DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION
VALASAN Village

ANAND District

PREPARED BY

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
Parth Patel	Civil	170110106031
Dhruv Virani	Civil	180113106016
Pratik Dabhoikar	Electrical	180113109005

COLLEGE NAME

G H PATEL COLLEGE OF ENGINEERING & TECHNOLOGY

NODAL OFFICERS NAME

Prof. Ratansharan Panchal

COLLEGE LOGO

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad – 382424 Gujarat

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Chandkheda, Ahmedabad – 382424 Gujarat

CERTIFICATE

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

Detail Project Report for,

VILLAGE VALASAN

DISTRICT ANAND

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
Parth Patel	Civil	170110106031
Dhruv Virani	Civil	180113106016
Pratik Dabhoikar	Electrical	180113109005

Date of Report Submission:	
Principal Name and Signature:	**Dr. Himanshu Soni**
VY-Nodal Officer Name and Signature:	**Prof. Ratansharan Panchal**
Internal(Evaluator) Guide Name and Signature:	
College Name:	**G H Patel College of Engineering & Technology**

ABSTRACT

"Vishwakarma Yojana – an approach towards rurbanization" is a very good attempt for constructing an environment that contains the amenities and livelihood of the rural area at the village area with all the different kind of infrastructure facilities like social (Health, Community Hall, Library & other), physical (Water, Drainage, Road, Electricity & other) and sustainable (Biogas plant, Solar Street lights & Other). Rurban concept gave as an idea of an area containing residences as well as some farming operations running, which is a very good thinking for the one who live their villages for better earning and migrate to urban areas for personal development whereas Rurban can help the farming grow which is lacking due to the lack of basic amenities and lack of new technology introduced in the market for agricultural purpose. Many a people leave people migrate leave their places just because they could not grow at the place they leave. For them Vishwakarma Yojana planned a great plan for the interested students to select any one village in their group for the development purpose so that, the villagers can be assured about their places and take interest in village works and get proper employment from the place itself so that they do not have to go for distances to live better life.

We selected the village with name 'Valasan' which is in Anand district, Gujarat. It is 7km away from Anand and Village code or location code of Valasan is 388325. It has a total panchayat raj and has most workers as farmers, employees, vendors, and many others. The village is home to 8050 people, among them 4118 are male and 3932 are female. There are 1682 households.

We are proposing our best designs for the better of the village like better infrastructures, better environment, better road networks, even though there are Pucca roads in the village but still it need certain maintenance for the betterment, drainage, and many problems that are visualized during the survey ofthe village and problems provided by the villagers. Hope we could help them with good and healthy environment with wealth at sustainable resources.

The students of the Vishwakarma Yojana are trying to give their best and provide our villages of the Gujarat and nationwide to provide a developed India overall.

Keywords: - sustainable development, infrastructural facilities, ideal village, smart village, development, drainage, sanitation, education.

ACKNOWLEDGEMENT

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

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

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

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

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

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

An act of gratitude is expressed to our internal guide / Evaluator / Nodal Officer,
Mr. Ratansharan Panchal from college G H Patel College of Engineering & Technology for their invaluable guidance, constant inspiration, and active involvement in our project work.

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

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

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

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ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
GIS	Geographic information system
PMGSY	Pradhan mantri gram sadak Yojna
KM	Kilometer
SAGY	Sansad Adarsh Gram Yojna

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

1.1 BACKGROUND & STUDY AREA LOCATION

Baben village is located about 40 km from Surat city, typifies development. Here villagers enjoy all the facilities that one living in the city enjoys. The 2.7 km road from Baben to Bardoli gives a commuter the feeling of passing through a highway, therefor the village road is 12-meter-wide and its well-lit with streetlight. The village panchayat collect grant which is given by government and use that money on development of road construction, streetlights, a lack, public toilets, drainage system, and water system for the 15610 people of Baben village. All the facilities are available in the village.

Baben village is in Bardoli district of Gujarat state, India. The latitude 21.1379° N and longitude 73.0966° E are the co-ordinate of Baben. Gandhinagar is the state capital for Baben village. It is located around 292 km away from Baben.

(Fig. 1 Map of Baben village)

1.2 CONCEPT OF IDEAL VILLAGE

1.2.1 Objective of Ideal Village

According to us an ideal village should meet with the basic amenities and needs of a village person. It includes sanitation, physical infrastructure facilities, good education facility, co-operative societies, clean environment, communication, health, wealth, and social development. An ideal Indian village will be so constructed as to lend itself to perfect sanitation. It will have cottages with sufficient light and ventilation built of a material obtainable within a radius of five miles of it. The cottages will have courtyards enabling householders to plant vegetables for domestic use and to house their cattle. The village lanes and streets will be free of all avoidable dust. It will have wells according to its needs and accessible to all. It will have houses of worship for all, also a common meeting place, a village common for grazing its cattle, a co-operative dairy, primary and secondary schools in which industrial education will be the central fact, and it will have Panchayats for settling disputes. It will produce its own grains, vegetables and fruit, and its own Khadi. This is roughly my idea of a model village.

1.2.2 Case Study of Ideal Village of India / Gujarat

Urban or municipal infrastructure refers to hard infrastructure systems generally owned and operated by municipalities, such as streets, water distribution, and sewers. It may also include some of the facilities associated with soft infrastructure, such as park, public pools and libraries.

Green infrastructure is a concept that highlights the importance of the natural environment in decision about land use planning. In particular there is an emphasis on the "life support" functions provided by a network of natural ecosystems, with an emphasis on interconnectivity to support long-term sustainability. Example include clean water and healthy soil, as well as the more androcentric function such as recreation and providing shade and shelter in and around towns and cities. The concept can be extended to apply to the management of storm water at the local level using natural system, or engineering systems that mimic natural systems, to treat polluted runoff.

1.2.3 The Idea of Model

Exposer visits are a very important training methodology as it enables the participants from a different setting to interact with learn from each other, allowing them to view practical / real life situation of successful integration of sustainable practices in the said field.
During this meeting border information exchanges took place between the two groups, beyond the core topic. It was observed that all the participants were enthusiastic for learning and implementing their learning's in their own village.

This visit was a step forward in the project as it was a real time experience for the participants on the struggle and hard work that goes into building a remarkable ideal village.

1.2.4 Ancient History Civil / Electrical Concept About Indian Village Foreign Countries Perspective and Its development

Punsari is a village located in Sabarkantha district in the state of Gujarat, India (latitude: -23.39 and longitude: -73.11). The village is located at about 80 km from the state capital, Gandhinagar. As per census 2011 total population of Punsari is 5100 where 2653 male and 2447 female. 79.43% literacy in Punsari village. The Punsari Gram Panchayat has received the prestigious Rajiv Gandhi Best Gram Panchayat National Award for the Year-2012, conferred by the Academy of Grassroots Studies and Research of India (AGRASRI), Tirupati, Andhra Pradesh.

Amenities provided to the villagers: -

1) Air-conditioners and CCTV cameras are installed in the primary schools. Apart from schools, 25 CCTVs are installed at prime junctions of the village so that the litterbugs can be spotted and punished.
2) Minibuses are used for transport purpose within the village. The panchayat has started a bus facility called the *Atal Express* for women which is used for the import of milk. Villagers can go anywhere in the village in this van by paying a token amount of just Rs 2.
3) For communication purposes, 120 waterproof speakers have been installed, which are used by the Sarpanch to inform the people of new schemes and to make important announcements. The speakers are also used to play bhajans, shlokas, and slogans of Mahatma Gandhi.

4) The panchayat has installed a reverse osmosis plant in 2010 to ensure the supply of clean drinking water to the villagers. During weddings and other ceremonies, water tankers are arranged.
5) Some of the facilities provided by the panchayat include local mineral water supply, sewer & drainage project, a healthcare centre, banking facilities and toll-free complaint reception service.
6) Efforts have been made for the empowerment of women and increasing security in the village.
7) The *Sarpanch* aims at getting Wi-Fi connectivity in the entire village so that the villagers can use unlimited internet once they purchase the modem from the panchayat office.
8) Panchayat hired a waste collecting van, which would gather waste, and transfer that to a plant where renewable waste was created. The entire village is lit due to this renewable energy plant.
9) Punsari has been getting 5-litre cans of mineral water for Rs. 4 since 2010.

(fig 2 baben village)

1.3 SWOT ANALYSIS OF IDEAL VILLAGE

SWOT Analysis is a useful technique for understanding your Strengths and Weaknesses, and for identifying both the Opportunities open to you and the Threats you face.

SWOT Analysis of Ideal Village

Strength

- Education facility
- The village has bituminous road in all areas
- Gram panchayat building
- Private Wi-Fi
- Government hospitals as well as private hospitals private hospitals are there.
- There are banks and ATM available in village CCTV cameras are fitted in every main road 24*7 working Bus stand is there in village.
- Solar light on main road
- No criminal activities
- Railway transportation facility
- Strong will power of the villagers for village development.

Opportunities

- To make whole village digital and Wi-Fi connect to rise the living standards of people.

Threats

- Vacant properties and property owners that do not maintain their property Crop damages during heavy rain.

1.4 FUTURE PROSPECTS OF THE IDEAL VILLAGE: -

Baben village can be developed as an educational and recreational hub due to development of upcoming infrastructure projects near the village and due to ITI college campus in the premises of Baben village. Local business and employment opportunities can also be improved with regards to increase in the physical and social development of village.

1.5 BENEFITS OF THE VISITS: -

Purpose: -

To study about the development as well as the infrastructure facilities of villages which is an ideal village and can be considered as Benchmark for
The development and growth of other villages which are developing, or which needs to be development.

By visiting such villages, we students of civil engineering and electrical engineering can understand about the actual development that a rural area needs to satisfy its basic infrastructure facilities and compare with urban area and can implement these techniques and facilities for the development of other villages which needs development and can implement the same for the development of villages which are allocated to us as a final year project.

After visiting the village, we came to know about various facilities that canbe provided in a village for Rurbanization of village and to reduce the migration of people from villages to city areas. We also came to know about the various methodologies and techniques that can be used for the development of village.

1.6 CIVIL CONCEPT / METHOD / USAGES IN THE IDEAL VILLAGE:

Civil engineering projects are increasingly complex and are associated with situations where robust decision is required to be taken. These decisions are made in different stages of civil engineering projects. For example, decision making takes place during feasibility study stage prior to design, procurement, and construction stages to determine the viability of project undertaken by an investor.

With the help of an interdisciplinary approach to problem solving, however, many innovations are being made to bring practical, repeatable implementation to construction. Although the learning curve may be steep, the potential benefits are considerable. All the work of the village development is carried by the gram panchayat are in their presence and efforts to make their village world class and people will visit their village for their well-known facilities which are provided by gram panchayat.

Chapter 2: Literature Review

2.1 Introduction: Urban and Rural

The "Rural Area" means any place as per the "least census" which meets the following criteria,

- Area with population less than 5,000
- Density of population less than 400 per km
- More than "25% of the male working population" is engaged in agricultural works. The definition of urban area is as follow:
    1) All places with a municipality, corporation or notified town area committee, etc.
    2) All other places which satisfied the following criteria:
        - Area with minimum population of 5,000
        - At least 75% of the male working population is engaged in nonagricultural activities.
        - A density of population of at least 400 persons per km^2

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 Different Definition of Rural Area / Village

As urban markets saturate and companies spread their wings in search of new markets, everybody has the same question on their lips: what constitutes a "rural" market? The question to discover the real rural India continues in great earnest. 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 15000 is considered rural in nature. The national sample survey Organization (NSSO) defines "Rural" as follow:

- An area with a population density of up to 400 per km^2
- Villages with clear surveyed boundaries but no municipal board

- 0A minimum of 75% of male working population involved in agriculture and allied activities.

2.4 Scenario: Rural / Urban India And Gujarat As Per Census 2011 (Population Growth)

DATA HIGHLIGHTS – CENSUS 2011

	2001	2011	Difference
Population in india	102.9	121.0	18.1
Rural	74.3	83.3	9.0
Urban	28.6	37.7	9.1

(Table no. 1 Population (in Crore))

For the first time since Independence, the increase in population is more in urban areas than that in rural area.

- Rural- Urban distribution: 68.84% and 31.16%
- Level of urbanization increased from 27.81% in 2001 census to 31.16% in 2011 census.
- The proportion of rural population declined from 72.195 to 68.84%

2.5 Rural issues and Concern

The major three issues are Agriculture, Rural area, and Farmers.

- Issues of Agriculture

In general, the issues are how to increase agriculture in India. It includes:

1) Increase the marketization level of agriculture production and operation and stabilizing the prices of agricultural products.
2) Changing the situation of smallholder economic agriculture, achieving economies of scale of agriculture production and operation
3) Guaranteeing the food security in India

- Issues of Rural Areas

This is particularly reflected in the disparity of economic and cultural development urban and rural areas. It is mainly caused by duel segmentation based on the household registration system.

- Issues of Farmers

It includes improving the income level of farmers, alleviating burdens of farmers, increasing the cultural quality of farmers, and safeguarding the right of farmers.

Various Measures for Rural Development:

For the development of rural different measures need to be taken to fulfil following objectives:

- To promote the rural economy by improving production and the employment situation and incomes of the rural population through:
- The development of new nonagricultural rural activities, such as agro industries, support services, etc., which will make higher level of productivity and competitiveness possible;
- The improvement of working, training and income condition of rural workers; and
- To promote the generation of saving and facilities a higher level of investment in the rural area.
- To help expand the access of the rural population to basic services, including, education, health care etc.

2.6 Various Infrastructure & Guideline / Norms for Village for the Provision of Different Infrastructure Facilities

Water supply: -

Delivery of safe drinking water is vital for protecting public for public health and of promoting more secure livelihoods. The traditional approach to water quality and safe management has relied on the testing of drinking water, as it leaves the treatment works or at selected points, either within the distribution system or at consumer taps. It is referred to as “end-product testing”.
Various method for water supply:

- Gravity-fed water supply system in hilly areas
- Dug well-based rural water supply.
- Borewell-based rural water supply.
- Ground water recharging system
- Roof top rainwater harvesting systems.

Sanitation facilities: -

Demand and supply of sanitation facilities and services should be addressed concurrently to ensure toilet adoption and sustained use and enable scale adoption and sustained use of sanitation facilities requires construction on safe toilets and their sustained use.

Roads: -

The union ministry of rural development has recently issued fresh guidelines under the “Pradhan Mantri Gram Sadak Yojana” to prevent construction of poor-quality roads and streamline the bidding process throughout India. PMHSY is the largest rural road connectivity program in the world.

School: -

Many small towns lack basic educational infrastructure. Most schools do not have proper toilets, electricity, and proper building with roofs. There is also lack of drinking water. The condition of government schools is also not satisfied according to many reports. There have been several cases of poisoning due to poor quality mid-day meals in government schools. Therefore, provide among all facilities in rural schools like proper toilets, electricity and proper building and provide good furniture which required in school.

2.7 Other Projects / Schemes

- **Projects / Schemes by Government Sector:**

  - ✓ IRDP (Integrated Rural Development Program)
  - ✓ SGSY (Swaranjayanti Gram Swarozgar Yojana)
  - ✓ NRUM (National Rurban Mission)
  - ✓ Pradhan Mantri Gram Sadak Yojana
  - ✓ Mahatma Gandhi National Rural Employment Guarantee Act-2005
  - ✓ PURA (Provision of Urban Amenities in Rural Areas)
  - ✓ JNNURM (Jawaharlal Nehru National Urban Renewal Mission)
  - ✓ JWDP (Integrated Wasteland Development Program)

- **Projects / Schemes by Private Sector:**

  - ✓ Intensive Agriculture area Program
  - ✓ Intensive Agriculture District Program

Chapter 3: Smart (Cities / Village) Concept As per Your Idea and its Visit (Civil & Electrical Concepts)

3.1 Concept, Definitions and Practices

Smart Cities Concept

As shown above a smart village is **S**elf-sufficient and **S**elf Reliant village with empowerment of **M**anpower (rural youth) through locally available natural resources and **A**ppropriate **R**ural **T**echnologies.

Smart villages will serve as complementary engines of economic growth to smart cities producing goods and services for local rural markets as well as high-value-added agricultural and rural industry products for both national and international market.

In the Indian context, village are the heart of the nation. Hence, for the development toper collated the Grass root level, focus must be developed to the progress of village and to smarten the rural population.

One of the main consequences of uncontrolled urbanization is lack of livelihoods, good standard of living and amenities in the villages of India.

Smart village concept may play crucial role in maintaining the balance between the development of rural and urban areas and help to reduce migration of rural population in urban areas.

This needs to be reversed and suitably managed to improve quality of life in Indian cities.

The concept of "Smart Village" will also address the multiple challenges such as unplanned urbanization, under-development of villages, migration for economic pursuits, better standard of living etc.

3.2 Benchmarks –Vision –Goal, Standards and Performance Measurement Indicators

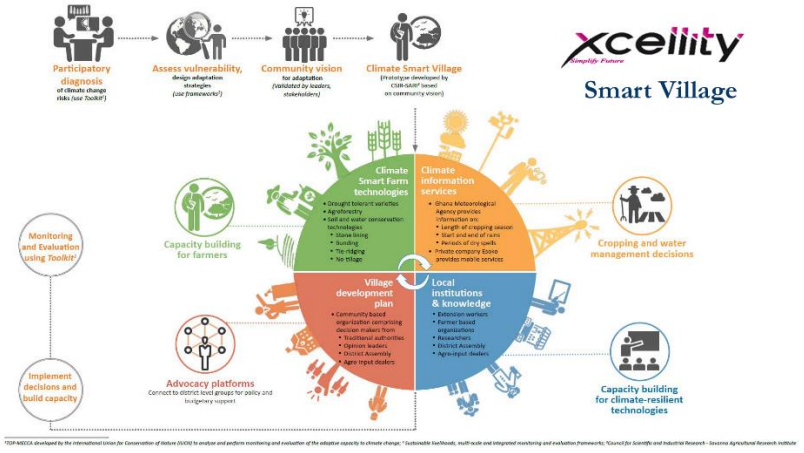
The vision of smart cities is that the smart cities are the center of the future, secure environmentally green, made safe, efficient because of all structure- whether for water, power, transportation. Are designed, construction making use of integrated materials, sensors, and network which are interfaced computerized systems of database, decision making algorithms.
Calculation of the 79 different livability indicators prescribed in the 'livability standards in cities' requires data on many aspects of urban infrastructure, governance, municipal finances, social infrastructure, economic aspects etc. wherever such data is regularly compiled by the ULBs or other services such as DISCOMS. Water and sewerage utilities etc. it should be sources from the records of such provides.
In some cases, the data may require on field through physical surveys. For certain indicators such as pollution, modal split of urban transport, water quality etc. data will have to be obtained from physical survey as per standard and prescribed survey and sampling techniques. And necessary maps may need to be prepared for cities where such information or maps are not available.

