.0 % (246)
Scheduled Caste Population %	8.9 % (722)
Working Population %	42.2 %
Child(0 -6) Population by 2011	757
Girl Child(0 -6) Population % by 2011	45.4 % (344)

Table 1 Shapur Population Data

Shapur Sorath Village	
Coordinates: 21.468066°N 70.370994°ECoordinates: 21.468066°N 70.370994°E	
Country	India
State	Gujarat
District	Junagadh
Area	
• **Total**	20 km^2 (8 sq mi)
Elevation	107 m (351 ft)
Population (2011)[1]	
• **Total**	8,108
• **Density**	410/km^2 (1,000/sq mi)
Languages	
• **Official**	Gujarati, Hindi
Time zone	UTC+5:30 (IST)
PIN	362 205
Telephone code	02872
Vehicle registration	GJ-11
Website	www.junagadhmunicipal.org

Table 2 Shapur Data

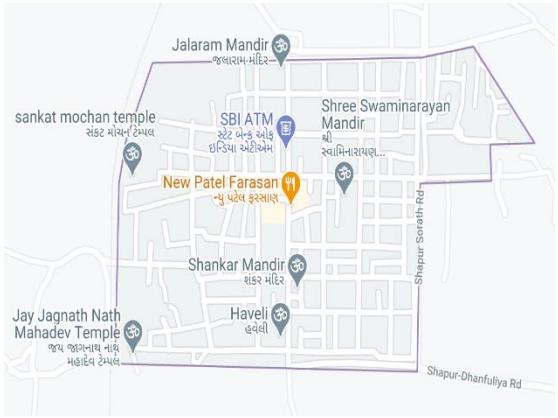


Figure 1 Shapur Map

Figure 2 Shapur Satellite Map

1.2 Concept: Ideal Village, Normal Village

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

to dispose-off waste properly. The ideal village has transportation facilities that enable efficient connectivity with nearby towns and villages.

1.2.1 Objectives:

- To substantially improve the standard of living and quality of life of all sections of the population
- To prevent distress migration from rural to urban areas, which is a common phenomenon in India 's villages due to lack of opportunities and facilities that guarantee a decent standard of living.
- To make the model village a hub that could attract resources for the development of other villages in its vicinity.
- Provide easier, faster and cheaper access to urban markets for agricultural produce or other marketable commodities produced in such villages.

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

Shapur is known for lignite based power generation plant owned by Gujarat Electricity Board. This is one of the biggest power generation facilities in Saurastra region and employs more than 2000 people locally. Almost 50% of village business and shoppers come from smaller villages around Shapur. Along the main road, there are several retail shops inside the village. Shapur provides better employment / business / earning opportunities to local workers in farms, industries, retail businesses, ferries, vegetable and beauty stall –Laris etc. Shapur is also famous for oil, engineering, cement products and dairy industries around the region. They provide good deal of internal and external employment and business and economy. Some of the well-known industries are: Thermal Power Station, Shri Arun Industries, Shri Momai Cement factory, Shri Momai Oil mill, Hari Oum Sweet, Trimurti ginning mill (Shashikant & Co.).

After Junagadh became Municipal Corporation, Shapur is one of the best places to do business in real estate and farming land transfer. Farmers having farms on Junagadh-road get very good value of their farms. People, who work in Junagadh but cannot afford living in Junagadh, live in Shapur as commute to Junagadh is only 15 minutes. They save much money in taxes, grocery, and education and get an urban lifestyle and facilities in this modern village. By looking at the growth of region, it looks like Shapur has been partially merged with Junagadh and will be under corporation's control within next few years.

Shapur - Village Overview

Manpur gram panchayat:	Shapur
Block / Tehsil:	Mendarada
District:	Junagadh
State:	Gujarat
Pincode:	362205
Area:	1845 hectares
Population:	8,108
Households:	1,798
Assembly Constituency:	Manavadar

Parliament Constituency: Porbandar
Nearest Town: Mendarada (5 km)

Figure 3 Shapur Post Office

Figure 4 Interaction with Shapur School Principal

1.2.2.1 Case Study of Model Village from the state of Gujarat – Punsari

The example of ideal village is Punsari village. Punsari is a Village in Talod Taluka in Sabarkantha District of Gujarat State, India. It is located 32 km towards South from District headquarters Himmatnagar. 19 km from. 58 km from State capital Gandhinagar, Modasa, Prantij, Himatnagar, Dehgamare the nearby Cities to Punsari.

Sometimes just a vision for change can create an ocean of a difference. When Himanshu Patel was elected Sarpanch of Punsari, a quaint little village in Sabarkantha district Gujarat, in 2006 there was no sewerage connection, no street lights, no pucca roads and, of course, no source of income for the manpur gram panchayat except the grants and funding from various state and Union government schemes.

Six years later, the urban village flaunts a wi-fi and optical fiber broadband network, classrooms with CCTV cameras, its own mini-bus transport system and 25 CCTVs located on important junctions to spot litterbugs.

There is an RO water treatment plant that supplies 20-litre cans to houses for a token cost of Rs 4. You also have a school bus to ferry your wards, and that too on clean RCC roads. The manpur gram panchayat also provides facilities of loud speaker covering entire village, gutter project, clean primary health care center, 8 kinder garden schools, banking facility, toll free complain receiving phone service, among others.

Villagers can buy ticket of Re 1 to use the mini bus service. For female students, bus service is completely free. Women come to deposit milk to milk bank couple of times during a day through this bus. Cost of running the service is managed through ticket sales. 120 loud-speakers covering each corner of the village. Villagers listen to prabhatiya in the morning and bhajan and bhakti songs in the evening. Also, important announcements like telephone bill, power bill, results of 10th and 12th are made through these speakers. Unique feature is that the village sarpanch can pass on any announcement from his mobile phone. To set up this system Rs 4 lakh were spent from corpus.

"The turn-around happened when we sold part of our grazing land as plotted schemes to various communities. The money is deposited in government coffers," says the 28-year-old Sarpanch. Some funds were also received through various government schemes. The village received rewards from the central government and the state governments recently We have proud on that village and try to make us village like Punsari which was smart and bunch of technology and facilities which was give comfort and good feeling to villagers.

Figure 5 Punsari Sarpanch

Figure 6 Punsari Garbage Collection

Figure 7 Punsari Solar Streetlight

1.2.3 The Idea of a model/Smart Village

Smart Village refers to a concept developed in rural area that provides solutions to problems occurred and improves the quality of life. The main problems faced by rural areas are cover poverty, low level of education, and limited access to technology. Smart village concept emerged due to some different characteristics between rural and urban areas. Banyuwangi Regency is one of regions that created smart concept starting from rural area, called smart kampung. So far, smart kampung only focused on public services, which included only a small part of smart city concept. Hence, this research was intended to propose the model of smart village examined through initial interview in village sample of Banyuwangi, literature reviews related to smart city, smart village, and smart rural. Then, the results were confirmed and adjusted to support local regulations. This research created a smart village model that was capable to be a guide for each village to develop towards 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.

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

A village is a clustered human settlement or community, larger than a hamlet but smaller than a town (although the word is often used to describe both hamlets and smaller towns), with a population typically ranging from a few hundred to a few thousand. Though villages are often located in rural areas, the term urban village is also applied to certain urban neighborhoods. Villages are normally permanent, with fixed dwellings; however, transient villages can occur. Further, the dwellings of a village are fairly close to one another, not scattered broadly over the landscape, as a dispersed settlement. In the past, villages were a usual form of community for societies that practice subsistence agriculture, and also for some

non-agricultural societies. In Great Britain, a hamlet earned the right to be called a village when it built a church. In many cultures, towns and cities were few, with only a small proportion of the population living in them. The Industrial Revolution attracted people in larger numbers to work in mills and factories; the concentration of people caused many villages to grow into towns and cities. This also enabled specialization of labor and crafts, and development of many trades. The trend of urbanization continues, though not always in connection with industrialization. Historically homes were situated together for sociability and defense and land surrounding the living quarters was farmed. Traditional fishing villages were based on artisan fishing and located adjacent to fishing grounds.

India: "The soul of India lives in its villages," declared M. K. Gandhi at the beginning of 20th century. According to the 2011 census of India, 68.84% of Indians (around 833.1 million people) live in 640,867 different villages. The size of these villages varies considerably. 236,004 Indian villages have a population of fewer than 500, while 3,976 villages have a population of 10,000+. Most of the villages have their own temple, mosque, or church, depending on the local religious following.

Rural Development: Rural development is the process of improving the quality of life and economic well-being of people living in rural areas, often relatively isolated and sparsely populated areas. Rural development has traditionally centered on the exploitation of land-intensive natural resources such as agriculture and forestry. However, changes in global production networks and increased urbanization have changed the character of rural areas. Increasingly tourism, niche manufacturers, and recreation have replaced resource extraction and agriculture as dominant economic drivers. The need for rural communities to approach development from a wider perspective has created more focus on a broad range of development goals rather than merely creating incentive for agricultural or resource-based businesses. Education, entrepreneurship, physical infrastructure, and social infrastructure all play an important role in developing rural regions. Rural development is also characterized by its emphasis on locally produced economic development strategies. In contrast to urban regions, which have many similarities, rural areas are highly distinctive from one another. For this reason, there are a large variety of rural development approaches used globally. Rural development is a comprehensive term. It essentially focuses on action for the development of areas outside the mainstream urban economic system. We should think of what type of rural development is needed because modernization of village leads to urbanization and village environment disappears.

1.3 Detail study (Socio economic, physical, demographic and infrastructure details) of Ideal village / Smart Village with photograph

Year	Population	Male	Female
1991	4004	2103	1901
2001	5031	2698	2333
2011	6191	3202	2990

Table 3 Socio Economic profile

Physical Profile

Shapur Village Manpur gram panchayat name is Shapur. Shapur is 6 km distance from Sub District Headquarter Mendarada and it is 40 km distance from District Headquarter Junagadh. Nearest Statutory Town is Mendarada in 6 km Distance. Shapur Total area is 1551.48 hectares, Forest area is 8 hectares, Non-Agricultural area is 14.57 hectares, Total irrigated area is 993.98 hectares and Total Water fall area is 0hectares. School, Bank, Aangalvadi, Health center are available there, Grampanchayat in good condition available. For transportation road are available properly there as well as proper street lights are fitted. physical profile of this village is good as ideal village and we also try to do that better.

Demographic Profile

As per constitution of India and Panchyati Raaj Act, Shapur village is administrated by Sarpanch (Head of Village) who is elected representative of village.

- Assembly MLA: Jawahar Chawada Pethaljibhai
- Parliament MP: Rameshbhai lawjibhai Dhaduk
- Sarpanch Name: Dinesh Faldu

Particulars	Total	Male	Female
Total No. of Houses	1,798	-	-
Population	8,108	4,237	3,871
Child (0-6)	757	413	236
Schedule Caste	722	361	440
Schedule Tribe	246	133	8
Literacy	79.58%	87.07%	70.55%
Total Workers	3,425	2,521	876
Main Worker	2,681	-	-
Marginal Worker	744	209	124

Table 4 Demographic Profile

Shapur village has higher literacy rate compared to Gujarat. In 2011, literacy rate of Shapur village was 79.06 % compared to 78.03 % of Gujarat. In Shapur Male literacy stands at 87.07 % while female literacy rate was 70.55%.

Infrastructure Details:

Water

- Treated Tap Water Supply all around the year and in summer also available. Hand Pump and Tube Wells/Boreholes are other Drinking Water sources.
- For the farm electricity is available for farming.
- 24-hour water supply system is activated with primary treatment at proper time period. The average rainfall in the village is inch.

Drainage

- Open Drainage System Available in this Village. House to House waste Collection available.
- There is system to Collect garbage on street. Drain water is discharged into sewer plant.

Sanitation

- There is proper sanitization in all houses having a toilet i.e., Safety Tank toilets are installed in every home.

Wi-Fi:

- Wi-Fi facilities is not available in this village.

Public announcement:

- Public Announcement system is installed at many places wherein announcements, news been announced when necessary.

Road and Transportation:

- Public Bus service available in this village.
- Nearest Railway Station is in 5 - 10 km. Autos Available in this village.
- Tractors Available in this Village. Animal Driven Carts are there in this village.
- Nearest National Highway is in less than 5 km. Nearest State Highway is in 5 - 10 km. Nearest District Road is in 5 - 10 km.
- Pucca road, Macadam Road and Foot Path are other Roads and Transportation within the village.

Security

- 20 point CCTV cameras and monitors been installed at key locations in order to keep a close watch on the daily activities.
- Also CCTV cameras are needed to installed in schools and health center.

1.4 SWOT analysis of Ideal village / Smart Village

SWOT analysis (or SWOT matrix) is a strategic planning technique used to help a person or organization identify strengths, weaknesses, opportunities, and threats related to business competition or project planning. This technique, which operates by 'peeling back layers of the company' is designed for use in the preliminary stages of decision-making processes and can be used as a tool for evaluation of the strategic position of organizations of many kinds (for-profit enterprises, local and national governments, NGOs, etc.). It is intended to specify the objectives of the business venture or project and identify the internal and external factors that are favorable and unfavorable to achieving those objectives. Users of a SWOT analysis often ask and answer questions to generate meaningful information for each category to make the tool useful and identify their competitive advantage. SWOT has been described as the tried-and-true tool of strategic analysis, but has also been criticized for its limitations.

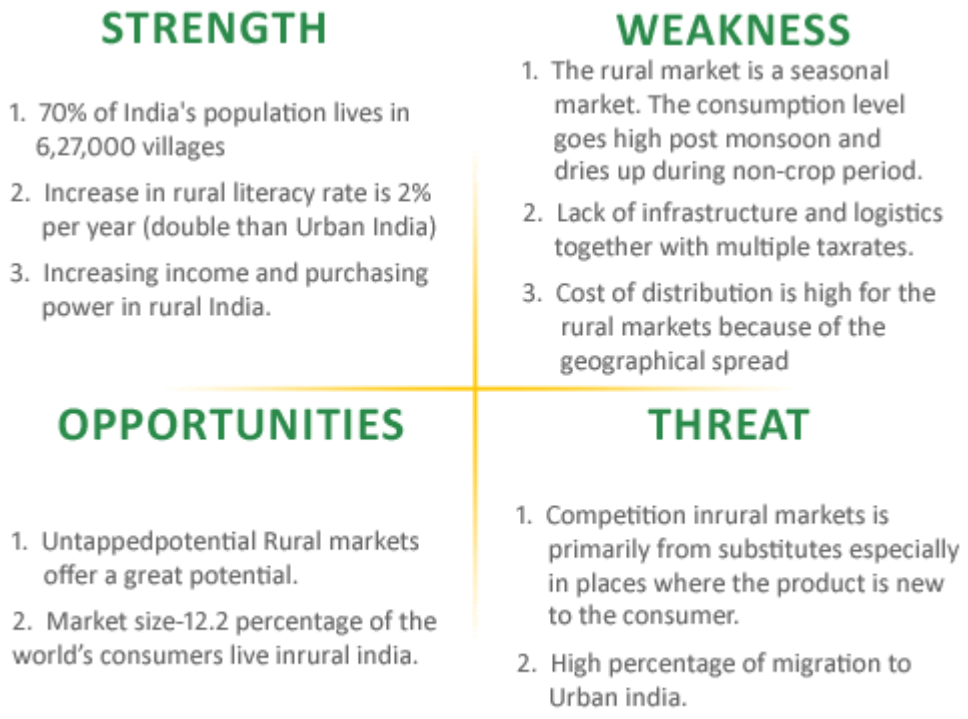


Figure 8 A SWOT Analysis

1.5 Future prospects of Development of the Ideal village / Smart Village

We have done an interaction with villagers and they have suggested some possible future prospects of development of the Jarod village. And we personally observed that things & those suggestions are as follows,

- Gas Pipelines
- Biogas Plant
- Cold Storage Area
- Rain Water Harvesting
- Solar Street Lights
- Working NGOs
- Public Wi-Fi Facility
- Fire Station, etc.

These are some of the aspects that need to be improved in the future in the village.

1.6 Benefits of the visits of Ideal village / Smart Village

- It helps us gain first-hand information regarding functioning of the village.
- Provides an opportunity to plan, organize and engage in active learning experiences.
- It helps to enhance are inter personal skills and communications
- Helps to understand the do and do not of the village activity.

1.7 Electrical / Civil aspects required in Ideal village / Smart Village

We have observed the balance of commercial, residential and recreational land use in the Jarod village but as per the feedback which were given by villagers some facilities are lacking in the village from civil aspects and these are, Gas Pipelines, Biogas Plant, Cold Storage Area, Rain Water Harvesting, Solar Street Lights, Public Wi-Fi Connection, Fire Station , etc. Moreover, by providing skill development centers for the youth, panchayat should also focus on enabling the youth to setup the self-employment units. Water harvesting, Ground water recharge and improvement of village tanks/lakes are also projecting to be pursued.

Chapter 2
Manpur Literature Review - (Civil & Electrical Concept)

2.1 Introduction: Urban & Rural village concept

An urban area or urban agglomeration, is a human settlement with high population density and infrastructure of built environment. Urban areas are created through urbanization and are categorized by urban morphology as cities, towns, conurbations or suburbs. In urbanism, the term contrasts to rural areas such as villages and hamlets and in urban sociology or urban anthropology it contrasts with natural environment. The creation of early predecessors of urban areas during the urban revolution led to the creation of human civilization with modern urban planning, which along with other human activities such as exploitation of natural resources leads to human impact on the environment.

In general, a rural area or countryside is a geographic area that is located outside towns and cities. The Health Resources and Services Administration of the U.S. Department of Health and Human Services defines the word rural as encompassing population, housing, and territory not included within an urban area. Whatever is not urban is considered rural.

Urban-rural relationships is beginning to appear more often in the academic literature as well as policy and programming documents. The evolution of the concept has a long history in the study of economics, geography and regional planning. This paper traces some of the historical background of the concept and identifies how it is being used at the present time. The paper is divided in two main parts.

In the first part we discuss how the term urban-rural relationship was coined to mark a departure from the traditional view of urban-rural dichotomy: the existence of two distinct and opposing perspectives that have influenced the conceptualization of urban-rural relationships. The first of these perspectives, the anti-urban view, can be traced back to rural-urban migration during the Industrial Revolution and the social, economic, environmental and health problems that this migration caused.

The second perspective, the pro-urban view, sees urbanization in terms of natural progress and development and regards cities as generators and centers of culture, knowledge, innovation and economic growth.

2.2 Importance of the Rural development

Rural development is important not only for the majority of the population residing in a rural area but the growth of rural activities is necessary to stimulate the speed of overall economic expansion of the nation. Rural development is pretended to be noticeable importance in the country today than in the olden days in the process of the evolution of the nation. It is a strategy trying to obtain improved rural creation and productivity, higher socio-economic equality, and ambition, stability in social and economic development. The primitive task is to decrease the famine roughly about 70 percent of the rural population, implement sufficient and

healthy food. Later, serve fair equipment of clothing and footwear, a clean environment and house, medical attention, recreational provision, education, transport, and communication.

2.3 Ancient Villages / Different Definition of: Rural Urban Villages

A village is a small settlement usually found in a rural setting. It is generally larger than a "Hamlet" but smaller than a "Town". Some geographers specifically define a village as having between 500 and 2,500inhabitants.

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

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

According to Reserve Bank of India (RBI): - Defines rural areas as those areas with a population of less than 49,000 (tier -3 to tier-6 cities).

Figure 9 Rural/Urban Villages of India

Rural Villages: Rural areas are also known as the country side or a village in India. It has a very low population density. Almost every economic agency today has a definition of rural India. Here are a few definitions: According to the Planning Commission, a town with a maximum population of 15,000 is considered rural in nature. An 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 male working population involved in agriculture and allied activities RBI defines rural areas as those areas with a population of less than 49,000 (tier -3 to tier-6cities). It is generally said that the rural areas house up to 70% of India's population. Rural India contributes a large chunk to India's GDP by way of agriculture, self-employment, services, construction etc. As per a strict measure used by the National Sample Survey in its 63rd round, called monthly per capita expenditure, rural expenditure accounts for 55% of total national monthly expenditure. The rural population currently accounts for one-third of the total Indian FMCG sales.

Urban Villages: In urban planning and design, an urban village is an urban development typically characterized by medium-density housing, mixed use zoning, good public transit and an emphasis on and public space. Planning for the improvement of housing

and living standard Urban villages Old owners invest in improving properties. Economic dynamism and up gradation through public investments Surrounding areas are well settled and agricultural fields minimal.

2.4 Scenario: Rural / Urban village of India population Growth

The Indian population census in the 2011 covered a number of parameters during the survey occurs, these parameters are population, growth rate in population, rate of literacy, density of population, sex ratio and child sex ratio etc. According to the census reports of Indian census 2011, the population of India is 1,210,193,422 with 623,724,248 males and 586,469,174 females. The total literacy rate in the country at 74.04%. The density of population is 382 person/sq.km. In regards to sex ratio, at present there are 940 females on average on per 1000 males and the child sex ratio is 914 females per 1000males. Census 2011 is the 15th Census of India since 1872 Provisional Population is arrived at by adding the Population as reported by each Enumerator for the Enumeration Block.

Table 5 INDIA CENSUS 2011 DATA

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

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

As per projection, population of Gujarat 7.04 Crores…

Table 6 Gujarat Population

Description	**2011**	**2001**
Approximate Population	6.04 Crores	5.07 Crore
Actual Population	60,439,692	50,671,017
Male	31,491,260	26,385,577
Female	28,948,432	24,285,440
Population Growth	19.28%	22.48%
Percentage of total Population	4.99%	4.93%
Sex Ratio	919	920
Child Sex Ratio	890	883
Density/km2	308	258
Density/mi2	798	669
Area (Km2)	196,244	196,024
Area mi2	75,770	75,685
Total Child Population (0-6 Age)	7,777,262	7,532,404
Male Population (0-6 Age)	4,115,384	4,000,148
Female Population (0-6 Age)	3,661,878	3,532,256
Literacy	78.03 %	69.14 %
Male Literacy	85.75 %	79.66 %
Female Literacy	69.68 %	57.80 %

Total Literate	41,093,358	29,827,750
Male Literate	23,474,873	17,833,273
Female Literate	17,618,485	11,994,477

Gujarat Urban Population 2011: Out of total population of Gujarat, 42.60% people live in urban regions. The total figure of population living in urban areas is 25,745,083 of which 13,692,101 are males and while remaining 12,052,982 are females. The urban population in the last 10 years has increased by 42.60percent. Sex Ratio in urban regions of Gujarat was 880 females per 1000 males. For child (0-6) sex ratio the figure for urban region stood at 852 girls per 1000 boys. Total children (0-6 age) living in urban areas of Gujarat were 2,952,359. Of total population in urban region, 11.47 % were children (0-6). Average Literacy rate in Gujarat for Urban regions was 86.31 percent in which males were 90.98% literate while female literacy stood at 70.26%. Total literates in urban region of Gujarat were 19,672,516.

2.6 Rural Development Issues - Concerns - Measures

Issues:

- *Issue of agriculture*: In general, the issue is how to industrialize agriculture in India. It includes increasing the marketization level of agricultural production and operation, and stabilizing the prices of agricultural products; changing the situation of smallholder economic agriculture, achieving economies of scale of agricultural production and operation; guaranteeing the food security in India.
- *Issue of rural areas*: This is particularly reflected in the disparity of economic and cultural development between urban and rural areas. It is mainly caused by the dual segmentation based on the household registration system.
- *Issue of farmers*: It includes improving the income level of farmers, alleviating burdens of farmers, increasing the cultural qualities of farmers, and safeguarding the rights of farmers.

Measures: Nature policy will be built around the three thematic axes. For each axis a range of measures will be available. In the new Regulation, conditions under which the measures can be implemented have been streamlined and simplified. Under this axis, measures fall into four groups:

1. Human resources: Young farmers, early retirement, training and information, farm advisory services. A series of measures target human resources within and linked to the agriculture and forestry sectors.

2. Physical capital: The EU provides support for modernization of agricultural holdings aimed at modernizing and improving their overall performance through the introduction of new technologies and innovation, targeting quality, organic products and on/off farm diversification, including non-food sectors and energy crops, as well as improving the environmental, occupational safety, hygiene and animal welfare status. Investments could, for instance, aim to modernize farm machinery and equipment so as to meet one of these objectives.

3. *Food quality under food quality, two measures exist*: incentive payments for farmers and information and promotion actions. Incentive payments will be available for farmers who participate voluntarily in EU or national schemes designed to improve the quality of agricultural products and production processes and which give assurances to consumers on these issues.

4. *Transitional measures* for the new Member States Support will be available during the period 2007–2013 for the new Member States via the measures supporting semi subsistence

farming and the setting up and operation of producer groups in order to ensure a smooth transition for these countries which address their particular challenges.

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

The rural development programme comprises various forms of support. They are intended to encourage efforts to increase competitiveness, help the environment, and improve quality of life in rural areas. In this way the measures help us to achieve the goals of the rural development programme. The specific objectives of rural development are:

- Raising the standard of living of people in rural areas,
- Alleviating poverty in rural areas and improving the quality of life of the people,
- Development of both farming and non-farming activities so as to generate gainful employment
- Changing the attitudes of the rural people towards transformation of village community,

Rural development has traditionally centered on the exploitation of land-intensive natural resources such as agriculture and forestry. However, changes in global production networks and increased urbanization have changed the character of rural areas. The need for rural communities to approach development from a wider perspective has created more focus on a broad range of development goals rather than merely creating incentive for agricultural or resource-based businesses. Education, entrepreneurship, physical infrastructure, and social infrastructure all play an important role in developing rural regions. Rural development is also characterized by its emphasis on locally produced economic development strategies. In contrast to urban regions, which have many similarities, rural areas are highly distinctive from one another. For this reason, there is a large variety of rural development approaches used globally. Rural development is a comprehensive term. It essentially focuses on action for the development of areas outside the mainstream urban economic system.

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

The definition of village electrification as adopted by the Government of India is: "A village will be deemed to be electrified if electricity is used in the inhabited locality within the revenue boundary of the village for any purpose whatsoever". Therefore, electrification of a village does not imply that all the houses in a village have electricity. Thus, it becomes a necessity to not only electrify the rural area but also to “Intensify”. The process of electrification is simple and straight forward with not much emphasis laid on faster electrification, the process includes-:

A. The process as per rural electrification distribution board (REDB) states to provide a 33/11kv or 66/11kv transformer in every block as per the load requirements or in general and also connected to the transmission line
B. Emanating from REDB (Rural electrification Distribution Board) would be supply feeders and one distribution transformer at least in every village settlement.
C. Electrification for household from distribution transformer to connect every household on demand.

D. To provide a decentralized grid system if the connection to the centralized grid is not feasible in terms of cost and optimization of system.
E. Development of infrastructure would also cater for requirement of agriculture activities & other economic activities including irrigation pump sets, small and medium industries, and village industries, cold chain and social services like health and education.

2.9 Other Projects / Schemes of Gujarat / Indian Government

Table 7 Government Project Scheme

Scheme	Sector	Work
Jawahargram Samriddhi Yojana	Government	Creation of demand-driven village infrastructure including durable assets.
Schemes For Sprinkler And Drip Irrigation System	Government	Providing subsidy and motivation programmed for saving water
Indira awasyojana	Government	Providing housing facilities for the poor villagers.
Provisions of urban amenities	Government	Developing parks
PHC	Government	Providing primary health care facilities in the rural area
Agriculture related schemes	Government	Implementing agriculture related programmer for motivation of agricultural products.
Water harvesting scheme	Government	Provisions developed for rain water harvesting and recharging of wells
Solar system scheme	Government	Provisions taken for development of solar energy
Road development scheme	Government	Provisions taken for development of solar energy area

A. Swarnajayanti Gram Swarojgar Yojana

This programme was launched in April, 1999. This is a holistic programme covering all aspects of self-employment such as organization of the poor into self-help groups, training, credit, technology, infrastructure and marketing.

Objective:

- The objective of SGSY is to provide sustainable income to the rural poor.
- The programme aims at establishing a large number of micro-enterprises in the rural areas, based upon the potential of the rural poor.
- It is envisaged that every family assisted under SGSY will be brought above the poverty-line with in a period of three years.

Scope:

- This programme covers families below poverty line in rural areas of the country. Within this target group, special safeguards have been provided by reserving 50% of benefits for SCs/STs, 40% for women and 3% for physically handicapped persons. Subject to the availability of the funds, it is proposed to cover 30% of the rural poor in each block in the next 5years.

B. Jawahar Gram Samriddhi Yojana:

The critical importance of rural infrastructure in the development of village economy is well known. A number of steps have been initiated by the Central as well as the State Governments for building the rural infrastructure. The public works programme have also contributed significantly in this direction. Jawahar Gram Samridhi Yojna (JGSY) is the restructured, streamlined and comprehensive version of the erstwhile Jawahar Rozagar Yojana.

Objective:

- Designed to improve the quality of life of the poor, JGSY has been launched on 1st April, 1999.
- The primary objective of the JGSY is the creation of demand driven community village infrastructure including durable assets at the village level and assets to enable the rural poor to increase the opportunities for sustained employment.
- The secondary objective is the generation of supplementary employment for the unemployed poor in the rural areas.
- The wage employment under the programme shall be given to Below Poverty Line (BPL) families.

Scope:

- JGSY is implemented entirely at the village Panchayatlevel.
- Village Panchayat is the sole authority for preparation of the Annual Plan and its implementation.

C. Indira Aawas Yojana:

IAY is the flagship rural housing scheme which is being implemented by the Government of India with an aim of providing shelter to the poor below poverty line. The Government of India has decided that allocation of funds under IAY (Indira Awas Yojna) will be on the basis of poverty ratio and housing shortage.

Objective:

- The objective of IAY is primarily to help construction of new dwelling units as well as conversion of unserviceable kutcha houses into pucca/semi-pucca by members of SC/STs, freed bonded laborer's and also non-SC/ST rural poor below the poverty line by extending them grant-in-aid.

Scope:

- IAY is a beneficiary-oriented programme aimed at providing houses for SC/ST households who are victims of atrocities, households headed by widows/unmarried women and SC/ST households who are below the poverty line.
- This scheme has been in effect from 1st April,1999.