3.3 Technological Options for Smart Cities: -

Cities and communities across the Nation are today facing complex and persistent challenges stemming from changing populations and infrastructure. In particular, demands on city infrastructure, systems, and services are growing and changing, prompting important new needs, such as more effective use of limited space, greater walkability, and ways to support residents across all socioeconomic statuses. The need for improved resilience in the face of natural and man- made disasters adds to the challenges that cities and communities are facing. These challenges directly manifest for city residents as well. Being able to address these challenges is in and of itself difficult.

Ongoing city operations are often dependent upon the very infrastructure, services, and systems that could benefit from innovation and finding the time, energy, and resources to improve city capabilities without adversely affecting these ongoing operations is not trivial. Consider, for example, routine roadway construction projects; cities and communities must often conduct these projects during limited nighttime and weekend hours, to minimize disruptions for residents who rely upon the roadways to commute to and from work.

At the same time, advances in networking and information technology over the last several decades have transformed individuals' lives, rapidly altering how we live, work, and communicate. Integrating these digital technologies with physical infrastructure at the city level similarly enables innovative opportunities and solutions to the challenge's cities are facing. By working closely with cities to support this integration in ways described in this strategic plan, Federal agencies can help facilitate solutions to city challenges and catalyze the smart of the future.



(fig. technological option for smart cities)

3.4 Road Map and Safeguards

The purpose of building smart cities is to make the lives of the people safer and easier. Technology can be used as an instrument to protect lives and improve services and, furthermore, it can be used to protect Personally Identifiable Information and cities critical infrastructures, such as water treatment systems, transportation, hospitals, and power plants. Technology can be used to reduce crimes by geographically spotting areas with high crime rates, identifying specific crime patterns, and reporting it to law enforcement instantly, many of these services are achieved.
Sensors are small measurement devices that can be integrated with electronics to detect certain smells, sound, or levels of variations. Sensors can be passive or active. Passive sensors do not necessarily act; they simply collect data, and they are used mainly to measure weather conditions, such as Ozone levels, wind speed, or the sun's ultraviolet levels. Active sensor devices, on the other hand, use electronics to process data and act.

3.5 Issues & Challenges: -

Retrofitting existing legacy city: infrastructure to make it smart, there are several issues to consider when reviewing a smart city concept. The most important is to determine the existing cities weak areas that need utmost consideration, e.g., 100-per-cent distribution of water supply and sanitation. The integration of formerly isolated legacy systems to achieve citywide efficiencies can be a significant challenge.

Financings of smart cities:

The High-Power Expert Committee on Investment Estimates in Urban Infrastructure has assessed a per-capita investment cost of Rs 43,386 for a 20year period. Using an average figure of 1 million people in each of the 100 smart cities, the total estimate of investment requirements for the smart city comes to Rs 7 lakh crore over 20 years. This translates into an annual requirement of Rs 35,000 crore. One needs to see how these projects will be financed as most of the project need would move through complete private investment or through PPPs (public-private partnership).

Availability of city development plan:

Most of our cities do not have a city development plan, which is the key to smart city planning and encapsulates and encapsulates all a city needs to improve and provide better opportunities to its citizens. Unfortunately, 70-80 % of Indian cities do not have.

Financial sustainability of ULBS:

Most ULBS are not financially self-sustainable and tariff levels fixed by the ULBs for providing services often do not mirror the cost of supplying the same. Even if additional investments are recovered in a phased manner, inadequate cost recovery will lead to continued financial losses.

Technical constraints of ULBS:

Most ULBS have limited technical capacity to ensure timely and cost-effective implementation and subsequent operations and maintenance owing to limited recruitment over several years along with inability of the ULBs to attract best of talent at market competitive compensation rates.

Three-tier governance:

Successful implementation of smart city solutions needs effective horizontal and vertical coordination between various institutions providing various municipal amenities as well as effective

coordination between local government, state government, central government, agencies on various issues related to financing and sharing of best practices and service delivery processes.

Providing clearances in a timely manner:

For timely completion of the project, all clearances should use online processes and be cleared in a time-bound manner. A regulatory body should be set up for all utility services so that a level playing field is made available to the private sector and tariffs are set in a manner that balances financial sustainability with quality.

Dealing with a multivendor environment: Another major challenge in the smart city space is that software infrastructure in cities contains components supplied by different.

Smart Infrastructure:

Smart information and communication technology have the potential to transform the way we plan and manage infrastructure. New development in computer hardware, new applications and software are changing the face of the infrastructure sectors, and society more generally, driving greater efficiency, increasing productivity, and greatly simplifying construction process and life of asset maintenance.

Cyber Security:

Cyber security is the body of technologies, processes and practices designed to protect network, computers, programs and data from attack, damage, or unauthorized access. In a computing context, security includes both cyber security and physical security. Ensuring cyber security requires coordinated efforts throughout on information system. Elements of cyber security include:

- Application security
- Network security
- Operational security
- End-user education

3.6 District Cooling and Heating / Green Building

District cooling system produce chilled water, steam or hot water at a central plant and then pipe that energy out to building for air conditioning. Space heating and water heating. As a result, there buildings do not require their own chiller, air conditioners, boilers, or furnaces.

District cooling systems are a highly efficient way for many owners and manufacturers to effectively address each of these challenges while meeting their comfort and process cooling and heating needs.

Heat sources in use for various district heating systems include, power plants designed for combined heat and power including both combustion and nuclear power plants; and simple combustion of a fossil fuel or biomass; geothermal heat; solar heat; industrial heat pumps which extract heat from, river or lake water, seawater, sewage, and waste heat from industrial processes.

3.7 Cyber Security

The range of areas where cities can become smarter is extensive, it is an evolution of ‘connected cities’ with the prevalence of data exchange at a larger scale Cyber security is the one of the key components of smart cities.

Effective cyber security is increasingly complex to deliver.It is important to remember that cyber security is a citywide issue

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(FIG. CYBER SECURITY)

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

More than 90% of the urban population has access to drinking water, and more than 60% of the population has access to basic sanitation. However, access to reliable, sustainable, and affordable water supply and sanitation (WSS) service is lagging. Are the Services Reliable? No Indian city receives piped water 24 hours a day, 7 days a week. Piped water is never distributed for more than a few hours per day, regardless of the quantity available. Raw sewage often overflows into open drains. Are the Services Technically and Financially Sustainable? Less than 50% urban population has access to piped water. The Non-Revenue Water (NRW: due to leakages, unauthorized connections, billing, and collection inefficiencies, etc.) is huge, estimated between 40-70% of the water distributed.

Operations and maintenance cost recovery through user charges is hardly 30-40%. Mos urban operations survive on large operating subsidies and capital grants.

3.9 Strategic Option for Fast Development

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

More than 90% of the urban population has access to drinking water, and more than 60% of the population has access to basic sanitation. However, access to reliable, sustainable, and affordable water supply and sanitation (WSS) service is lagging behind. Are the Services Reliable? No Indian city receives piped water 24 hours a day, 7 days a week. Piped water is never distributed for more than a few hours per day, regardless of the quantity available. Raw sewage often overflows into open drains. Are the Services Technically and Financially Sustainable? Less than 50% urban population has access to piped water. The Non-Revenue Water (NRW: due to leakages, unauthorized connections, billing and collection inefficiencies, etc.) is huge, estimated between 40-70% of the water distributed.

Operations and maintenance cost recovery through user charges is hardly 30-40%. Most urban operations survive on large operating subsidies and capital grants.

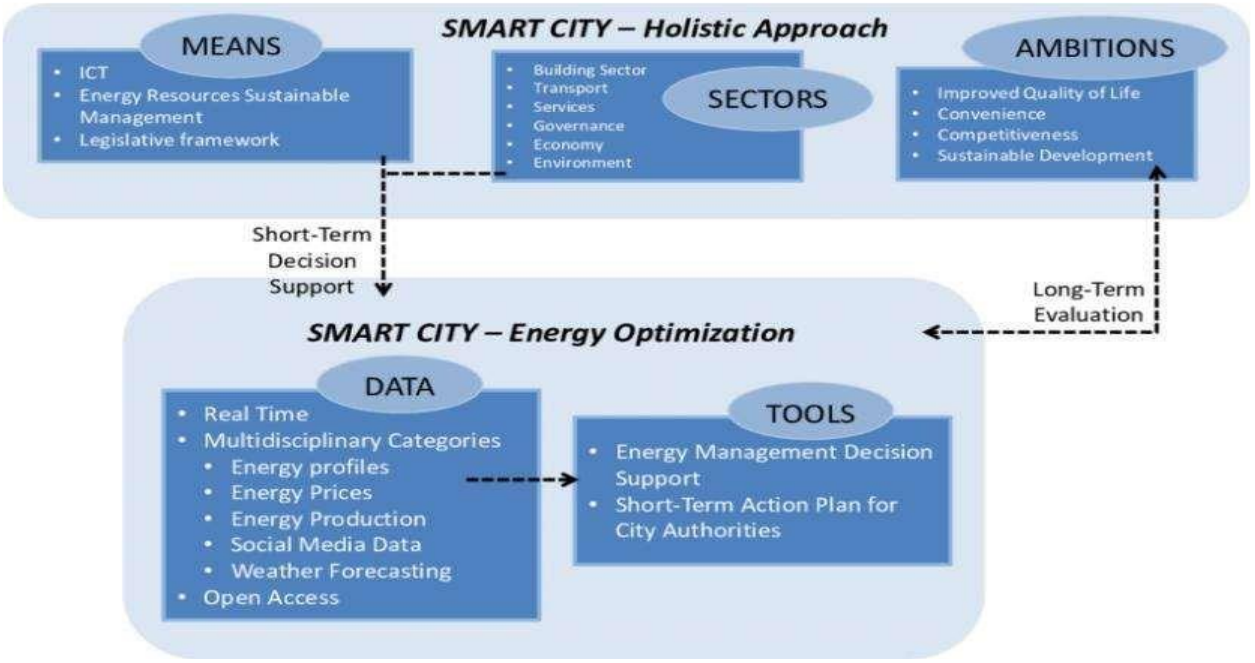
3.11 Initiative in Village Development by Local Self-Government

- Rural Local Government (or Panchayat Raj Institutions)
- Zilla Panchayat
- Mandal or Taluka Panchayat
- Gram Panchayat

- Initiation by Local People
- Organization program for increase literacy for peoples of village.
- Providing enough information regarding to using of various facilities.
- Peoples must learn various things regarding how to keep facilities in good condition.

3.12 Smart Initiative by District Municipal Corporation

Cities accommodate nearly 31% of India's current population and contribute 63% of GDP (Census 2011). Urban areas are expected to house 40% of India's population and contribute 75% of India's GDP by 2030. This requires comprehensive development of physical, institutional, social and economic infrastructure. All are important in improving the quality of life and attracting people and investment, setting in motion a virtuous cycle of growth and development. Development of Smart Cities is a step **in that direction.**



The Smart Cities Mission is an innovative and new initiative by the Government of India to drive economic growth and improve the quality of life of people by enabling local development and SMART CITIES MISSION STRATEGY

Pan-city initiative in which at least one Smart Solution is applied city-wide Develop areas step-by-step – three models of area-based developments Retrofitting, Redevelopment, Green fieldessing technology as a means to create smart outcomes for citizens.

FINANCING OF SMART CITIES

The Smart City Mission will be operated as a Centrally Sponsored Scheme (CSS) and the Central Government proposes to give financial support to the Mission to the extent of Rs. 48,00crore over five years i.e. on an average Rs.100 crore per city per year. An equal amount, on matching basis, will have to be contributed by the State/ULB; therefore, nearly Rupees one lakh crore of Government/ULB funds will be available for Smart Cities development.

3.13 Any Projects Contributed Working by Government

- The panchayat raj system is a three-tier system with elected bodies at village, taluka and district levels.
- The modern system is based in part on traditional panchayat government, in part on the vision of mahatma Gandhi and part by the work of various committees to harmonize the highly centralized Indian government administration with a degree of local autonomy.
- The result was intended to create greater participation in local government by people and more effective implementation of rural development programs.
- Although, as of 2015, implementation in all of India is not complete the intention is for there to be a gram panchayat for each village or group of villages, a tehsil level council, and a zilla panchayat at the district level.

3.14 How to Implement Other Countries Smart Villages project in Indian Village context

Each village should have following 5 basic amenities in 5 year:

- Roads
- Electricity
- Water
- Hospitals
- Schools

Basic amenities of for smart village from other countries are:

- Schooling: smart classroom can improve the quality of education by providing access to a large amount of education resources.
- Health care: improving information available on the availability, location, and cost of various types of health care.
- Agriculture: provide information to farmers on the types of crops that can fetch them returns, by ensuring that there is no guilt of one product shortage of another.

Chapter 4: Introduction of Valasan Village

4.1 Introduction

4.1.1 Introduction About Valasan Village Details

The rurbanzation area selected for the study, planning, and designing is Valasan Village, located in Anand district in Gujarat, India. It is situated 7 km away from district headquarter Anand.

Valasan is a village in Anand district in Gujarat State. Valasan village pin code is 388325. Valasan village total population is 8050.

4.1.2 Justification / need of the study

The Goal of research proposal is to present and justify the need to study a research problem and to present the practical ways in which this research should be conducted.

There are number of schemes of the Government which are being operated and run for rural development in the rural areas of the country. Evolution taken up so far for these schemes has been more or less in a piecemeal form, i.e. generally for each scheme separately. It has become difficult to get an overall picture of the development in totality in the rural areas and is difficult to assess the impact of any one particular scheme, since most of the schemes are complementary and supplementary and most of the time, they all are contributing to the impact. Hence a view has been formed to take up studies on trial basis to assess the impact of the important schemes as a whole in rural development in selected village.

4.1.3 Study Area

Valasan village is the village in Anand district of Gujarat state, India. It is located from 7 km away from the Anand and 94 km away from state capital Gandhinagar.

Village has population about 8050 and no.ofhouse is 1682, female population is 3932 and male population is 4118

The total area of village is 682.14 hectors.

4.1.4 Objective of the study

The main objective of the study undertaken is to utilize the results to provide true feedback of the present state of implementation of all development schemes in the rural areas. The observation made during the study are to inputs to help in bringing about changes in the formulation or reformulation.

- To access problems, constrains in the effective implementation.
- To know the basic requirement of village.
- To provide the basic facilities in rural area like Education, health, irrigation, electric power etc.

- To provide the impact of these various programs
- To gauge the general opinion of the people towards there schemes and programs of the government.

4.1.5 Scope of the Study

The aim of project is to develop the village with job opportunity for villagers. A team of project is finding the problem or need of a village in terms of socio – cultural or physical or social infrastructure and to design that facility with efficient engineering solution which include the design proposal and estimate cost to facilitate the require facility for the future growth of village with urban facilities.

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 infrastructure services, and the administrative systems of the village. 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, aaganwadi, overhead tank, police station, fire station, etc. are available or not.

Rural settlement engulfed in urban limits during the process of development, and those located in the fringe areas of large cities, can be termed as urban villages.

4.1.6 Methodology Framework for Development of Your Village

To achieve the aim by passing through the objective, the study will be done in the following methodology, described as follow:

A. Literature study:

The various theories and case studies to be referred to the understanding of various issues related to the urban, to define the “Fringe villages”, to study the various issues of “Fringe villages”.

B. Field Visit:

The field visit will be starts from collection of revenue maps and ‘gametal’ maps if possible, along with the map and other basic information of the study areas.

C. Primary Survey and Interview:

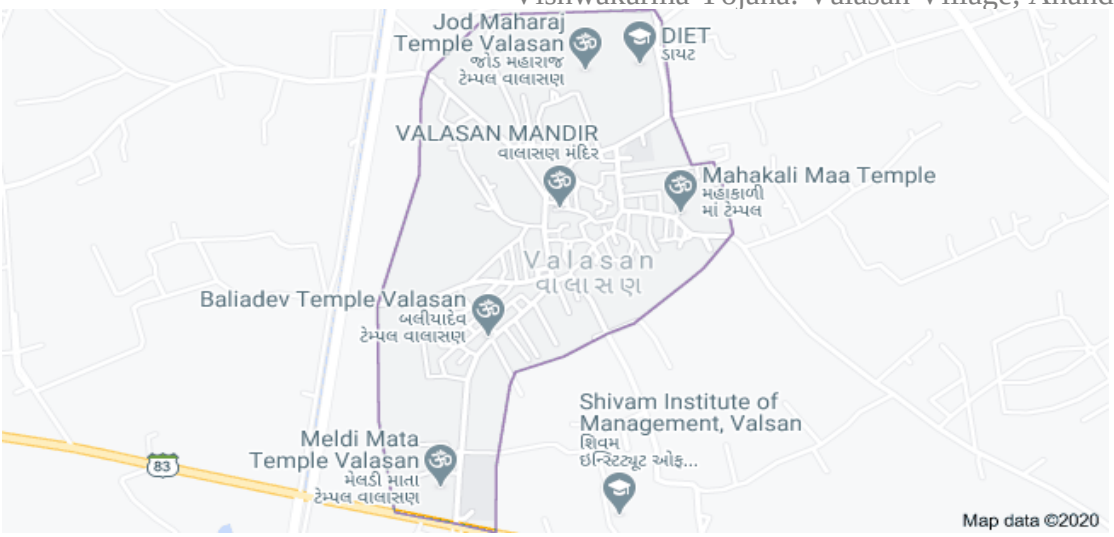
The primary surveys such as household surveys, questionnaire survey, to know the real status of the infrastructure services and quality of life they are living in the area and the major problems and issues they are facing, questionnaire survey of the real estate developers to know the scope and trend and scope of the development and status of the market and demand of that place.

D. Data Analysis:

An analysis form is used for finding a requirement of village as per government norms. A data collected during village survey is also used for an analysis government data on paper data.

E. Issues Findings, Development of Strategy:

From the above study in the detail of the literature review, situation analysis, study of the existing institutional framework, primary and secondary data analysis and mapping the best appropriate strategy to be formulated with possible recommendation, implementation strategy and allocating the roles and responsibilities of the different local bodies which give a scope for villagers to show their ability and chances of job opportunity.



F. Final Proposal:

Strategic theme-based proposal for fridge village from analysis in the form of rurban town.

4.2 STUDY AREA PROFILE

4.2.1 Study Area Location

Name of Taluka: - Anand

Name of District: - Anand

The location code or village code of Valasan village is 516923. It is situated 7 km away from sub- district headquarter and 7 km away from district headquarter Anand.

- Primary topographical and geographical details are described below.

1	Nearest town and its distance	Anand- 16km
2	Temperature	29 C’
3	Annual rainfall	675mm

(Table no. 2 Study Area Location)

4.2.2 Base Location map, Land Map, Gram Tal Map

Base Location Map:

(Fig no 3 Valasan Map)

Valasan village is located at Anand Taluka in Anand District in Gujarat State, Valasan village is 7 km away from Anand.

4.2.3 Physical & Demographical Growth

The facilities are essential for economic as well as social growth of any area. These facilities include proper road network, water supply, drainage etc. any village which needs to be economically development must contain the above-mentioned facilities.

Demographical growth

Sr.no	population	Male	female	Total house holds
1	8050	4118	3932	1682
2	12%	9%	5%	

(Table no. 3 Demographical growth)

4.2.4 Economic Profile / Bank

The economic status of Valasan gram panchayat is not well as compared the ideal village like Baben. Valasan panchayat collects around 14 to 15 Lakh as various taxes and funds from the various sources of income are housing tax, income tax, water tax, electricity bills, cleaning charges, taxes from the Household. And the other development work is done in village by the Grant Which is given by the Stat government or Central Government.

There is no Bank in Valasan Village. Villagers have to Go to Anand which is near to Valasan Village at the 7 Km Distance.

4.2.5 Social scenario – Preservation of traditions, Festival, Cuisine

Stringent rules must be passed to ensure that corrupt practices do not hamper and harass the bank loan seekers, old age and handicapped pensioners, and other recipients of bank assistance for small enterprises or other beneficiaries for other interventions.

Festivals: the village folk culture is dance including garba, dandiya, raas, tipani etc.

Traditional wear: they wear traditional cloths like chanyacholi, kediyo, kachhado, Guajarati saree etc.

Cuisine: the regular food is Gujarati thali, Indian food, the villagers prefer the vegetables to eat which is they grow in their farm.

4.2.6 Migration Reasons / Trends

In Valasan village people are migrate because of better opportunity for jobs, business, high living standard. People are migration to Anand is one of the economic hubs of Gujarat, people earn more in the city rather than village that’s why people migrate from village to city.

4.3 DATA COLLECTION

4.3.1 Methods for Data Collection

- By filling survey forms
- By interaction with villagers
- By interaction with sarpanch / panchayat members
- By observation, the current condition of the village

4.3.2 Primary Survey Details

Primary survey details are collected by interacting with the village dwellers and questioning them about facilities available and require. They were asked to give suggestions about the work required to be carried out for the development of the village to promote rurbanization.

4.3.3 Average Size of the house

The village has no specified size of house, but the Financially Capable villagers have good, constructed House and poor villagers have small size or medium size house. The Average size of house is 100 var plot per house.

4.3.4 No. of Human being in one house

As per population and household number the average Human being in the one House is 4 Each House has 4 persons in the house.

4.3.5 Which Martial Use locally / Outsourced Materials

The village has no specific material. All the martial which is required which has been Transported to village from the nearest town like Anand.

Which Martial Use Locally The village has no specific material. All the martial which is required which has been Transported to village from the nearest town like Anand.

4.3.6 Geographic Details

sr.no	Description	Information details
1	Area of village	717hectors
2	Forest area	63 hectors
3	Residential area	30 acres
4	Other area	-
5	New area	-
6	Distance from nearest railway station	5km Karamsad
7	Nearest town with distance	7 km Anand

(Table no.4 Geographic Details)

4.3.7 Demographic Details

Sr.no	population	male	female	Total households
1	8050	4118	3932	1682

(Table no.5 Demographic Details)

4.3.8 Occupational Details

Percentage of workers	Occupation
70%	Farming
20%	Work in farm as labor
10%	Jobs

(Table no.6 Occupational Detail)

4.3.9 Agricultural Detail

Weather	Crops name
Winter	Wheat
Summer	Bajra
Monsoon	Groundnut

(Table no.7 Agricultural Details)

4.3.10 Manufacturing Hub / Warehouse

No, manufacturing Hub.

4.3.11 tourism Cluster

No, tourism site at village.

4.4 Infrastructure Details

4.4.1. Drinking water / Water management facilities

(Fig no. 4 water tank 1 of Valasan)

The Valasan village Has no R.O. Plant by which the village has provide the drinking water facilities. the village has one Overhead water tanks by the village has provided the water for drinking.

4.4.2 Drainage network / sanitation Facilities

Valasan village Has no Under Ground drainage system.

4.4.3 Transportation and Road Network

Usually, the Villager use their own vehicle and Gujrat Government provide G.S.R.T.C. Bus service for transportation. The Village has no Bus stand Facilities. The village has Bituminous and R.C.C. road, network.

4.4.4 Housing condition

Village household has good Condition, almost villagers have good Paccca Makan (House)

4.4.5 Social Infrastructure Facilities Health, Education, community hall, Library

Valasan village has health care center, and 1 primary school but no library and no community hall.

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

Some of public buildings are in good condition like panchayat office and some public building like anganwadi require maintenance of redesign.

4.4.7 Technology/ Mobile/ Wi-Fi / internet uses detail in percentage.

Technology	Percentage of users
Mobile	92%
WIFI	0%
Internet	78%

(Table no. 8 Technology/ Mobile/ Wi-Fi / internet uses detail in percentage)

4.4.8 Sports Activities as Gram Panchayat

- Cricket
- Football
- volleyball

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

No, Valasan village has no socio-cultural facilities.

4.4.10 Other Facilities

No other facilities.

4.4.11 Any other details

Nil (NO VILLAGE PLAN(MAP) AVAILABLE)

4.5 ELECTRICAL CONCEPT

4.5.1 Renewable energy source planning particularly for villages

In Valasan village renewable Energy is solar energy for use as a household purpose and streetlight.

4.5.2 Irrigation Facilities

There are no irrigation facilities for farmers. (canal, pond) Farmers irrigate their farm with the use of tube or bore well and open well.

4.5.3 Electricity Facilities with Area

In Valasan village there are 24-hour electricity facilities.

4.6 EXISTING INSTITUTION LIKE - VILLAGE ADMINISTRATION DETAIL PROFILE

4.6.1 Bachat Mandali

No Bachat mandali

4.6.2 Dudh Mandali

No Dudh Mandali

4.6.3 Mahila Forum

No Mahila Forum

4.6.4 Plantation for air pollution

For reducing pollution panchayat has stated planting trees over the areas on which plantation is possible

4.6.5 Rainwater Harvesting

No use of rainwater Harvesting methods in village.

4.6.6 Agriculture Development

Valasan Villagers use advanced technology for irrigation and plantation of crop and advanced machinery for framing.

Chapter 5: Technical Options with Case Studies

5.1 CONCEPT (CIVIL)

5.1.1 Advance construction techniques

The construction industry is repeatedly criticized for being inefficient and slow to innovate. The basic method of construction, techniques and technologies have changed little since roman times.

Every construction project is different, every site is a singular prototype, construction works are in different places, and involve the constant movement of personnel and machinery. The term 'advanced construction technology' covers a wide range of modern techniques and practices that encompass the latest development in materials technology, design procedures, quantity surveying, facilities management, services, structural analysis and design, and management studies.

8 Modern Building Construction Techniques,

1) 3D Volumetric Construction

Using this modular construction technology, 3D units are produced in controlled factory settings using needful construction and building materials. Finished units are transported to site in various modules, basic structural blocks or final touched up units with all amenities installed, for assembly. Blocks can be erected rapidly at site and properties of concrete like fire retardant, sound resistivity, thermal mass etc. are retained.

(fig.22 3D Volumetric Construction)

2) Precast Flat Panel Modules

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

(fig.23 Precast Flat Panel Modules)

3) Tunnel Formwork System

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

(fig.24 Tunnel Formwork System)

4) Flat Slabbing Technology

This technique utilizes the simplicity of contemporary formwork for quickly building flat slabs to facilitate easy and swift placing of horizontal amenities and for partitioning. Maximization of pre-fabricated services occur as services can be carried out in an uninterrupted manner in zones underneath the floor slabs. Every top-notch building Construction Company is using the same as internal layouts can be conveniently modified for accommodating alterations at a later date. Further, reinforcement needed is lesser which cuts down labour costs significantly.

5) Pre-cast Foundation Technique

Foundations can be built swiftly with precast concrete units which are produced in a factory and are high on quality quotient. Strength is imparted to foundation related building construction materials through interconnected concrete piles.This technique allows construction work to progress even in inclement weather and minimizes excavation activity.

(fig.25 Pre-cast Foundation Technique)

6) Hybrid Concrete Building Technique

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

(fig.26 Hybrid Concrete Building Technique)

7) Thin Joint Masonry Technique

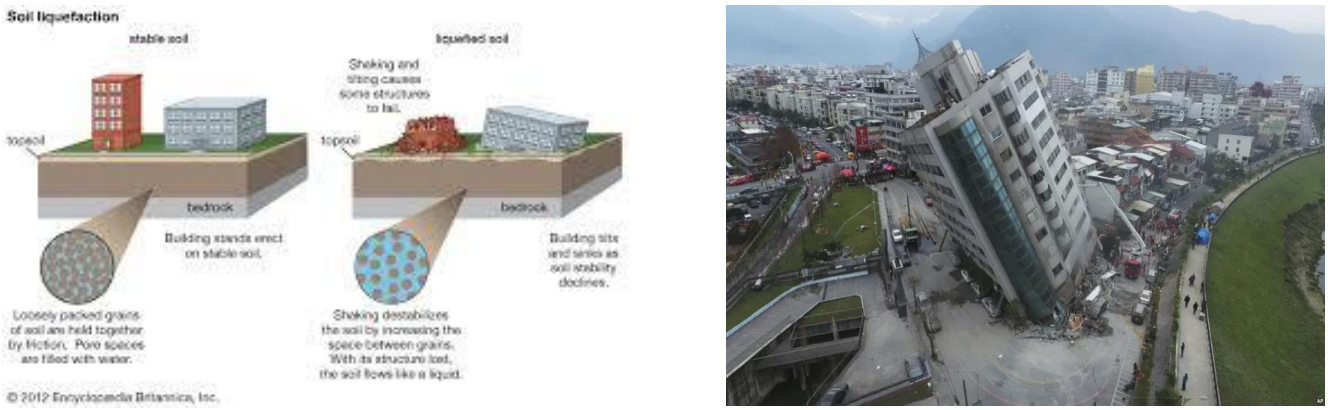
Utilization of this technique leads to the reduction of the quantum of mortar applied by slashing it depth from 10mm to lesser than 3mm. Consequently, mortar can be laid swiftly with enhanced productivity on the longer wall panels.With large sized concrete blocks, higher construction efficiency along with significant cost reduction can be achieved. Within a single day, the number of mortar courses laid is higher as curing of mortar takes place quickly without compromising on bonding strength resulting in the elimination of floating problem.

(fig.27 Thin Joint Masonry Technique)

5.1.2 Soil Liquefaction

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

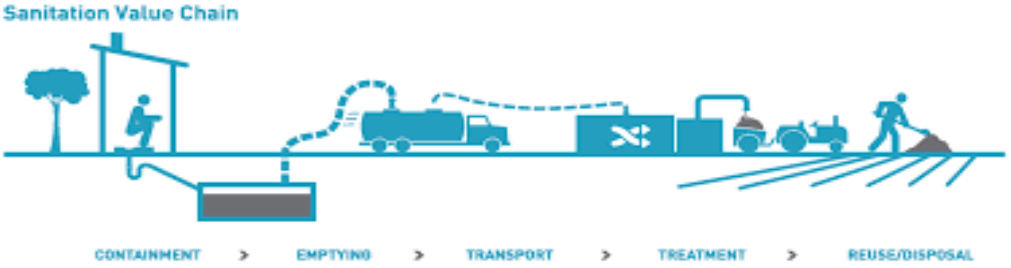
The phenomenon is most often observed in saturated, loose (low density or uncompacted), sandy soils. This is because a loose sand has a tendency to compress when a load is applied. Dense sands, by contrast, tend to expand in volume or 'dilate'. If the soil is saturated by water, a condition that often exists when the soil is below the water table or sea level, then water fills the gaps between soil grains ('pore spaces'). In response to soil compressing, the pore water pressure increases and the water attempts to flow out from the soil to zones of low pressure (usually upward towards the ground surface). However, if the loading is rapidly applied and large enough, or is repeated many times (e.g. earthquake shaking, storm wave loading) such that the water does not flow out before the next cycle of load is applied, the water pressures may build to the extent that it exceeds the force (contact stresses) between the grains of soil that keep them in contact. These contacts between grains are how the weight from buildings and overlying soil layers is transferred from the ground surface to layers of soil or rock at greater depths. This loss of soil structure causes it to lose its strength (the ability to transfer shear stress), and it may be observed to flow like a liquid (hence 'liquefaction').



(fig no.5 soil liquefaction)

5.1.3 Sustainable Sanitation

Sustainable sanitation is a system designed to meet certain criteria and to work well over the long-term. Sustainable sanitation systems consider the entire "sanitation value chain", from the experience of the



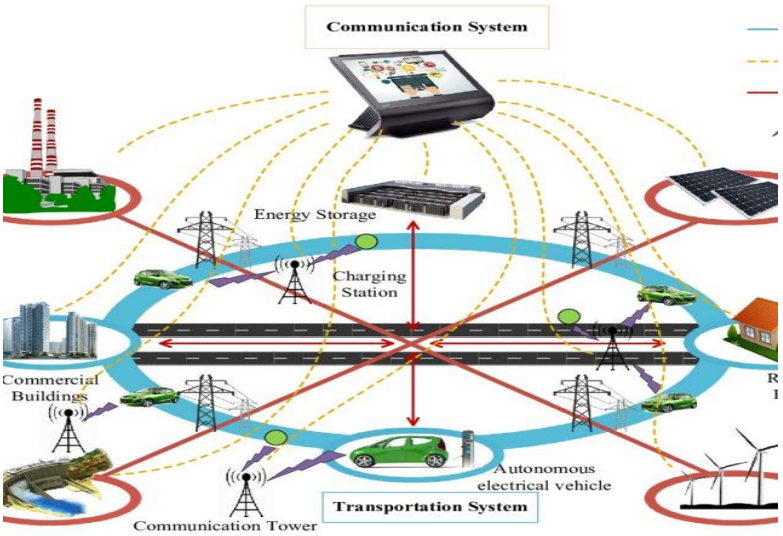
(fig no.6 sustainable sanitation)

user, excreta and wastewater collection methods, transportation or conveyance of waste, treatment, and reuse or disposal. The Sustainable Sanitation Alliance includes five features (or criteria) in its definition of "sustainable sanitation": Systems need to be economically and socially acceptable, technically and institutionally appropriate and protect the environment and natural resources.

5.1.4 Transport Infrastructure / system

- WBM roads
- Bituminous roads
- Concrete roads

Intelligent transport system is an advanced application which aims to provide innovative services relating to different modes of transport and traffic management and enable users to be better informed and make safer, more coordinated, and smarter use of transport networks.



(fig no.7 transport system)

5.1.5 Vertical Farming

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

(fig no.8 vertical farming)

5.1.6 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure

Mechanism: Corrosion Mechanism, Prevention & Repair Measures of RCC Structure Though concrete is quite strong mechanically, it is highly susceptible to chemical attack and thus structure gets damaged and even fail unless some preventive measures are adopted to counteract this and thereby increasing the durability of structure. In the case of Reinforced concrete structure, the ingress of moisture or air may lead to corrosion of steel, cracking and spalling of concrete cover thereby reducing durability of concrete structure. Repair has been suggested as the protective solution for damaged structure due to corrosion.

Overall, there is very little published empirical evidence that provides insight into the durability of silane treatments and their long-term residual protection (i.e., following at least 10 years of service). Such a gap in knowledge is undesirable given the scale of infrastructure treated with hydrophobic treatments such as silanes.

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

1) Alternative reinforcement and slab design method includes materials that electrically isolate the steel from the concrete and create a barrier for chloride ions, materials that protect steel galvanic-ally, and materials that have significantly higher corrosion thresholds than conventional reinforcing steel. Concrete slabs have been designed without any internal reinforcement.

2) Barrier methods protect reinforced concrete from corrosion damage by preventing water, oxygen, and chloride ions from reaching the reinforcement and initiating corrosion.
3) Electrochemical methods use current and an external anode to protect the reinforcement, even when the chloride ion concentration is above the corrosion threshold.

4) Corrosion inhibitors offer protection by raising the threshold chloride concentration level, by reducing the permeability of the concrete, or by doing both.

5.1.7 Sewage treatment plant

Sewage treatment is the process of removing contaminants from municipal wastewater, containing mainly household sewage plus some industrial wastewater. Physical, chemical, and biological processes are used to remove contaminants and produce treated wastewater (or treated effluent) that is safe enough for release into the environment. A by-product of sewage treatment is a semi-solid waste or slurry, called sewage sludge. The sludge has to undergo further treatment before being suitable for disposal or application to land.

5.1.7 Technical Case Study On “CableStayed Bridges and Bow String Bridges (Bandra Worli sea-link bridge)”

Introduction: -

A. Cable Stayed Bridges

A cable-stayed bridge has one or more towers (or pylons), from which cables support thebridge deck.

There are three major classes of cable-stayed bridges as in figure 9.

1. Harp
2. Fan
3. Radial

(Fig no.9 Major Classes of Cable-Stayed Bridges)

In the harp or parallel design, the cables are nearly parallel so that the height of their attachment to the tower is proportional to the distance from the tower to their mounting onthe deck.

In the fan design, the cables all connect to or pass over the top of the towers. The fan design is structurally superior with minimum moment applied to the towers but for practical reasons the modified fan is preferred especially where many cables are necessary. In the modified fan arrangement the cables terminate near to the top of the tower but are spaced from each other sufficiently to allow better termination, improved environmental protection, and good access to individual cables for maintenance.

The cable-stayed bridge is optimal for spans longer than cantilever bridges, and shorter than suspension bridges. This is the range where cantilever bridges would rapidly grow heavier if the span were lengthened, and suspension bridge cabling would not be more economical if the span were shortened.

B. Bow String Bridges

Bow string bridge shown in figure 2, also known as a Tied-arch bridge, this type of anarch bridge incorporates a tie between two opposite ends of the arch. The tie can withstand the horizontal thrust forces which would normally be exerted on the abutments of an arch bridge.