D. DRDA administration:

District Rural Development Agency (DRDA) has traditionally been the principal organ at the District level to oversee the implementation of the anti-poverty programmes of the Ministry of Rural Development. Created originally for implementation of Integrated Rural Development Programme (IRDP), the DRDAs were subsequently entrusted with a number of programmes, both of the Central and State Governments.

Since inception, the administrative costs of the DRDA (District Rural Development Agency) were met by setting aside a part of the allocations for each programme. Of late, the number of programmes had increased and several programmes have been restructured with a view to making them more effective. While an indicative staffing structure was provided to the DRDAs, experience showed that there was no uniformity in the staffing structure.

It is in this context that a new centrally sponsored scheme - DRDA Administration - has been introduced from 1st April, 1999 based on the recommendations of an inter-ministerial committee known as Shankar Committee. The new scheme replaces the earlier practice of allocating percentage of programme funds to the administrative costs.

Figure 10 Government Schemes Summarry

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

3.1 Introduction: Concepts, Definitions and Practices

Concepts:

A smart village is one where sustainable energy sources are used as a measure of development and people have access to quality education and healthcare, access to clean drinking water, sanitation and nutrition enhanced security, gender equality and democratic engagement. Based on the exploration of a wide and extensive array of literature from various disciplinary areas we identify eight critical factors of smart city initiative management and organization, technology, governance, policy context, people and communities, economy, built infrastructure and natural environment.

Definition (Civil & Electrical)

Civil engineering is a professional engineering discipline that deals with the design, construction, and maintenance of the physical and naturally built environment, including public works such as roads, bridges, canals, dams, airports, sewerage systems, pipelines, structural components of buildings, and railways.

Electrical engineering is an engineering discipline concerned with the study, design and application of equipment, devices and systems which use electricity, electronics, and electromagnetism.

Smart village means all the necessaries facilities is developed in the village and no need to moves in city for any kind of requirement. A Smart Village enables its inhabitants to make use of the contemporary technological and social achievements, while its infrastructures are still being developed in line with Sustainable Development Goals, offers an opportunity to efficiently deal with future of energy security and issues of local and circular.

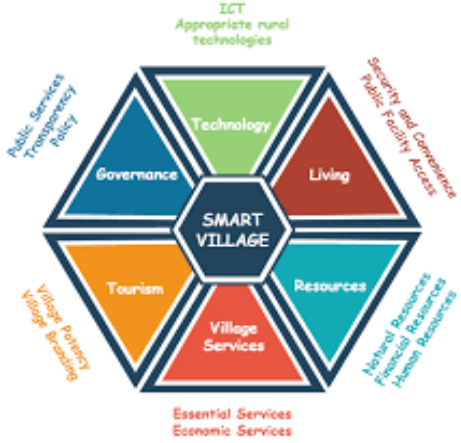


Figure 13 Smart Village Concept

The driving motivation behind the concept on " Smart Village " is that the technology should acts as a catalyst for development, enabling education and local business opportunities, improving health and welfare, enhancing democratic engagement and overall enhancement of rural village dwellers.

Smart Village India gets its foundation from Mahatma Gandhi's vision of Adarsh Gram (model village) and Gram Swaraj (Village self-rule/independence). Gandhi in two texts, Hind Swaraj and Gram (Village) Swaraj, promotes the concept of integrated rural development to impact majority of the population, as the primary initiative after India Independence in 1947. The Eco Needs Foundation has initiated the concept of "Smart Village". Under this project the Foundation is adopting villages and putting efforts for sustainable development by providing basic amenities like sanitation, safe drinking water, internal road, tree plantation, water

conservation. The Foundation is also working for inculcating moral values in the society and for improving the standard of living of the villagers.

3.2 Vision-Goals, Standards and Performance Measurement Indicators

Table 8 Smart cities benchmarks

Sr no.	Parameter	Benchmark
A	**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 width of 2m or more, one in each direction, should be provided on all streets with carriage way largerthan 10 m High quality and high frequency mass transport within 800 m of all residences in areas over 175persons / ha of built area
B	**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% residences should have access to employment and public and institutional transport 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 and 30 commercial/institutional in every TOD Zone within 800m of Transit Stations
C	**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 in collection of water related charges
D	**Sewerage & Sanitation**	100% households should have access to toilets 100% schools should have separate toilets for girls 100% households should be connected to the waste water network 100% efficiency in the collection and treatment of waste water 100% efficiency in the collection of sewerage network
E	**Solid management**	100% households are covered by daily door-step Collection system. 100% collection of municipal solid waste 100% segregation of waste at source, i.e. bio-degradable and non-degradable waste 100% recycling of solid waste

F	**Storm storage**	100% coverage of road network with storm water drainage network Aggregate number of incidents of water logging reported in a Year = 0 100 % rainwater harvesting
G	**Electricity**	100% metering of electricity supply 100% households have electricity connection 24 x 7 supply of electricity 100% recovery of cost Tariff slabs that work towards minimizing waste
H	**Health care facilities**	Availability of telemedicine facilities to 100% residents 30 minutes 'emergency response time 1 dispensary for every 15,000 residents Nursing home, child, welfare and maternity. Enter - 25 to 30 beds per lakh population.

Smart Cities Performance Measurement Indicators

Table 9 Smart Cities Measurement Indicators

People	Prosperity	Planet	Governance	Propagation
1. Health 2. Safety 3. Access to services 4. Education 5. Diversity & social cohesion 6. Quality of housing	1. Employment 2. Equity 3. Green economy 4. Economic performance 5. Innovation 6. Attractiveness & Competitiveness	1. Energy & Mitigation 2. Material, Water & Land 3. Climate resilience 4. Pollution 5. Ecosystem	1. Organization 2. Community involvement Multi-level governance	1. Scalability 2. Reliability

Several standards and standardization attempts are presented, all coming from well-known international organizations. 2 of them (from ISO, ITU and BSI) are presented in detail.

1. The ISO 37120standard

- The ISO 37120 Standard is titled "Sustainable development of communities - Indicators for city services and quality of life".
- The standard presents a set of (around 100) indicator to measure the performance of city services and quality of life.
- The standard is applicable to any city, municipality or local government that wants to measure its performance, in a comparable and verifiable manner, irrespective of size andlocation.
- The standard is available at the ISO web site (at a price). A free summary can be obtained here (ISO preview facility)

- My view: a very good start for measuring your smart city initiatives. But, some indicators are quite "indirect" and maybe difficult to gather. No real assessment of ICT infrastructures.

2. The ISO/DIS37101

- This is a standard in draft status (DIS), published in September2015.
- The standard, titled "Sustainable development of communities -- Management systems - Requirements with guidance for resilience and smartness", presents the main axes of activities for a smart city.
- The draft standard is available at a cost from the ISO website.
- My view: very helpful information on how to plan, manage and evaluate a smart city initiative. Also includes the 10 main areas of smart city intervention types (e.g. health, energy, environment, etc). More like a guideline than a standard though Similar information contained in several relevant papers or studies.

3.3 Technological Options

Smart energy

Smart energy systems will monitor and control energy usage to more efficiently manage and conserve energy. Cisco estimates that cities that run on information can improve their energy efficiency by 30 percent within 20 years. By using renewable energy sources, manage water supply and have a waste management system, cities can reduce pollution and use less energy.

Smart mobility

Smart mobility strives to find more sustainable transport options. Deloitte reported that an average American is stuck about 34 hours in traffic every year. With rapidly growing cities, new transportation solutions need to be developed to keep mobility dynamic. By conducting big data drive projects, information can be gathered to identify driving and movement patterns and minimize the accident probability. Finding new and improved solutions will reduce costs and have a positive environmental impact.

Smart infrastructure

Smart infrastructure creates the fundament for all smart solutions. By using new technology to convert raw data into information, urban and regional development can be planed and designed to fit future demand. Also, existing systems can be improved by analyzing data from sensors, traffic patterns and tracking systems.

Smart public services

By connecting city residents and authorities using innovative communication technology, cities can become safer, cleaner and the general city standard will improve. If residents have the possibility to report trash or infrastructural problems, authorities can act faster to solve problems they otherwise would not be aware of.

Smart care

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

Giving caretakers access to patient information will help doctors collaborate in new ways to give the best patient care possible.

A smart city will respond better to emerging population challenges than traditional city management. By utilizing resources more efficiently governments can save money, improve life quality and meet the needs of future generations.

3.4 Road Map and Safe Guards

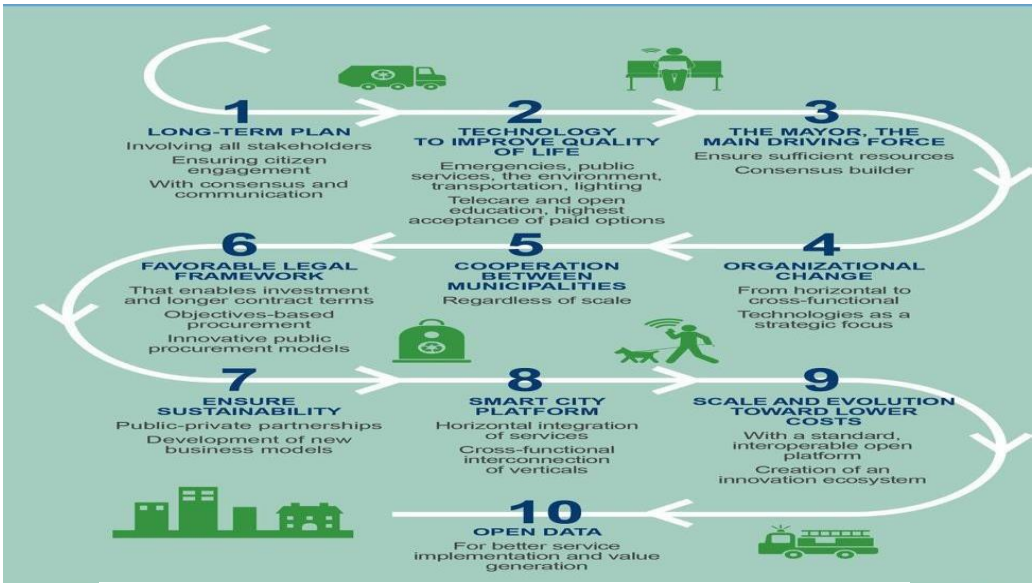


Figure 14 Road Map and Safe Guards

3.5 Issues & Challenges

Unfortunately, it is a fact that, in the world today, 1.3 billion people remain without access to electricity. In addition, 3 billion are still cooking on dangerous and inefficient stoves. Many of them live in remote rural village communities. Until such communities have access to modern energy services, little progress can be made to develop their economies and improve their lives. Following the successful conclusion of this first phase of activities the smart villages Initiative intends to take forward their findings, and leverage the unique global base of knowledge and network that we have assembled, to pursue the linked goals of universal energy access and rural development. Facilitating the establishment, in partnership, of pilot "Smart Villages" around the world to act as examples of the concept and provide a base for demonstrating the sustainable impact of this holistic and sustainable rural development approach. Working with research partners around the world to evidence the impact of the holistic "Smart Villages" development model, through baseline studies and long- term impact assessment across multiple development metrics, across multiple SDGs.

Developing and testing innovative technologies that can help deliver some of these integrated development objectives – for example innovative agricultural technology, cold storage, ICT access, remote education and telemedicine.

Provide consulting and advisory services on energy access and holistic models of rural development, harnessing the wealth of information and the experience we have t

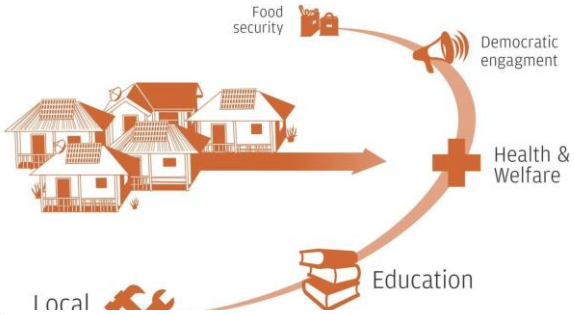


Figure 15 Issues and Challenges

assembled through our global network during the course of the past 5 years. Village issues and challenge area is be simplified as below figure in which food, security, democratic engagement, health and welfare, communication, business and education take place given as bellow figure.

3.6 Smart Infrastructure - Intelligent Traffic Management

Smart infrastructure provides the foundation for all the key themes related to a smart city, including smart people, smart mobility, smart economy, smart living, smart governance and smart environment. The central characteristic that underlies most of these components is that they are connected and that they generate data, which may be used intelligently to ensure the optimal use of resources and improve performance. This section introduces some key components of smart city infrastructure and concludes by highlighting the need for a combined method in dealing with such infrastructure. Smart infrastructure includes following:

Smart Infrastructure involves applying this to economic infrastructure for the benefit of all stakeholders. It will allow owners and operators to get more out of what they already have, increasing capacity, efficiency and resilience and improving services.

It brings better performance at lower cost. Gaining more from existing assets is the key to enhancing service provision despite constrained finance and growing resource scarcity.

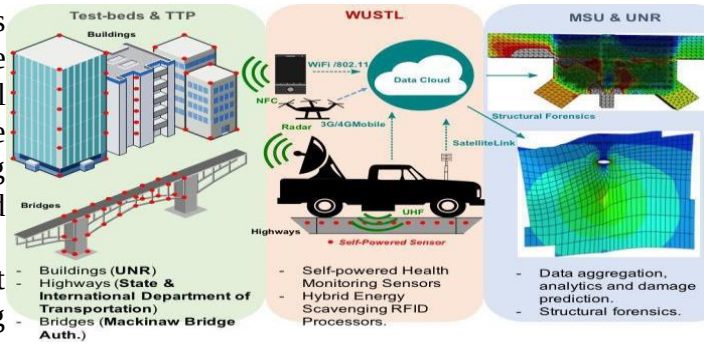


Figure 16 Smart Infrastructure

It will often be more cost-effective to add to the overall value of mature infrastructure via digital enhancements than by physical enhancements – physical enhancements add `more of the same', whereas digital enhancements can transform the existing as well.

Data is the key – the ownership of it and the ability to understand and act on it. Industry, organizations and professionals need to be ready to adjust in order to take advantage of the emerging opportunities. Early adopters stand to gain the most benefit.

Everyone in the infrastructure sector has a choice as to how fast they respond to the changes that Smart Infrastructure will bring. But everyone will be affected. Change is inevitable. Progress is optional. Now is the time for the infrastructure industry to choose: to be Smart.

3.7 Cyber Security

Smart city technologies capture data relating to all forms of privacy and drastically expand the volume, range and granularity of the data being generated about people and places. Privacy can be threatened and breached by a number of practices which are normally treated as unacceptable, however are part of operations in a smart city eco system.

As mentioned previously, smart city technologies have large attack surfaces that have a number of vulnerabilities, especially in systems that contain legacy components using old software which has not been regularly patched. Technology solutions aim to use best practices to mitigate these risks and keep the data safe and secure.

The aim of the technological solutions is to reduce the attack surface as much as possible and to make the surface that is visible as robust and resilient as possible.

These solutions include:

1. End-to-end encryption

2. Strong password policy
3. Up-to date firewalls, anti-virus
4. Isolation of trusted resources from public resources
5. Implement manual over rides on all systems

3.8 District Cooling & Heating

District Cooling

District cooling is the cooling equivalent of district heating. Working on broadly similar principles to district heating, district cooling delivers chilled water to buildings like offices and factories needing cooling. In winter, the source for the cooling can often be sea water, so it is a cheaper resource than using electricity to run compressors for cooling.

District Heating

District heating is a system for distributing heat generated in a centralized location for residential and commercial heating requirements such as space heating and water heating. The heat is often obtained from a cogeneration plant burning fossil fuels but increasingly also biomass, although heat-only boiler stations, geothermal heating, heat pumps and central solar heating are also used, as well as nuclear power.

District heating plants can provide higher efficiencies and better pollution control than localized boilers. According to some research, district heating with combined heat and power (CHPDH) is the cheapest method of cutting carbon emissions, and has one of the lowest carbon footprints of all fossil generation plants.

3.9 Strategic Options for Fast 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

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 than more intensive infrastructure service levels and a large number of smart applications will be packed into the retrofitted smart city. This strategy may also be completed in a shorter time frame, leading to its replication in another part of the city.

Redevelopment

Redevelopment will affect a replacement of the existing built-up environment and enable co- creation of a new layout with enhanced infrastructure using mixed land use and increased density. Redevelopment envisages an area of more than 50 acres, identified by Urban Local Bodies (ULBs) in consultation with citizens. For instance, a new layout plan of the identified area will be prepared with mixed land-use, higher FSI and high ground coverage.

Greenfield Development

Greenfield development will introduce most of the Smart Solutions in a previously vacant area which is more than 250 acres using innovative planning, plan financing and plan implementation tools with provision for affordable housing, especially for the poor. Greenfield developments are required around cities in order to address the needs of the expanding population. One well known example is the GIFT City in Gujarat. Unlike retrofitting and redevelopment.

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

Climate change is predicted to cause significant in precipitation and temperature patterns, affecting the availability of water.

Population growth and urbanization are enforcing rapid changes leading to a dramatic increase in high-quality water consumption. Frequently, this demand for water cannot be satisfied by the locally available water resources, while the discharge of insufficiently treated wastewater increases costs for downstream users and has detrimental effects on the aquatic systems.

Urban Sanitation Challenges

More than 40% of the world's population lacks improved sanitation facilities, and India's urban sanitation coverage rate is only 50%.

Consequences of poor sanitation are devastating on human health and the environment.

Many urban areas provide access to toilets, yet often upkeep is lacking, seepage is not well managed, and sewerage is discharged untreated.

It must also ramp up the waste treatment facilities so that water bodies are not polluted by effluent discharge.

One of the major challenges for the government is to elevate India to the international levels of urban sanitation that is found in developed counties. - Health Risks Along the Entire Sanitation Chain

3.11 Initiatives in village development by local self-government

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 do not have the capacity to provide adequate services at present, let alone address the requirements of accelerated urban growth in the future. Proposals relate to three types of institutions.

3.12 Smart Initiatives by District Municipal Corporation

At present, Gandhinagar Municipal Corporation (GMC) is in the process of revising the Smart city proposal for second round participation.

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 the space or the wherewithal to dispose of waste. The challenge is going to be tougher.

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

1. DRDA Administration
2. PradhanMantri Awas Yojana (Grameen)
3. MGNREGA-2005
4. National Social Assistance program
5. PradhanMantri Gram Sadak Yojana
6. Prime Minister Rural Development Fellowship

Projects/ schemes by private sector:

1. Ministry of Rural Development schemes
2. Non- Ministry of Rural Development schemes
3. Financing
4. Capital Grant under RURA

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

Integrated biomass and solar town concept for a smart eco village in Iskandar Malaysia (2014):

This paper presents a new integrated biomass and solar town concept that can serve as a global model for smart eco-villages in tropical countries. The proposed model considers actual operation constraints due to biomass availability, weather variation, and restriction of the thermal plant. The application of this new concept on the Iskandar Malaysia (IM) case study with an average daily demand load of 16,900 kWh/d revealed that a 417-kW direct-fired biomass power generator, 412 kW biogas thermal power plant, 136 kW solar photovoltaic (PV) modules, and sodium Sulphur battery with an energy capacity of 3046 kWh and power of 1530 kW were required. The annual cost of the integrated biomass and solar town was estimated to be approximately RM 3 million at an electricity cost of RM 0.48/kWh.

Village-level solar power in Africa: Accelerating access to electricity services through a socio-technical design in Kenya (2014):

Village-level solar power supply represents a promising potential for access to electricity services. The analysis includes the reasons for its socio-technical design, and the actual functioning of the model. The research shows that an energy centre model can cover basic electricity needs in areas with dispersed settlement patterns, where mini-grid based systems as well as conventional grid extension meet significant challenges. Close attention to the socio- cultural context and the challenges of users, operators and managers is required. Our research draws on theories of socio-technical change and users' innovation, and presents a five step analytical framework for analysis of village-level power provision.

Solar power energy solutions for Yemeni rural villages and desert communities (2016):

According to UNDP Policy Note 2014, only 23% of Yemen rural community have access to electricity – having connected to national grid or use small isolated generating units – while the country is one of the richest in solar energy with over 3000 h per year clean blue sky. Otherwise, energy poverty that is a facet of a multidimensional poverty in Yemen will persists because the possibility of connecting rural communities to the national grid, even in

the next ten years, is invisible due to major political and financial problems that the country is facing. Moreover, PV energy is environmentally clean and has proved to be one of the best solutions for rural electrification in many countries worldwide due to noticeable drop of PV systems prices with the advance in PV technology. Accordingly, it should be the best solution for rural electrification in Yemeni as well. The paper demonstrates the cost effectiveness and the design procedure of utilization of solar energy for rural and desert communities in Yemen using a number of subsequent cases typical to Yemeni communities and provides also a practical study to support Bedouin backpackers.

3.15 Electrical concept

- Rural electrification under Minimum Needs Programme launched in1974
- Kutir Jyoti Yojana to provide single point light to below poverty level (BPL) families in.

DDUGJY AIMSAT

- Separation of agriculture and non-agriculture feeders.
- Strengthening and augmentation of sub-transmission and distribution infrastructure in rural areas including metering of distribution transformers feeders/consumers.

Technology

Renewable off-grid enterprises have emerged in many areas to meet the demand for electricity in rural communities.

Photovoltaics, Wind mechanical water pumps, Small wind electric, Diesel solar hybrid power systems: especially for telecommunications worldwide, Bio energy, Micro hydro is very widely implemented in Nepal, Vietnam, and China., Hybrid power is also widely used where a number of different technologies are combined to provide a single power source., LED street light with solar panel, Digital energy meter, Use of necessary device for reducing looses, Low cost with good quality wiring system infrastructure, Regular checkup & maintenance, Planned power distribution system , More use of LED Bulbs

Chapter 4
About Manpur Village

4.1 Introduction

4.1.1 Introduction About Manpur Village details

According to Census 2011 information the location code or village code of Manpur village is 362260. Manpur village is located in Mendarada Tehsil of Junagadh district in Gujarat, India. It is situated 13km away from sub-district headquarter Mendarada and 18km away from district headquarter Junagadh. As per 2009 stats, Manpur village is also a manpur gram panchayat.

The total geographical area of village is 1102.33 hectares. Manpur has a total population of 1,506 peoples. There are about 320 houses in Manpur village. As per 2019 stats, Manpur villages comes under Manavadar assembly & Porbandar parliamentary constituency. Mendarada is nearest town to Manpur which is approximately 13 km away

Table 10 Manpur CESUS Data

Manpur - Village Overview	
Manpur gram panchayat :	Manpur
Block / Tehsil :	Mendarada
District :	Junagadh
State :	Gujarat
Pincode :	362260
Area :	1102.33 hectares
Population :	1,506
Households :	320
Assembly Constituency :	Manavadar
Parliament Constituency :	Porbandar
Nearest Town :	Mendarada (13 km)

Manpur 2011 Census Details

Manpur Local Language is Gujarati. Manpur Village Total population is 1450 and number of houses are 320. Female Population is 47.2%. Village literacy rate is 74.0% and the Female Literacy rate is 31.7%.

Table 11 Manpur Population Details

Census Parameter	**Census Data**
Total Population	1450
Total No of Houses	320
Female Population %	47.2 % (450)
Total Literacy rate %	74.0 % (650)
Female Literacy rate	31.7 % (676)
Scheduled Tribes Population %	1.5 % (32)
Scheduled Caste Population %	16.1 % (344)
Working Population %	62.1 %
Child(0 -6) Population by 2011	185
Girl Child(0 -6) Population % by 2011	43.2 % (80)

4.1.2 Justification/ need of the study

Almost 69% of our population lives in villages and the need to be provided with the best of facilities and lifestyle to take India forward as a country. Being future civil engineers, it is our duty to observe even the smallest issue and work towards its improvement. Even if a small amount of people migrates from villages to cities the pressure on the city increases, be it: overcrowding, pollution, traffic etc., this affects the whole nation Migration occurs mainly due to job opportunities and better facilities like hospitals, educational facilities etc. provided in urban area. To increase liveliness of village by providing good sanitation facilities, good infrastructure, basic requirements like pucca houses or awaas, water supply etc. are required considering the environmental and need of people.

4.1.3 Study Area (Broadly define)

Manpur is a village placed in Mendarada Block of Junagadh district in Gujarat. Positioned in rural region of Junagadh district of Gujarat, it is one among the 46 villages of Mendarada Block of Junagadh district. As per the administration records, the village number of Manpur is 362260. The village has 320 homes.

Manpur is a Village in Mendarada Tehsil of Junagadh District of Gujarat State, India. It is situated 13 KM away from sub - District head-quarters Mendarada and 18 km away from

district head quarter Junagadh. 369 KM from State capital Gandhinagar. As per 2009 stats, Manpur village is also a manpur gram panchayat.

Nearby Villages of Manpur:

Patrapsar (8 KM), Bantiya (8 KM), Navlakhi (9 KM), Taliyadhar (9 KM), Chudva (9 KM) are the nearby Villages to Manpur.

Manpur is surrounded by Mendarada Taluka towards South, Manavadar Taluka towards west, Junagadh Taluka towards East, Upleta Taluka towards North.

Junagadh, Upleta, Manavadar, Keshod are the nearby Cities to Manpur.

4.1.4 Objectives of the study

Following are the various objectives of the study:

- To collect data through techno-economic survey of Manpur village.
- To analyze basic social and physical infrastructure.
- To analyze existing public infrastructure.
- To promote integrated development of rural areas with provision of quality housing, better connectivity, employment opportunities and supporting physical and social infrastructure.
- To promote integrated development.
- To reduce migration from rural to urban areas due to lack of basic services and sufficient economic activities in rural areas.
- To propose the comprehensive planning suited for ideal village.

4.1.5 Scope of the Study

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

Figure 15 Methodology Framework

4.1.7 Available Methodology for development of related to Civil/Electrical

Civil:
Various type method for Roads
Water Tank facilities
Storm Water network
Various type of method for Transportation
Manpur gram panchayat Building
School Building
Physical Infrastructure

Electrical:
Solar Energy
Other Renewable
House hold electricity
Use of non-conventional energy sources
Electricity Networks
Biomass Energy
Street light facilities
Electrical wiring method

4.2 Manpur Study Area Profile

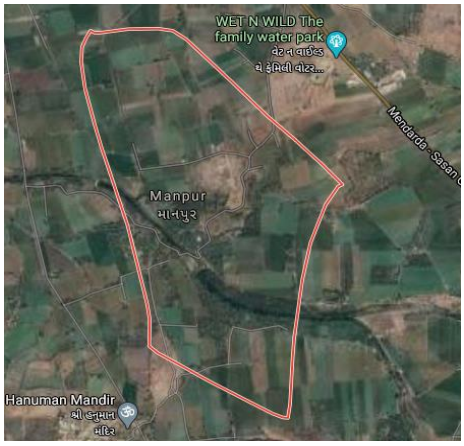
4.2.1 Study Area Location with brief History land use details

Manpur
Block / Tehsil → Mendarada
District → Junagadh
State → Gujarat

About Manpur

According to Census 2011 information the location code or village code of Manpur village is 362260. Manpur village is located in Mendarada Tehsil of Junagadh district in Gujarat, India. It is situated 13km away from sub-district headquarter Mendarada and 18km away from district headquarter Junagadh. As per 2009 stats, Manpur village is also a manpur gram panchayat.

The total geographical area of village is 1102.33 hectares. Manpur has a total population of 1,506 peoples. There are about 320 houses in Manpur village. As per 2019 stats, Manpur comes under



Manavadar assembly & Porbandar parliamentary constituency. Mendarada is nearest town to Manpur which is approximately 13km away.

4.2.2 Base Location map, Land Map, Gram Tal Map

Figure 16 Gram Tal Map

Figure 13 Land Map

Figure 18 Manpur Map

4.2.3 Physical & Demographical Growth

Table 12 Census – Demographic Data

#	Category	Total	Male	Female
1	**Total Population**	1450	1000	450
2	**Child Population(0-6 years)**	185	105	80
3	**Scheduled Caste Population**	344	180	164
4	**Scheduled Tribe Population**	32	15	17
5	**Literates Population**	650	350	300
6	**Illiterates Population**	200	130	70
7	**Workers Population**	670	470	200
8	**Non-Workers Population**	808	416	392

4.2.4 Economic generation profile / Banks

About the economic profile of this village, most of the villagers are interested in farming and labor work. The village doesn't have any better facilities regarding infrastructure but has good electrification system which distributed 24*7 hours for domestic use and 8 hours for agricultural use. Agriculture is the main occupation of Manpur Village. Majority crops taken in the village are wheat, gram and groundnut. Some of the peoples are also running their stores. Dairy and milk production are the secondary source of income.

Table 13 HOUSE OWNERSHIP, LAND OWNERSHIP, MONTHLY INCOME

	House Ownership			Land Owned			Households with Highest Earning member Income as		
Village	**Owned**	**Rented**	**Any Other**	**Total unirrigated land (in hectares)**	**Total irrigated land (in hectares)**	**Total other irrigated land (in hectares)**	**Less than Rs. 5,000**	**Between Rs. 5,000 and Rs 10,000**	**Rs. 10,000 or more**
Manpur	428	14	0	180.20	720	822.10	104	240	98

Total	**428**	**14**	**0**	**180.20**	**720**	**822.10**	**104**	**240**	**98**

Table 14 MAIN SOURCE OF HOUSEHOLD INCOME

Village	Cultivation	Manual Casual Labour	Part-time or Full-Time Domestic Service	Foraging Rag Picking	Non-agricultural Own Account Enterprise	Begging/Charity/ Alms collection	Others
Manpur	291	126	1	0	0	1	23
Total	**291**	**126**	**1**	**0**	**0**	**1**	**23**

4.2.5 Actual Problem faced by Villagers and smart solution

Table 15 Problems faced in different domain and Suggestions

Village:Manpur	Strength	Moderate Gap	Critical Gap		
Domain	**Parameter Description**	**Village Status**	**Status of Manpur gram panchayat**		**Suggestions**
Agriculture	Number of households engaged majorly in Non-Farmactivities	115[24.73%]	115[24.73%]		Contact the Block Mission Manager, National Rural Livelihood Mission of yourstate.
	Availability of governmentseed centres	No (Nearest facility More than 10kms)	No (Nearestfacility More than 10 kms)		
	Whether this village is a partof the Watershed Development Project	Yes	Yes		
	Availability of Community Rain Water Harvesting System/Pond/Dam/Check Dam etc.	Yes	Yes		
	Does the village has any Farmers Collective	Farmers Produce Organization (FPOs)	Farmers Produce Organization (FPOs)		
	Availability of warehouse forFood Grain Storage	Yes	Yes		
	Availability of Primary Processing facilities at thevillage level	Yes	Yes		
	Does the village have accessto Custom Hiring Centre (Agri-equipments)	No	No		
Land Improvement &Minor	Availability of soil testingcentres	No	No		Anyone from the village canopen soil testing centre.