(Fig no.10 bow string bridge)

Along bridges history, arch represented the optimal solution for its structural efficiency, because when it is designed following the anti-funicular curve of loads, transverse sectionsare uniformly compressed. This efficiency is the reason of using arches made of materials with good compression strength and bad tensile properties. Till 19th century arches have been built only with stones or bricks and, depending on the length to be saved, they were single or multi-span bridges. Unfortunately, in arch bridges it is not possible to avoid totally bending moments, because the thrust line cannot coincide with the geometric axis for all live load combinations, due to the variability of traffic loads. To solve this problem arch cross sections, have the right thickness, to maintain the thrust line into the central core of inertia andto avoid tensile stresses for all load combinations. The arch behaviour is established when a significant thrust at footings appears, which implies horizontal forces into the foundations. When soil is not adequate to receive these forces, it is possible to compensate them through a tie placed between arch footings; in this way only vertical reaction forces can be obtained. So, the whole tied-arch structure works as a simply supported beam, in which the arch is a curvedcompressed member, and the tie is in tension. In bridges with an upper arch, the tie can be provided by the deck itself that is the link member between arch footings. In this case the deck is suspended to the arch by several metallic hangers. This is the so- calledbowstring.

Bandra Worli Sea -Link Bridge: -

A. Basic Information

Official Name "Rajiv Gandhi Setu" Carries 8 Lanes of traffic Locale Mumbai, Maharashtra, Maharashtra State Road Development Corporation (MSRDC) Crosses Mahim Bay Design Cable Stayed Main Spans, Concrete -Steel precast Segment Viaducts at either End Total length 5.6 Km (3.5 miles) Width (66ft) Highest Point 126 meters (413 ft.) Longest Span (820 ft.) Construction Begin 2000 Construction End 24 march, 2010 Opened 30 June,

2009.

(Fig no.11 bandra worali se link bridge)

B. Facts

1. The project has already been acclaimed by the viewers as an engineering marvel of modern India.
2. First Cable-Stay Bridge in India in open sea.
3. The length of the bridge is 63 times the height of the Qutub Minar in Delhi.

4. Its weight is equivalent to 50,000 African elephants.
5. The length of the steel wires used is equivalent to the circumference of the earth.
6. A total of 424 cables were used for both Bandra cable stay as well as Worli cable stay bridges.
7. The cables are made of high tensile steel and are designed to take the maximum loadof 900 tons.
8. 92,000 tons of cement was utilized to make BWSL.
9. Facts briefly Cost: Rs. 1634 Crore (Cost of all packages including escalation &IDC.)

C. Data Comparison

The table shows the comparision of the scenario till date with the scenariowith the sea link construction.

The Scenario Till date	The Scenario with the sea link
Distance: 7.7 km	Distance: 4.70 km
Traffic Signals: 23	Traffic Signals: 4
Morning Pick hour travel: 35 min	Morning Pick hour travel: 6 min
Evening Pick hour travel: 38 min	Evening Pick hour travel: 6 min
Average speed: 13 kmph	Average speed: 80 kmph

(Table no.9 scenario of bridge)

D. Benefits of Bandra-Wori Sea Link

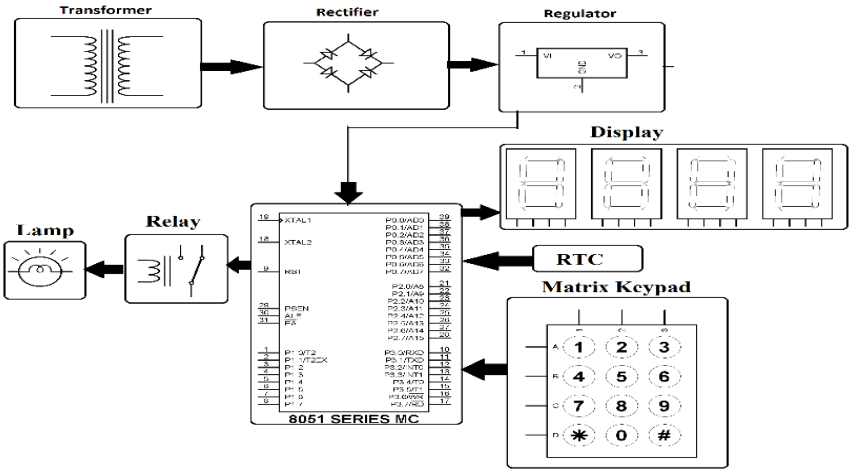
1) It is estimated that the sea link will help saving Rs. 10 million annually due to congestionin traffic and length of the previous route and shorter new route.

2) While earlier it used to take 40 minutes for drive between Bandra and Worli, now the distance can be covered in a mere 8 minutes resulting in large savings in time.

5.2 Concept (Electrical)

5.2.1 Programmable Load Shedding

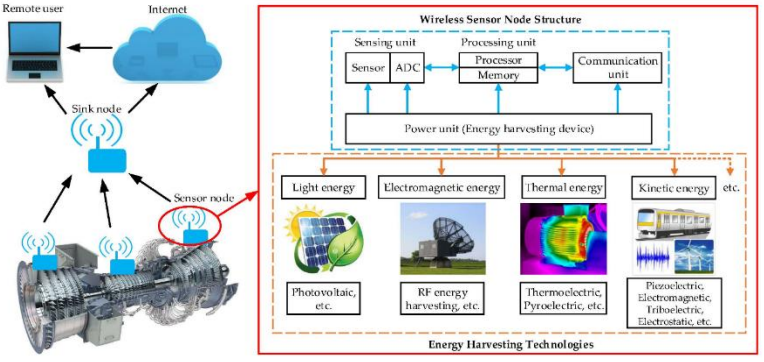
The project is an automatic load operation system that controls load operation, multiple numbers of times according to programmed instruction. The project eliminates the manual ON/OFF switching of load. A real time clock (RTC) is used to track the time and automatically switch ON/OFF the load. This project is required for load shedding time management which is
used when the electricity demand exceeds the suppy and there comes a need for manually switching ON/OFF the electrical devices in time. Hence this system eliminates the manual operation by automatically switching the load ON/OFF.



(Fig no.12 load shedding)

5.2.2 Management through Energy Harvesting Concept

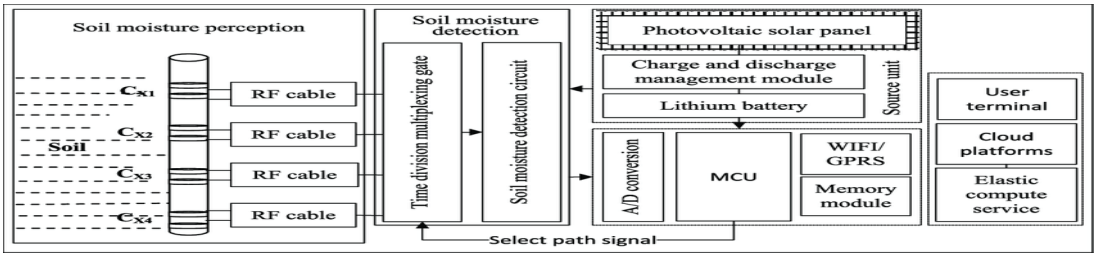
The objective of the Power Management through Energy Harvesting Concept project work has been designed and implemented in the power management through energy harvesting concept which deals with the power saving and optimization.



(Fig no.13 energy harvesting system)

5.2.3 Moisture Monitoring System

Soil moisture sensors aid good irrigation management. Good irrigation management gives better crops, uses fewer inputs, and increases profitability. Soil moisture sensors help irrigators to understand what is happening in the root zone of a crop.



(Fig no.14 moisture monitoring system)

5.2.4 Home Automation using IoT / Any other methodology

Home automation system using IoT that can control and automate most of the home appliances. The proposed system consists of an Arduino Uno board (ATmega32 IC), GSM module
(SIM 300), PIR sensor, temperature sensor (LM 35), gas sensor (MQ-6), power select (7805) and web application.

(Fig no.15 home automation)

5.2.5 PC Based Electrical Load Control

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

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

5.2.6 Electrical Parameters Measurements

Electrical parameter	Measuring unit	Symbol
Voltage	Volt	V or E
Current	Ampere	I or i
Resistance	Ohm	R or Ω
Conductance	Siemen	G or ʊ
Capacitance	Farad	C
Charge	Coulomb	Q
Inductance	Henry	L or H
Power	Watts	W
Frequency	Hertz	Hz

(Table no.10 Electrical parameters measurement)

Chapter 6: Swatchh Bharat Abhiyan (Clean India)

6.1 Swatchhta needed in allocated village

The Nirmal Bharat Abhiyan has been restructured into the Swachh Bharat Mission (Garmin). The mission aims to make India an open defecation free country in Five Years. It seeks to improve the levels of cleanliness in rural areas through Solid and Liquid Waste Management activities and making Gram Panchayats Open Defecation Free (ODF), clean and sanitized.

Village requires solid waste disposal, sanitation, liquid waste management etc.

(Fig no.16 existing condition in valasan)

6.2 Guidelines - Implementation in allocated village

"A clean India would be the best tribute India could pay to Mahatma Gandhi on his 150-birth anniversary in 2019," said Shri Narendra Modi as he launched the Swachh Bharat Mission at Rajpath in New Delhi. On 2nd October 2014, Swachh Bharat Mission was launched throughout length and breadth of the country as a national movement. While leading the mass movement for cleanliness, the Prime Minister exhorted people to fulfill Mahatma Gandhi's dream of a cleanand hygienic India. Shri Narendra Modi himself initiated the cleanliness drive at Mandir Marg Police Station. Picking up the broom to clean the dirt, making Swachh Bharat Abhiyan a mass movement across the nation, the Prime Minister said people should neither litter, nor let others litter. He gave the mantra of 'Na gandagi karenge, Na karne denge.

(Fig no.17 Swatchh Bharat Abhiyan)

' Shri Nsarendra Modi also invited nine people to join the cleanliness drive and requested each of them to draw nine more into the initiative. By inviting people to participate in the drive, the Swachhta Abhiyan has turned into a National Movement. A sense of responsibility has been evoked among the people through the Clean India Movement. With citizens now becoming active participants in cleanliness activities across the nation, the dream of a 'Clean India' once seen by Mahatma Gandhi has begun to get a shape.

- To facilitate participation of local communities in improving water and sanitation management.
- By ensuring safe sanitation in all households, public, offices, institutions, and places.
- By educating communities about safe usage of water, prevent of contamination and about hygienic habits.
- Identification of Household without toilets corrective action.
- To promotes modern agriculture and water use technologies to conserve water.
- By proper plan and implementation of water supply schemes.
- To establish local environmental safeguard measures.

6.3 Activities Done by Students for allocated village

- Student have to aware the villagers about waste and waste segregation.
- Students can help to clean their school's colleges and aware the people to do not throw the garbage on the road.
- They can give the information to people about dry and wet garbage and dispose them to separate.
- Student can aware the people and make campaigning about swatcch bhart abhiyan.

Chapter 7: Village condition due to Covid-19

(Fig 18 COVID-19 situation)

Coronavirus disease 2019 (**COVID-19**) is a contagious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first case was identified in Wuhan, China in December 2019.

Common symptoms of COVID-19 include fever, cough, fatigue, breathing difficulties, and loss of smell and taste. Symptoms begin one to fourteen days after exposure to the virus. While most people have mild symptoms, some people develop acute respiratory distress syndrome (ARDS). ARDS can be precipitated by cytokine storms,multi-organ failure, septic shock, and blood clots. Longer-term damage to organs (in particular, the lungs and heart) has been observed. There is concern about a significant number of patients who have recovered from the acute phase of the disease but continue to experience a range of effects—known as long COVID—for months afterwards. These effects include severe fatigue, memory loss and other cognitive issues, low-grade fever, muscle weakness, and breathlessness.

COVID-19 spreads via several means, primarily involving saliva and other bodily fluids and excretions. These fluids can form small droplets and aerosols, which can spread as an infected person breathes, coughs, sneezes, sings, or speaks. The virus may also spread by direct contact and it is unknown how often it spreads via fomites (contaminated surfaces). The exact route of transmission is rarely proven conclusively, but infection mainly happens when people are near each other for long enough, which is known as "close contact". It can spread as early as two days before infected persons show symptoms and from asymptomatic individuals. People remain infectious for up to ten days in moderate cases, and two weeks in severe cases. The standard diagnosis method is by real-time reverse transcription polymerase chain reaction (RRT-PCR) from a nasopharyngeal swab. Preventive measures include social distancing, quarantining, ventilation of indoor spaces, covering coughs and sneezes, hand washing, and keeping unwashed hands away from the face. The use of face masks or coverings.

7.1 Taken steps in allocated village related to existing situation

Villagers follow the covid-19 guideline which is provided by the government of Gujarat. And according to that Gram panchayat and sarpanch make a guideline for villagers to take some steps against covid-19.

- Wearing mask
- 6 feet distance (social distancing)

- Washing hand repeatedly
- Shutdown shops after 7pm

7.2 Activities Done by Students for allocated village

- Student could spread aware to the villagers about covid-19.
- Students made the masks and distributed to needy.
- Students sticked the posters regarding government guideline of covid-19 in village.
- We organized Covid-19 awareness camp in valasan village. We interacted with villagers and told them regarding the danger of corona virus. We also interacted with Sarpanch and distributed nose mask and sanitizer. Corona virus is one of the pandemics which has broken the economic leg of world's leading nation and lots of people have lost lives till date. In such situation it is very necessary to not underestimate the severity of this disease.

 r

(fig. mask distribution in valasan village)

7.3 Any other steps taken by the students/ villagers

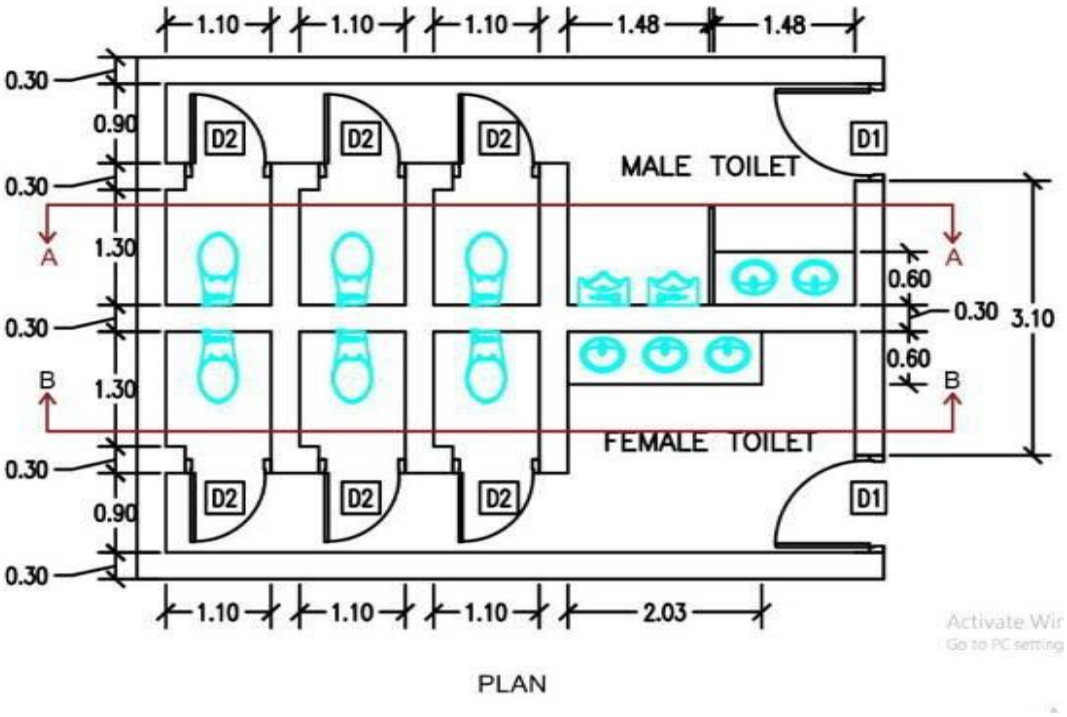
No

Chapter 8: Sustainable Design Planning Proposal (prototype Design) – part 1

8.1 Design Proposals

Sr. no	Description	Design
1	Civil	Design of public toilet
2	Civil	Design of Aaganvadi
3	Civil	Design of rooftop (inclined) Rainwater harvesting
4	Civil	Design of library
5	Civil	Design of Public garden
6	Civil	Design of Play ground

8.1.1 Design of Public toilet: -



(Fig. Plan of public toilet (outer Dimension: - 7.8m*5.9m)

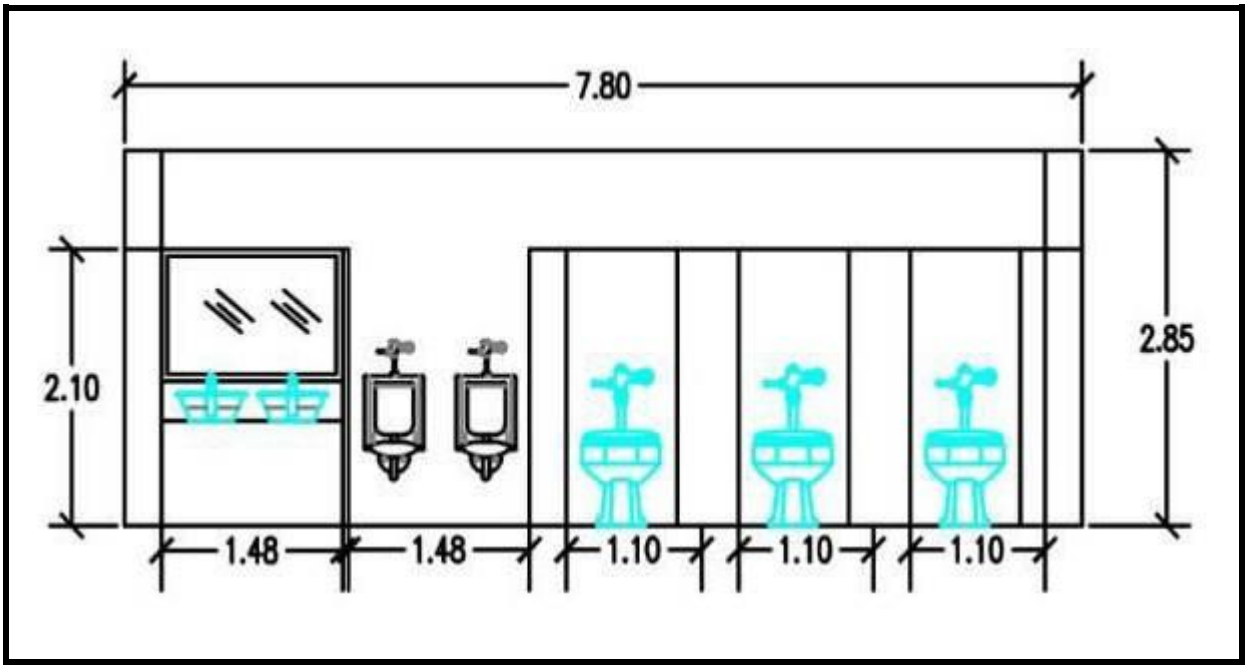


Fig. SECTION A

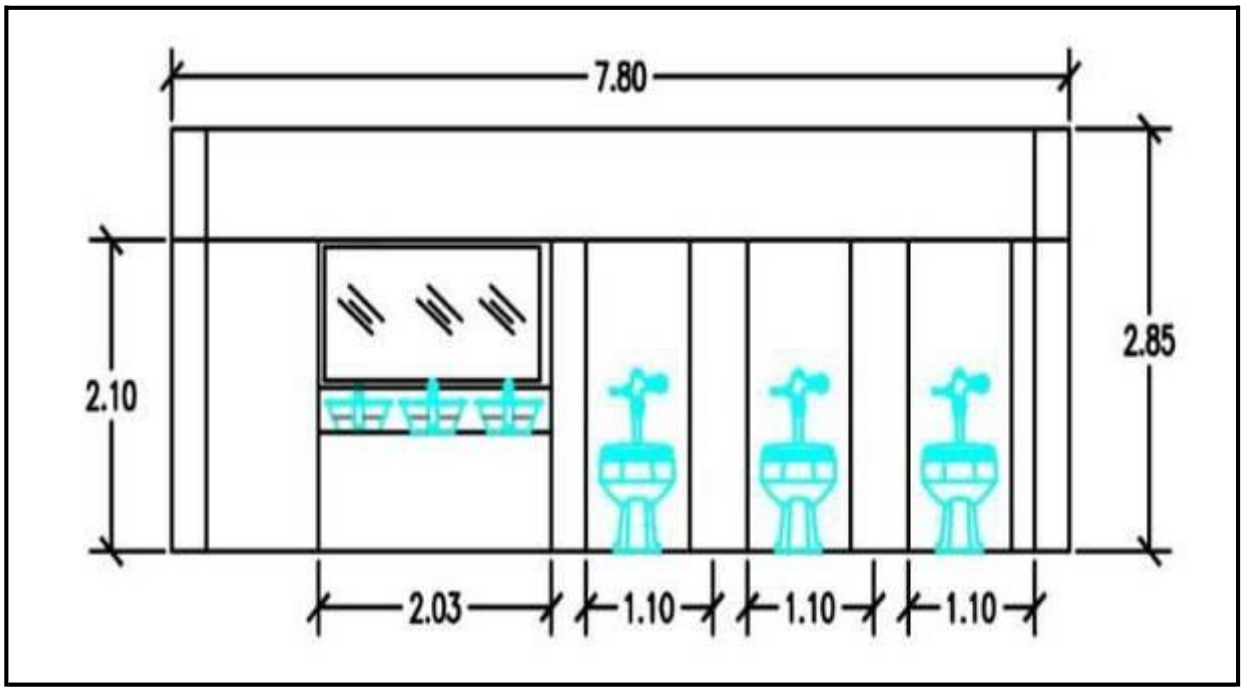


Fig. section bb

Measurement sheet of public toilet(Table 12)

Total center line length= 46.50m

No. of junction=11, Net center line length=44.85m

SR no.	Discription	NOS.	Length (m)	Breadth (m)	Height (m)	Total	Gra
1	Excavation in foundation Net center line length=44.85	1	44.85	0.9	1.1	44.40	**44.40 m^3**
2	P.C.C in foundation	1	44.85	0.9	0.2	8.07	**8.07 m^3**
3	Brick masonry up toplinth level						
	First step:- 45.90m	1	45.90	0.6	0.3	8.26	
	Second step:- 46.00m	1	46.00	0.5	0.3	6.90	
	Third step:- 46.10	1	46.10	0.4	0.3	5.53	
	Fourth step:- 46.20	1	46.20	0.3	0.3	4.15	**24.84 m^3**
	Brick work for steps						
	First step:-	2	1.1	0.9	0.15	0.297	
	Second step:-	2	1.1	0.6	0.15	0.198	
	Third step:-	2	1.1	0.3	0.15	0.099	**0.594 m^3**
	Net quantity:-						**25.434 m^3**
4	Damp proof coarse(D.P.C)	1	46.50	0.3	-	13.95	**13.95 m^2**
5	Brick masonry above plinth up to slab level	1	44.85	0.3	3	-	**40.37 m^3**

8.1.2 Design of Anganwadi

Valasan Village Have 2 Anganwadi But the Student of Village Is More So the Village Required One More Anganwadi. We Talk to The Villagers and Sarpanch They Give Us the Feedback That One More Aganwadi Is Required. And the One of The Anganwadi's Condition Is So Weak and Construction Is Old So The Above Basis We Decide To Give The Plan Of Anganwadi.

(Fig .Elevation of Anganwadi)

Estimation of Anganwadi

Sr no.	Item Description	No.	Length (m)	Width (m)	Height (m)	Quantity (CU M / SQ M)
1	**Excavation work**					
	LW1	2	3.95	0.9	1.2	8.532
	LW2	2	3.45	0.9	1.2	7.452
	LW3	2	8.02	0.9	1.2	17.3232
	LW4	3	1.65	0.9	1.2	5.346
	Short wall					
	SW1	4	2.91	0.9	1.2	12.572
	SW2	2	2.45	0.9	1.2	5.292
	SW3	1	1.48	0.9	1.2	1.5984
	SW4	2	1.32	0.9	1.2	2.8512

				TOTAL QTY.	60.966	
	P.C.C. work at footing (1:4:8)					
	Long wall					
	LW1	2	3.95	0.9	0.3	2.133
	LW2	2	3.45	0.9	0.3	1.863
	LW3	2	8.02	0.9	0.3	4.3308
	LW4	3	1.65	0.9	0.3	1.3365
	Short wall					
	SW1	4	2.91	0.9	1.2	12.5712
	SW2	2	2.45	0.9	0.3	1.323
	SW3	1	1.48	0.9	0.3	0.3996
	SW4	2	1.32	0.9	0.3	0.7128
	Steps					
	Base step P.C.C.	1	4.05	1.22	0.1	0.4941
				TOTAL QTY.		15.7356
3	**Brick work up to plinth level**					
	1st step brick work					
	Long wall					
	LW1	2	3.65	0.6	0.3	1.314
	LW2	2	3.15	0.6	0.3	1.134
	LW3	2	7.72	0.6	0.3	2.7792
	LW4	3	1.35	0.6	0.3	0.729
	Short wall					
	SW1	4	3.21	0.6	0.3	2.3112
	SW2	2	2.75	0.6	0.3	0.99

	SW3	1	1.78	0.6	0.3	0.3204
	SW4	2	1.62	0.6	0.3	0.5832
	2nd step brick work					
	Long wall					
	LW1	2	3.55	0.5	0.3	1.065
	LW2	2	3.05	0.5	0.3	0.915
	LW3	2	7.62	0.5	0.3	2.286
	LW4	3	1.25	0.5	0.3	0.5625
	Short wall					
	SW1	4	3.31	0.5	0.3	1.986
	SW2	2	2.85	0.5	0.3	0.855
	SW3	1	1.88	0.5	0.3	0.282
	SW4	2	1.72	0.4	0.3	0.4128
	3rd step brick work					
	Long wall					
	LW1	2	3.45	0.4	0.3	0.828
	LW2	2	2.95	0.4	0.3	0.708
	LW3	2	7.55	0.4	0.3	1.812
	LW4	3	1.15	0.4	0.3	0.414
	Short wall					
	SW1	4	3.41	0.4	0.3	1.6368
	SW2	2	2.95	0.4	0.3	0.708
	SW3	1	1.98	0.4	0.3	0.2376
	SW4	2	1.82	0.4	0.3	0.4368
	Stair					
	1ST STEP	1	2.9	0.6	0.15	0.261

	2ND STEP	1	3.4	0.85	0.15	0.4335
	3RD STEP	1	3.95	1.05	0.15	0.622125
					TOTAL	23.62313
	Plinth masonry above plinth level					
	Long wall					
	LW1	2	3.05	0.3	3	5.49
	LW2	2	2.52	0.3	3	4.536
	LW3	2	7.12	0.3	3	12.816
	LW4	3	0.75	0.3	3	2.025
	Short wall					
	SW1	4	3.81	0.3	3	13.716
	SW2	2	3.35	0.3	3	6.03
	SW3	1	2.38	0.3	3	2.142
	SW4	2	2.22	0.3	3	3.996
					TOTAL	50.751
	Deduction					
	D1	4	1.2	0.3	2.1	3.024
	D2	3	0.9	0.3	2.1	1.701
	W1	3	2.4	0.3	1.5	3.24
	W2	5	0.9	0.3	1.5	2.025
	V	3	0.6	0.3	0.6	0.324
				TOTAL QTY.		10.314
				NET QTY.		42.057
5	**Plaster work (internal wall)**					
	Passage	2	2.083		3	12.498
		2	4.572		3	27.432

	Room 1	2	3.658		3	21.948
		2	2.972		3	17.832
	Room 2	2	3.708		3	22.248
		2	2.972		3	17.832
	Storeroom	2	2.017		3	12.102
		2	0.95		3	5.7
	Toilet	2	3.038		3	18.228
		2	1.524		3	9.144
	Service room	2	3.251		3	19.506
		2	2.466		3	14.796
	Staircase area	2	2.692		3	16.152
		1	2.083		3	6.249
	Passage	1	2.83	4.57		12.9331
	Room 1	1	3.658	2.97		10.86426
	Room 2	1	3.708	2.972		11.02018
	Storeroom	1	2.017	0.95		1.91615
	Toilet	1	3.038	1.524		4.629912
	Service room	1	3.251	2.466		8.016966
	Staircase area	1	2.083	2.692		5.607436
				TOTAL QTY.		276.655
	Deduction					
	D1	4	1.2		2.1	10.08
	D2	3	0.9		2.1	5.67
	W1	3	2.4		1.5	10.8
	W2	1	0.9		1.5	1.35
	V	3	0.6		0.6	1.08

				TOTAL QTY.		28.98
				NET QTY.		247.674
6	**Plaster work (external wall)**					
		2	10.06	7.41	3.2	477.0854
	Deduction					
	D1	1	2.4		3	7.2
	W1	3	2.4		1.5	10.8
	W2	5	09		1.5	6.75
	V	2	0.6		0.6	0.72
				TOTAL QTY.		25.47
				NET QTY.		451.6154
7	**R.C.C. work for slab**					
		1	9.15	6.1	0.2	11.163
				TOTAL QTY.		11.163
8	**Brick work in parapet wall**					
	Long wall	2	5.79	0.3	1.5	5.211
	Short wall	2	8.85	0.3	1.5	7.965
	Stair wall	2	1.67	0.3	2.1	2.1042
		1	2.235	0.3	0.6	0.4023
				TOTAL QTY.		15.6825

Abstract Sheet of Anganwadi

Sr. no	Item Description	QTY	Rate	Per	Amount (Rs.)
1	Earthwork in excavation in foundation	60.96	90	CU M	5486.4
2	Earth filling in plinth	18.376	2700	CU M	49615.2
3	Brick masonry up to plinth in CM	26.623	3500	CU M	93180.5
4	Smooth plaster inside rooms & ceiling	247.674	150	SQ M	37151.1
5	Smooth plaster on outer wall	451.6154	150	SQ M	67742.31
6	Paint work (whitewash)	247.674	5	SQ M	1238.37
7	Paint work on outer wall	451.6154	5	SQ M	2258.077
8	Brick work for parapet wall	15.6825	3500	CU M	54888.75
			Total Rs.		311560.707
		Add 1.5% water charge			4673
		Add 10% Co charge			3115.60707
		Total estimate cost in Rs.			319350

8.1.3 Sustainable Design (Design of rooftop (inclined) Rainwater harvesting.

Rainwater Harvesting Can be Defined as activity of direct collection of Rainw a t e r and storageof Rain Water as well as other activities aimed at harvesting and conserving surface and Ground Water, Prevention of loss through evaporation and seepage and other hydrological studies and engineering inventions aiming at most efficient utilization of the Rain Water towards best use for the humidity.

There is no any sustainable facilities in present condition of Valasan village. So, we propose the Rooftop Rainwater harvesting system in school which beneficiate the school dwellers as curing of lawns & it's also used in a latrine block for providing flushing system. It's also useable in draught situation.

Procedure :-

Rainwater which is collected in gutter pipes drained in down pipe and flowing through sand filter where the water is disinfect and storage in tank. Thus the rain water is harvested.

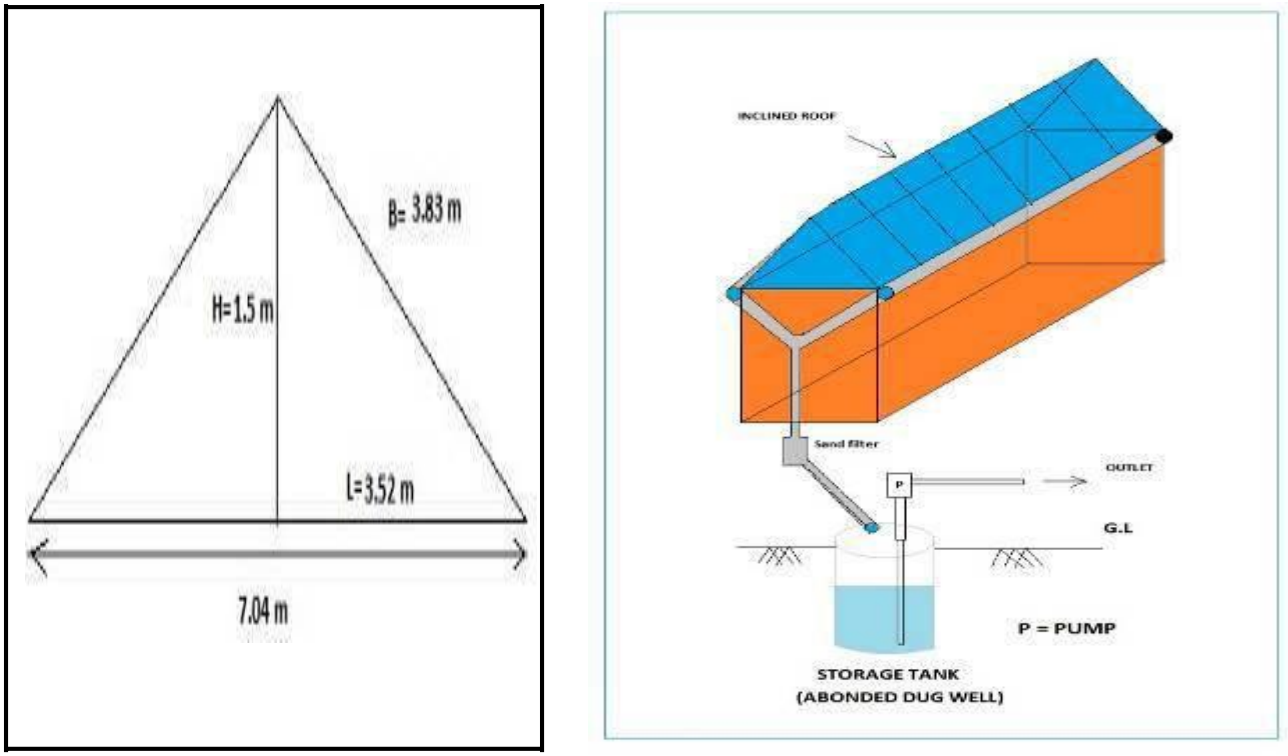


Fig. Typical design of rainwater harvesting System

Components of Rainwater Harvesting system:-

- Roof Catchment Area
- Drain pipes
- Gutter
- Down pipe
- Filter Unit (Sand filter)
- Storage tank (1000 mm dia)
- Pump unit
- Outet pipe (to recharge)

Sand Fiters:-

Sand filters have commonly available sand as filter media. Sand filters are easy and inexpensive to construct. These filters can be employed for treatment of water to effectively remove turbidity (suspended particles like silt and clay), colour and microorganisms.

A rain water which are collecting in gutter drained in sand filter through the down pipe.
Sand filter media remove the disinfection of water and the water is harvested in storage tank

Design Features:-

Average annual rainfall of the Valasan = 1406.1 mm.

In simple terms, this means if the terrace floor is assumed impermeable, and all the rain that falls on it is retained without evaporation then in one year, there will be rainwater on the terrace floor to a height of 1.4 m.