Irrigation	Availability of fertilizer shop	Yes	Yes		
	Main Source of irrigation	Ground water (tube well)	Ground water (tube well/pump)		
	Number of farmers using drip/sprinkler irrigation	7[0.93%]	7[0.93%]		
	Total area irrigated (in hectare), If in acres divide by2.47	850.6[93.41]	850.6[93.41]		Call Kisan call centre 1800-180-1551.
Animal Husbandry	Does the village have Livestock Extension services	Livestock Extension Officer	LivestockExtension Officer		Call agriculture helpline1094 for details
	Availability of Milk CollectionCentre /Milk routes / ChillingCentres	Yes	Yes		
	Any Project supporting Poultry Development	Yes	Yes		
	Any Project supporting Goatary Development	Yes	Yes		
	Any Project supporting PigeryDevelopment	Yes	Yes		
Animal Husbandry	Availability of Veterinary Clinic or Hospital	Yes	Yes		
Rural Housing	No of household with kucchawall and kuccha roof (KutchaWall is Grass/thatch/bamboo etc, Plastic/polythene, Mud/ unburnt brick ,Wood, Stone not packed with mortar,Kutcha Roof is Grass/ thatch/ bamboo/ wood/ mud etc, Plastic/ polythene, Hand made tiles	1[0.22%]	1[0.22%]		Check the waiting list forPMAY-G.
Drinking Water	Availability of Piped tap water	100% habitations covered			
Roads	Whether the village is connected to All weather road	Yes	Yes		
	Whether village has internalpucca roads (cc/ brick road)	Fully covered			MGNREGA can be used to create internal cc/brick road.
	Availability of Public Transport	Bus	Bus		
	Availability of Railway Station	No (Nearest facility10-20 kms)	No (Nearestfacility10-20 kms)		
Rural Electrification	Availability of electricity fordomestic use	>12 hrs			Renewable electricity equipments can be used atsusidized rates.
Non Conventional Energy	Use of Solar Energy/Wind Energy for electrification ofthe house	No	No		
Maintenance of Community Assets	Availability of PanchayatBhawan	Yes	Yes		
	Is there a Common ServiceCentre (CSC) in the village	Colocated with Panchayat	Colocated with Panchayat Bhawan		

		Bhawan			
	Availability of Public Information Board underPeople's Plan Campaign	Available andupdated	Available andupdated		
Fuel & Fodder	Common pastures as perrevenue records	Yes	Yes		
Libraries	Availability of Public Library	Yes	Yes		
Cultural Activities	Availability of recreational centre/Sports Playground etc	Both	Both		
Financial & Communication Infrastructure	Availability of banks	Yes	Yes		
	Availability of Business Correspondent with internetconnectivity?	Yes	NA		

4.2.6 Social scenario -Preservation of traditions, Festivals, Cuisine

Table 16 Social Scenario

Social Security	No of beneficiaries receiving benefits under Pradhan Mantri Matru Vandana Yojana	5[100.00%]	5[100.00%]
	No. of beneficiaries receiving benefits under Aayushman Bharat-Pradhan Mantri Jan Arogya Yojana or any State Govt Health scheme	20[100.00%]	20[100.00%]
	Total no of households receiving food grains from Fair Price Shops	160[100.00%]	160[160%]
	Total number of farmers in the age of 18-40 years subscribed to Pradhan MantriKisan Pension Yojana (PMKPY)	20[66.67%]	20[20%]

4.2.7 Migration Reasons / Trends

This question was asked of that person who had come from elsewhere to reside at the place of enumeration. The code used are: Work/employment-1, Business-2, Education-3, Marriage-4, Moved after birth-5, Moved with household-6 and Any other-7. The reason for migration was determined as applicable at the time of migration and not in reference to any point of time after that. For example, if a person had moved from the place of her/his last residence for the purpose of education and subsequently at some point of time got employment there only, the reason for migration was taken to be 'education' and not 'work/employment'.

Migration Reasons as per the data available in Village Profile & Taluka Planning Atlas:

1. Number of families who have migrated from village to village/city to get higher education are 200.
2. Number of families who have migrated from village to other place in the country are 55.
3. Number of families who have migrated from village to out of the country are 25.

Other reasons: Lack of physical and infrastructure facilities in the village like community hall, bank, PHC, etc.

Migration Trend:

One important facet of study on population is the study of migration arising out of various social, economic or political reasons. For a large country like India, the study of movement of population in different parts of the country helps in understanding the dynamics of the society better. At this junction in the economic development, in the country, especially when many states are undergoing faster economic development, particularly in areas, such as, manufacturing, information technology or service sectors, data migration profile of population has become more important.

4.3 Data Collection Manpur Village (Photograph/Graphs/Charts/Table)

4.3.1 Describe Methods for data collection

A detailed baseline survey was undertaken which involved household census survey and Village level data collection from Sarpanch and Galati Mantri. This gave in the details of

the demographic profile of the village, the literacy percentage, SC/ST population, cattle population and net consumption rate in the village, average milk production of the cattle and various schemes running and their benefits physical survey was undertaken to identify various natural resources available in the village. It included the soil typology, well in the area, crop taken in the field, cropping pattern, fertilizer used and various sources of irrigation in the field.

4.3.2 Primary details of survey details

Manpur is a large village located in Mendarada Taluka of Junagadh district, Gujarat with total 320 families residing. The Manpur village has population of 1450 of which 1000 are males while 450 are females as per Population Census 2011.

In Manpur village population of children with age 0-6 is 185 which makes up 8.67 % of total population of village. Average Sex Ratio of Manpur village is 893 which is lower than Gujarat state average of 919. Child Sex Ratio for the Manpur as per census is 762, lower than Gujarat average of 890.

Manpur village has higher literacy rate compared to Gujarat. In 2011, literacy rate of Manpur village was 81.06 % compared to 78.03 % of Gujarat. In Manpur Male literacy stands at 88.36 % while female literacy rate was 73.00 %.

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

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

In Manpur: Average size of the house in the village is 5 X 10m

Geo-Tagging: The process of tagging infrastructure with geographical information like Latitude, Longitude, Distance, place name, etc. It is connected to GPS which are monitored through computer internet networks. It can be used to locate important places like labs, dispensaries, milk center, etc. Geo Tagging is not implemented in Manpur village.

4.3.4 No of Human being in One House

Total number of populations in Manpur is 2040 as per 2011 census. There are different number of people in each house as there are nuclear families as well as joint families, but the average no of human beings in one house is 4.

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

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

4.3.6 Geographical Detail

Time zone: IST (UTC+5:30)

Elevation / Altitude: 40 meters. Above Seal level

Latitude:21.3892073

Longitude: *70.742442*

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

Table 17 CESUS 2011 Demographical Details

Village	Total Population	SC Population	ST Population	Male	Female	Transgender
Manpur	2040	343	7	1079	961	0
Total	**2040**	**343**	**7**	**1079**	**961**	**0**

4.3.8 Occupational Detail - Occupation wise Details / Majority business

Major occupation of the village is farming so there are no more locally material available. So, this material is brought from the nearest city for the construction of houses and they also doo Bee Keeping, Sericulture (Silk Production), Handloom, Handicrafts.

Table 18 Occupational Detail

Village	Cultivation	Manual Casual Labour	Part-time or Full-Time Domestic Service	Foraging Rag Picking	Non-agricultural Own Account Enterprise	Begging/ Charity/ Alms collection	Others
Manpur	291	126	1	0	0	1	23
Total	**291**	**126**	**1**	**0**	**0**	**1**	**23**

4.3.9 Agricultural Details / Organic Farming / Fishery

Table 19 Agricultural Details

Domain	Parameter Description	Village Status	Status of Grampnchayat
Agriculture	Number of households engaged majorly in Non-Farm activities	115[24.73%]	115[24.73%]
	Availability of government seed centres	No (Nearest facility More than 10 kms)	No (Nearest facility More than 10 kms)
	Whether this village is a part of the Watershed Development Project	Yes	Yes
	Availability of Community Rain Water Harvesting System/Pond/Dam/Check Dam etc.	Yes	Yes
	Does the village has any Farmers Collective		Farmers Produce Organization (FPOs)

		Farmers Produce Organization(FPOs)	
	Availability of warehouse for Food Grain Storage	Yes	Yes
	Availability of Primary Processing facilities at the village level	Yes	Yes
	Does the village have access to Custom Hiring Centre (Agri-equipments)	No	No
Fisheries	Pisciculture - InLand Fishery/Coastal Fishery/Any Other	No	No
	Community Ponds Used for Fisheries	No	No
	Extension facilities for Aquaculture	No (Nearest facility More than 10kms)	No

4.3.10 Physical Infrastructure Facilities - Manufacturing HUB / Ware Houses

There is no Manufacturing HUB or Ware House in the village.

4.3.11 Tourism development available in the village for attracting the tourist

There is no tourism cluster in the village.

4.4 Infrastructure Details (With Exiting Village Photograph)

Figure 20 Manpur Entrance Gate

Figure 21 Manpur Internal Roads

Figure 22 Manpur Aangadvadi

4.4.1 Drinking Water / Water Management Facilities

Availability of Piped tap water, for drinking purpose there are two overhead water tanks in Manpur village. One overhead tank has 50000 liters of capacity and other tank is of 20000 liters of capacity. Water is supplied through underground pipes to the houses.

4.4.2 Drainage Network / Sanitation Facilities

Underground Drainage System is available in the village. It has closed drainage system.

4.4.3 Transportation & Road Network

For local transportation public uses auto rickshaws and private vehicles. State Road Transport bus service is available in the village. Nearest Railway Station is at distance of about 13 kms at Vanthli.

4.4.4 Housing condition

No of household with kuccha wall and kuccha roof (Kutcha Wall is 1- Grass/thatch/bamboo etc 2- Plastic/polythene 3- Mud/unburnt brick 4-Wood 5- Stone not packed with mortar, Kutcha Roof is 1- Grass/thatch/bamboo/wood/ mud etc 2- Plastic/polythene 3 -Handmade tiles [0.22%]. Total no of households using clean energy (LPG/Bio gas) 126[27.10%] and No of households having piped water connection 320[100.00%]

Figure 23- Housing Conditions

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

Health Facilities: There is a Public Health Centre in the village.

Education Facilities: There are 2 Government primary schools and a private primary school. There is government secondary and higher secondary school in the village.

Community Hall: There is no community hall in the village.

Library: There is no public library in the village.

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

Existing condition of the public buildings are in good condition.

4.4.7 Technology Mobile/ WIFI / Internet Usage Details

Most of the people in the village use smart phones. There is good network coverage in the residential area of the village. There is no Wi-Fi in the village.

4.4.8 Sports Activity as Manpur gram panchayat

There is no sports activity by the manpur gram panchayat.

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

There is one river passing through village. There is no public garden or park or playground in the village. Solid waste is disposed in the surroundings of the road area. So, proper solid waste management and development of side ways is necessary.

Figure 25 Manpur's River

Figure 26 Garbage around sideways

4.5 Electrical Concept

4.5.1 Renewable energy source planning particularly for villages

Figure 27 Renewable Energy

Nearly 73 % of India's population lives in more than 5.5 lakh villages. The ministry has been supporting programs for the use of renewable energy products and devices such as biogas plants, solar thermal systems, photovoltaic devices, biomass gasifiers, etc. as well as the Integrated Rural Energy Programme. Renewable energy is derived from natural processes that are replenished constantly. In its various forms, it derives directly from the sun, or from heat generated deep within the earth. Included in the definition is electricity and heat generated from solar, wind, ocean, hydropower, biomass, geothermal resources, and biofuels and hydrogen derived from renewable resources. Renewable energy source plans like Biogas power generation, storing of rain water by rainwater harvesting system, use of solar energy, use of wind power etc. may be used. These renewable energies may be used for power generation, heating and for transportation purpose.

4.5.2 Irrigation Facilities

Irrigation is the application of controlled amounts of water to plants at needed intervals. **Irrigation** helps to grow agricultural crops, maintain landscapes, and revegetate disturbed soils in dry areas and during periods of less than average rainfall.

4.5.3 Electricity Facilities with Area

In the Manpur village the no local source of electrical energy is available. Source of Electricalenergy is only one that is Governmental electrical energy which is supplied from substation. Under the Jyoti gram Yojana government provide 24hour power supply to respective village power produced GETCO and distribute by PGVCL (private sector). Electricity is the basic need for the better facilities.

4.6 Existing Institution like - Village Administration – Detail Profile

4.6.1 Bachat Mandali

There is no Bachatmandali.

4.6.2 Dudh Mandali

There is one Dudhmandali.

4.6.3 Mahila forum

No mahila forum founded in village.

4.6.4 Plantation for the Air Pollution

Highway is near the village one air cleaning plantation is needed.

4.6.5 Rain Water Harvesting - Waste Water Recycling

There is availability of Community Rain Water Harvesting System/Pond/Dam/Check Dam etc.

4.6.6 Agricultural Development

Agriculture awareness and Technology implement is needed for Best Irrigation development

Chapter 5
Sustainable Technical Options with Case Studies of the Existing Village

5.1 Concept (Civil)

5.1.1 Advance construction techniques

The technologies on this list are among the most important advanced construction technologies that are making their way into the field of civil engineering.

Self-healing concrete

Cement is one of the most widely used materials in construction, but also one of the largest contributors to harmful carbon emissions, said to be responsible for around 7 per cent of annual global emissions. Cracking is a major problem in construction, usually caused by exposure to water and chemicals. Researchers at Bath University are looking to develop a self-healing concrete, using a mix containing bacteria within microcapsules, which will aid building innovation by germinating when water enters a crack in the concrete to produce limestone, plugging the crack before water and oxygen has a chance to corrode the steel reinforcement.

Thermal bridging

Efficient insulation material is becoming increasingly important throughout the construction industry. Heat transmission through walls tends to be passed directly through the building envelope, be it masonry, block or stud frame, to the internal fascia such as drywall. This process is known as “thermal bridging”. Aerogel, a technology developed by Nasa for cryogenic insulation, is considered one of the most effective thermal insulation materials and US spin-off Thermablok has adapted it using a proprietary aerogel in a fiber glass matrix. This can be used to insulate studs, which can reportedly increase overall wall R- value (an industry measure of thermal resistance) by more than 40 per cent.

3D Printing

Sometimes known as ‘additive manufacturing’, 3D printing uses a printer to build objects layer by layer. 3D printers are being designed to work with increasingly complex materials; the latest models are capable of combining different materials together in a single object. This development has opened up entirely new possibilities for the construction industry. 3D printing can be used to construct either a small component or even an entire building.

Modular Construction

Modular construction is one of the most popular developments in civil engineering where a building is constructed off-site using the same materials and designed to the same standards as conventional on-site construction. This innovative building technique limits environmental disruption, delivering components as and when needed, and turning construction into a logistics exercise. It also has strong sustainability benefits, from fewer vehicle movements to less waste. With up to 70 per cent of a building produced as components, it allows a move towards “just in time” manufacturing and delivery. In use in the United States and UK, Chinese developer Broad Sustainable Building recently completed a 57-storey skyscraper in 19 working days using this method.

Photovoltaic Glaze

Building integrated photovoltaic (BIPV) glazing, which can help buildings generate their own electricity, by turning the whole building envelope into a solar panel. Companies such as Polysolar provide transparent photovoltaic glass as a structural building material, forming windows, façades and roofs. Polysolar's technology is efficient at producing energy even on north-facing, vertical walls and its high performance at raised temperatures means it can be double glazed or insulated directly. As well as saving on energy bills and earning feed-in tariff revenues, its cost is only marginal over traditional glass, since construction and framework costs remain, while cladding and shading system costs are replaced.

Smart Bricks

The technologies on this list are among the most important advanced construction technologies that are making their way into the field of civil engineering. Smart bricks are modular connecting bricks and are similar to 'Lego.' Made out of high strength concrete and developed by 'Kite Bricks', smart bricks are versatile and come with substantial thermal energy control and a reduction in construction costs. As they are modularly designed, they are easy to connect and have space for insulation, electricity and plumbing.

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

Causes Prevention and Repair of Cracks in Building

Cracks in building are a common occurrence. It affects the stability and appearance of buildings. So, it is important to understand the cause of cracks and the effective ensures should be taken for prevention. Though cracks in concrete cannot be prevented entirely but they can be prevented by using proper material and technique of construction and considering criteria. Sometimes water penetrates through cracks in building and cause severe damage to building.
Keywords- Crack, Structural Failure, Concrete, Causes, Prevention, Repair Technique, Epoxy, Grouting

Cracks are the most common problem that occurs in any type of concrete structure such as, beams, columns, etc. A building component develops cracks whenever stress in the component exceeds its strength. Stress in a building component could be caused by externally applied forces such as, dead, live, wind or seismic loads and internal forces such as, moisture changes, thermal movements and chemical reaction. There are numerous causes of cracking in concrete, but most instances are related more too concrete specifications and construction practices than by stresses due to induced forces.

1. Size of Cracks
2. Shape of Cracks
3. Causes of Cracks

Repair of Cracks:

The repair of cracks can be achieved with the following techniques:

1. By epoxy-injection grouting
2. By routing and sealing
3. By flexible sealing
4. By stitching
5. By providing additional reinforcement
6. By drilling and plugging
7. By prestressing steel
8. By grouting

9.Dry packing
10. Overlays
11. Autogeneous healing
12. Surface coatings

Rectification methods used to uplift over tilted buildings include

1. Compaction grouting method
2. Chemical grouting method
3. Underpinning method
4. Micro-Tunneling method

Rehabilitation techniques

Here are several effective physical rehabilitation techniques for use in critically ill patients.

1. Encourage movement. ...
2. Perform chest percussion or courage.
3. Use vibration.
4. Position the patient appropriately.

5.1.3 Disaster management in natural calamities

Disaster management in India refers to conservation of lives and property during a natural and man-made disaster. Disaster management plans are multi-layered and are planned to address issues such as floods, hurricanes, fires, mass failure of utilities and the rapid spread of disease.

5.1.4 Various types of Roads / Intelligent transport system

A. Types of Roads Based on Materials

1. Earthen roads

Earthen roads are laid with soil. They are cheaper of all types of roads. This type of road is provided for less traffic areas and or for countryside areas. Good drainage system should be required which reflects good performance for longer period.

Figure 285 Earthen Road

2. Gravel roads

Gravel roads are also low-quality roads but they are good when compared to earthen roads. Compacted mixture of gravel and earth is used as pavement material in this case.

Figure 29 Gravel Road

3. Murrum roads

Murrum is a matter obtained from the disintegration of igneous rocks by weathering agencies. This is used to make roads called as Murrum roads.

Figure 30 Murrum Road

4. Kankar roads

Kankar is nothing but impure form of lime stone. Kankar roads are provided where lime is available in good quantity. These are also low quality and

performance wise they are similar to gravel and murrum roads.

5. **WBM roads**

Water Bound Macadam (WBM) roads contain crushed stone aggregate in its base course. The aggregates are spread on the surface and these are rolled after sprinkling water. WBM roads provides better performance compared to earthen, gravel, murrum and kankar roads. WBM roads are laid as layers about 10cm thickness of each layer. They are immediately under traffic.

Figure 31 Kankar Road

Figure 32 WBM Road

6. **Bituminous roads**

This are very popular roads around the world. They are most used roads in the world. They are low in cost and good for driving conditions. They are flexible and thickness of bituminous roads depends upon the subgrade soil conditions.

Figure 33 Bituminous Road

7. **Concrete roads**

Cement concrete is used to construct the pavements in case of concrete roads. These are very popular and costlier than all other types of roads. They are not flexible so, they require less maintenance. Concrete roads are suitable for high traffic areas. Concrete roads are laid with joints and time of construction is more.

Figure 34 Concrete Road

B. Types of Roads Based on Location and Function.

1. **National highways** are main roads of a particular country. They connect all major cities to the capital of the country. They run throughout the length and breadth of the country. Minimum two-lane road is provided for national highways.
2. **State highways** are second main roads which connect major parts of state with in it. State highway ultimately connects to the national highways.
3. **District roads** are provided with in the cities and connect markets and production places to state and national highways. Two types of district roads are there namely,
   I. Major district roads
   II. Minor district roads
4. **Rural roads or village roads** connect the nearby villages with each other. They lead to nearby town or district roads. Usually, low quality roads are provided as village roads because of low traffic.

C. Types of Roads Based on Traffic Volume.

1. **Light Traffic Roads** The roads which are carrying 400 vehicles daily on an average is called light traffic roads.
2. **Medium Traffic Roads** If a road carrying 400 to 1000 vehicles per day then it is said to be medium traffic road.
3. **High Traffic Roads** If a road is carrying is more than 1000 vehicles per day then it is considered as high traffic road.

D. Types of Roads Based on Rigidity.

1. **Flexible Roads** consists flexible layer as pavement surface which require good maintenance otherwise it can be disintegrated easily with heavy traffic. All types of roads except concrete roads are come under this category.
2. **Rigid Roads** Rigid pavements are non-flexible and cement concrete roads are come under this Category.

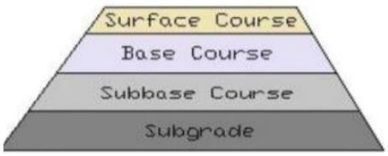


Figure 35 Flexible Pavement

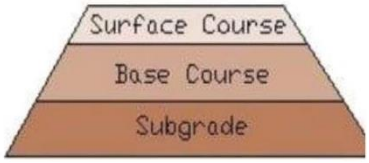


Figure 36 Rigid Pavement

5.1.5 Various type of Environmental Factors

There are two types of environmental Factors are as follow.

1. Physical Environmental Factors
2. Social Environmental Factors

1. Physical Environmental Factors

The factors in the physical environment that are important to health include harmful substances, such as air pollution or proximity to toxic sites (the focus of classic environmental epidemiology); access to various health-related resources (e.g., healthy or unhealthy foods, recreational resources, medical care); and community design and the built environment (e.g., land use mix, street connectivity, transportation systems).

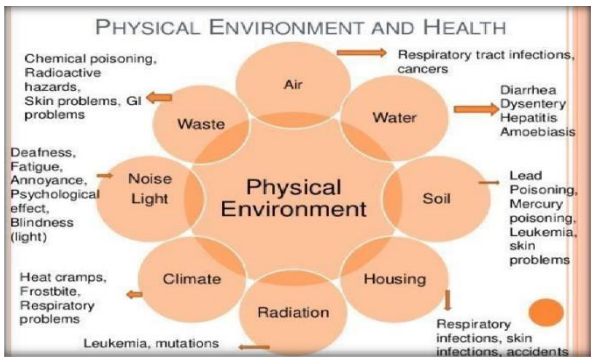


Figure 37 Physical Environmental Factors

2. Social Environmental Factors

Factors in the social environment that are important to health include those related to safety, violence, and social disorder in general, and more special factors related to the type, quality, and stability of social connections, including social participation, social cohesion, social capital, and the collective of the neighborhood (or work) environment. Social participation and integration in the immediate social environment (e.g., school, work and neighborhoods) appear to be important to both mental and physical health. What also seems important is the stability of social connections, such as the composition and stability of households and the existence of stable and supportive local social environments or neighborhoods in which to live and work.

5.1.6 E – waste disposal / Any West disposal

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

Electronic scrap components, such as CPUs, contain potentially harmful materials such as lead, cadmium, beryllium, or brominates flame retardants.

Electronic waste is emerging as a serious public health and environmental issue in India. India is the “fifth largest electronic waste producer in the world”; approximately 2 million tons of e-waste are generated annually.

E-waste is a popular, informal name for electronic products nearing the end of their "useful life." Computers, televisions, VCRs, stereos, copiers, and fax machines are common electronic products. Many of these products can be reused, refurbished, or recycled. There is an up gradation done to this E-waste garbage list which includes gadgets like Smartphone, tablets, laptops, video game consoles, cameras and many more.

Recycling is an essential element of e-waste management. Properly carried out, it should greatly reduce the leakage of toxic materials into the environment and mitigate against the exhaustion of natural resources. However, it does need to be encouraged by local authorities and through community education.

5.1.7 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure

Corrosion Process

The ingress of chloride ions (Cl-) to the level of the steel reinforcing bars destroys the passive film and initiates corrosion. This makes reinforced concrete structures in coastal areas and/or marine environments vulnerable to damage by corrosion of steel reinforcement.

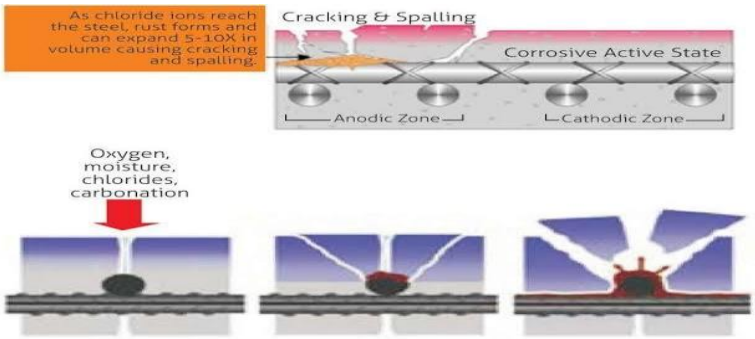


Figure 38 Corrosion Process

Prevention

Create slip joints under the support of RCC slab on walls. Masonry work on RCC slabs and beams should not be started before drying RCC slab and beam. Provide horizontal movement joints between the top of brick panel and RCC beam/slab.

Figure 39 Prevention

Repair Massure

This is the process of restoring something that is damaged or deteriorated or broken to good condition. Repairs are performed on damaged buildings to restore the strength after disaster.

5.2 Concept (Electrical)

5.2.1 Local / Out Source of Energy

Local Source of Energy

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

Out Source of Energy

Their Tinmas village electricity is delivered by Gujarat State Electricity Corporation Limited (GSECL) is a wholly owned subsidiary company of the Gujarat

Electricity Board (GEB), which came into existence in August 1993 after the unbundling of thereby.

It is a power generation company working in the territory of Gujarat, India. It delivers electricity through four distribution companies DGVCL, MGVCL, PGVCL, and UGVCL. PGVCL is supplied a electricity in Tinmas village.

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

Solar powered LED street light with auto intensity control. This project is driven by solar energy used to control the light intensity from morning to evening based on the brightness. This solar powered street light can conserve a large amount of electricity compared to the other lights.

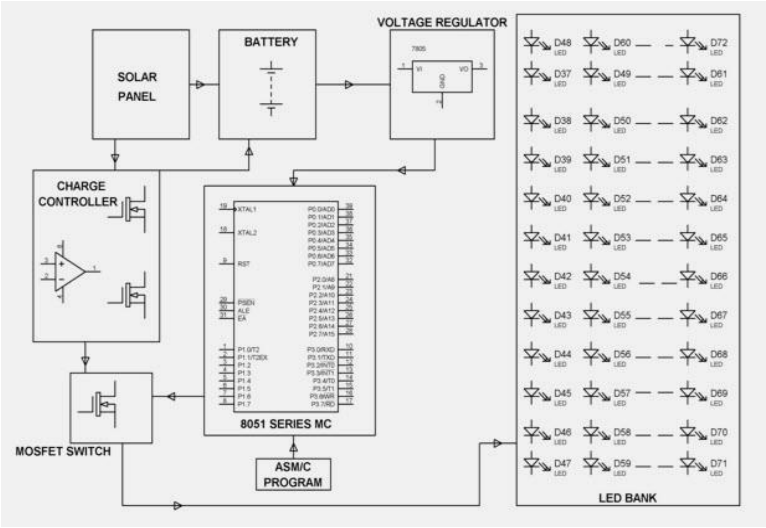


Figure 40 Solar Panel Circuit

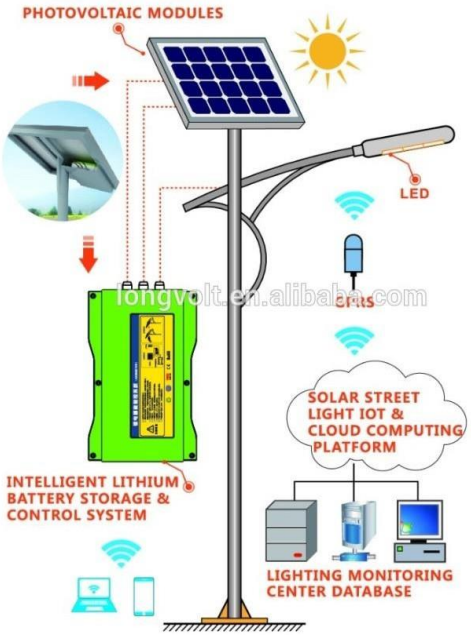


Figure 41 Solar Powered Street Light with aurto intensity control Circuit

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

5.2.3 Automatic Water Plant System / Designing of DC Motor Speed Control Unit /Irrigation Water Pump Controller for Illiterates Using GSM

Automatic Water Plant System

In this system, soil moisture sensor senses the moisture level of the soil. If soil will get dry then sensor senses low moisture level and automatically switches on the water pump to supply water to the plant. As plant get sufficient water and soil get wet then sensor senses enough moisture in soil. After which the water pump will automatically get stopped.