- L = total Plan length= 25.03 m
- B = Inclined Width of the roof
- H = Height of the pitch of the roof)

We know that, $B^2 = L^2 + H^2$ (L=length of roof on one side)

$= 3.52^2 + 1.5^2$

So that B = 3.83 m

Area of catchment = L X 2B

= 25.03 X 2(3.83)

= 191.73 m^2

Volume of rainfall over the catchment area = Area of catchment X average annual rainfall

$= 191.73 m^2 X 1.4 m$

Total rail water collected $= 268.43 m^3$

Assuming that 60% water is harvested and 40% of loss is gained due to evaporation loss or conveyance loss therefore total volume of water harvested = 0.6 X $268.43 m^3 = 161.06 m^3$

We know that, $1m^3 = 1000$ liter

So that total water harvested = 1,61,060 liter

Design of storage tank:-

- Area of rooftop = 191.73 m2
- Average annual rainfall = 1406.1 mm
- Runoff coefficient for aluminum sheet = 0.85m (Refer DRWS)
- Coefficient for evaporation = 0.8 m
- Total water harvested = 191.73*1.4*0.85*0.8 = 182.53 m3
- Capacity of storage tank = 182530 liter (Which is 20% larger than required)

Approx. cost of 2.5 lack liter tank is Rs. 40,000 /- (Manual of DRWS)

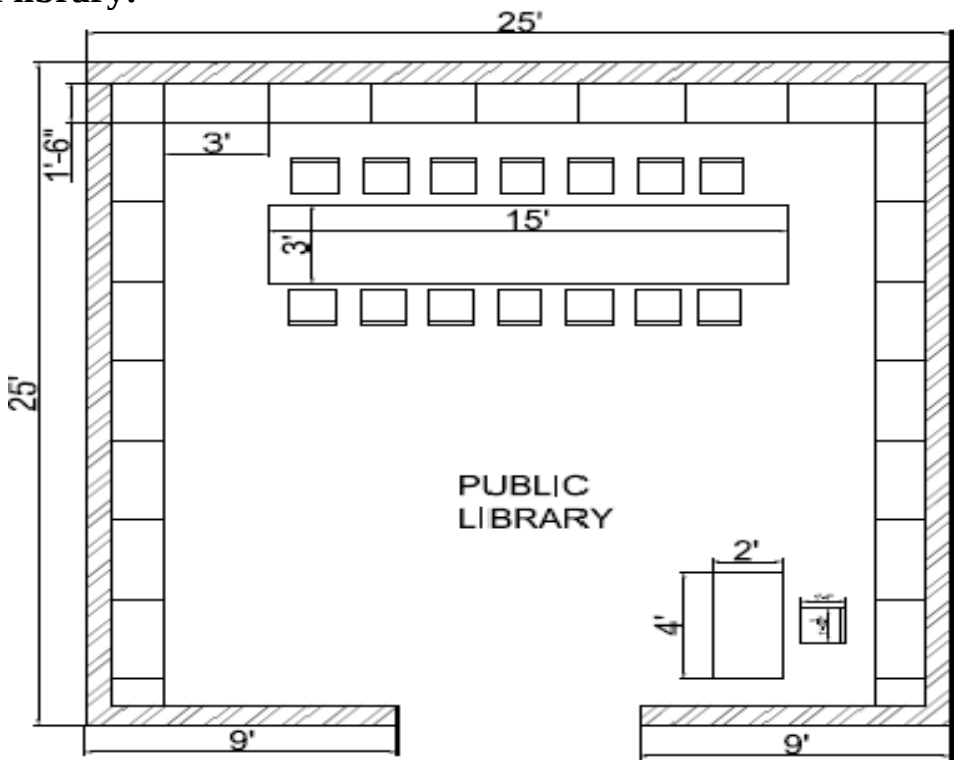
So estimate cost of tank that will be = for 182530 liter

= 40000 X 0.73

= 29204.80/-

Estimated cost of storage tank :- 30,000 Rs.

8.1.4 Design of library: -



{Fig Plan of public library}

Quantity Sheet

Sr.	Item	No.	Length	Width	Height	Quantity
1	**Excavation in foundation**					
	Long wall	2	8.25	0.9	1.5	22 27 m3
	Short wall	2	7.05	0.9	1.5	19 03 m3
	Total excavation					**41.30 m3**
2	**p.c.c**					
	Long wall	2	8.25	0.9	0.3	4.455 m3
	Short wall	2	7.05	0.9	0.3	3.80 m3
	Total					**8.262 m3**
3	**Brickwork upto plinthlevel**					
	Long wall 1st step 2nd step3rd step 4th step	2 2 2 2	7.95 7.85 7.75 7.65	0.6 0.5 0.4 0.3	0.3 0.3 0.3 0.3	2.862 m3 2.355 m3 1.86 m3 1.377 m3

	Short wall 1st step 2nd step3rd step 4th step	2 2 2 2	7.35 7.45 7.55 7.65	0.6 0.5 0.4 0.3	0.3 0.3 0.3 0.3	2.646 m3 2.235 m3 1.812 m3 1.377 m3
	Total					**16.639 m3**
4	**Brickwork in super structure**					
	Long wall	1	14.1	0.3	3.00	12 69 m3
	Short wall	2	2.69	0.3	3.00	4.842 m3
	Parapet	1	28.2	0.2	1.00	5.64 m3
	Total					**23.172 m3**
5	**Plastering work**					
	Inside	1	26.53		4.00	106.12 m2
	Outside	1	28.45		4.00	113.8 m2
	Total					**219.92 m2**
6	**Flooring**	1	7.05		7.05	**49.70 m2**
7	**R.c.c**					
	Slabs	1	9.45	9.45	0.12	**10.71 m3**
	Beams	1	30.6	0.3	0.3	**2..75 m3**
	Columns	6	0.3	0.3	3.00	**1.62 m3**

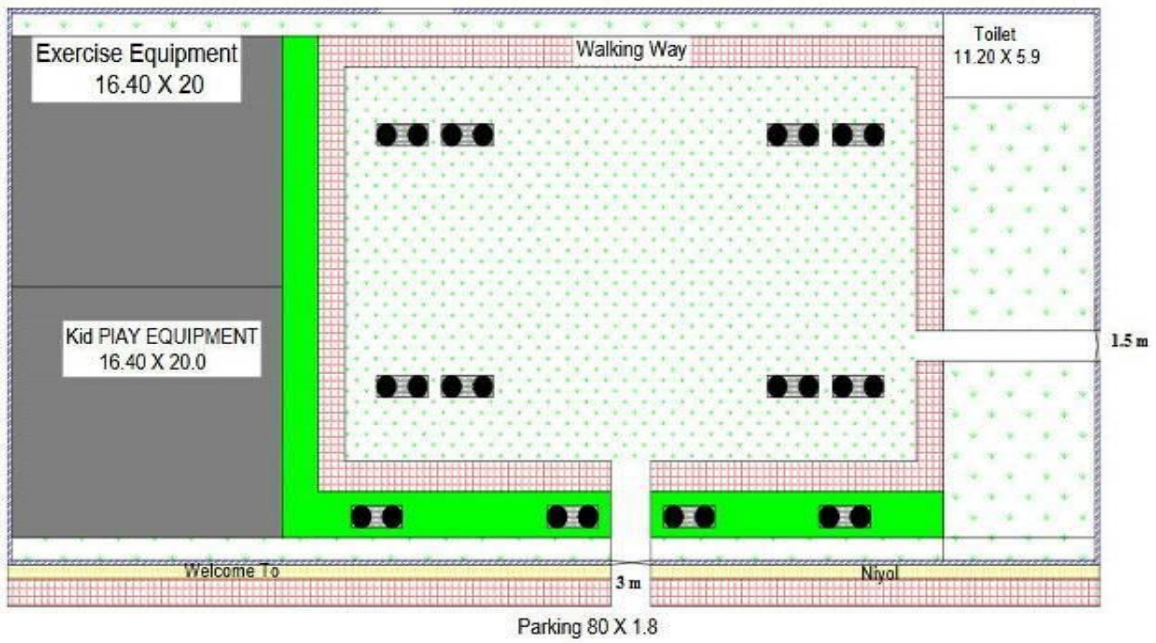
Abstract Sheet

Sr.	**Item description**	**Quantity**	**Rate**	**Per**	**Amount**
1	Excavation work	41.30	155	Cu.m	6401.5
2.	P.C.C	8.262	3000	Cu.m	24786
3.	Brickwork in foundation	16.639	3200	Cu.m	53244.8
4.	Brickwork in superstructure	23.172	3500	Cu.m	81102
5.	Plaster	219.92	150	Sq.m	32988
6.	Flooring	49.70	855	Sq.m	42493.5
7.	R.C.C slab	10.71	4900	Cu.m	52479
8.	Beams	2.75	14500	Cu.m	39875
9.	Columns	1.62	14500	Cu.m	23490
	Total				**356859.80**

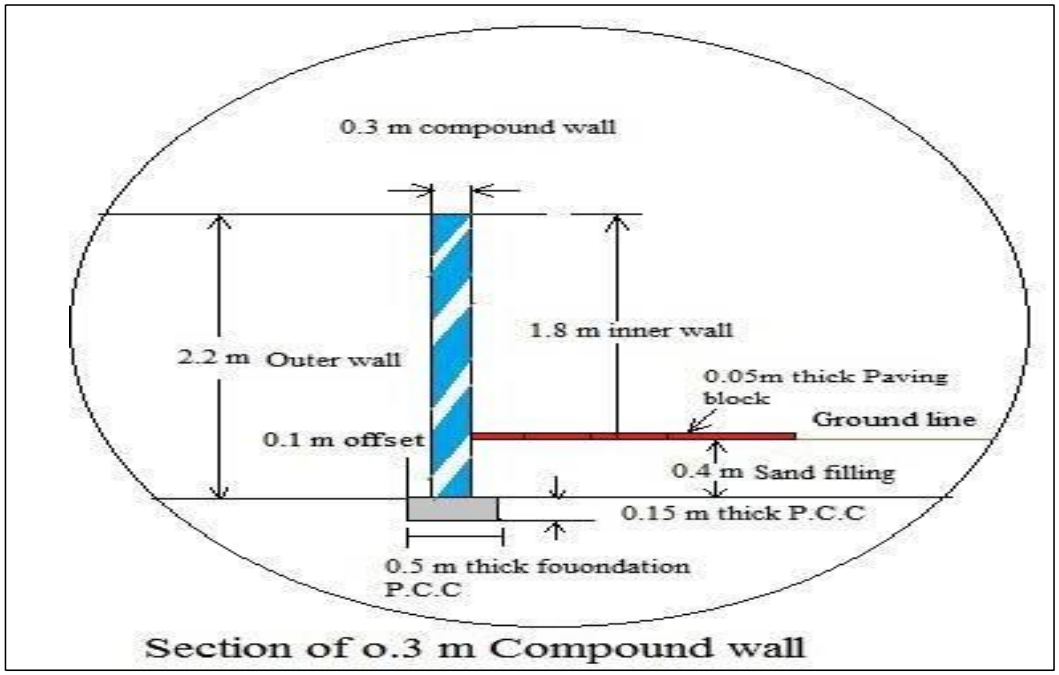
Total cost : 3,56,860/- Rs.

8.1.5 Socio cultural design (Public Garden)

- As per gap analysis there must be public garden in each village.
- According to survey there is no public garden in village. So we propose Public garden as a socio-cultural facility which beneficiate to village dewellers as resting place and providing healthy environment.



(Fig. PLAN of Public Garden)



(Fig. Section of compound wall)

Measurement sheet of Public Garden (Table 16)

SR no.	Description	Nos.	Length (m)	Breadth (m)	Width (m)	Quantity (m3)
	Compound wall					
1.	Excavation of foundation in Soil Net center line length=232.20 M	1	232.20	0.5	0.55	**63.86 m^3**
2.	0.15 m thick P.C.C in foundation below of wall (1:3:6)	1	232.20	0.5	0.15	**17.42 m^3**
3.	Filling available excavated earth (excluding rock in trenches Plinth, sides of foundations etc. in layers not exceeding 20 cm in depth, consolidating each layer by ramming and watering.) 63.86- 17.42 = 46.44 m^3	1	-	-	-	**46.44 m^3**
4.	First class brick masonry above ground line. (1:3:6)	1	232.20	0.3	2.2	**153.25 m^3**
5.	20 mm thick sand face cement plaster both side of compound wall. (1:3)	1	232.20	-	2.2	**510.84 m^2**
6.	20 mm thick sand face cement plaster on top of the compound wall. (1:3)	1	232.20	0.3	-	**69.66 m^2**
7.	For provide land scaping:- Grow trees and plant in garden area including watering etc in charge of engineer.	-	-	-	-	**1748.88 m^2**

8.	**Kerb stone paver blockin side of walking way.**	**-**	**-**	**-**	**-**	**108.80 m^2**
9	**Interlocking paver block**	**-**	**-**	**-**	**-**	**249.00 m^2**

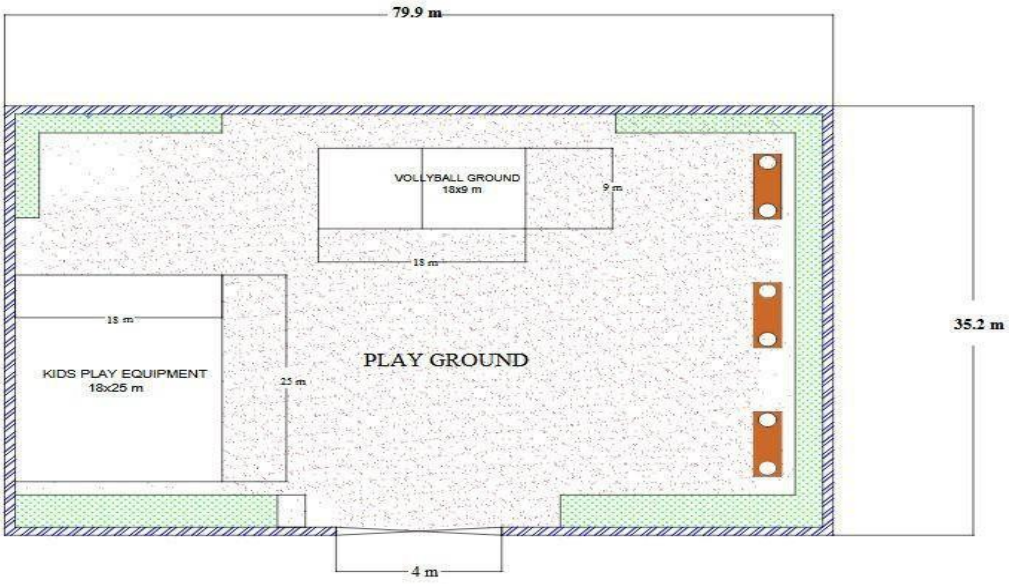
Abstract sheet of compound wall (Table 17)

No.	Item	Qty.	Rate	Per	Amount Rs.
1.	Excavation in foundation (up to 1.5 m lift and 50m lead)	63.86 m^3	85.0	m^3	**5428.10**
2.	0.15 m thick Plain cement concrete (P.C.C) in Foundation (1:3:6)	17.42 m^3	3200	m^3	**55744.00**
3.	Filling available Excavated earth (excluding rock in trenches Plinth, sides of foundations etc. in layers not exceeding 20 cm in depth, consolidating each)	46.44 m^3	49	m^3	**2275.56**
4.	First class brick masonry above ground line. (1:3:6)	153.25M^3	3200	m^3	**490400.00**
5.	20 mm thick sand face cement plaster both side of	510.84M^2	180.40	m^2	**92155.54**
6.	20 mm thick sand face cement plaster on top of	69.66 m^2	180.40	m^2	**12566.66**
7.	For provide land scraping: - Grow trees and plant, lawns in garden area including watering etc.	1748.88M^2	650	m^2	**1136772.00**
8.	Kerb stone paver block in side of walking way.	108.80 M^2	80	m^2	**87040.00**

9.	Interlocking paver block in walking way in the garden.	249.00 m2	450	2 m	112050.00
				TOTAL	19,81,865.2
				ADD 2% CONTINGENCY	39637.30
				ADD 3% WORK CHARGE ESTABLISHMENT	59455.96
				GRAND TOTAL	20,80,958.4

8.1.6 Design Village Playground with Compound Wall

- There is a very big ground in front of school but currently that is not useable. Gram panchayat fencing this ground and they want to develop the ground in better way.
- Although the primary school is in well condition but there is no facility of playground for playing purpose of kids. There is convenient place to develop the compound wall around the playground. So we can easily develop the landscaping (like plantation, creating lawns. Etc.)
- Although there is no playground in village. so we propose Village Playground with compound



(Fig. Plan of Play ground)

Measurement sheet of Village Playground with Compound wall: -

SR no.	Description	Nos.	Length (m)	Breadth (m)	Width (m)	Quantity (m3)
	Compound wall					
1.	Excavation of foundation	1	229.60	0.5	0.55	63.14 m^3
2.	0.15 m thick P.C.C in foundation below of wall(1:3:6)	1	229.60	0.5	0.15	17.22 m^3
3.	Filling available Excavated earth (excluding rock in trenches Plinth, sides of foundations etc. in layers not exceeding 20 cm in depth, consolidating each layer by ramming and watering.)	1	-	-	-	45.92 m^3
4.	First class brick masonry above ground line. (1:3:6)	1	229.60	0.3	2.2	151.54 m^3
5.	20 mm thick sand face cement plaster both side of compound wall. (1:3)	1	229.60	-	2.	505.12 m^2
6.	20 mm thick sand face cement plaster on top of the compound wall. (1:3)	1	229.60	0.3	-	68.88 m^2
7.	For provide land scraping: - Grow trees and plant in garden area including watering	**-**	**-**	**-**	**-**	**226.5 m^2**

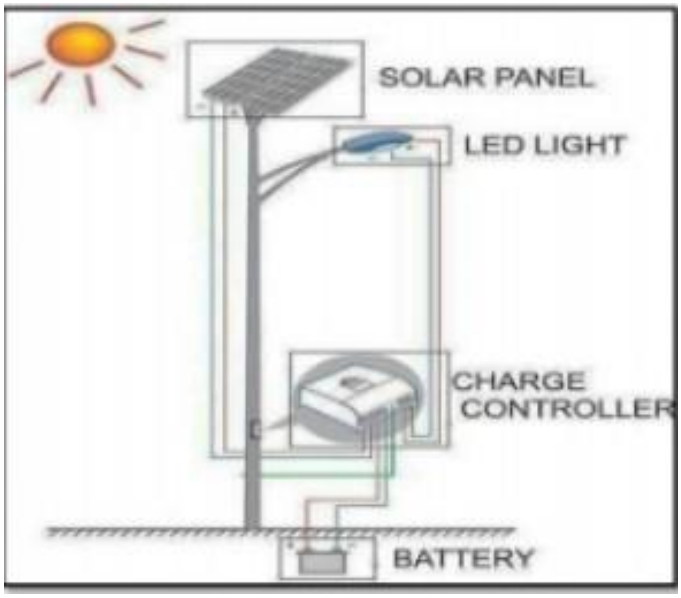
Abstract sheet of compound wall (Table 19)

No.	Item	Qty.	e	Per	Amount R
1.	Excavation in foundation (up to 1.5 m lift and 50m lead)	63.14m3	85.00	m^3	**5366.90**
2.	0.15 m thick Plain cement concrete (P.C.C) in foundation (1:3:6)	17.22m2	3200	m^3	**55104.00**
3.	Filling available Excavated earth (excluding rock in trenches Plinth, sides of foundations etc. in layers not Exceeding 20 cm in depth, consolidating each layer by ramming	45.92m^3	49	m^3	**2250.08**
4.	First class brick masonry above ground line. (1:3:6)	151.54m	3200	m^3	**484928.00**
5.	20 mm thick sand Face cement plaster both side of	505.12m^2	180.40	m^2	**91123.65**
6.	20 mm thick sand Face cement plaster on top of the compound	68.88m^2	180.40	m^2	**12425.95**

7.	For provide land scraping: - Grow trees and plant, lawns in garden	226.5m^2	650	m^2	**147225.00**
	area including				
	watering etc under				
				TOTAL	**7,84,423.8/-**

8.1.7 Design of solar streetlights: -

New Integrated Solar led Street Light is an extremely versatile and robust solar parking lot light, it is perfect for all kind of weather conditions. This compact solar powered street light provides extra lighting easily in no time. Installation is straightforward; only 4 bolts need to be tightened onto a pole. The unit can also be wall mounted. No trenching or connection to the electric grid is needed. The all-in-one LED solar street light is perfect for retrofitting old electric powered fixture or new installations. In this put solar panel, solar light, and battery all in one box.



(fig. Solar street light detail layout)

❖ **Estimate Cost of All-In-One Solar Street Light**

Sr. No	Item description	Rate in Rs
1	All in one (Solar panel, solar light, and battery)	5500
2	Pole (7-8Meter)	3000
3	labour charge & other	1200
	Total estimate cost in Rs	**9700**

8.1.8 Design of electricity in community hall: -

(Fig electricity in community hall)

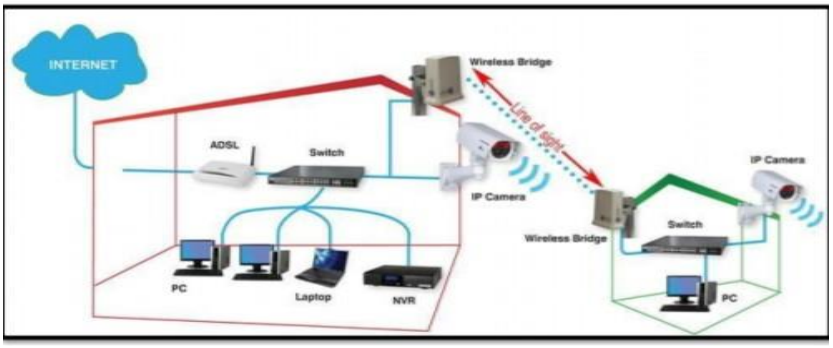
Electrical accessories estimate: -

Sr. no	Place	Item Description	No of Use	Each Cost	Total cost Rs
1`	Hall + Stage	LED Tube light	11	550	6050
2	Hall + stage	Fan	8	1500	12,000
3	Stage	50W Flood Light	2	1100	2200
4	Toilet	LED Bulb	2	80	160
				Total Rs	20,410

Electrical wiring & labour cost: -

Sr. no	Name	Labour cost	Number	Cost	
1	One point price (underground wiring)	150	23	3450	
2	For one LED tube light & bulb	50	13	650	
3	For one fan	100	8	800	
3	For one flood light	50	2	100	
4	For extra plug point	150	15	2250	
			Total Rs.	**7250**	

8.1.9 CCTV installation:



(fig. CCTV installation layout)

CCTV Camera Installation Table

Sr. No	Name Of Components	Cost Of Component
1	Camera Security Kits + Shipping (Per Annum) (IP High Speed Dom) (IR Distance Up 120m	3935
2	Power Strips	3000
3	Cable	620
4	Memory Backups (USB Or CDs Or DVDs)	4000
	Total (essential Item)	**11555**

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

After completion of visit & data collection the project carried out in the current semester by the group members which includes the design of a sustainable facilities. Future scope would be study over other different urban amenities that would be sustainable in rural areas.

Sr.no	Design
1	Drinking water facilities
2	Burial ground
3	Animal shelter
4	Bank with atm service
5	Public communityhall
6	Citizen service center

(Table no 11. Part II design)

Chapter 10: Conclusion of the Entire Village Activities of the Project

For India's economy to be strong, the rural economy needs to grow. Rural areas are still plagued by problems of malnourishment, illiteracy, unemployment, and lack of basic infrastructure like schools, hospitals, sanitation, etc. Our villages need to grow in tandem with cities and standard of life must improve there for inclusive growth to happen. If rural India is poor, India is poor.

While we have latest services and products available in our cities now, villagers are still coping with age old products.

1. While we have international fully air-conditioned schools in our cities, the schools in villages still do not have benches and chairs, leave alone computers. We have a huge shortage of teachers in rural areas, and the school dropout rate is huge.

2. In cities, we have wide roads, flyovers, and underpasses while many villages still do not have proper roads. Urban-rural road links can play a vital role in rural growth.

3. Employment opportunities are hardly there in villages which forces youth to move to cities creating imbalance in the ecosystem and leaving the villages deprived.

4. While we may have numerous hospitals, nursing homes and medical facilities in cities, villages neither have health awareness nor health facilities. See the condition of major hospitals like AIIMS to know how many villagers must flock to cities for even basic treatments.

Vishwakarma yojana aims to procure development in villages without losing essence. After all the way to uplift our country is through developing the villages. The scheme would reinforce wellbeing of people and further quality of living standard.

Chapter 11: References refereed for this project

1) B.N. DATTA (2017) Stimtion publisher “Estimation and costing book”

2) G.B. Deshpandey, J.P. Nayak (2014) Nirali prakasan “Quantity surveying book”

3) National Building Code of India (2016)

4) S.S. Bhavikatt, M.V. Chltawadagi (2014) I.K. International Pvt. Ltd. “Building planning and drawing”

5) The Hindu news (15 October 2013) “The 15 must have basic amenities in Villages.”

• **Web Sites: -**

o www.Sciencedirect.com

o www.smartvillage.gujrat.gov.in

o https://www.census2011.co.in/

o Gujrat Village Directory @ VList.in- India

o Swachhbharat.mygov.in

o https://bis.gov.in

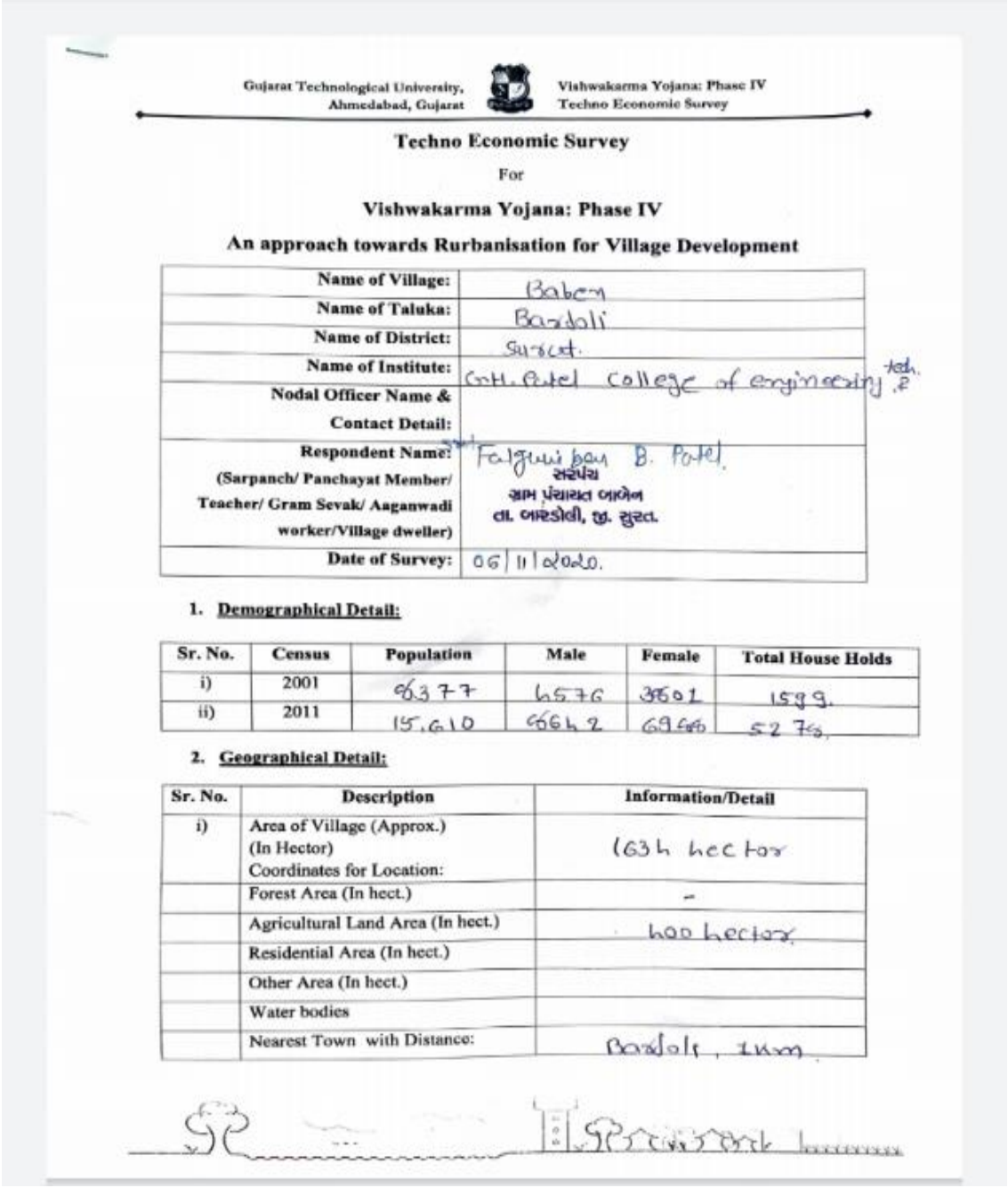
o developments-every-small-town-needs/story/239305.html

o rehabilitation/maintenance/

o www.onefivenine.com/india/villages/vansva

Chapter 12: Annexure attachment

12.1 Survey form of Ideal Village



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase IV
Techno Economic Survey

Techno Economic Survey

For

Vishwakarma Yojana: Phase IV

An approach towards Rurbanisation for Village Development

Name of Village:	Baben
Name of Taluka:	Bardoli
Name of District:	Surat.
Name of Institute:	Smt. Patel College of engineering, Tech.
Nodal Officer Name & Contact Detail:	
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Falguni ben B. Patel. સરપંચ ગ્રામ પંચાયત બાબેન તા. બારડોલી, જી. સુરત.
Date of Survey:	06/11/2020.

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	9637	4576	3501	1599.
ii)	2011	15,610	8662	6948	5275.

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	1634 hector
	Forest Area (In hect.)	-
	Agricultural Land Area (In hect.)	400 hector.
	Residential Area (In hect.)	
	Other Area (In hect.)	
	Water bodies	
	Nearest Town with Distance:	Bardoli, 1km

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Vishwakarma Yojana: Phase IV
Techno Economic Survey

3. Occupational Details:

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

4. Physical Infrastructure Facilities:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated) • RO Water • Well (Covered/ Uncovered) • Hand pumps • Tube well/ Borehole • River/ Canal/ Spring/ Lake/ Pond	yes. yes yes. yes			1 5 4 1.
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:			
	Underground Sump	Capacity:			
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	yes	yes		
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	yes			both.
	If Open than Pucca / Kutchcha	yes			Pucca-3 katcha-4.
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	Water bodies			
Suggestions if any:					

Gujarat Technological University, Ahmedabad, Gujarat

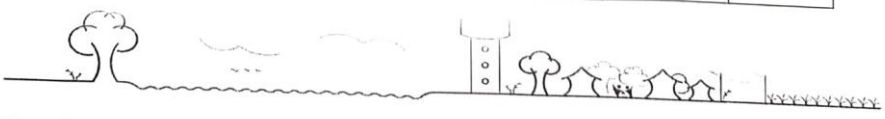
Vishwakarma Yojana: Phase IV
Techno Economic Survey

E.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	All weather			All weather
	Main road	Yes			All weather
	Internal streets	yes			All weather
	Nearest NH/SH/MDR/ODR Dist. in kms.	Yes.			NH-53 5Kms.
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Yes			1 Km Bardoli
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes			Baibey
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes			
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes			24 hr.
	Power supply for Domestic Use	Yes			24 hr.
	Power supply for Agricultural Use	Yes			fixed hr.
	Power supply for Commercial Use	Yes			24 hr.
	Road/ Street Lights	yes			

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

5. Social Infrastructural Facilities:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks



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K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	Yes			Sub. centre
	Private Clinic/Private Hospital/ Nursing Home	Yes			Private clinic / hospital.
	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				
	Primary School	Yes	Yes		1.
	Secondary school	No			
	Higher sec. School	No			
	ITI college/ vocational Training Center	No			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities				
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					

M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:	No			1 km Gandoli

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	Condition:				
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	No			
	Public Garden Location: Condition:	Yes			
	Village Pond Location: Condition:	yes.			
	Recreation Center Location: Condition:	No.			
	Cinema/ Video Hall Location: Condition:	No.			
	Assembly Polling Station Location: Condition:	yes.			Pandayat office
	Birth & Death Registration Office Location: Condition:	Yes.			Pandayat office.
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	No.			Bardoli.
	Telecommunication Network/ STD booth	No			

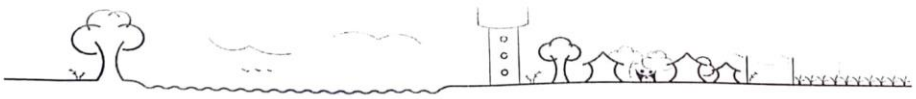
	General Market	yes			
	Shops (Public Distribution System)	yes			
	Panchayat Building	yes			
	Pharmacy/Medical Shop	yes			
	Bank & ATM Facility	yes			
	Agriculture Co-operative Society	yes			APMC
	Milk Co-operative Soc.	No			
	Small Scale Industries	NO			
	Internet Cafes/ Common Service Center/Wi Fi	Yes.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

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

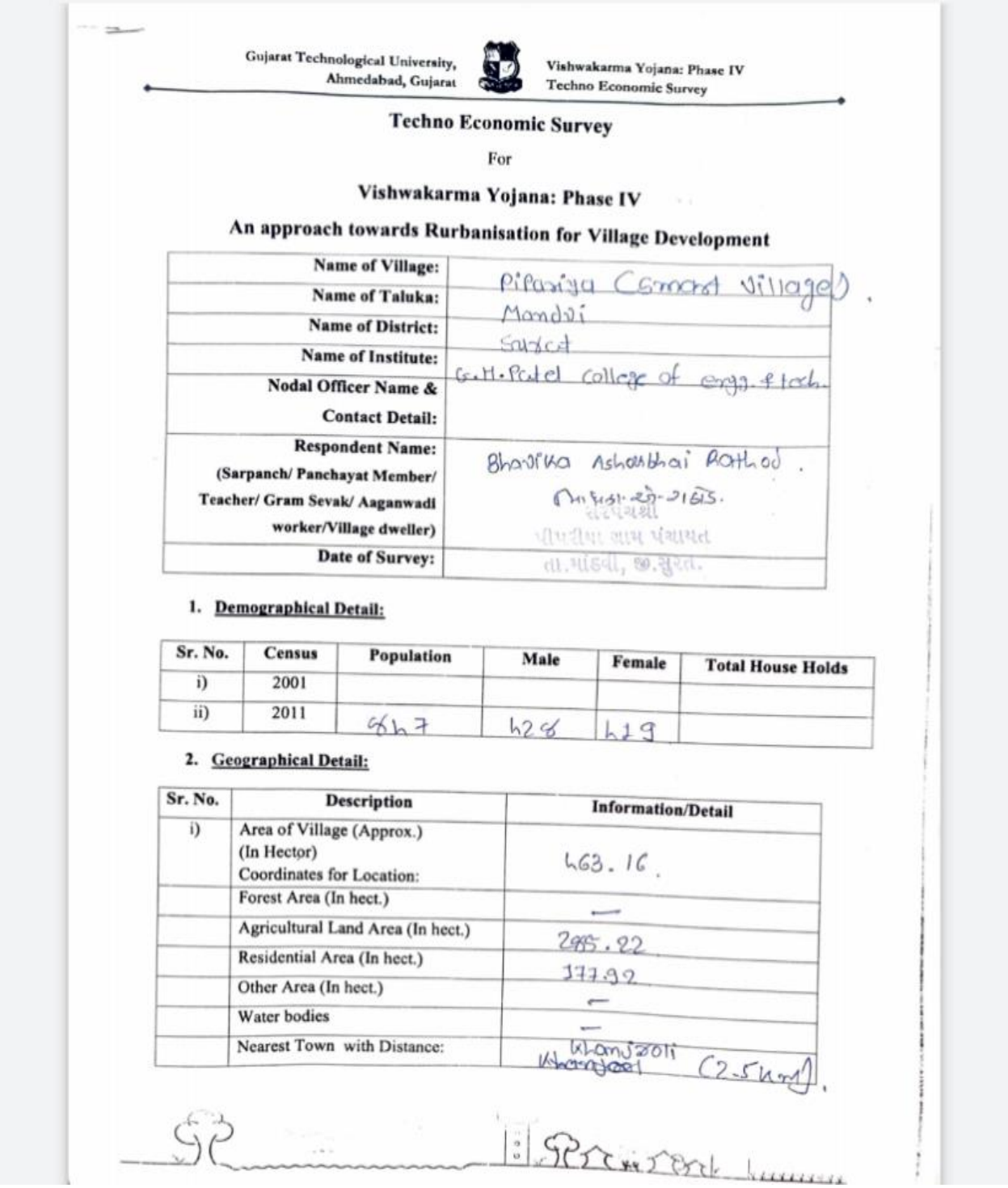
Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
O.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources				
P.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	yes			Solar street light.
Q.	Any Other				

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	yes (soft copy).