I have used a self-made water pump in this system using 5-volt DC motor. I could use 12-volt water pump in the system but to operate this, it will require a relay module. So, to reduce all these hardware complexities, I made DC motor-based water pump using diode, transistor and registers combined circuit which operates DC motor according to the Arduino code

Designing of DC Motor Speed Control Unit

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

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

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

Irrigation Water Pump Controller for Illiterates Using GSM

The main aim of this 3-phase irrigation water pump controller for illiterates using GSM modem project is to control the three-phase water pump by using GSM modem for illiterates. In this ECE project the mainly used components are two microcontrollers one microcontroller in control switch another at water pump, one microcontroller sends the data then another side have to perform the corresponding functionality, here two G.S.M modems are used in this project, to communicate the both pump side and switch side throw G.S.M the data is send to the other microcontroller. Between the water pump and microcontroller there is interfacing circuit for the interfacing, here two power supplies are needed to perform the operation of water pump, here use the LED indicators to display the information.

Figure 42 GSM Based Irrigation

The microcontroller used here operates at 5volts, this project equipment is more sensitive because here microcontrollers used, and illiterates can easily know the status of the motor by using LED indicator. The features of this project are easily interfaced, high voltage water pumps are easily controlled, more sensitive, the response is generated from the LED indicator, and wireless connection. To design this project designer should aware of embedded c programming, PCB connections, remote control. This project mainly used in houses.

5.2.4 Central Control Unit for Irrigation Water Pumps Construction

This project aims in providing a user friendly, reliable and automated water pumping system for illiterates. Now a day's technology is running with time, it completely occupied the life style of human beings. Even though there is such an importance for technology in our routine life there are even people whose life styles are very far to this well-known term technology. So, it is our responsibility to design few reliable systems which can be even

efficiently used by them. This basic idea gave birth to the project construction of central control unit for irrigation water pump controller for illiterates and this project aims in introducing the automation technology into the lives of the illiterates.

Automation is the most frequently spelled term in the field of electronics. The hunger for automation brought many revolutions in the existing technologies. One among the technologies which had greater developments is RF communications. The result of this is the RFID cards which transmit a unique identification number. This number transmitted by the RFID can be read with the help of a RF reader.

Here the automation process is done through the wireless RF technology. The RFID reader at the central control unit decodes the RFID tag of that particular user and fed this information as input to the microcontroller unit. The microcontroller transmits the information wirelessly through RF transmitter, to the RF receiver of the user's exact water pump connected to the microcontroller. The microcontroller takes the responsibility of controlling the water pump using relay.

Features:

- User friendly interfacing.
- Identification of water pumps through RFID technology.
- Feedback generated with the help of LED indicator.
- Controls high voltage water pumps.
- Wireless control of remote water pump using RF technology.
- Highly sensitive.

Applications:

- Utilized for irrigation purpose.
- For house hold automations.

5.2.5 Design of Sensing Soil Moisture Content by Auto Irrigation System

The automatic irrigation system on sensing soil moisture project is intended for the development of an irrigation system that switches submersible pumps on or off by using relays to perform this action on sensing the moisture content of the soil. The main advantage of using this irrigation system is to reduce human interference and ensure proper irrigation.

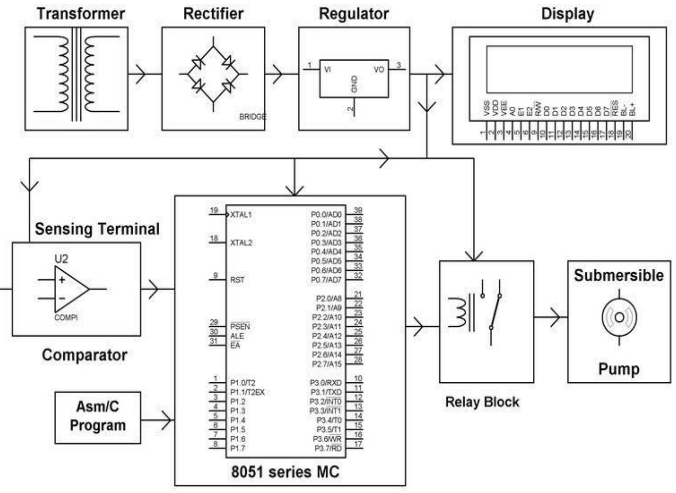


Figure 43 Block Diagram of Soil Moisture Content Based Irrigation

The Microcontroller acts as a major block of the entire project, and a power supply block is used for supplying power of 5V to the whole circuit with the help of a transformer, a bridge rectifier circuit and a voltage regulator. The 8051 microcontroller is programmed in such a way that it receives the input signal from the sensing material which consists of a comparator to know the varying conditions of the moisture in the soil. The OP-AMP which is used as comparator acts as an interface between the sensing material and the microcontroller for transferring the moisture conditions of the soil, viz. wetness, dryness, etc.

Once the microcontroller gets the data from the sensing material – it compares the data as programmed in a way, which generates output signals and activates the relays for operating the submersible pump. The sensing arrangement is done with the help of two stiff metallic rods

that are inserted into the agricultural field at some distance. The required connections from these metallic rods are interfaced to the control unit for controlling the operations of the pump according to the soil moisture content.

5.2.6 Energy Meter Reading with Load Control Using GSM

The main objective of the project is to develop a GSM based energy meter reading system and load control through SMS. Electricity department sends employees to take meter reading every month, which is an expensive and time-consuming job. The proposed project provides a convenient and efficient method to avoid this problem. The electricity department and the user can get the readings of the energy meter of consumers via SMS. The loads can also be controlled by the user of this system via SMS using this project.

A microcontroller input is effectively interfaced to a digital energy meter that takes the reading from the energy meter and displays the same on an LCD. The reading of the energy meter is also sent to the control room by an SMS via SIM loaded GSM modem. This GSM modem can also receive commands from the cell phone to control the owner's electrical loads. It uses a standard digital energy meter that delivers output pulses to the microcontroller to perform counting for necessary action. On receiving command, it can switch ON/OFF the loads.

MAX 232 converts the Rs232 voltage levels into TTL voltage levels and MAX 232 converts the TTL voltage levels into RS232 voltage levels. Whenever a message is sent to the GSM modem, it communicates the message to the micro controller and micro controller is responded back as the preset mobile number through the program. The load is also controlled by sending the message to the GSM modem, it decodes the message and load is controlled by the electricity department if the customer fails to pay the bills. If the meter is tampered immediately the GSM modem sends SMS to the control station of the electricity department to avoid power theft.

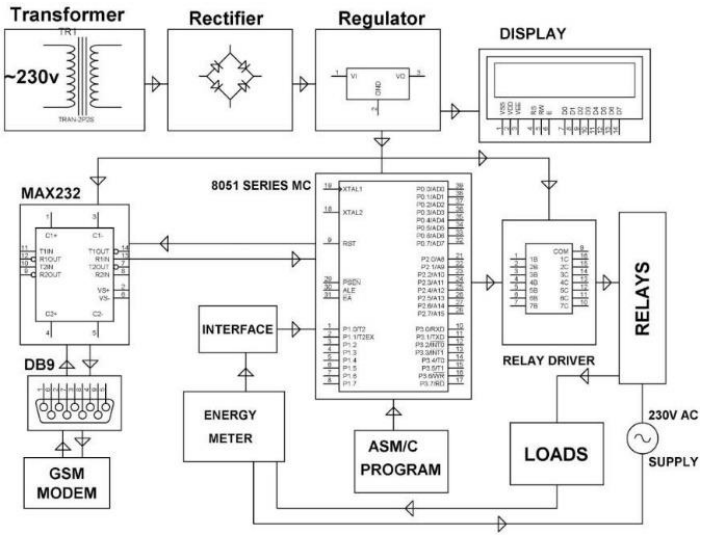


Figure 447 Block Diagram of GSM Based Energy meter

5.2.7 Street Light Monitoring and Control System

The project "STREET LIGHT MONITORING AND CONTROL SYSTEM" is developed for automatic street lights maintenance and to reduce power consumption. The application is designed in such a way that we place light sensors in all street light circuits, which is responsible to switch on and off automatically. once the lights are switched on current sensors placed at every street light circuits are responsible to report problem status to the centralized system with help of GSM module attached with the circuit. The status is available in the centralized system, the work man now can easily locate the particular light to take care which minimizes the time to search it and repair. The system also maintains database to store useful information from each street light like power consumption, total number of burning hours, total number of interruptions, tally the actual power consumption with the power supplied and details of fault detection. Hence maintaining the system with optimal power consumption giving commercial benefits to business and the prosperity of the city as a whole.

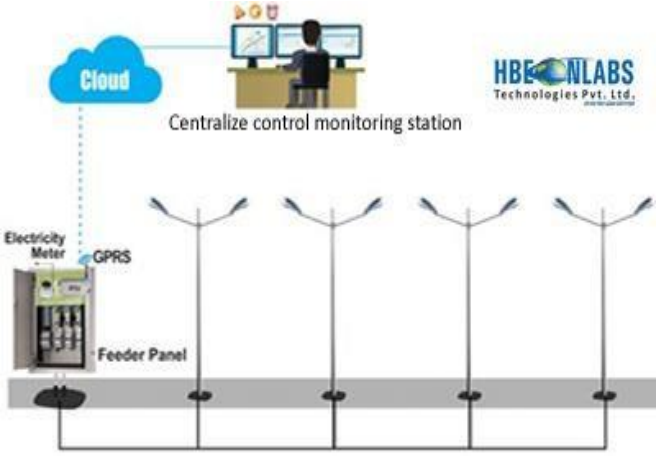


Figure 45 Solar street light controller

Users to travel at night with good visibility, in safety and comfort, while reducing many malfunctions occurs during night and enhancing the appearance of the neighborhood. Conversely, poorly designed lighting systems can lead to poor visibility which may not be helpful for any pedestrian and who are passing by that street. Quite often, street lighting is poorly designed and inadequately maintained (e.g., there are large numbers of burned-out lamps), and uses obsolete lighting technology, thus consuming large amounts of energy and financial resources.

Chapter 6
Swatchh Bharat Abhiyan (Clean India)

Swachh Bharat Abhiyan or Clean India Mission is a country-wide campaign initiated by the Government of India in 2014 under the leadership of Honourable Prime Minister Narendra Modi to eliminate open defecation and improve solid waste management. The core objectives of the mission were to reduce open defecation and improve management of municipal solid waste in both urban and rural areas. Elimination of open defecation was to be achieved through construction of individual household level toilets and public toilets.

Swachh Bharat Abhiyan is expected to cost over ₹62 thousand crores. The government provides an incentive of ₹12,000 for each toilet constructed by a rural family. An amount of ₹9 thousand crores was allocated for the mission in the 2016 Union budget of India. The World Bank provided a US$1.5 billion loan and $25 million in technical assistance in 2016 for the Swachh Bharat Mission to support India's universal sanitation initiation. The programme has also received funds and technical support from the World Bank, corporations as part of corporate social responsibility initiatives, and by state governments under the Sarva Shiksha Abhiyan and Rashtriya Madhyamik Shiksha Abhiyan schemes.

Impacts of Swachh Bharat Abhiyan

According to the dashboards maintained by respective ministries, more than 100 million individual household level toilets have been constructed in rural areas, and 6 million household toilets in urban areas. In addition, nearly 6 million community and public toilets have also been constructed in the urban areas. Consequently, 4,234 cities and more than 600,000 villages across the country have declared themselves open defecation free.

More than 81.5 thousand wards in urban areas now have100% door to door collection of solid waste and nearly 65 thousand wards practice 100% segregation of waste at source. Of the nearly 150 thousand metric tonnes of solid waste generated in urban areas, 65% is being processed.

6.1 Swatchhta needed in allocated village -Existing Situation with photograph

The village has a solid waste collection system which collects the solid waste two days a week. But there is a lack of awareness in the dustbins to throw the solid waste. Therefore, there are solid wastes on the sides of road in the village.

The Gram Pnachayat authorities are trying their best to keep the village clean. Sweepers are employed to clean the village. Government facility related to the west management is not available in Manpur village people support needed.

Figure 46 Need of Waste Management

6.2 Guidelines - Implementation in allocated village with Photograph

Guideline for the process of implementation of SBA

1. Elimination of open defecation
2. Eradication of Manual Scavenging
3. Modern and Scientific Municipal Solid Waste Management
4. Generate awareness about sanitation and its linkage with public health
5. Capacity Augmentation for ULBs to create an enabling environment for private sector participation in Capex (capital expenditure) and Opex (operation and maintenance)
6. The estimated cost of implementation of SBM (Urban) based on unit and per capita costs for its various components is Rs. 62,009 Crore.
7. The Government of India share as per approved funding pattern amounts to Rs. 14,623 Crore. In addition, a minimum additional amount equivalent to 25% of GoI funding, amounting to Rs. 4,874 Crore shall be contributed by the States as State/ ULB share.

Mission Components

- Household toilets, including conversion of insanitary latrines into pour-flush latrines
- Community toilets.
- Public toilets and urinals

- Solid waste management
- IEC & Public Awareness
- Capacity building and Administrative & Office Expenses (A&OE)

6.3 Activities Done by Students for allocated village with Photograph:

There is lack of awareness among the people to use the dustbin to throw solid waste. So we educated the people of the village of the importance of the cleanliness of the village and to throw the waste in the dustbins. We also made people aware of the Swachh Bharat Abhiyan which is started by our beloved Prime Minister Narendra Modi. We also discussed the issue with the Sarpanch and Talati about the programs for the awareness of the clean village through Swachh Bharat Abhiyan.

Figure 47 Swachhta Abhiyan

Chapter 7
Village condition due to Covid-19

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

District administrations and Manpur gram panchayats all across the country are proactively taking various measures to check the spread of the COVID-19 pandemic in the country's hinterland. Ministry of Panchayati Raj, Government of India remains in close coordination with State Governments, District authorities and Manpur gram panchayats to ensure that lockdown conditions are not violated and norms of social distancing are scrupulously followed.

In all manpur 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. Regular cleaning operations are being carried out and disinfectant is being sprayed on the roads.

Face masks are being distributed to the citizens by Manpur 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 social distance. Along with ration distribution to villagers, fodder for abandoned cattle is also being provided by a social service organization.
Due to the lockdown there were no jobs in the cities, therefore lots of people who resided in the cities came back to the village which increased the risk of coronavirus in the village.

Therefore, quarantine center was established in the school premises for the people coming from cities outside of the village. The people were quarantined for 14 days in the quarantine facility before they can go to their homes in the village Their daily needs were satisfied by the manpur gram panchayat in collaboration with the district authorities and state government.

Arogya Setu App

Aarogya Setu is an COVID–19 contact tracing, syndromic mapping and self-assessment digital service. It is a mobile app. It is developed by the National Informatics Centre. It is run by the Ministry of Electronics and Information Technology (MeitY).
Arogya Setu app has the stated purpose to spread awareness of COVID–19 and to connect essential COVID–19-related health services to the people of India. This app augments the initiatives of the Department of Health to contain COVID–19 and shares best practices and advisories.

Arogya Setu App is a tracking app which uses the smartphone's GPS and Bluetooth features to track the coronavirus infection. With Bluetooth, it tries to determine the risk if one has been near (within six feet of) a COVID–19-infected person, by scanning through a database of known cases across India. Using location information, it determines whether the location one is in belongs to one of the infected areas based on the data available.

The central government has made it mandatory for the government employees to use the Arogya Setu app. The manpur gram panchayat officials and the health care officials have

made people aware to use the Arogya Setu app for the benefit of the village. With the Arogya Setu app the government health officials can track down the origin of the corona virus if there is any case noted in the village.

7.2 Activities Done by Students for allocated village Clean with Photograph

- Due to lack of knowledge of the Coronavirus disease the villagers are afraid to meet the people of the city.
- We made them aware about the Coronavirus disease and how it spreads through contact of hand.
- We made them aware about the importance of the social distance, wearing mask at public places and cleaning your hands with soap or disinfectant at regular intervals.
- We assured them that there is nothing to fear about the disease if we follow the guidelines given by the government.
- We made the people aware about the Arogya Setu app on the mobile. We insisted people to use the Arogya Setu app on their mobile. We taught the village people how to use the Arogya Setu app which will be helpful in the future.

7.3 Any other steps taken by the students / villagers

Sanitization has been done in the Manpur Village. The disinfectant has been sprayed on the back of a bike. The sanitization process is done in every street of the village and the public buildings across the village. “Remember the 3 W’s” slogan is given to spread awareness on the coronavirus disease. The 3 W in the slogan are:

1. Wear a mask to cover your face.
2. Wait six feet apart from each other to avoid close contact.
3. Wash your hands frequently by using hand sanitizer or soap.

Figure 48 The 3 W's Implementation

Figure 49: Sanitization of the village

Figure 50: Slogan for awareness of coronavirus

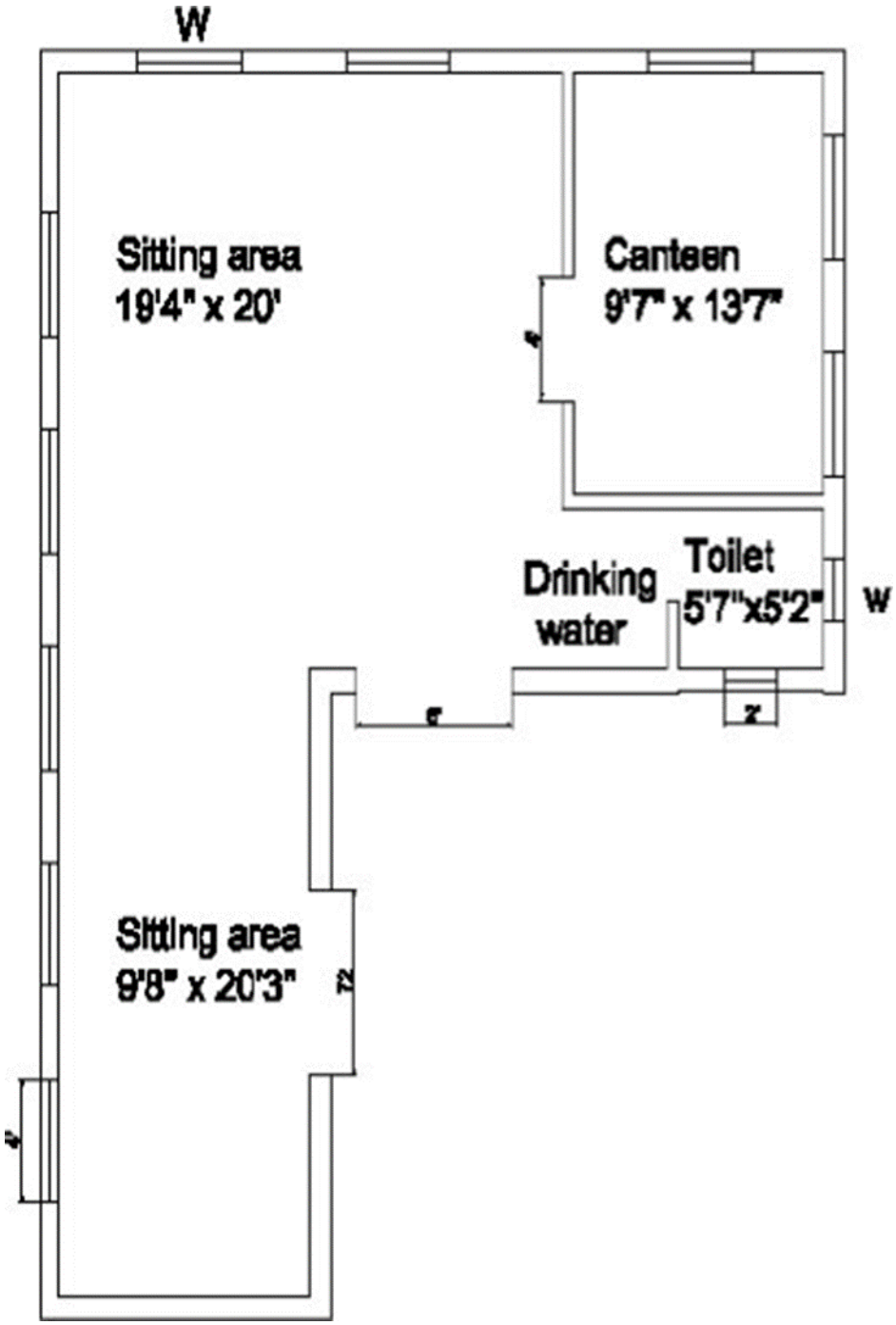
Chapter 8
Sustainable Design Planning Proposal (Prototype Design)- Part- I (Scenario / Existing Situation / Proposed Design in Auto cad / Recapitulation Sheet / Measurement Sheet / Abstract Sheet / Sustainability of Proposal / Any other software)

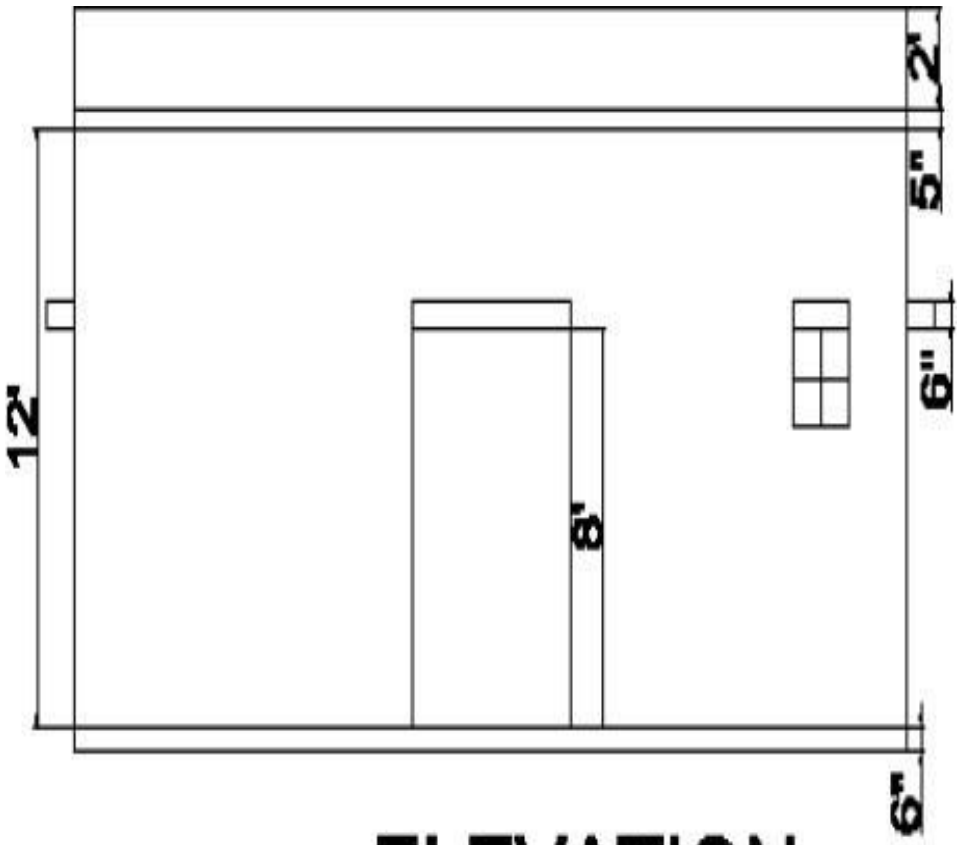
8.1 Design Proposals

The village lack some basic infrastructure like Social infrastructure, Physical infrastructure, Socio-Cultural infrastructure and the use of renewable energy is null in the village. It is very important to provide basic infrastructure facility and it is economical, eco-friendly and efficient also. Following design are provided with use of civil and electrical engineering technology. Provided design for bio-gas plant which is used for cooking purposes and used as natural gas with help of electrical engineering the Bio-gas plant is used for producing electrical engineering.

- Design of PHC is provided for maintenance purpose in village.
- Public Toilet design is also provided which is necessary for village.
- The design for Anganwadi is also provided.
- As the village lacks community hall its design also provided.
- From the smart village infrastructure design the design for Vocational training center is provided.
- The design for submersible using solar energy for working is also provided.
- Rain Water Harvesting is provided for any Public Building to store the rain water.
- Bus stand requires maintenance.

8.1.1 Sustainable Design (Civil- Bus stand)


W
Sitting area
19'4" x 20'
Canteen
9'7" x 13'7"
Drinking
water
Toilet
5'7"x5'2"
W
Sitting area
9'8" x 20'3"



ELEVATION

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

Abstract Sheet of Bus Stand Design

Sr. No.	Item Detail	Qty.	Unit Rate	Per.	Rs.
1	Excavation Earth Work Mechanical	53.39	67.2	m.cu	3722
2	Concrete Work In FoundationMasonry	2.21	19.81	m.cu	4378
3	Brick Masonry	25.11	2798	m.cu	70257
4	Slab RCC Work	11.11	3020	m.cu	33552
5	Plaster Work	126.26	98.8	Sq.	12400
6	Painting	126.26	9.00	Sq.	1263
Total cost is 125307					

8.1.2 Sustainable Design (Civil- Septic Tank)

Design Drawings

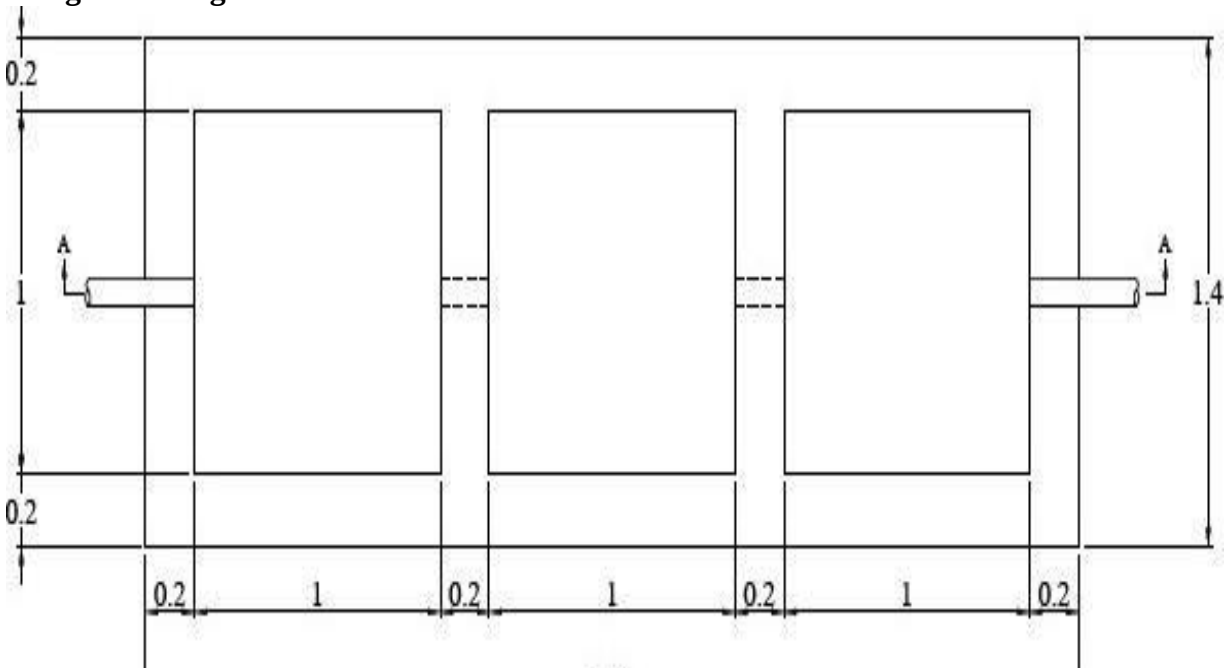


Figure 51 Plan of Septic Tank

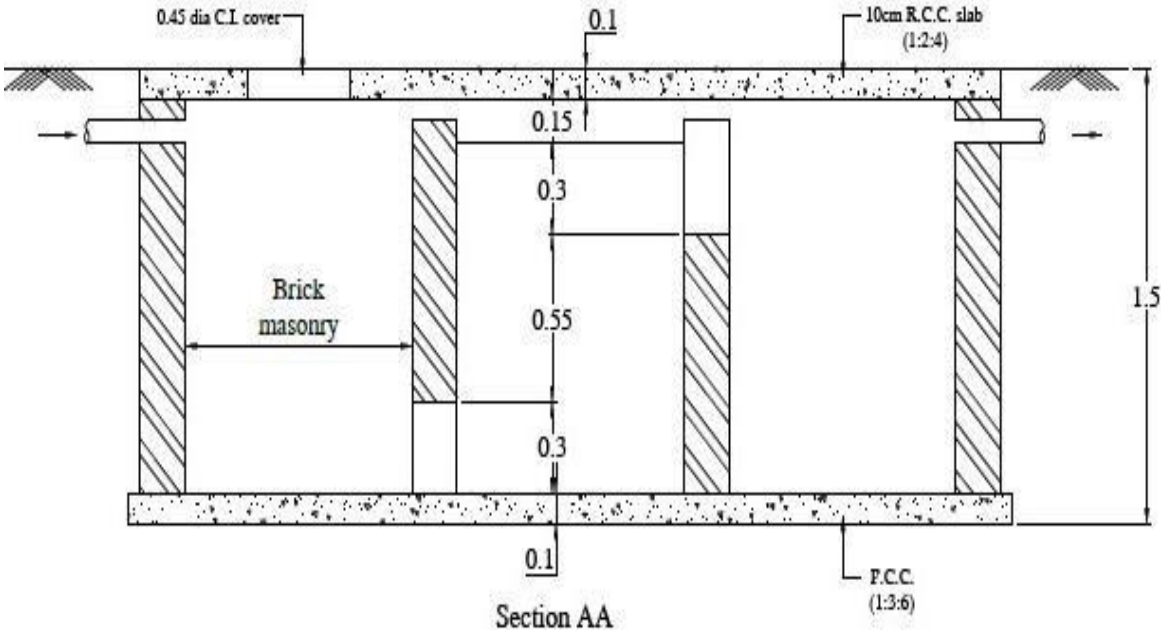


Figure 52 Section of Septic Tank

Measurement Sheet:

Table 20 Mesurement of Septic Tank

Sr. No.	Item	No.	Length	Breadth	Height	Qty.
1	Excavation work up to depth 1.5m	1	3.9	1.5	1.5	**8.76**
2	P.C.C. (1:3:6) flooring	1	3.9	1.5	0.1	**0.59**
3	First class brick masonry in C.M. (1:6)					
	Long walls	2	3.8	0.2	1.3	1.98
	Short walls	2	1	0.2	1.3	0.52
	Middle walls	2	1	0.2	1.15	0.46
					Total	**2.96**
4	R.C.C. slab in proportion (1:2:4)	1	3.8	1.4		**5.32**
5	Weight of steel reinforcement in slab					**41.76**

Abstract Sheet:

Table 21 Abstract Sheet of Septic Tank

No.	Item	Qty.	Per	Rate	Amount
1	Excavation	8.78	cu m	95	**834.10**
2	P.C.C. Flooring	0.59	cu m	2010	**1185.90**
3	1st class Brick Masonry	2.96	cu m	1920	**5683.20**
4	R.C.C. Slab	0.53	cu m	2565	**1359.45**
5	Steel reinforcement				
	20% Mild Steel	8.35	kg	41.75	**348.61**
	80% HYSD Steel	33.41	kg	39.45	**1318.02**
				Total	**10729.28**
				Add 5% contingencies	**536.46**

Grand Total in Rs	**11300**

8.1.3 Physical design (Civil - Aanganwadi)

Design Drawings

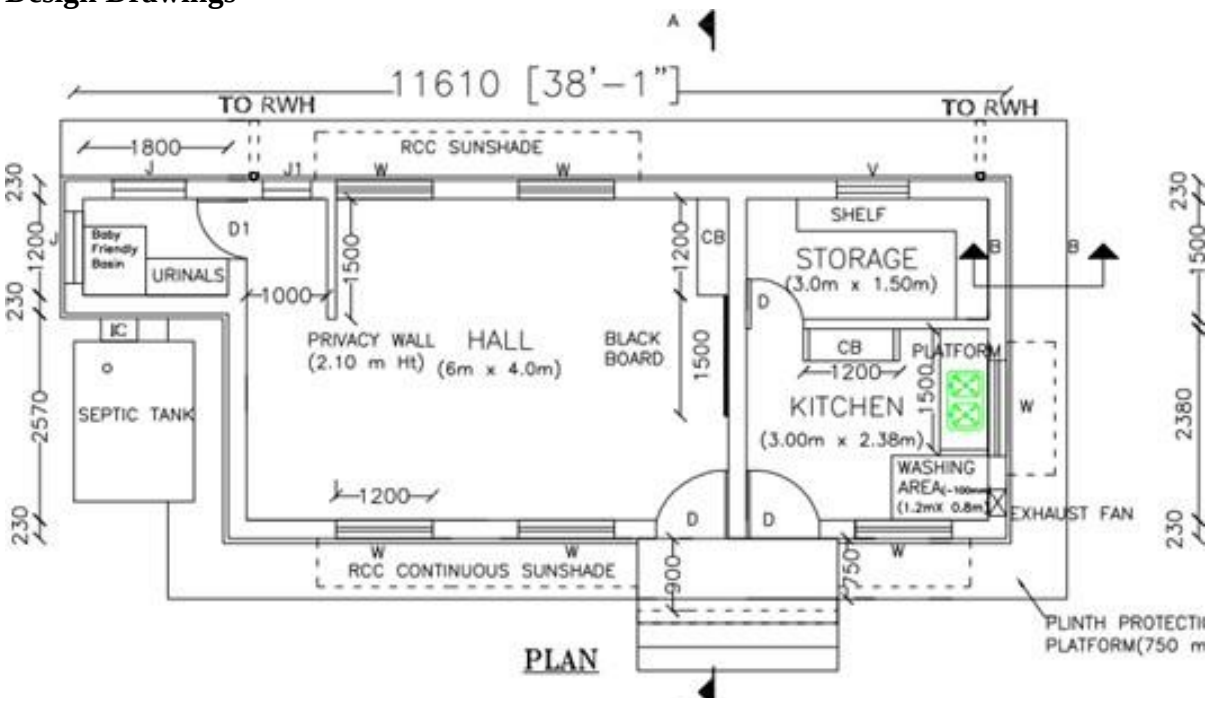


Figure 8 Plan of Aanganwadi

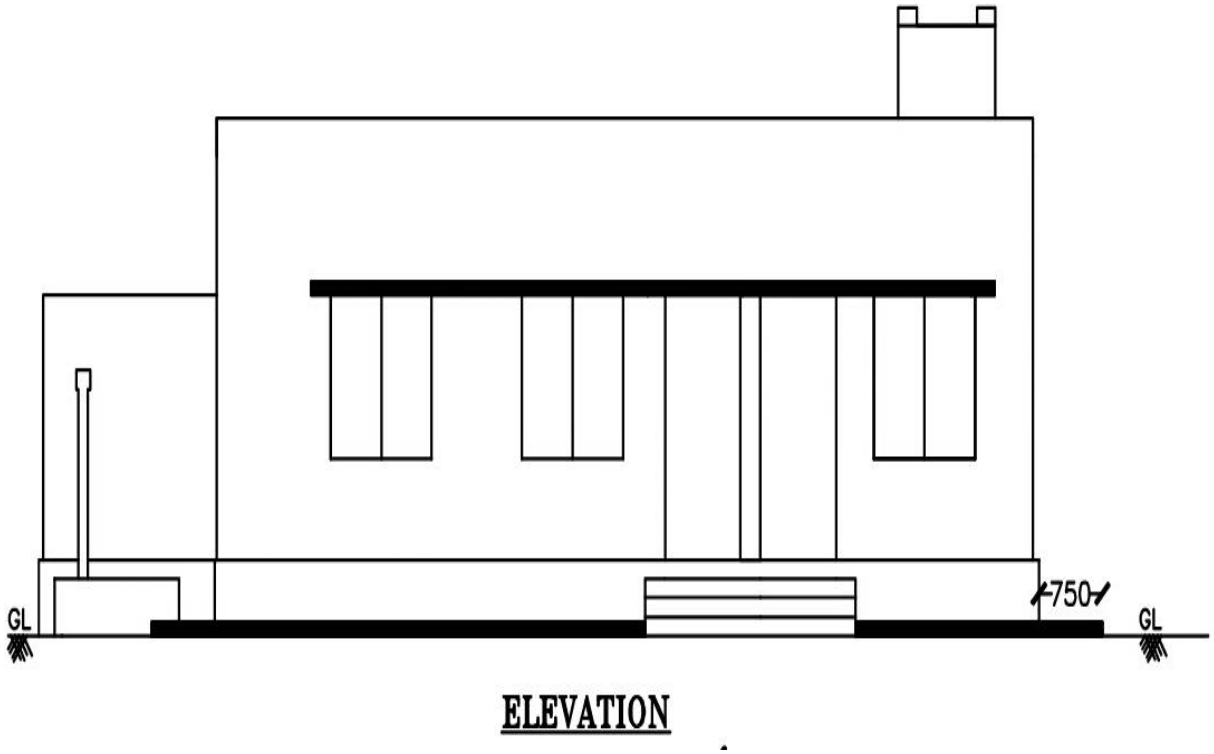


Figure 54 Elevation of Aanganwadi

Measurement Sheet:

Table 22 Measurement Sheet of Aanganwadi

Sr. No	Item Description	No.	Length (m)	Width (m)	Height (m)	Quantity (m^3)
1	**Long walls**					
	L=6.40+0.23 =6.63	3	6.63	0.23	3	13.7241
	Short wall					
	L=6.934+0.23+2.44+0.23					
	=9.834	2	9.834	0.23	3	13.57092
	Short walls horizontal					
	L=9.834+2.44+0.23					
	=12.50	1	12.5	0.15	3	5.625
	Parapet wall					
	Long walls	2	6.63	0.23	0.91	2.775318
	short wall	2	9.834	0.23	0.91	4.1165124
				Total Quantity		**39.81185**
2	**RCC work in Slab**	1	7	10.05	0.12	8.442
3	**Smooth plaster inside walls**					
	Kitchen walls	2	2.44		3	14.64
		2	3.35		3	20.1
	Bed room walls	2	5.18		3	31.08
		2	3.05		3	18.3
	OTS walls	2	2.44		3	14.64
		2	1.75		3	10.5
	Drawing room walls	2	6.934		3	41.604
		2	3.35		3	20.1
				Total Quantity		**170.964**

Abstract Sheet:

Table 23 Abstract Sheet Of Aanganwadi

Sr. No.	Item Description	Quantity	Rate	Per	Amount Rs.
1	Brickwork in super structure in C.M. 1:6	32.81 m^3	3500	m^3	114835
2	Brickwork for parapet wall	7 m^3	3500	m^3	24500
3	RCC work for slab	8.42 m^3	8800	m^3	74096
4	Smooth plaster on inside walls and ceiling in C.M. 1:3	170.96 m^2	150	m^2	25644

		Rs.	239075
	Add 5% contingencies		11954
		Rs.	**251029**

8.1.4 Social design (Civil – Post Office)

Design Drawings

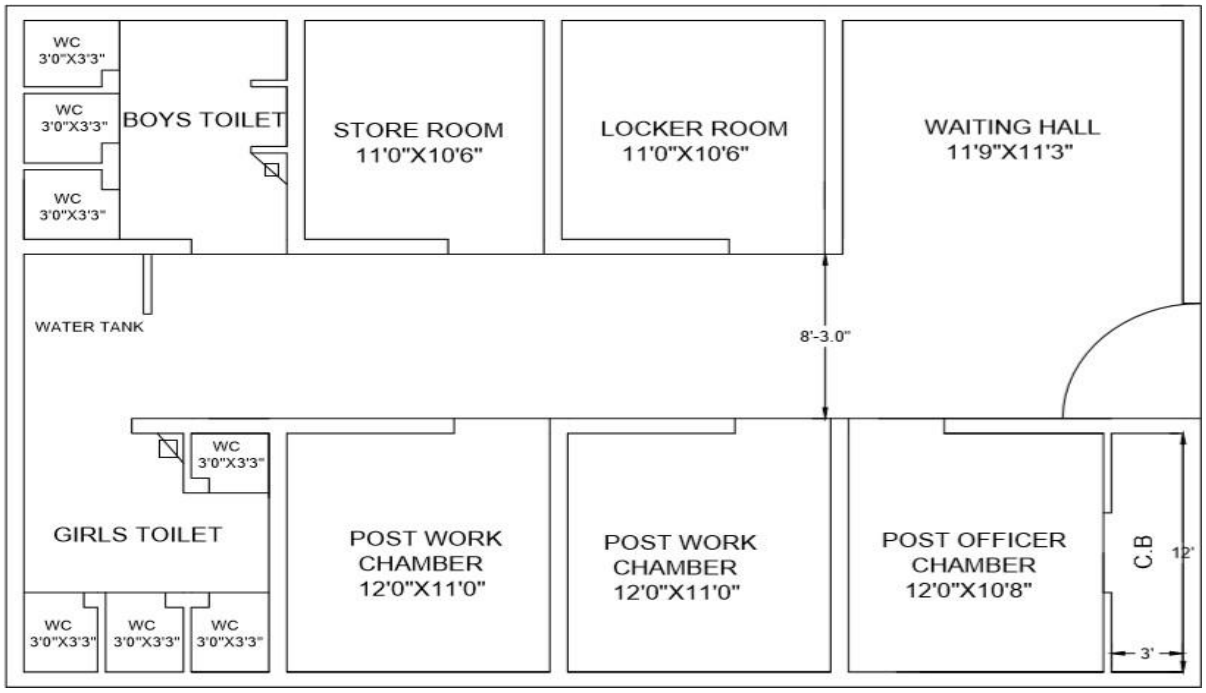


Figure 55 Plan of Post Office

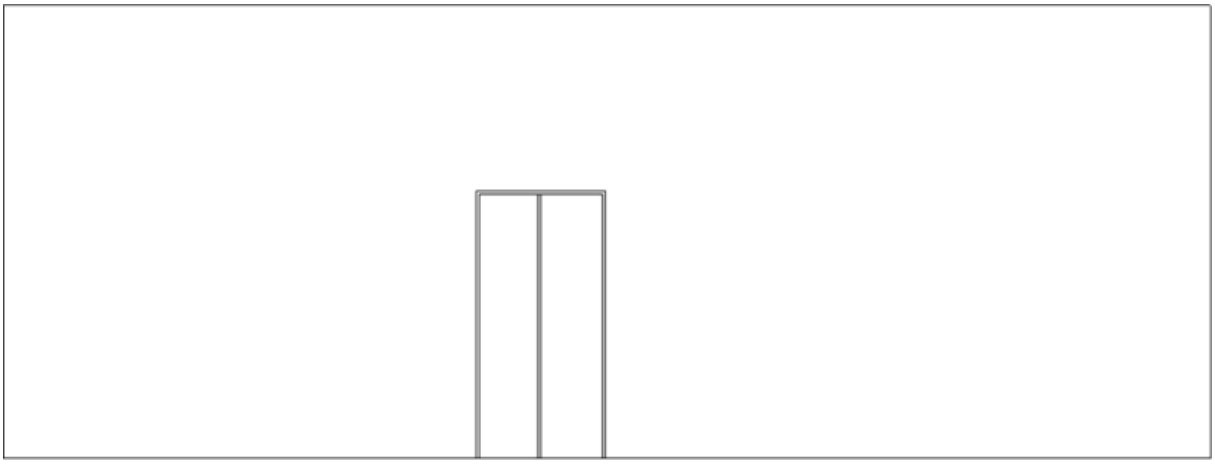


Figure 56 Elevation of Post Office

Calculation of Total Central Line Length:

Table 24 Calculation of Central line Length

Total Centre line length
L=11.73x2=23.46m
L=7x2=14m
L=2.43x2=4.86m
L=2.74x1=2.74m

L=2.28x1=2.28m
Total Centre line length = 47.34m
Total no of Junction=4

Measurement Sheet:

Table 25 Measurement Sheet of Post office

Sr No.	Item Description	No.	Length (m)	Width (m)	Height (m)	Quantity (m^3)
1	**Excavation In Foundation**					
	Net C.L. Length					
	=47.34-0.5*0.9*4	1	45.54	0.9	1.5	**61.479**
	=45.54 m					
2	**Plain cement concrete in foundation in 1:3:6**					
		1	45.54	0.9	0.3	**12.2958**
3	**Brickwork in foundation**					
	Upto plinth					
	Step 1 L=47.34-0.5*0.6*4					
	=46.14 m	1	46.14	0.6	0.2	5.5368
	Step 2 L=47.34-0.5*0.5*4					
	=46.34 m	1	46.34	0.5	0.2	4.634
	Step 3 L=47.34-0.5*0.4*4					
	=46.54 m	1	46.54	0.4	0.2	3.7232
	Step 4 L=47.34-0.5*0.3*4					
	=46.74 m	1	46.74	0.3	1.2	16.8264
	Step 5 h=(1.5-0.3-3*0.2)+0.6					
	=1.2m					
			Total Quantity		**30.7204**	
3	**Brickwork in superstructure**					
	in cement mortar 1:6					
	L=47.34-0.5*0.3*4					
	=46.74 m	1	46.74	0.3	3	**42.066**
4	**RCC. Slab**	1	12.03	7.3	0.12	**10.53828**
5	**Smoot plaster on inside wall and celling in C.M. (1:3)**					
	Waiting area wall	1	11.43		4	45.72
		2	4.27		4	34.16
		1	2.13		4	8.52
	waiting area ceiling	1	11.43	4.27		48.8061
	Inquary cabin wall	5	2.13		4	42.6
	Inquary cabin ceiling	1	2.13	2.13		4.5369
	Toilet wall	3	2.44		4	29.28
		3	1.98		4	23.76
	Toilet ceiling	1	2.44	1.98		4.8312

			Total quantity		**242.2142**	
6	**Parapet wall**					
	L=37.46 m	1	37.46	0.3	0.91	**10.22658**

Abstract Sheet:

Table 26 Abstract Sheet of Post Office

Sr No.	Item Description	Quantity	Rate	Per	Amount Rs.
1	Excavation in foundation	61.48 m^3	85	m^3	5225.8
2	Brick bat cement concrete in Foundation	12.30 m^3	3200	m^3	39360
3	First class brickwork upto plinth in CM 1:6	30.72 m^3	3200	m^3	98304
4	Brickwork in super structure in CM 1:6	42.066 m^3	3500	m^3	147231
5	Brickwork for parapet wall	10.23 m^3	3500	m^3	35805
6	RCC work for slab	10.53 m^3	8800	m^3	92664
7	Smooth plaster on inside walls and ceiling in CM 1:3	242.21 m^2	150	m^2	36331.5
				Rs.	454921.3
		Add 5% contingencies			22746
				Rs.	**477667.3**

8.1.5 Socio-Cultural design (Civil- Community Hall)

Design Drawings

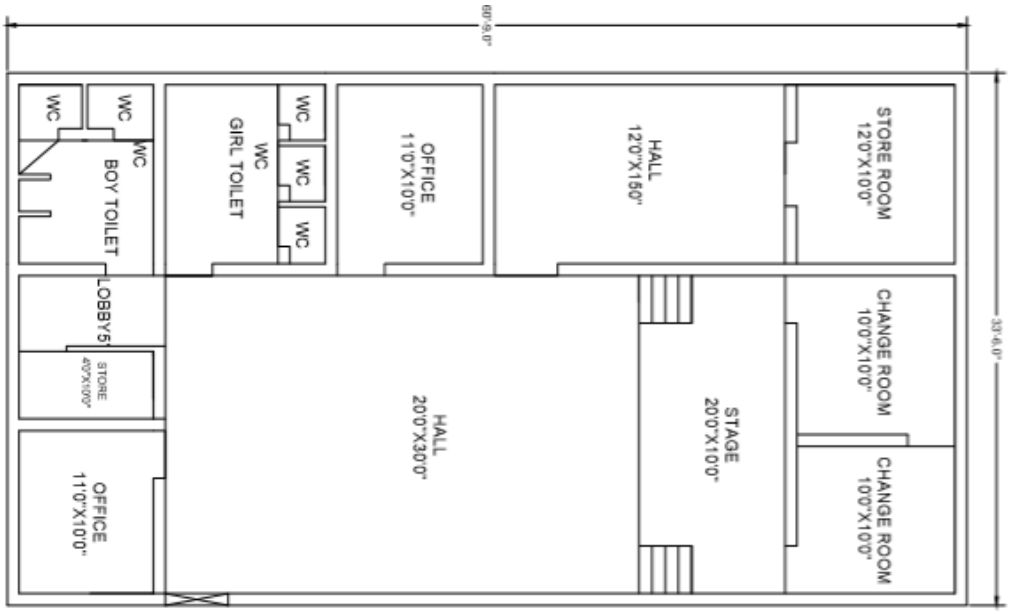


Figure 57 9Community hall Design

Calculation of Center Line Length:

Table 27 Calculation of Centre line length

Total Centre line length
L=8.30x4=33.23 m
L=3.076x3=9.23 m
L=2.46x1=2.46 m
Total Centre line length = 44.92 m
Total no of Junction=4

Measurement Sheet:

Table 28 Measurement Sheet of Community Hall

Sr No.	Item Description	No.	Length(m)	Width(m)	Height(m)	Quantity(m^3)
1	**Excavation In Foundation**					
	Net C.L. Length					
	=44.92-0.5*0.9*4	1	43.12	0.9	1.5	**58.12**
	=43.12m					
2	**Plain cement concrete in**					
	foundation in 1:3:6	1	43.12	0.9	0.3	**11.6424**
3	**Brickwork in foundation upto plinth**					
	Step 1					
	L=44.92-0.5*0.6*4					
	=43.72 m	1	43.72	0.6	0.2	5.2464
	Step 2					
	L=44.92-0.5*0.5*4					
	=43.92 m	1	43.92	0.5	0.2	4.39
	Step 3					
	L=44.92-0.5*0.4*4					
	=44.12 m	1	44.12	0.4	0.2	3.52
	Step 4					
	L=44.92-0.5*0.3*4					
	=44.32 m	1	44.32	0.3	1.2	15.95
	h=(1.5-0.3-3*0.2)+0.6					
	=1.2m					
				Total Quantity	**29.5**	
4	**Brickwork in superstructure**					
	in cement mortar 1:6					
	L=44.92-0.5*0.3*4					
	=44.32 m	1	44.32	0.3	3	**39.88**
5	**RCC. Slab**	1	142	142	0.12	**17.04**
6	**Smoot plaster on inside wall and celling in C.M. (1:3)**					

	Hall walls	2	9.144		3	54.864
		2	9.144		3	54.864
	Hall celing	1	9.144	9.144		83.61274
	Toilet wall	4	3.048		3	36.576
		4	1.83		3	21.96
	Toilet ceiling	1	3.048	1.83		5.57784
				Total Quantity	**257.455**	
7	**Parapet wall**					
	L=49.23 m	1	49.23	0.3	0.91	**13.43**

Abstract Sheet:

Table 29 Abstract Sheet of Community Hall

No.	Item Description	Quantity	Rate	Per	Amount Rs.
1	Excavation in foundation	58.12 m^3	85	m^3	4940.2
2	Brick bat cement concrete in foundation	11.6424 m^3	3200	m^3	37248
3	First class brickwork upto plinth in C.M. 1:6	29.5 m^3	3200	m^3	94400
4	Brickwork in super structure in CM 1:6	39.88 m^3	3500	m^3	139580
5	Brickwork for parapet wall	17.04 m^3	3500	m^3	59640
6	RCC work for slab	13.43 m^3	8800	m^3	118184
7	Smooth plaster on inside walls and ceiling in C.M. 1:3	257.455 m^2	150	m^2	38618
				Rs.	492600
		Add 5% contingencies			24629
				Rs.	**519228.2**

8.1.6 Smart Village Design (Civil – Composting Toilet)

Design Drawings

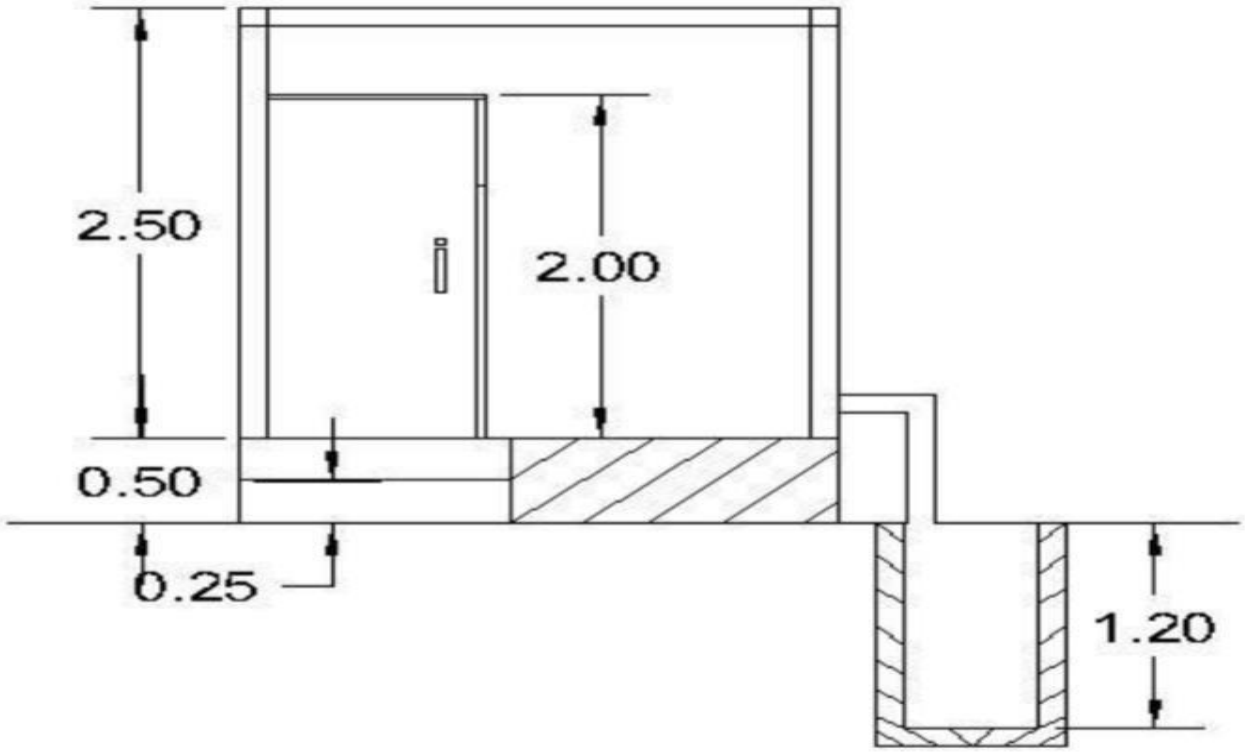


Figure 58 Elevation of Dry Composting Toilet

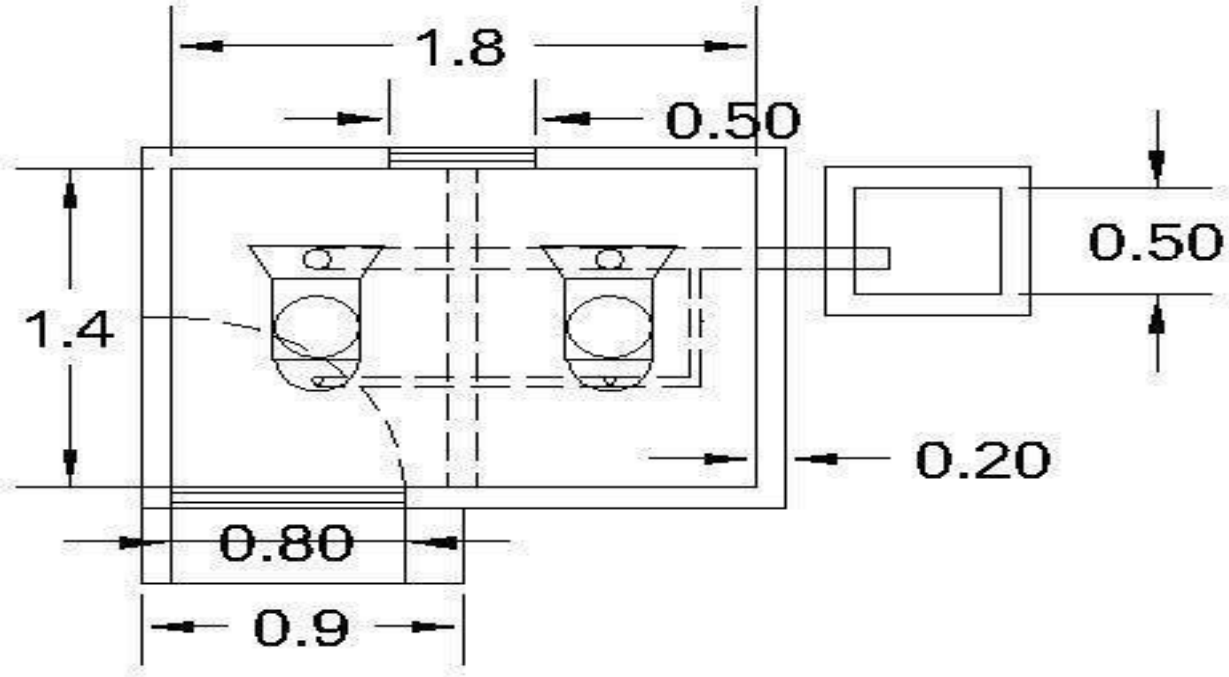


Figure 108 Plan of Dry Composting Toilet

Measurement Sheet:

Table 30 Measurement Sheet of Dry Composting Toilet

Design details	Measurement
No. of users	5 members
Average volume of desiccated material	0.25 liters / person / day
Retention period	300 days
No. of chambers	2 nos.
Size of faeces collection tanks	5 nos. x 300 days x 0.25 l/p/d = 375 liters
Volume of tanks needed	630 liters
Size of one tank provided	0.9 m x 1.4 m x 0.50 m x 1000 liters
Size of chamber access hole	750 mm wide x 400 mm high
Vent pipe	100 mm dia connecting both tanks 500 mm above roof level Cowl on top
Toilet size (floor area)	1.4m width x 1.8 m length
Plant bed or Soak pit	0.50 m x 0.50 m size or 0.50 m x 0.50 m x 1.20 m size
Door	0.8 m x 2 m
Roof	1–2" thick Ferro-cement slab or AC/GI sheets
Super structure	Brick wall 200 mm thick

Abstract Sheet:

Table 31 Abstract of Dry Composting Toilet

Item	Length	Breadth	Height	Quantity	Rate	Amount
Excavation	8.7	0.4	0.25	0.87	201	**174.8**
Brickwork	8.7	0.4	0.10	0.348	4000	**1392**
Masonry up to plinth	8.7	0.3	0.65	1.696		
Deductions of doors(2)	0.75	0.3	0.4	-0.18		
Total				**1.516**	**2817**	**4270**
Masonry in super structure	7.2	0.2	2.5	3.6		
Deduct						
Door	2	0.2	0.8	-0.32		
Ventilator	0.5	0.2	0.5	-0.05		
Total				**3.23**	**2900**	**9367**
Slab at plinth	2.2	1.8	0.1	0.396	3392	1343
Roof of Asbestos sheet	1.8	1.4		2.5	1000	2500
Both side plaster(2)	7.2		2.5	36		
Deduction						

Door	2		0.8	-1.6		
Ventilator	0.5		0.5	-0.25		
Total				**34.15**	**100**	**3415**
Cost of pans and door					2600	2600
Total Cost						**25061**

8.1.7 Heritage Village Design (Civil – Village Entrance Gate)

Design Drawings

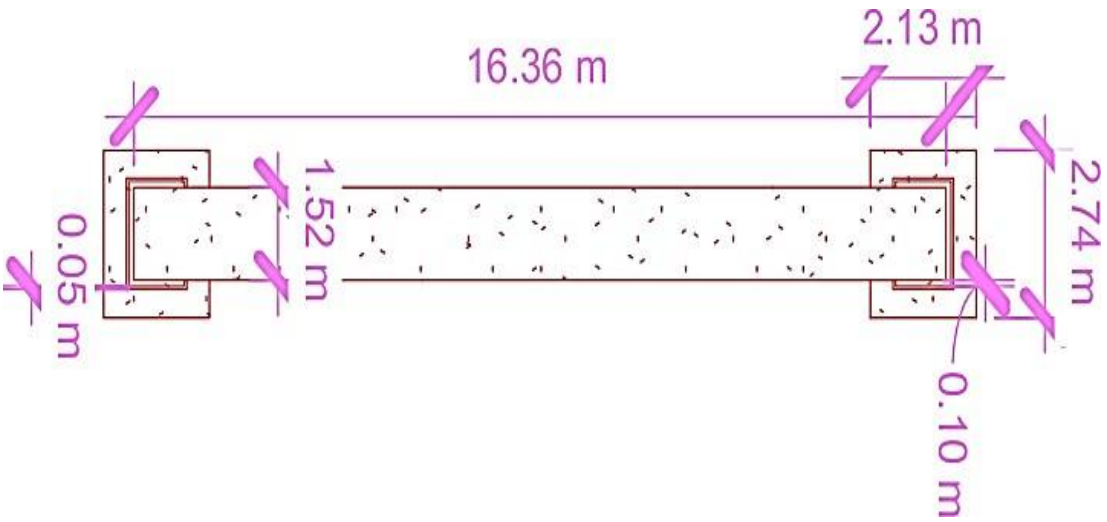


Figure 60 Plan of Vilage Entrance Gate

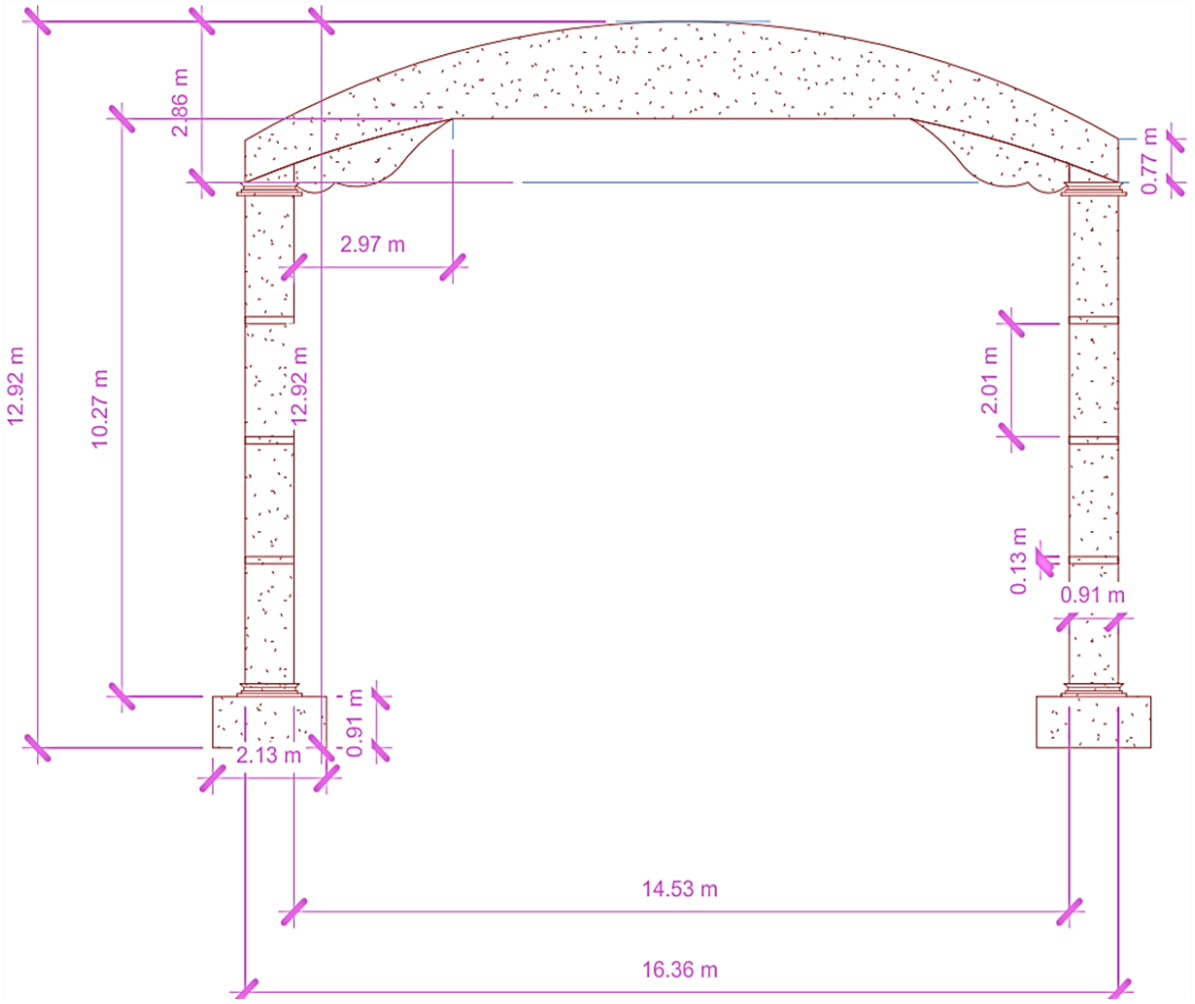


Figure 61 Elevation of Village Entrance Gate

Measurement Sheet:

Table 32 Measurement of Village Entrance Gate

Sr No.	Item Description	No.	Length (m)	Width (m)	Height (m)	Quantity
1	Excavation in Foundation	2	2.8	2.2	0.91	**11.21**
2	P.C.C. in foundation (1:4:8)	2	2.74	2.13	0.91	**10.6**
3	Brickwork in column in cement mortar (1:6)	2	1.52	0.91	9.15	**25.31**
4	RCC. Beam	1	16.36	1.52	0.77	**19.14**
5	Smoot plaster in C.M. (1:3)					
	Front of Column	2	0.91	-	9.15	8.32
	Sides of Column	2	1.52	-	9.15	13.90
	Top Beam	1	16.36	-	2.09	34.75

	Total Quantity	**56.97**

Abstract Sheet:

Table 33 Table 27 Abstract of Village Entrance Gate

Sr. No.	Description	Qty.	Rate	Per	Amount
1	Excavation in Foundation	11.21	85	m^3	**952**
2	P.C.C. in foundation (1:4:8)	10.62	3200	m^3	**33984**
3	Brickwork in column in cement mortar (1:6)	25.31	3500	m^3	**88585**
4	RCC. Beam	51.97	5500	m^3	**105300**
5	Smoot Plaster in C.M. (1:3)	56.97	150	m^2	**8545**
				Total Amount	**237366**
				Add 5% contingencies	**11868**
				Grand Total	**249250**

8.1.8 Electrical Design 1 (Post Office)

Design Drawings

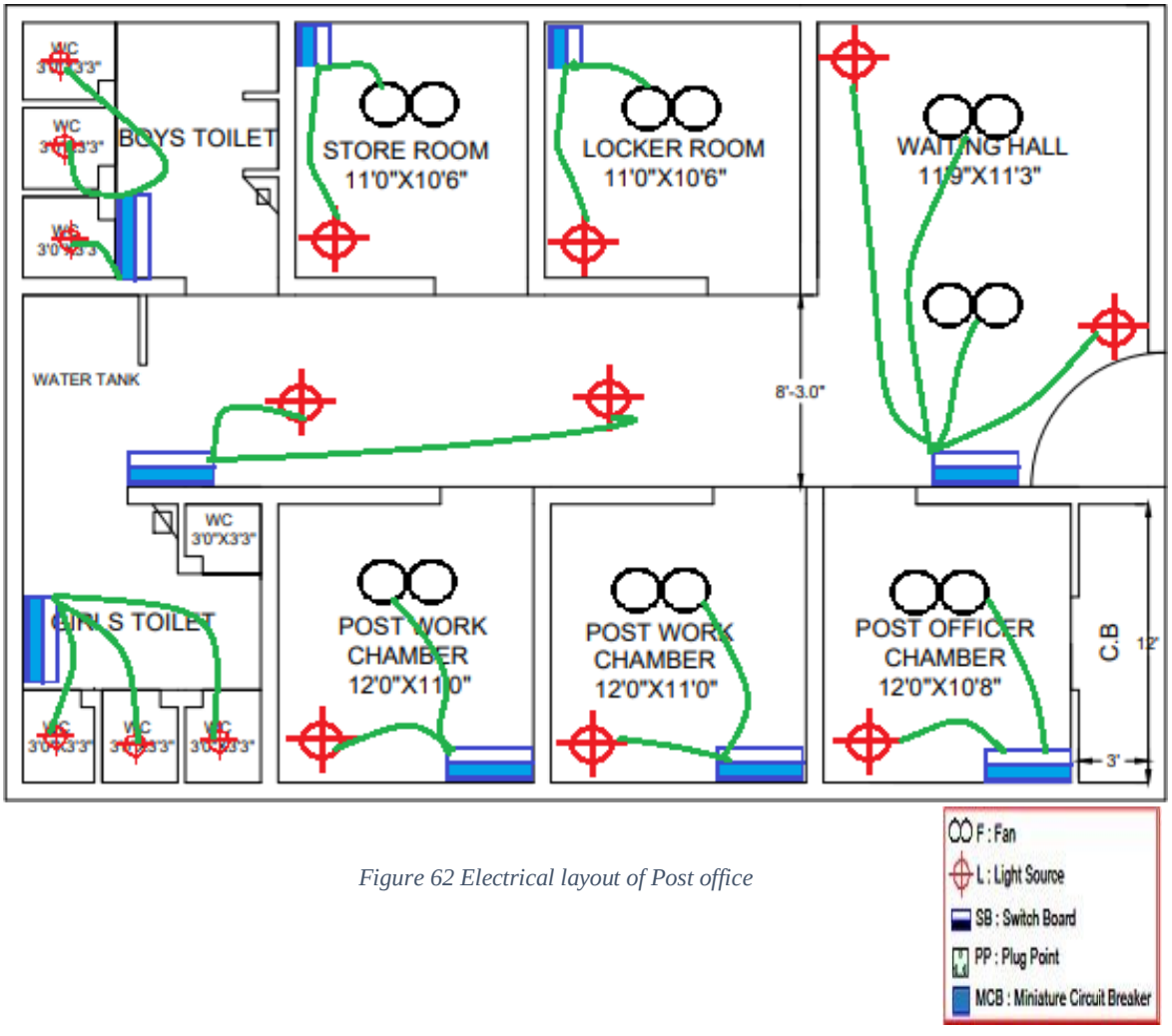


Figure 62 Electrical layout of Post office

Load Calculation:

Table 34 Load Calculation (Post Office)

Sr. No	Type And Location Of Point	No. Of Points	Watt/Point	Total Wattage
1	Light Points (2+2+2+2+2+2+2+1)	15	30	450
2	Fan Points (3+3+1)	7	60	420
3	5 Amp. Socket Outlet (2+2+2+2+2+2+2+2+2)	18	100	1800
		40		2670

Measurement Sheet:

Table 35 Measurement & Estimate Sheet for Post Office

Sr. No.	Materials with Specification	Quantity Reqd.	Unit	Rate RS | PER		Total Cost (Rs.)
1	MCB	1		600	Each	600
2	240 V, 16 A, 2 Way MCB Type Board	1		370	Each	370
3	Board 12- module	2		345	Each	690
	Board 8- module	3		315	Each	945
	Board 4- module	2		168	Each	336
	Board 2-module	2		121	Each	242
4	PVC Conduit Pipe 25 MM Diameter	60	M	22	M	1320
5	1/1.80mm, 650v Grade Single core aluminium PVC cable	0.5	M	10	M	5
6	1/1 40mm, 650 V Grade Single Core Aluminium PVc Cable	150	M	10	M	1150
7	Single Way 5A Anchor Switch, 240 V	44		14	Each	616
8	pvc Type Two Plate Cilling Rose	21		20	Each	420
9	pvc type petant holder	14		35	Each	490
10	flexible Wire 23/0 193 mm	50	M	10	M	500
11	Earthing wire 14 SWG GI Wire	0.4	M	35	M	14
12	Nut, Bolt with Earthing Thimble	5		15	Each	75
13	51mm screw	52		100	200no	5200
14	6 A, 3 Pin Socket	9		40	Each	560
15	Cement, Soil Warnice	100	100	400		40000
16	Fan Regulator	7		300	Each	2100
17	Fan	7		1200	Each	8400
18	Lamp	15		200	Each	3000
19	Labour Charge	40 Point		150	Each	6000
	5 % miscellaneous charge					1652

				RS. Total	74,685

8.1.9 Electrical Design 2 (Aangadwadi)

Design Drawings

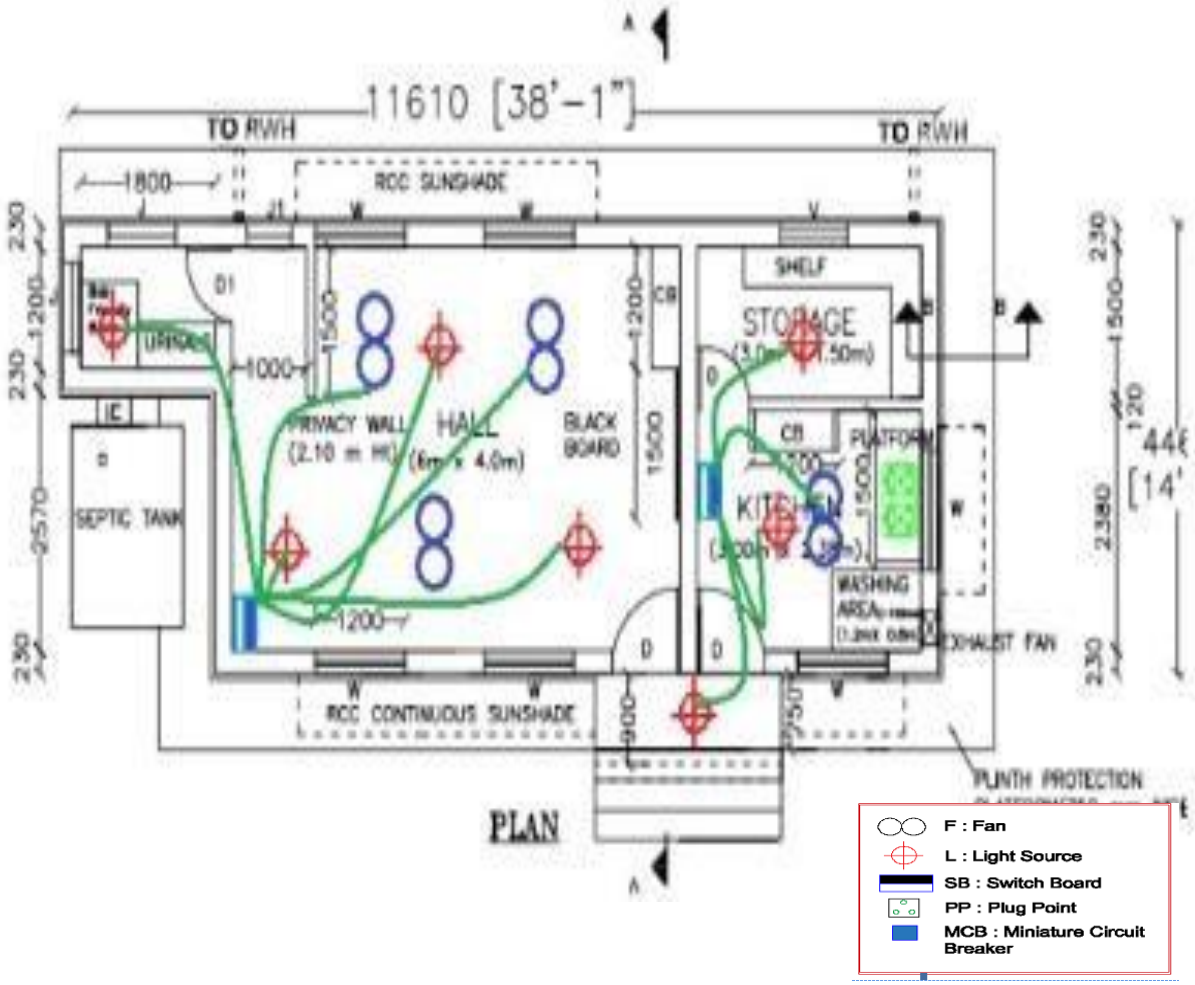


Figure 63 Aanganwadi Electrical Design

Load Calculation:

Table 36 Load Calculation (Aanganwadi)

Sr. No	Type and Location Of Point	No. Of Points	Watt/Point	Total Wattage
1	Light Points	7	30	210
	(2+2+2+1)			
2	Fan Points	4	60	240
	(2+2)			
3	5 Amp. Socket Outlet	6	100	600
	(2+2+2)			
4	15 Amp. Socket Outlet	2	1000	2000
		19		3050

Measurement Sheet:

Table 37 Material Estimate with Cost Anganwadi

Sr. no.	Materials with specification	Quantity reqd.	Unit	Rate		Total cost (Rs.)
				Rs.	per	
1	240 v, 16 a, 2 way mcb type board	1		370	each	370
2	mcb	1		600	each	600
3	board 10- module	1		325	each	325
	board 8- module	1		315	each	315
	board 6- module	1		220	each	220
4	pvc conduit pipe 25 mm diameter	50	m	22	m	1100
5	1/1 80mm, 650v grade single core aluminiumpvc cable	0.5	m	10	m	5
6	1/1 40mm, 650 v grade single core aluminiumpvc cable	150	m	10	m	1500
7	single way 5a anchor switch, 240	15		20	each	300
8	single way 15a anchor switch, 240	1		40	each	40
9	pvc type two plate cilling rose	9		20	each	180
10	pvc type petant holder	6		35	each	210
11	flexible wire 23/0 193 mm	30	m	10	m	300
12	earthing wire 14 swggi wire	0.3	m	35	m	11
13	nut, bolt with earthing thimble	5		15	each	75
14	51mm screw	30		100	200	30
15	6 a, 3 pin socket	6		40	each	240
16	15 a, 3 pin socket	1		60	each	60
17	cement, soil warnice					300
18	fan regulator	3		300	each	900
19	fan	3		1200	each	3600
20	lamp	6		200	each	1200
21	labour charge	21 point		150	each	3150
	5 % miscellaneous charge					600
					Rs. Total	15631

8.1.10 Electrical Design 3 (Community Hall)
Design Drawings

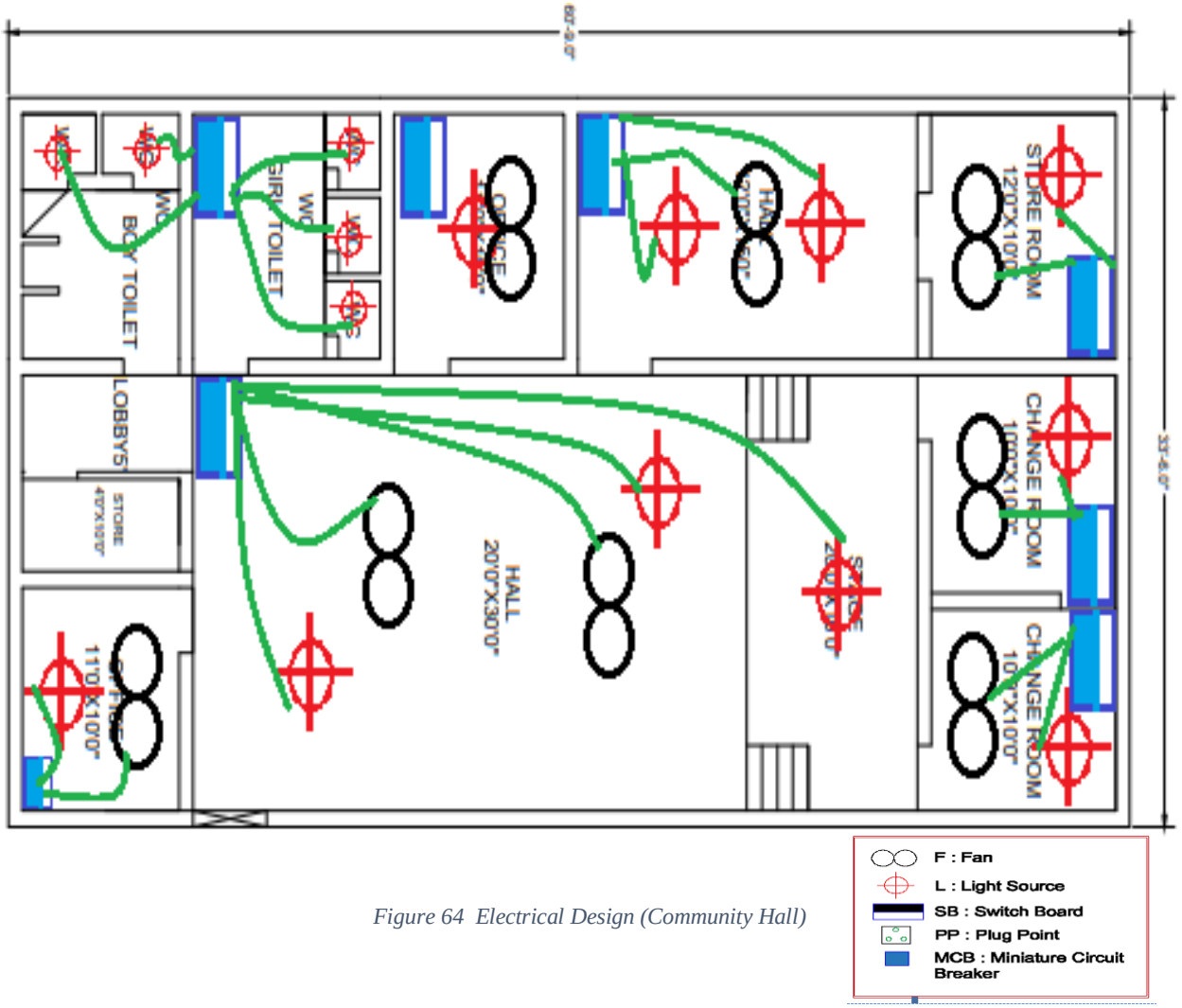


Figure 64 Electrical Design (Community Hall)

Load Calculation:

Table 38 Load Calculation (Community Hall)

Sr.No	Type and Location Of Point	No. Of Points	Watt/Point	Total Wattage
1	Light Points		30	450
	(2+2+2+2+2+2+2)	15		
2	Fan Points		60	480
	(3+3+2)	8		
3	5 Amp. Socket Outlet		100	1600
	(2+2+2+2+2+2+2+2)	16		
	Total	38		2530

Measurement Sheet:

Table 39 Measurement and Estimate for Community hall

Sr. No.	Materials with Specification	Quantity Reqd.	Unit	Rate		Total Cost (Rs.)
				Rs	Per	
1	MCB	1		400	Each	400
2	240 V, 16 A, 2 Way MCB Type Board	1		370	Each	370
3	Board 12- module	1		345	Each	345
	Board 4- module	5		168	Each	840
	Board 2-module	2		121	Each	242
4	PVC Conduit Pipe 25 MM Diameter	60	M	30	M	1800
5	1/1.80mm, 650v Grade Single core aluminium PVC cable	0.5	M	10	M	5
6	1/1 40mm, 650 V grade Single Core Aluminium PVC Cable	150	M	10	M	1150
7	Single Way 5A Anchor Switch, 240 V	34		20	Each	680
8	pvc Type Two Plate Ceilling Rose	21		20	Each	420
9	pvc type petant holder	15		40	Each	600
10	flexible Wire 23/0 193 mm	50	M	10	M	500
11	Earthing wire 14 SWG GI Wire	0.4	M	35	M	14
12	Nut, Bolt with Earthing Thimble	30		15	Each	450
13	51mm screw	30		100	200no	300
14	6 A, 3 Pin Socket	14		40	Each	560
15	Cement, Soil Warnice	5		60		300
16	Fan Regulator	8		300	Each	2400
17	Fan	8		1200	Each	9600
18	Lamp	15		200	Each	3000
19	Labour Charge	38 Point		60	Each	2280
					Total	26256
	5 % miscellaneous charge					1313
					RS. Total	27569

8.2 Reason for Students Recommending this Design

- As for the hygienic & cleanliness purpose the design for public toilet is necessary.
- For the better treatment for village dwellers against diseases the PHC need to be modern equipped.
- For the development of children, the Anganwadi is to be developed.
- The design for community hall is to be needed for carrying out meeting and other function carried out by village dwellers.

- From the Smart Village design the design for vocational training center is given so the youth of village get technical knowledge.
- The cattle dung and extract are used for Bio-Gas Plant thus village is cleaned with help of Bio-Gas plant and the electricity is generated through it thus BioGas plant is needed for village.
- For use of renewable energy, the submersible pump design is provided helpful for farmer and household works.
- Rain Water Harvesting system can be implemented for individual as well as public buildings such as hospitals or schools.
- Renewable energy sources can be used for energy conservation and to reduce load on conventional energy sources

8.3 About designs Suggestions / Benefit of the villagers

- We suggest of the villagers to use non-conventional energy source like Solar energy, bio gas energy, wind energy etc.
- There is no any public garden or recreational center is available in village so we also think about to design of it.
- We suggest about energy saving saving concept
- Wi -fi network service is required for village dwellers
- Door to door dustbins are required for the purpose of garbage collection
- Proper techniques for agricultural purpose are to be used

Rain water harvesting system for government buildings

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

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

1. Social design: Community hall

In the Manpur village there is no any bank and villagers have to go outside the village at Shapur for banking facility so that one bank should be there in village so villagers can easily do their banking related works and for easy access of it.

2. Socio-Cultural design: Cow yard

There is no any cow yard in the Manpur village but for the better growth of dairy and economy of the Manpur there should be one cow yard in the village.

3. Smart village design: Solar Street Lights.

For the smart development of the Manpur village we have proposed the smart concepts as the solar street light.

These are the proposed designs for the future development of Manpur village for Vishwakarma Yojana phase VIII, Part 2 design.

Chapter 10

Conclusion of the Entire Village Activities of the Project

In this semester, we completed our Literature Review and our Ideal Village Visit. From there we got an idea about how the ideal village should be. Then we visited our allotted village Manpur of Junagadh district.

There we completed our Techno-Economic Survey and Smart Village Survey. After surveying we came to conclusion that there was lack of Social Culture Plant. Hence, we designed Garden and also designed Manpur gram panchayat building and Bus Stop of the entire village. We also design an electrical layout of a exits new building.

Benefits in Future

- Peoples get benefits of bus stops for the purpose of waiting of bus with comfort
- Create awareness to keep village clean
- Train women in that village so that they can teach children in school
- New solar street light in the village
- Wi-Fi system available in the village
- Camera system is also available in the village

The project is to provide urban amenities in rural areas and maintaining the rural soul. This will help in developing villages in sustainable manner, reduce migration from villages and prevent the cities from the urban Pressure.

This project will be helpful to develop the village as it will increase basic infrastructure facilities and add smart infrastructure facilities in the village. With increasing use of facilities will generate employment opportunities. It will also help to increase the revenue and GDP of state and country. It will also increase country's image in front of world as Good infrastructure, Good Economic Profile and good employment solution.

Vishwakarma Yojana gives an opportunity to design solutions for the village which will help in the development of the village and betterment of the people of the village. The infrastructures are designed keeping in mind the sustainability and economic factor in the consideration. This development will eventually be the development of the country, which is developed keeping the vision of the future in mind.

Chapter 11
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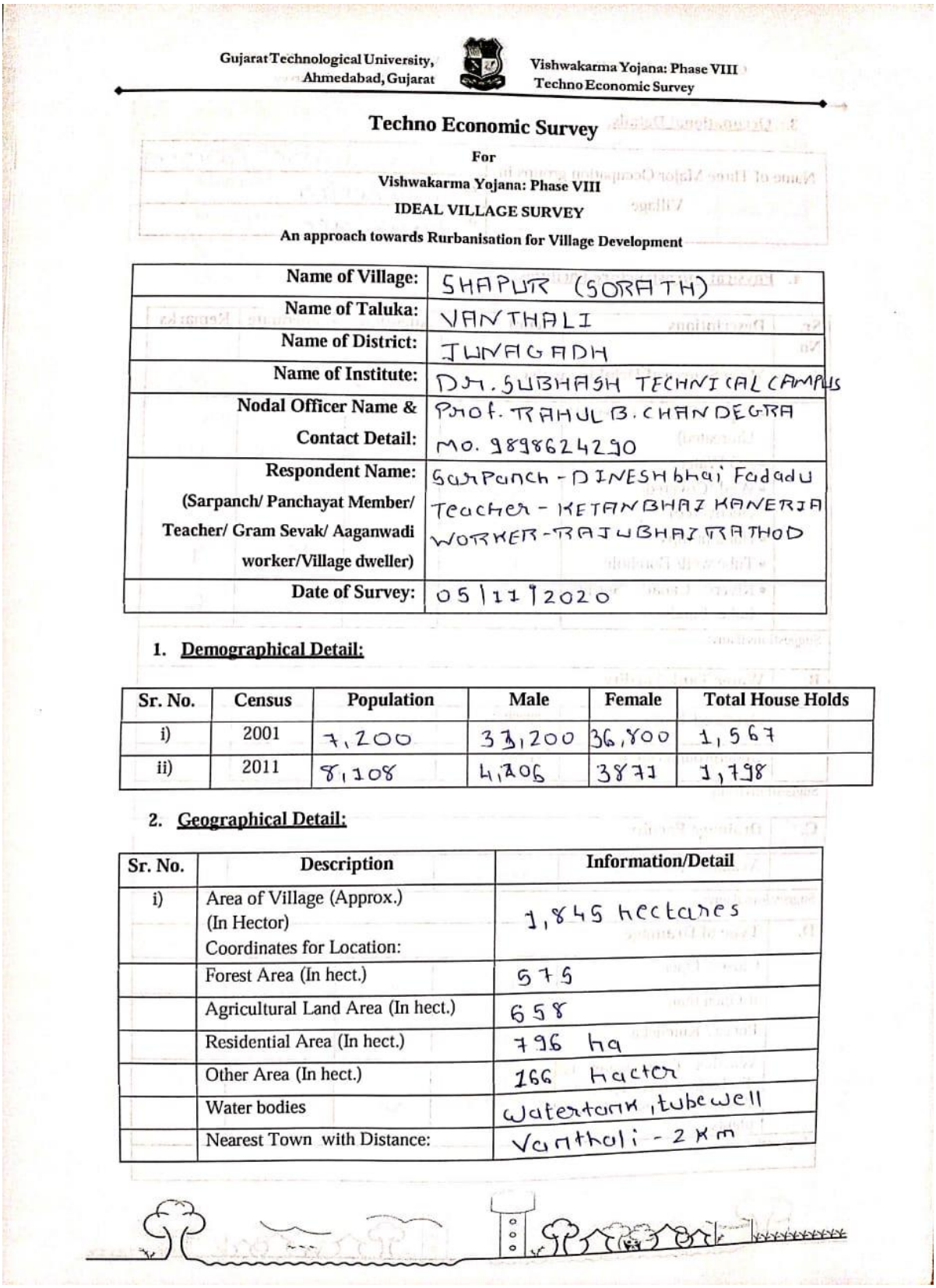
Chapter 12
Annexure attachment

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



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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:	SHAPUR (SORATH)
Name of Taluka:	VANTHALI
Name of District:	JUNAGADH
Name of Institute:	DR. SUBHASH TECHNICAL CAMPUS
Nodal Officer Name & Contact Detail:	Prof. RAHUL B. CHANDEGRA Mo. 9898624290
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Sarpanch - DINESHbhai Fadadu Teacher - KETANBHAI KANERIA WORKER - RAJUBHAI RATHOD
Date of Survey:	05/11/2020

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	7,200	33,200	36,900	1,567
ii)	2011	8,108	4,206	3871	1,798

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	1,845 hectares
	Forest Area (In hect.)	575
	Agricultural Land Area (In hect.)	658
	Residential Area (In hect.)	796 ha
	Other Area (In hect.)	166 hactor
	Water bodies	Watertank, tubewell
	Nearest Town with Distance:	Vanthali - 2 Km

3. Occupational Details:

Name of Three Major Occupation groups in Village	1. Agriculture - Farming
	2. Shopkeeper
	3. Employee

4. Physical Infrastructure Facilities:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated)	Yes	✓		
	• RO Water	No			
	• Well (Covered/ Uncovered)	Yes	✓		
	• Hand pumps	Yes		✓	9
	• Tube well/ Borehole	Yes			
	• River/ Canal/ Spring/ Lake/ Pond	Yes	✓		6
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: 2 Lac	✓		
	Underground Sump	Capacity: 1.7 Lac	✓		
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	Yes	✓		
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	85 % closed	✓		
	If Open than Pucca / Kutchcha	-			
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	Yes	✓		
Suggestions if any:					

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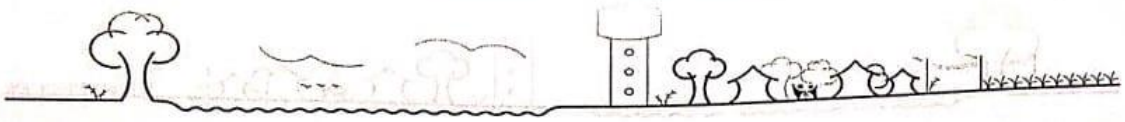
E.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	WBM	✓		
	Main road	RCC	✓		
	Internal streets	CC	✓		
	Nearest NH/SH/MDR/ODR Dist. in kms.	NH-7KM SH-3KM	✓		
Suggestions if any:					

F.	Transport Facility				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Yes	✓		
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes	✓		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto Chakado Private	✓		
Suggestions if any:					

G.	Electricity Distribution				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Govt. PGVCL (24 hr)	✓		
	Power supply for Domestic Use	Yes	✓		
	Power supply for Agricultural Use	Yes	✓		
	Power supply for Commercial Use	Yes	✓		
	Road/ Street Lights	Yes	✓		



	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
	Renewable Energy Source Facilities (Y/ N)	No			
	LED Facilities	No			
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	Yes - 2 no	✓		
	Location Condition	Good			
	Community Toilet (With bath/ without bath facilities)	No			
	Solid & liquid waste Disposal system available	No			
	Any facility for Waste collection from road	D to D	✓		
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	tube well Canal	✓		
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	88% Pucca 12% Kutcha			

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:	CHC Govt. Hospital Yes	✓			
	Private Clinic/Private Hospital/ Nursing Home	Available	✓			
	If any of the above Facility is not available in village than approx. distance from village: .....kms.					
Suggestions if any:						

L.	Education Facilities:				
	Aaganwadi/ Play group	Yes	✓		
	Primary School	Yes	✓		
	Secondary school	Yes	✓		
	Higher sec. School	Yes	✓		
	ITI college/ vocational Training Center	No			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	No			
	If any of the above Facility is not available in village than approx. distance from village: 10....kms.				
Suggestions if any:					

M.	Socio- Culture Facilities				
	Community Hall (With or without TV) Location:	No			

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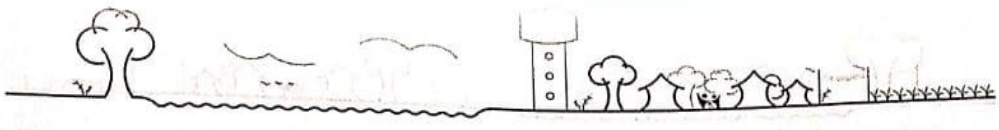
Techno Economic Survey

	Condition:	V.Good	✓		
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	No 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:	Yes Primary School	✓		
	Birth & Death Registration Office Location: Condition:	Y Panchayat	✓		

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

Suggestions if any:

N.	Other Facilities				
	Post-office	Yes	✓		
	Telecommunication Network/ STD booth	No			



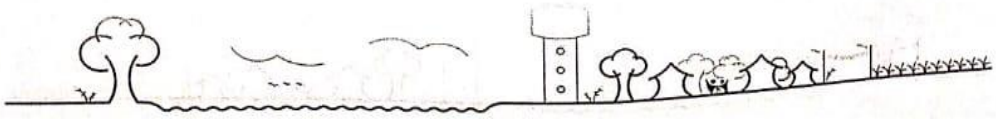
	General Market	Yes	✓		
	Shops (Public Distribution System)	Yes	✓		
	Panchayat Building	yes	✓		
	Pharmacy/Medical Shop	yes	✓		
	Bank & ATM Facility	yes	✓		
	Agriculture Co-operative Society	yes	✓		
	Milk Co-operative Soc.	yes	✓		
	Small Scale Industries	yes	✓		
	Internet Cafes/ Common Service Center/Wi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

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

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

7. **Data Collection From Village**

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



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

8. Additional Information/ Requirement:

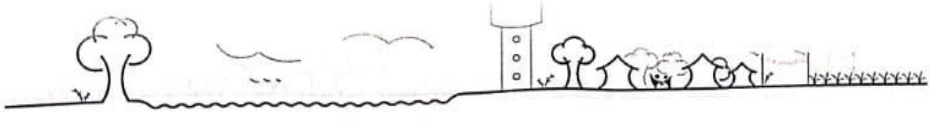
Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities(School Building, Health Center, Panchayat Building, Public Toilets & any other)	Existing is good, school need maintainance	-
2.	Additional Information/ Requirement	No	-

9. Smart Village Proposal Design

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Solar Street light Rain collection	Possible delopment	-

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

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



12.2 Survey form of Smart Village Scanned copy attachment in the report for Part-I

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

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

Name of District:	JUNAGADH
Name of Taluka:	KESHOD
Name of Village:	AJAB
Name of Institute:	DR. Subhash technical campus
Nodal Officer Name & Contact Detail:	Prof. Rahul B. Chandegra
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Ranchhod bhai Villagers
Date of Survey:	01/12/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	6802	3548	3245	1516
2.	2011	8026	4105	6921	1898

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector) Coordinates for Location:	3238.08 Hectors
2.	Forest Area (In hect.)	0
3.	Agricultural Land Area (In hect.)	3,143 Hect.
4.	Residential Area (In hect.)	94.90 Hect.
5.	Other Area (In hect.)	-
6.	Distance to the nearest railway station (in kilometers):	13 KM

1

7.	Name of Nearest Town with Distance:	Sergadh - 4KM
8.	Distance to the nearest bus station (in kilometers):	100M
9.	Whether village is connected to all road for the any facility or town or City?	Yes

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Farming
	2.	Labour
	3.	Job

Major crops grown in the village:	1.	Magfali
	2.	Cotton
	3.	tuver

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 (Protected)	✓		
3.	**WATER FROM SPRING** Protected Spring Unprotected Spring Rainwater Tanker Truck Cart With Small Tank	Yes (Rain water)	✓		
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/** Irrigation Channel Bottled Water Hand Pump Other(Specify)**Lake/ Pond**	Yes other	✓		

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Suggestions if any:						
B.	**Water Tank Facility**					
	Overhead Tank	Capacity:	3 Lac	Ltr		
	Underground Sump	Capacity:	4 lac	Ltr		
Suggestions if any:						
C.	**The Type of Drainage Facility**					
	A. UNDERGROUND DRAINAGE	80% VG				
	1	Close	✓			
	2					
	B. OPEN WITH OUTLET	✓				
	C. OPEN WITHOUT OUTLET					
Suggestions if any:						
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**					
	Village approach road	RCC	✓			
	Main road	CC / RCC	✓			
	Internal streets	Blocks	✓			
	Nearest NH/SH/MDR/ODR Dist. in kms.	16 KM	✓			
Suggestions if any:						
E.	**Transport Facility**					
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	✓ 13 KM				
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes available	✓			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto Chakdo	✓			
Suggestions if any:						
F.	**Electricity Distribution**					
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	PGVCL	✓			

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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)	No	✓		
	LED Facilities	No			
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	Not available			
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	No			
	Solid & liquid waste Disposal system available	out of village			
	Any facility for Waste collection from road	Regular			
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND	✓	✓		
	STREAM/RIVER	-			
	CANAL	✓	✓		
	WELL	✓	✓		
	TUBE WELL.	✓	✓		
	OTHER (SPECIFY)	Pump	✓		
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	80% P 20% K			

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	Yes	✓		
	Sub-Centre	Yes	✓		
	PHC	No			
	BLOCK PHC	No			
	CHC/RH	Yes	✓		
	District/ Govt. Hospital	Yes	✓		
	Govt. Dispensary	Yes	✓		
	Private Clinic	Yes	✓		
	Private Hospital/	Yes	✓		
	Nursing Home	No			
	AYUSH Health Facility	Yes	✓		
	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	Yes	✓		
	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: 13...kms.				

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Suggestions if any:

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

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

Suggestions if any:

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

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

Suggestions if any:

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

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

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

IX. Smart Village / Heritage Details

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

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

ગામ પંચાયત કાર્યાલય
તાલુકો-કેશોદ

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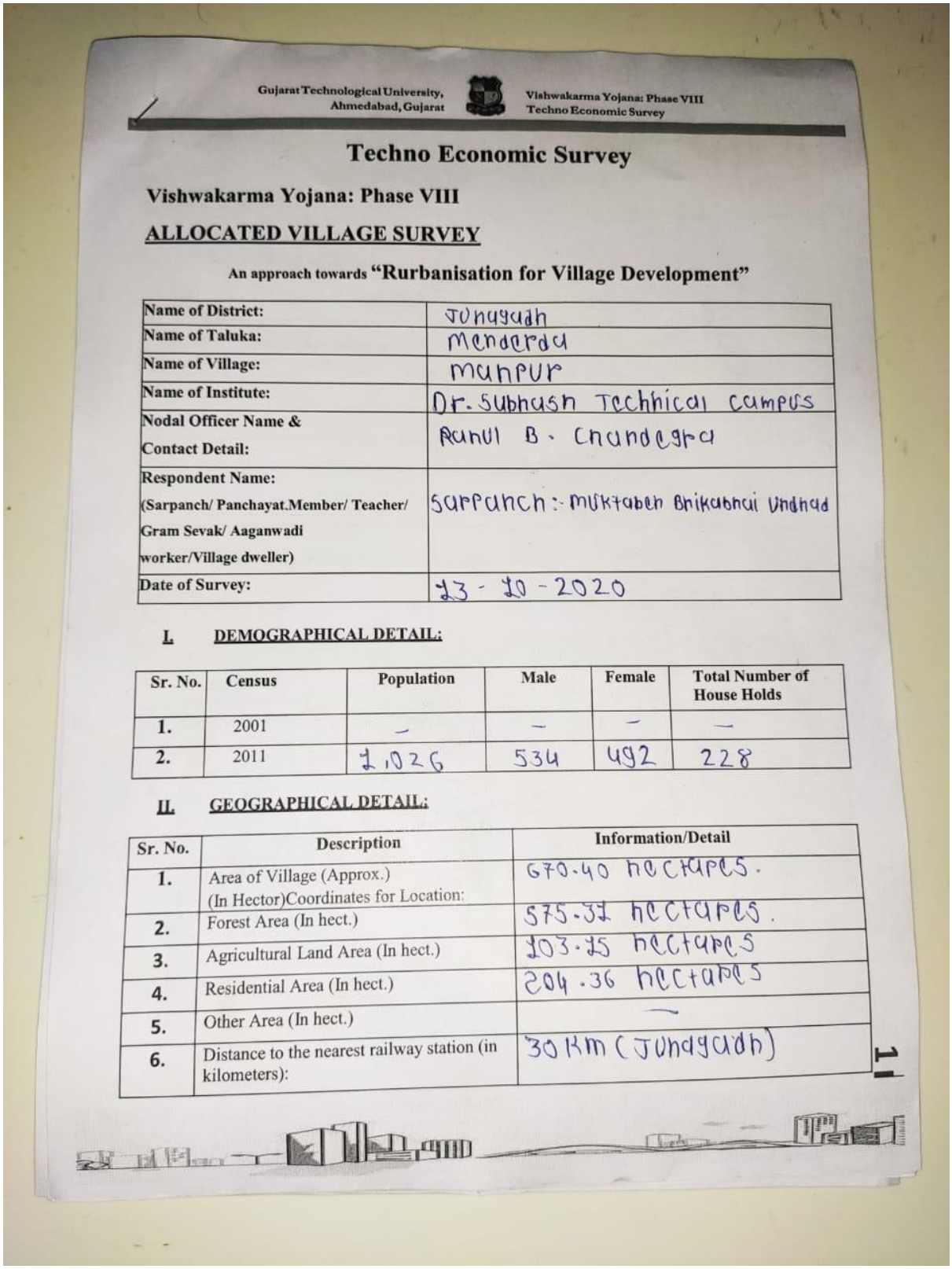
12.3 Survey form of Allocated Village Scanned copy attachment in the report for Part-I



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Techno Economic Survey

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Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

Name of District:	Junagadh
Name of Taluka:	Mendarda
Name of Village:	Manpur
Name of Institute:	Dr. Subhash Technical campus
Nodal Officer Name & Contact Detail:	Rahul B. Chandegra
Respondent Name: (Sarpanch/ Panchayat.Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Sarpanch :- Muktaben Bhikabhai Vadhad
Date of Survey:	23 - 10 - 2020

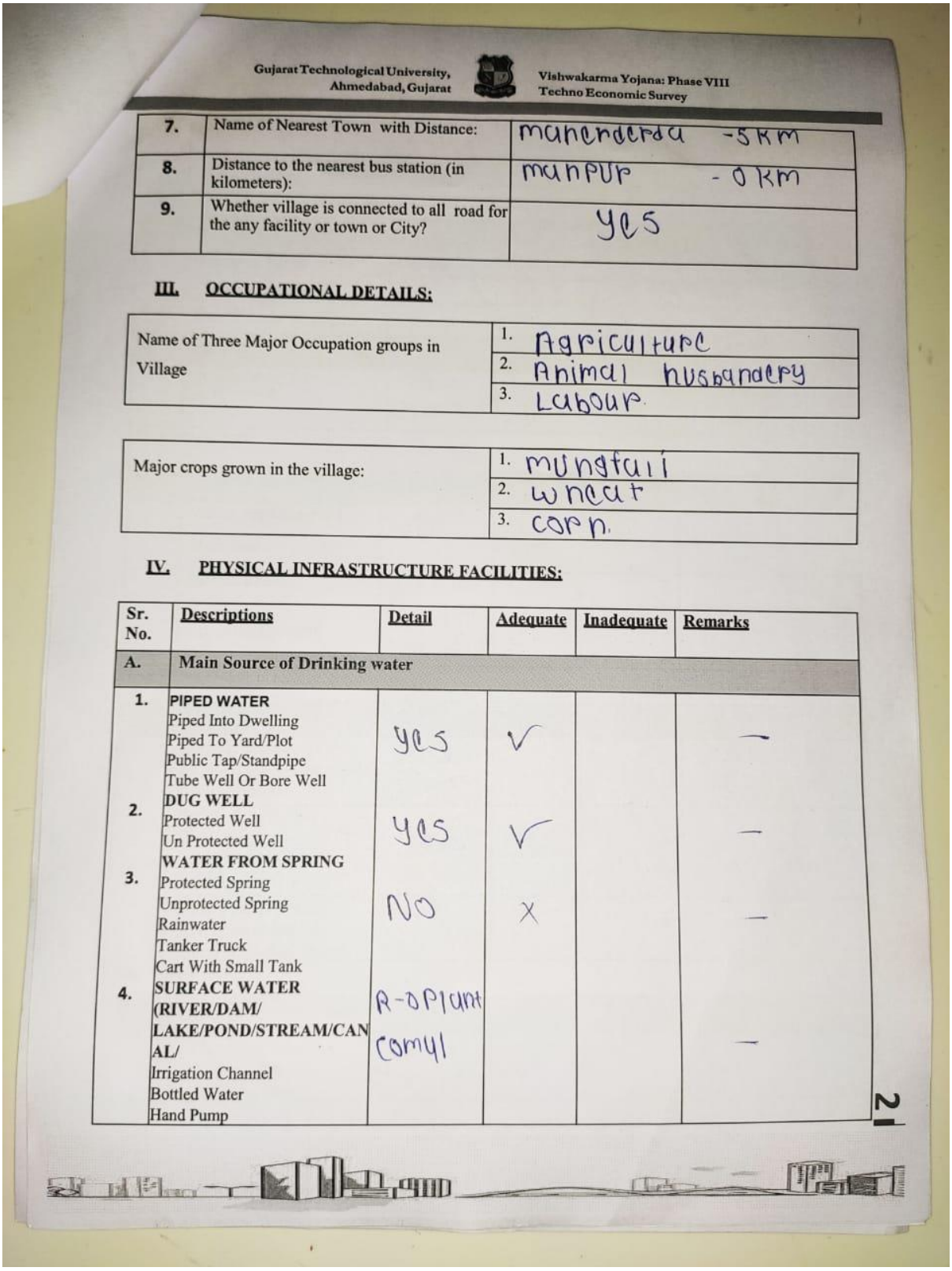
I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	–	–	–	–
2.	2011	1,026	534	492	228

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	670.40 hectares.
2.	Forest Area (In hect.)	575.32 hectares.
3.	Agricultural Land Area (In hect.)	103.25 hectares
4.	Residential Area (In hect.)	204.36 hectares
5.	Other Area (In hect.)	–
6.	Distance to the nearest railway station (in kilometers):	30 Km (Junagadh)

1



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7.	Name of Nearest Town with Distance:	manendera -5 KM
8.	Distance to the nearest bus station (in kilometers):	manpur - 0 KM
9.	Whether village is connected to all road for the any facility or town or City?	yes

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1. Agriculture 2. Animal husbandary 3. Labour.
Major crops grown in the village:	1. mungfali 2. wheat 3. corn.

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	X		—
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/** Irrigation Channel Bottled Water Hand Pump	R-O Plant comyl			—

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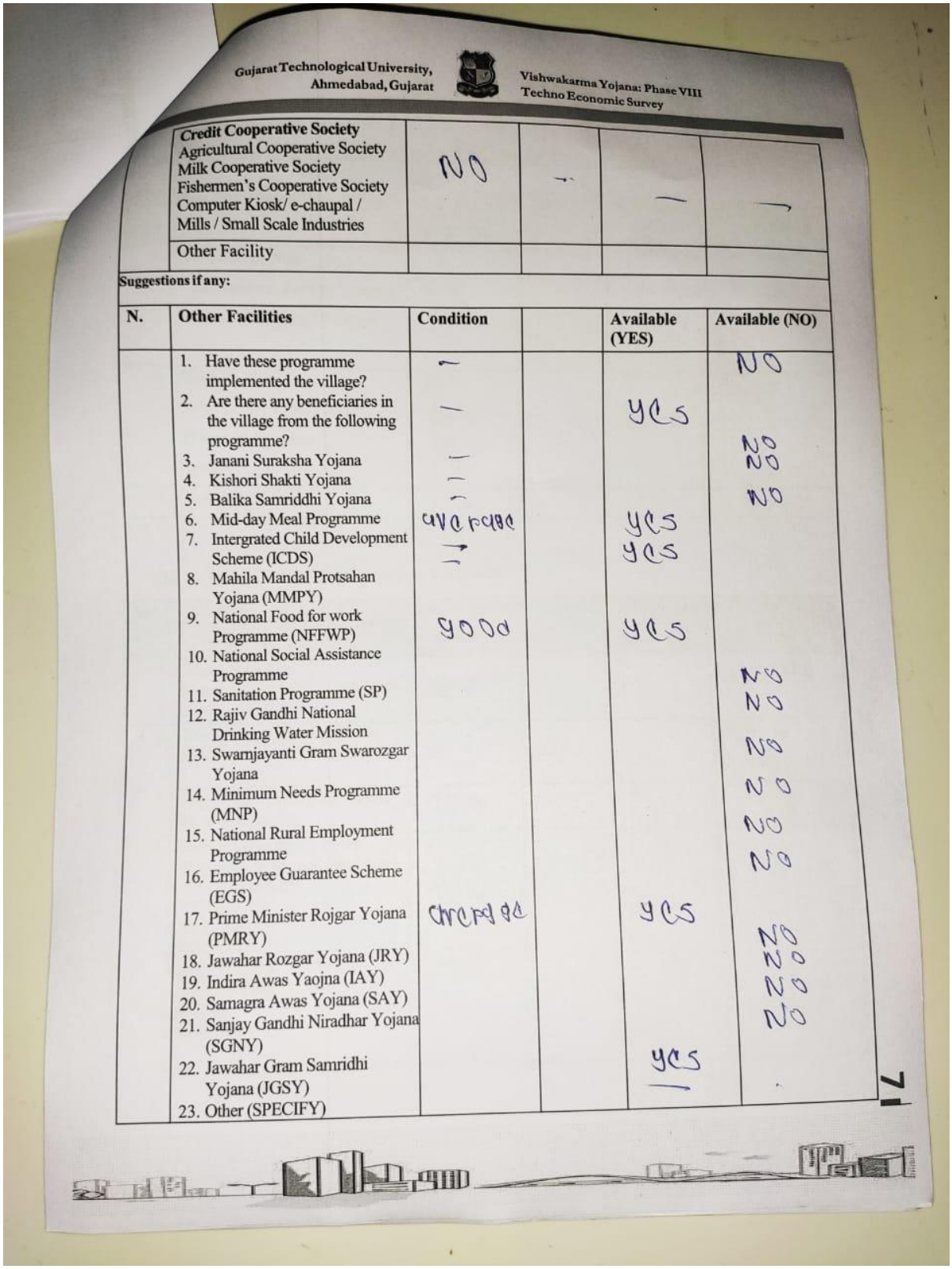

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	Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-chaupal / Mills / Small Scale Industries	NO	-	—	—
	Other Facility				

Suggestions if any:

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

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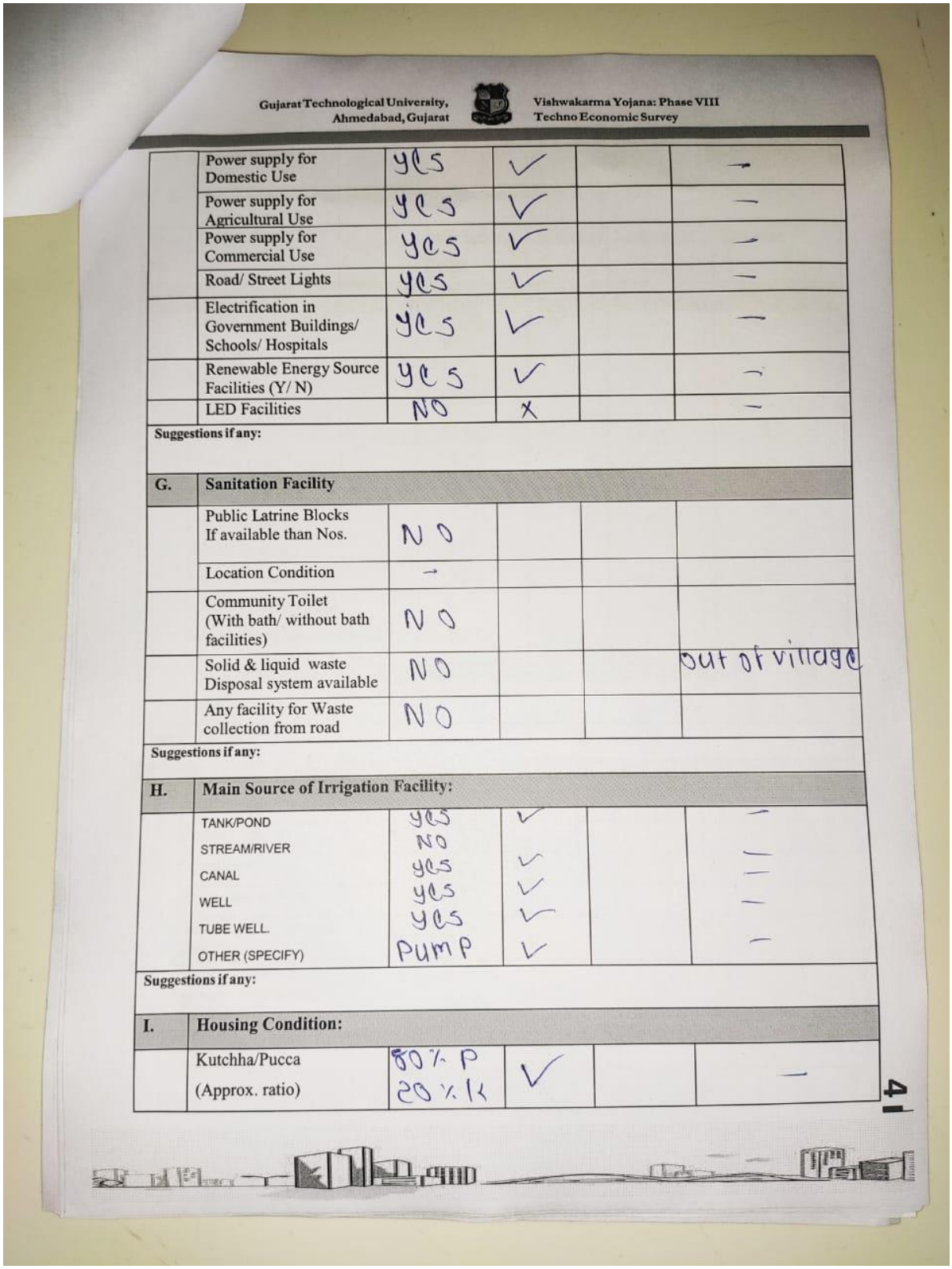

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	Power supply for Domestic Use	yes	✓		–
	Power supply for Agricultural Use	yes	✓		–
	Power supply for Commercial Use	yes	✓		–
	Road/ Street Lights	yes	✓		–
	Electrification in Government Buildings/ Schools/ Hospitals	yes	✓		–
	Renewable Energy Source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

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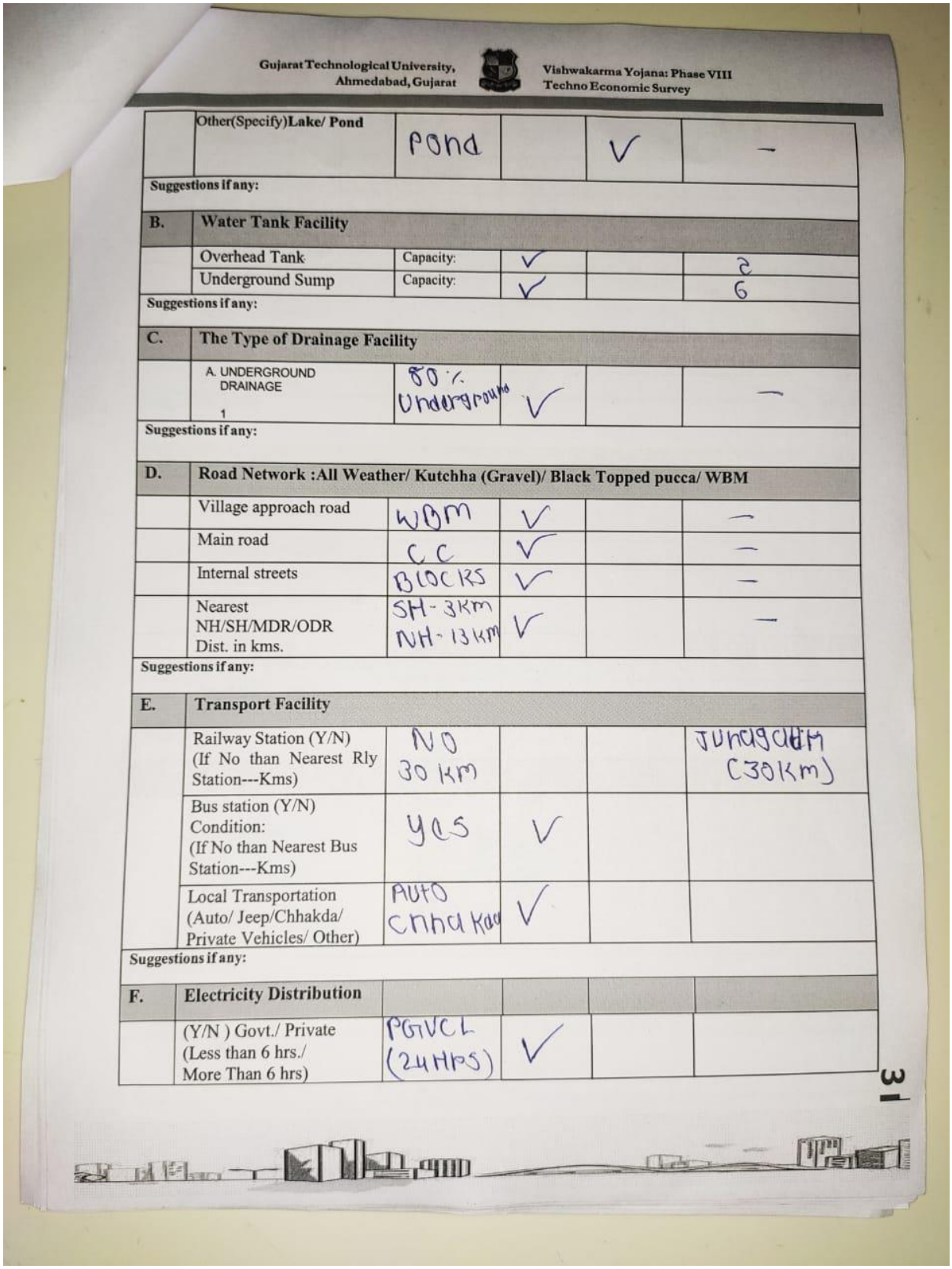

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	Other(Specify)Lake/ Pond	Pond		V	–

Suggestions if any:

B.	Water Tank Facility				
	Overhead Tank	Capacity:	V		2
	Underground Sump	Capacity:	V		6

Suggestions if any:

C.	The Type of Drainage Facility				
	A. UNDERGROUND DRAINAGE 1	50 % Underground	V		–

Suggestions if any:

D.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	WBM	V		–
	Main road	C C	V		–
	Internal streets	BLOCKS	V		–
	Nearest NH/SH/MDR/ODR Dist. in kms.	SH - 3KM NH - 13KM	V		–

Suggestions if any:

E.	Transport Facility				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NO 30 KM			JUNAGADH (30KM)
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	YES	V		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	AUTO CHHAKDA	V		

Suggestions if any:

F.	Electricity Distribution				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	PGVCL (24HRS)	V		

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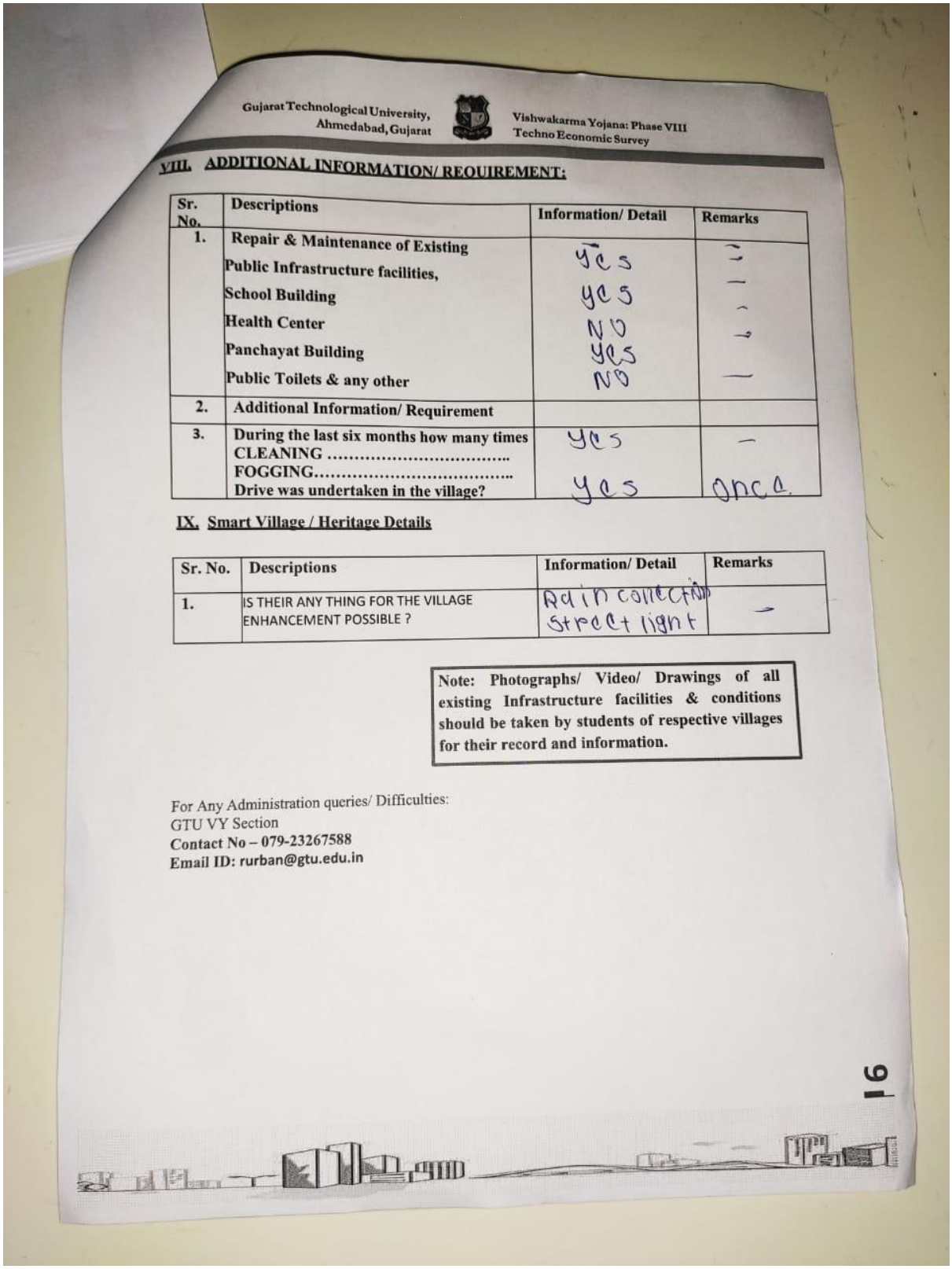

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VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

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

IX. Smart Village / Heritage Details

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

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

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

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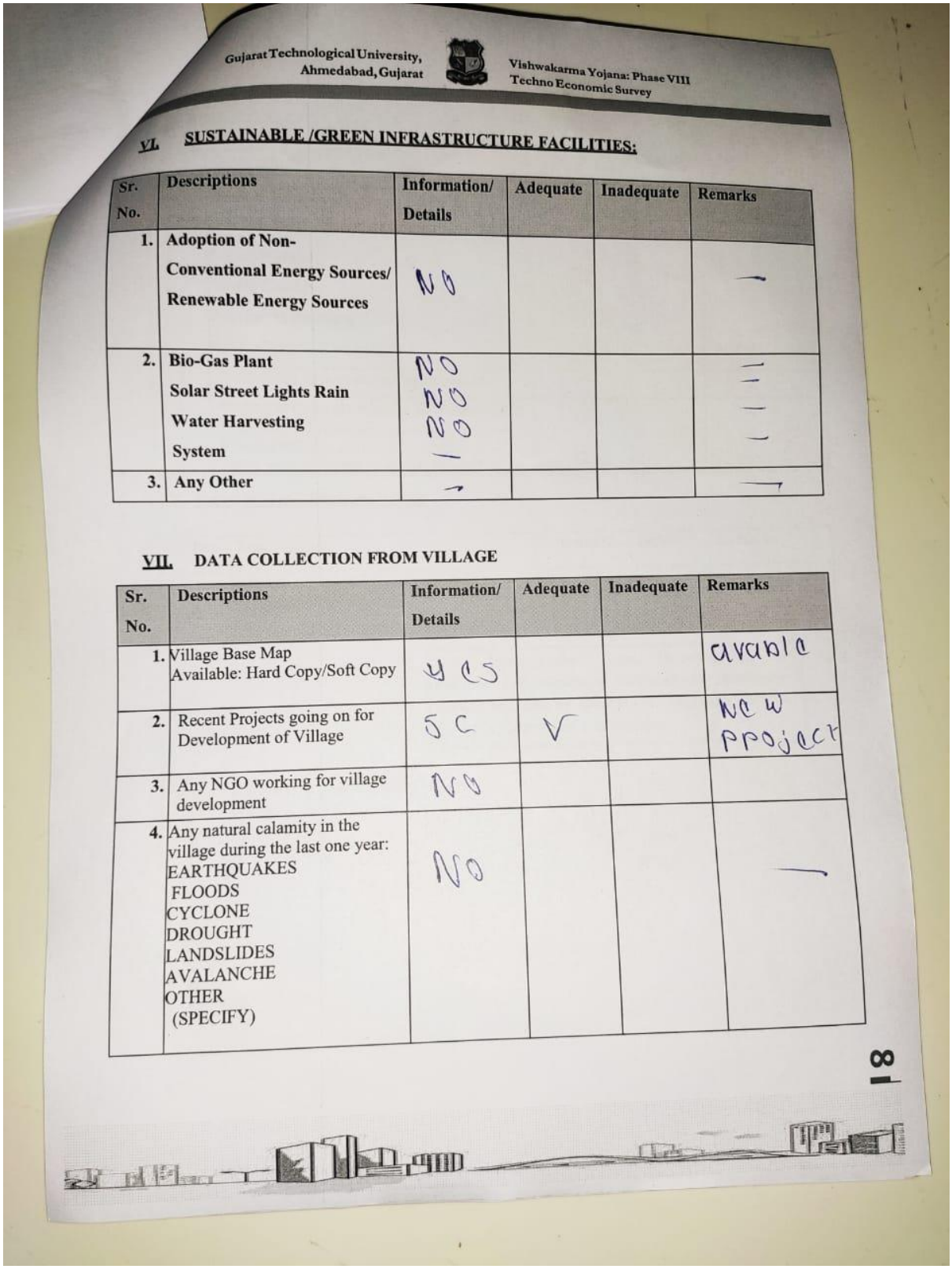

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VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Village Base Map Available: Hard Copy/Soft Copy	YES			avable
2.	Recent Projects going on for Development of Village	SC	V		NEW PROJECT
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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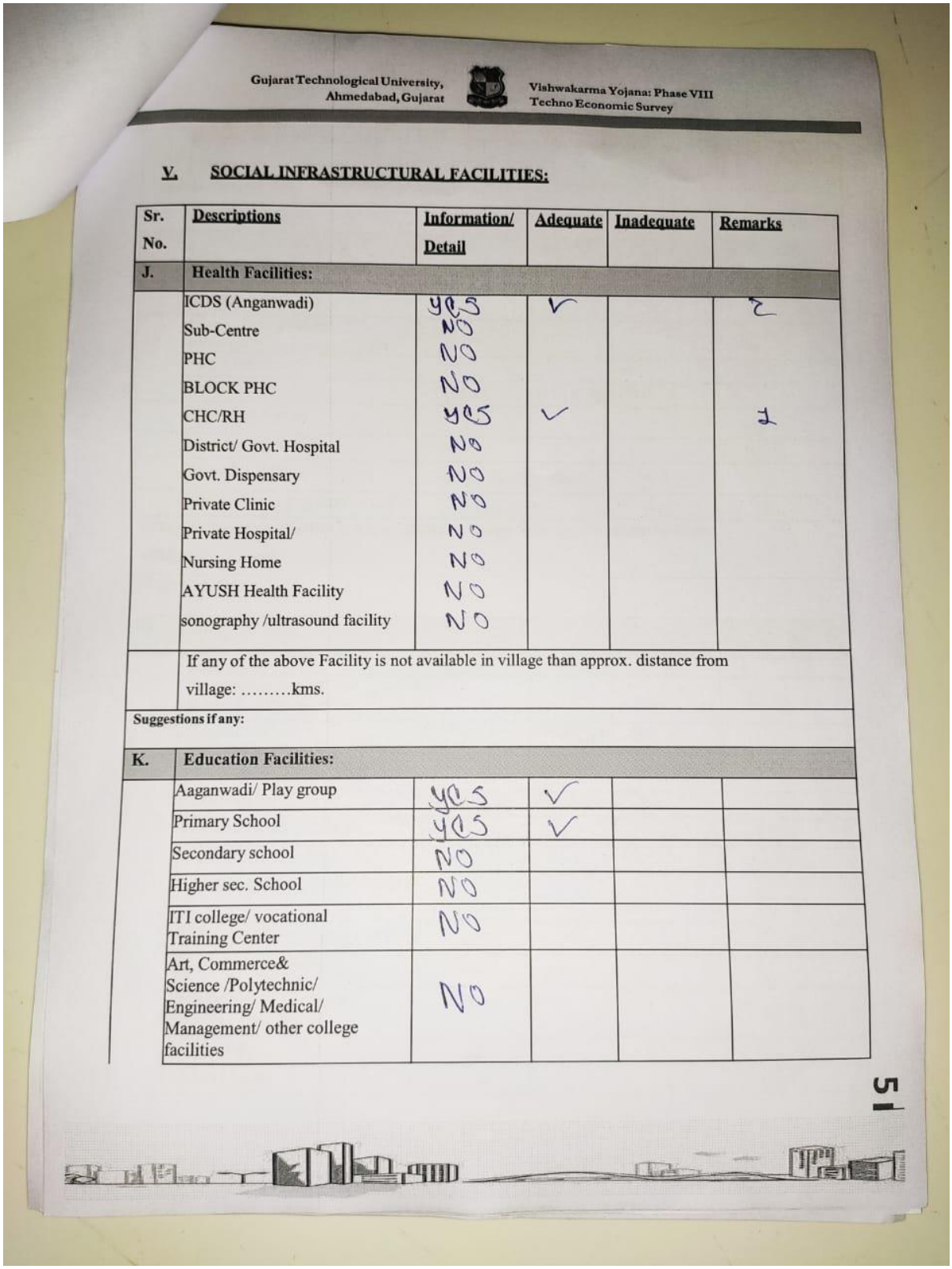

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

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

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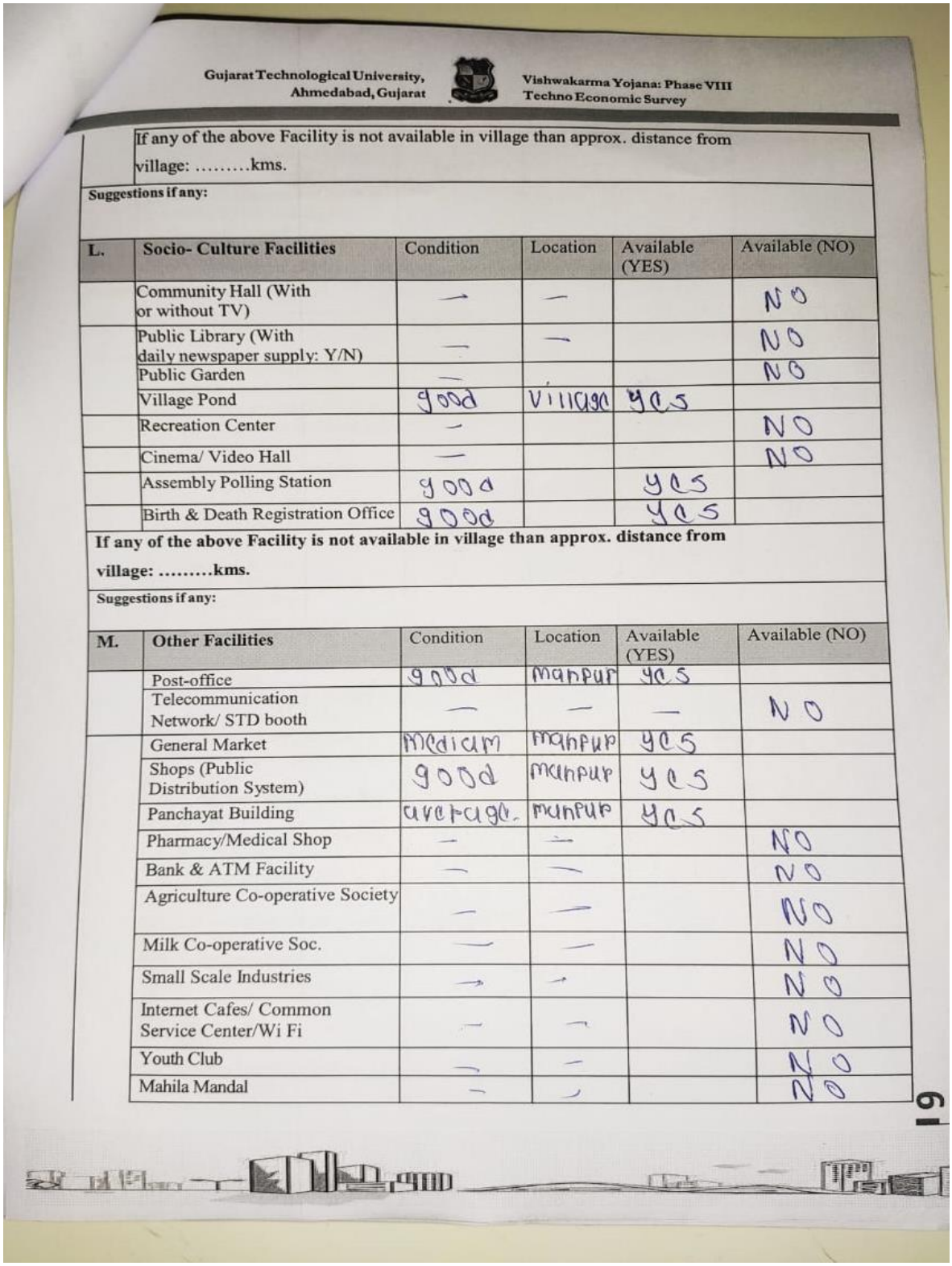

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If any of the above Facility is not available in village than approx. distance from village: .....kms.

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	—			NO
	Village Pond	good	Village	YES	
	Recreation Center	—			NO
	Cinema/ Video Hall	—			NO
	Assembly Polling Station	good		YES	
	Birth & Death Registration Office	good		YES	

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

Suggestions if any:

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

12.4 Gap Analysis of the Allocated Village

Table 40 Gap Analys

Village Facilities	Planning Commission/UDPFI Norms	Village Name:	Manpur		
		Population:		5360	
		Existing	Required as per Norms	Smart Village / Cities / Design	Gap
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	3	1		2
Primary School	Each Per 2500 population	1	1		0
Secondary School	Per 7,500 population	0	2		2
Higher Secondary School	Per 15,000 Population	0	0		0
College	Per 125,000 Population	0	0		0
Tech. Training Institute	Per 100000 Population	0	0		0
Agriculture Research Centre	Per 100000 Population	0	0		0
Skill Development Centre	Per 100000 Population	0	0		0
Health Facility					
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	1	1		0
Primary Health & Child Health Centre	Per 20,000 population	0	0		0
Child Welfare and Maternity Home	Per 10,000 population	0	0		0
Multispeciality Hospital	Per 100000 Population	0	0		0
Public Latrines	1 for 50 families (if toilet is not there in home, specially for slum pockets & kutcha house)	0	50		50
Physical Infrastructure Facilities					
Transportation		**Adeqt/ Inadet**			
Pucca Village Approach Road	Each village	Adequate			
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)		Inadequate	YES	
Drinking Water (Minimum 70 lpcd)		**Adeqt/ Inadet**			
Over Head Tank	1/3 of Total Demand	Adequate			
U/G Sump	2/3 of Total Demand	Adequate			
Drainage Network - Open			Inadequate		
Drainage Network - Cover			Inadequate		
Waste Management System			Inadequate		
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	1	1		0
community hall and Public Library	Per 15000 Population	0	1		1
Cremation Ground	Per 20,000 population	1	1		0
Post Office	Per 10,000 population	1	1		0
Manpur gram panchayat Building	Each individual/group panchayat	1	1	YES	0
APMC	Per 100000 Population	0	0		0
Fire Station	Per 100000 Population	0	0		0
Public Garden	Per village	0	1	YES	1
Police post	Per 40,000Population	0	0		0
Shopping Mall		0	0		0
Electrical Design					
Electricity Network		**Adeqt/ Inadet**			
		Adequate			
Any Smart Village Facility					
Technology	No				
		ESR cap	0		
		Sump cap	50,000 Ltr.		
		Lat cap	0		

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

Sr. No.	Village	Discipline	Part - I	Part - II
1.	Manpur	Electrical	Design of Post Office wiring	Design of street light
			Design of Aanganwadi	Design of Community hall
		Civil	Design of Community hall	Design of Main Road
			Design of entrance gate	Design of Dry Composting Toilet
			Design of Bus stand	
2.	Shapur	Electrical	Design of ele. Plans for post office	Electrical Plans for PHC
			Electrical plans for Anaganwadi	Electrical plans for Bus stand
			Design of Solar plates	Design of panchayat building
		Civil	Design of post office	Bus stand
			Design of anganwadi	PHC building
3.	Ajab	Electrical	Electrical plans for public toilet	Electrical plans for PHc
			Design of street lights wiring	Electrical plans for wiring in bus stand
		Civil	Design Of Bus stand	Design of post office
			Design of store	Design of pole

Table 41 Summary Details of all vilages

12.6 Drawings (If, required, A1, A2, A3 design is not visible then Only)

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

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

Table 42 Summarry of Good Photographs

Allocated Village	Ideal Village	Smart Village
		
		
		


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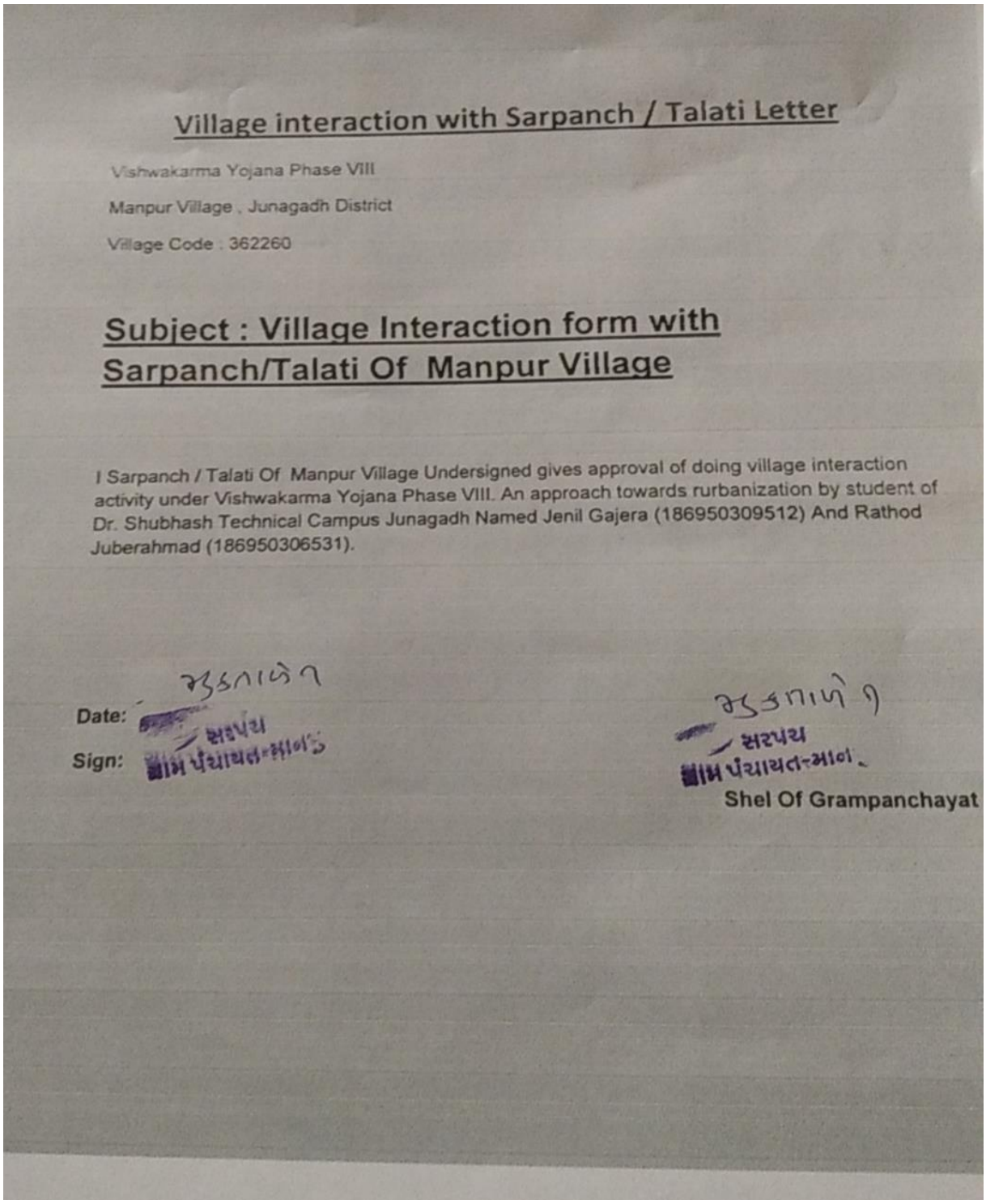
12.8 Village Interaction with sarpanch Report with the photograph



Village interaction with Sarpanch / Talati Letter

Vishwakarma Yojana Phase VIII

Manpur Village , Junagadh District

Village Code : 362260

Subject : Village Interaction form with Sarpanch/Talati Of Manpur Village

I Sarpanch / Talati Of Manpur Village Undersigned gives approval of doing village interaction activity under Vishwakarma Yojana Phase VIII. An approach towards rurbanization by student of Dr. Shubhash Technical Campus Junagadh Named Jenil Gajera (186950309512) And Rathod Juberahmad (186950306531).

Date: [redacted]

Sign:

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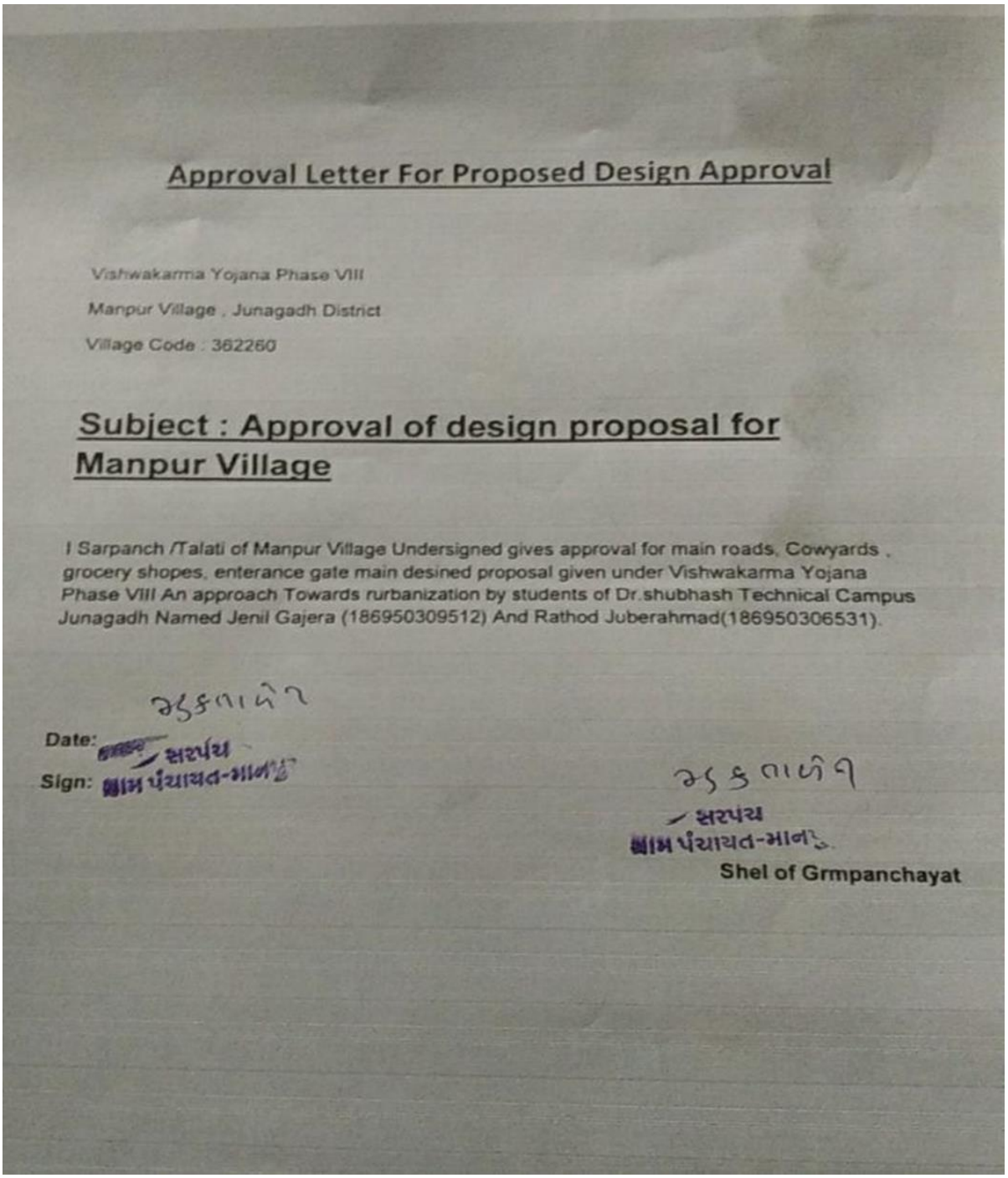
Shel Of Grampanchayat

12.9 Sarpanch Letter giving information about the village development



Approval Letter For Proposed Design Approval

Vishwakarma Yojana Phase VIII

Manpur Village , Junagadh District

Village Code : 362260

Subject : Approval of design proposal for Manpur Village

I Sarpanch /Talati of Manpur Village Undersigned gives approval for main roads, Cowyards , grocery shopes, enterance gate main desined proposal given under Vishwakarma Yojana Phase VIII An approach Towards rurbanization by students of Dr.shubhash Technical Campus Junagadh Named Jenil Gajera (186950309512) And Rathod Juberahmad(186950306531).

Date: ૨૬/૧૧/૨૦૨૧

Sign: સરપંચ ગ્રામ પંચાયત-માનપુર

૨૬/૧૧/૨૦૨૧

સરપંચ

ગ્રામ પંચાયત-માનપુર

Shel of Grmpanchayat