12.2 Survey form of Smart Village



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Vishwakarma Yojana: Phase IV
Techno Economic Survey

Techno Economic Survey

For

Vishwakarma Yojana: Phase IV

An approach towards Rurbanisation for Village Development

Name of Village:	Pipariya (Smart Village)
Name of Taluka:	Mandvi
Name of District:	Surat
Name of Institute:	G.H. Patel college of engg. & tech.
Nodal Officer Name & Contact Detail:	
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Bhavika Ashokbhai Rathod
Date of Survey:	

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001				
ii)	2011	967	428	439	

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	463.16
	Forest Area (In hect.)	—
	Agricultural Land Area (In hect.)	285.22
	Residential Area (In hect.)	177.92
	Other Area (In hect.)	—
	Water bodies	—
	Nearest Town with Distance:	Kamrej (2.5 km)

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Techno Economic Survey

3. Occupational Details:

Name of Three Major Occupation groups in Village	1. farmers 2. — 3. —

4. Physical Infrastructure Facilities:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated) • RO Water • Well (Covered/ Uncovered) • Hand pumps • Tube well/ Borehole • River/ Canal/ Spring/ Lake/ Pond	yes. no. yes no. yes. yes yes.			(mixed).
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: (a). 50000 lit (b) 25000 lit			no (b).
	Underground Sump	Capacity: (a). 60000 lit.			
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	yes.			
Suggestions if any;					
D.	**Type of Drainage**				
	Closed/ Open	closed.			
	If Open than Pucca / Kutchcha	—			
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	Mix (direct in drain and land).			
Suggestions if any:					

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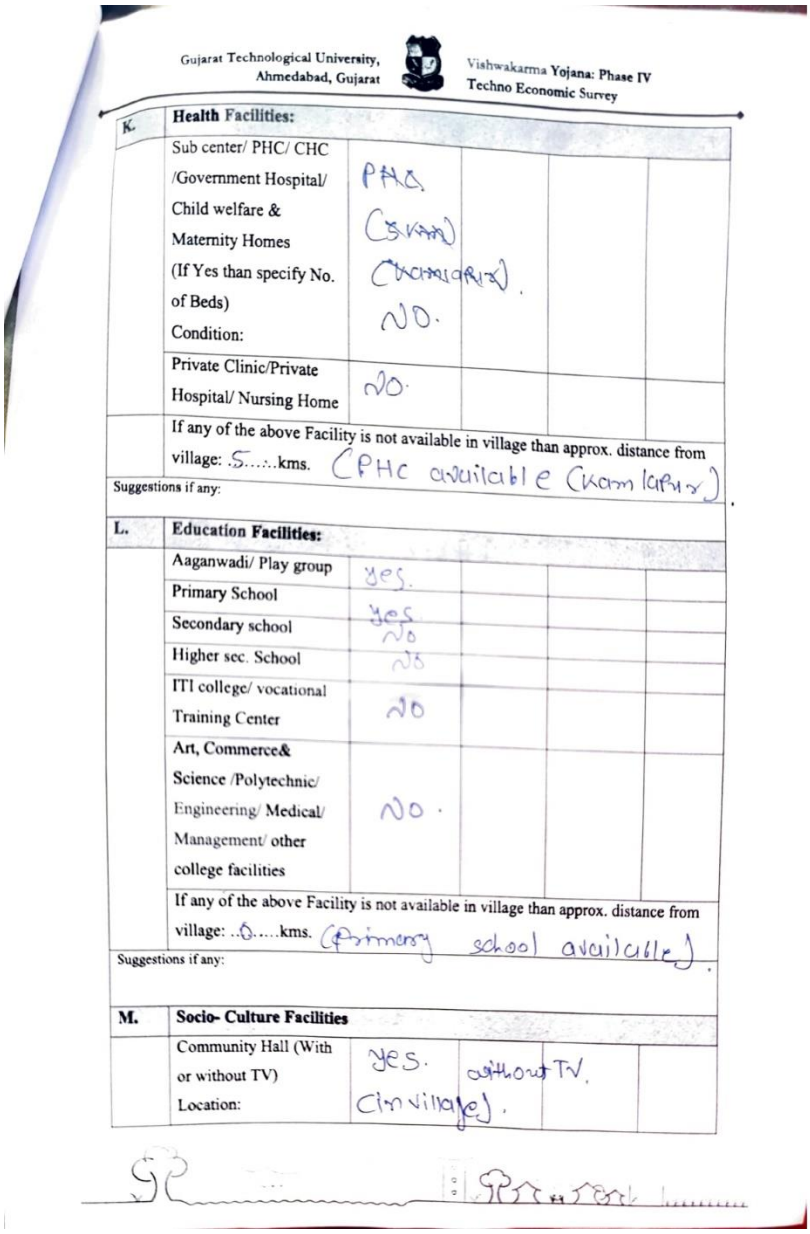
	Electrification in Government Buildings/ Schools/ Hospitals	24 hr.			
	Renewable Energy Source Facilities (Y/ N)	yes.			
	LED Facilities	yes.			
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	NO.			
	Location Condition	—			
	Community Toilet (With bath/ without bath facilities)	with bath.			
	Solid & liquid waste Disposal system available	yes. (Septik tank).			
	Any facility for Waste collection from road	Septik tank			
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	River (Tapi).			
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	kutchha = 20%.	Pucca = 60%.	ratio = 0.25	(1:4).

5. Social Infrastructural Facilities:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks



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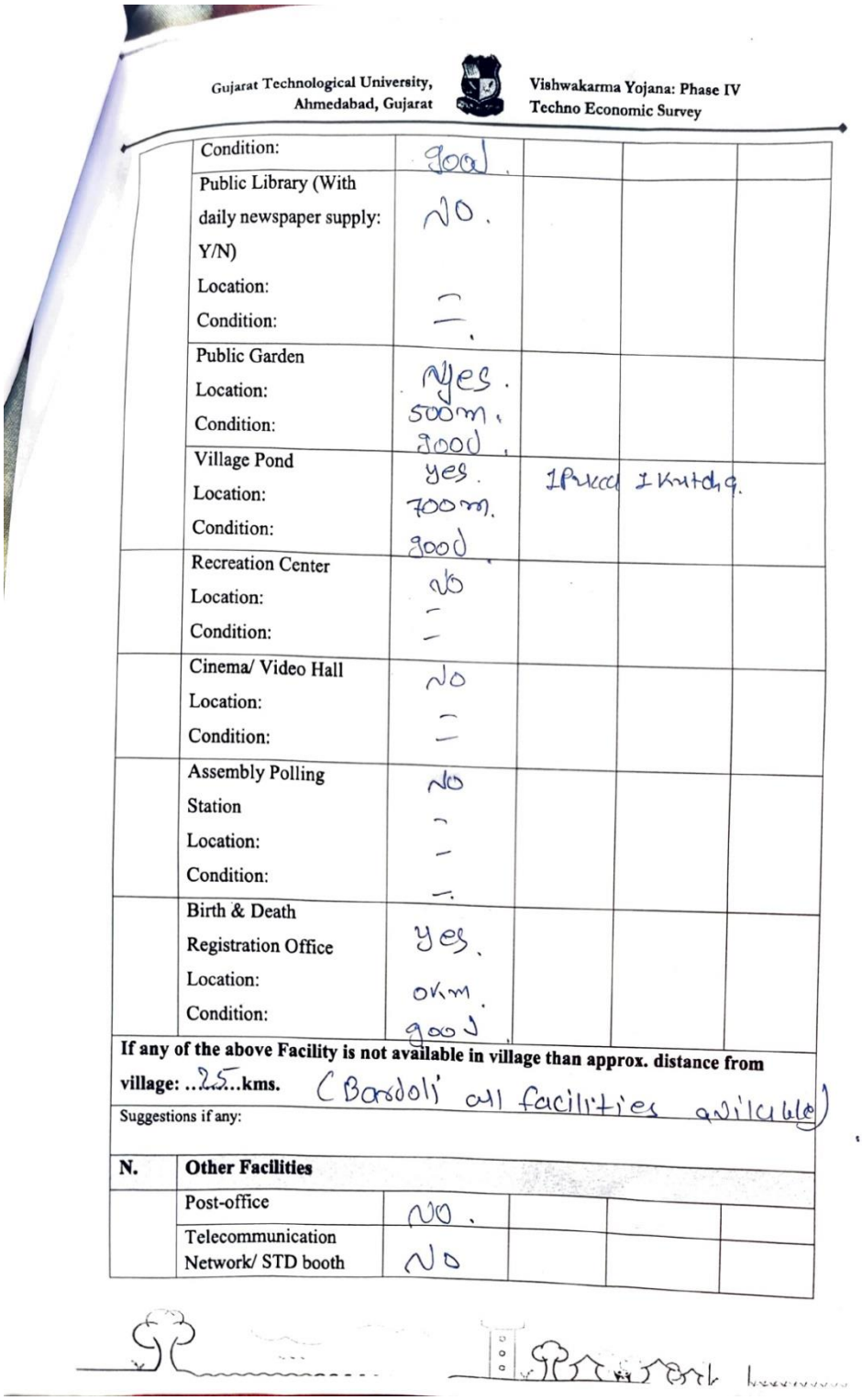
K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	PHC (Civil) (Chamlapur). NO.			
	Private Clinic/Private Hospital/ Nursing Home	NO.			
	If any of the above Facility is not available in village than approx. distance from village: 5.....kms. (PHC available (Chamlapur).				
Suggestions if any:					
L.	**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.			
	If any of the above Facility is not available in village than approx. distance from village: ..0.....kms. (Primary school available).				
Suggestions if any:					
M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:	yes. (in village).	without TV.		



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	Condition:	good.			
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	NO. — —			
	Public Garden Location: Condition:	Yes. 500m. good.			
	Village Pond Location: Condition:	yes. 700m. good.	1Pucca 1Kutcha.		
	Recreation Center Location: Condition:	NO — —			
	Cinema/ Video Hall Location: Condition:	NO — —			
	Assembly Polling Station Location: Condition:	NO — —			
	Birth & Death Registration Office Location: Condition:	yes. 0Km. good			

If any of the above Facility is not available in village than approx. distance from village: ..25..kms. (Bardoli all facilities available)

Suggestions if any:

N.	Other Facilities				
	Post-office	NO.			
	Telecommunication Network/ STD booth	NO			

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Vishwakarma Yojana: Phase IV
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	General Market	NO.			
	Shops (Public Distribution System)	yes	General store		
	Panchayat Building	yes.	Pucka		
	Pharmacy/Medical Shop	NO.			
	Bank & ATM Facility	NO.			
	Agriculture Co-operative Society	NO.			
	Milk Co-operative Soc.	yes.			
	Small Scale Industries	NO.			
	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.			
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	

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Vishwakarma Yojana: Phase IV
Techno Economic Survey

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

8. **Additional Information/ Requirement:**

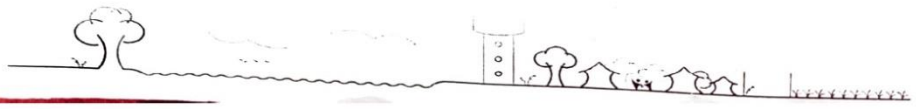
Sr. No.	Descriptions	Information/ Detail	Remarks
1.	**Repair & Maintenance of Existing Public Infrastructure facilities(School Building, Health Center, Panchayat Building, Public Toilets & any other)**	NO.	
2.	**Additional Information/ Requirement**	Paver block work for Road is ongoing.	

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

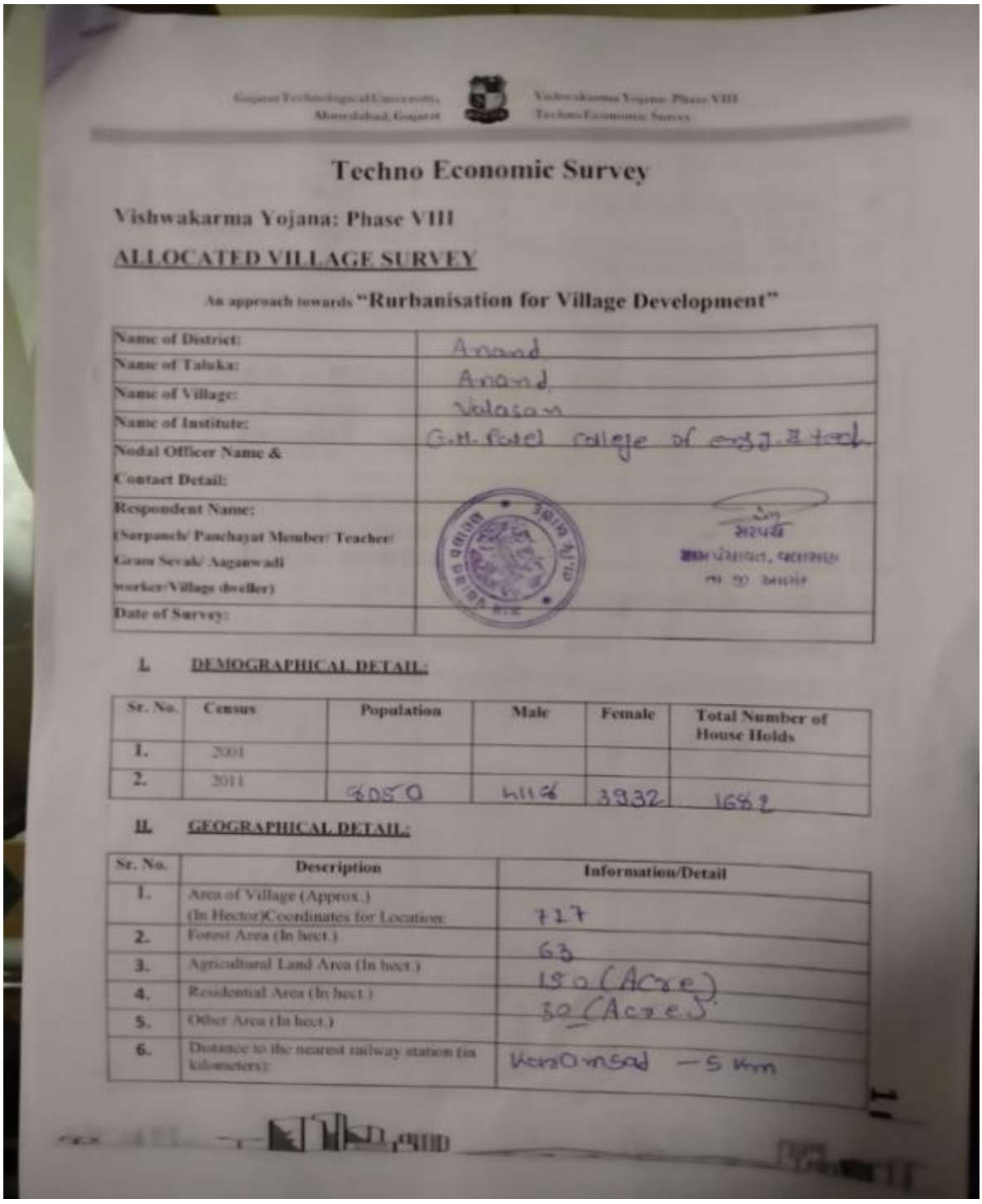
For Any Technical queries/ Difficulties:
Ms Jagruti Shah, OSD
Contact no. 9978980170

For Any Administration queries/ Difficulties:
Ms. Darshana Chauhan, OSD
Contact No. 9909944891

Email ID: rurban@gtu.edu.in



12.3 Survey form of Allocated Village



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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

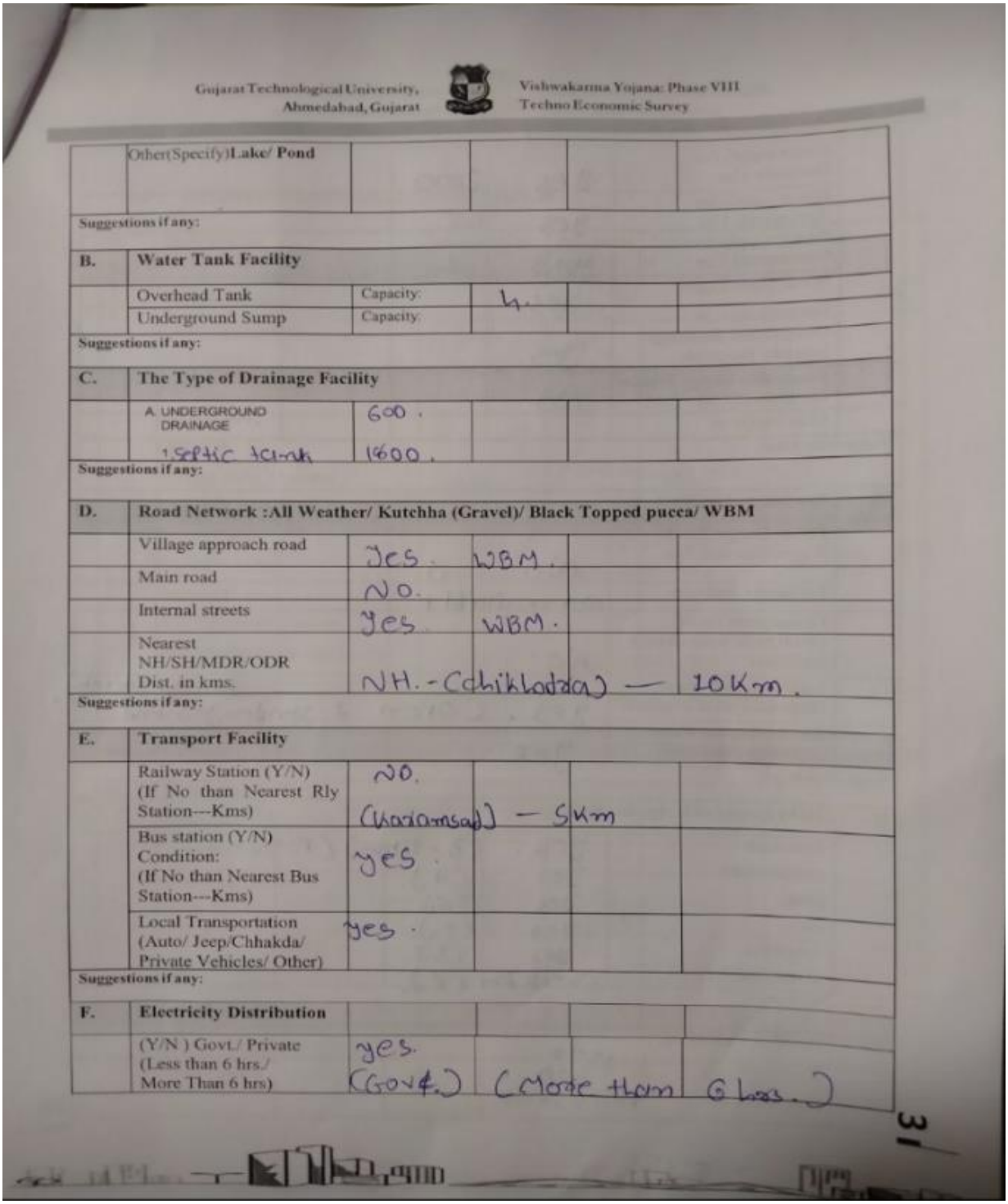
Name of District:	Anand
Name of Taluka:	Anand
Name of Village:	Valasan
Name of Institute:	G.H. Patel college of engg. & tech.
Nodal Officer Name & Contact Detail:	
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	
Date of Survey:	

I. **DEMOGRAPHICAL DETAIL:**

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	6050	2118	3932	1658

II. **GEOGRAPHICAL DETAIL:**

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	727
2.	Forest Area (In hect.)	63
3.	Agricultural Land Area (In hect.)	150 (Acre)
4.	Residential Area (In hect.)	30 (Acres)
5.	Other Area (In hect.)	
6.	Distance to the nearest railway station (in kilometers):	Vallabh Vidyanagar - 5 km



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Vishwakarma Yojana: Phase VIII
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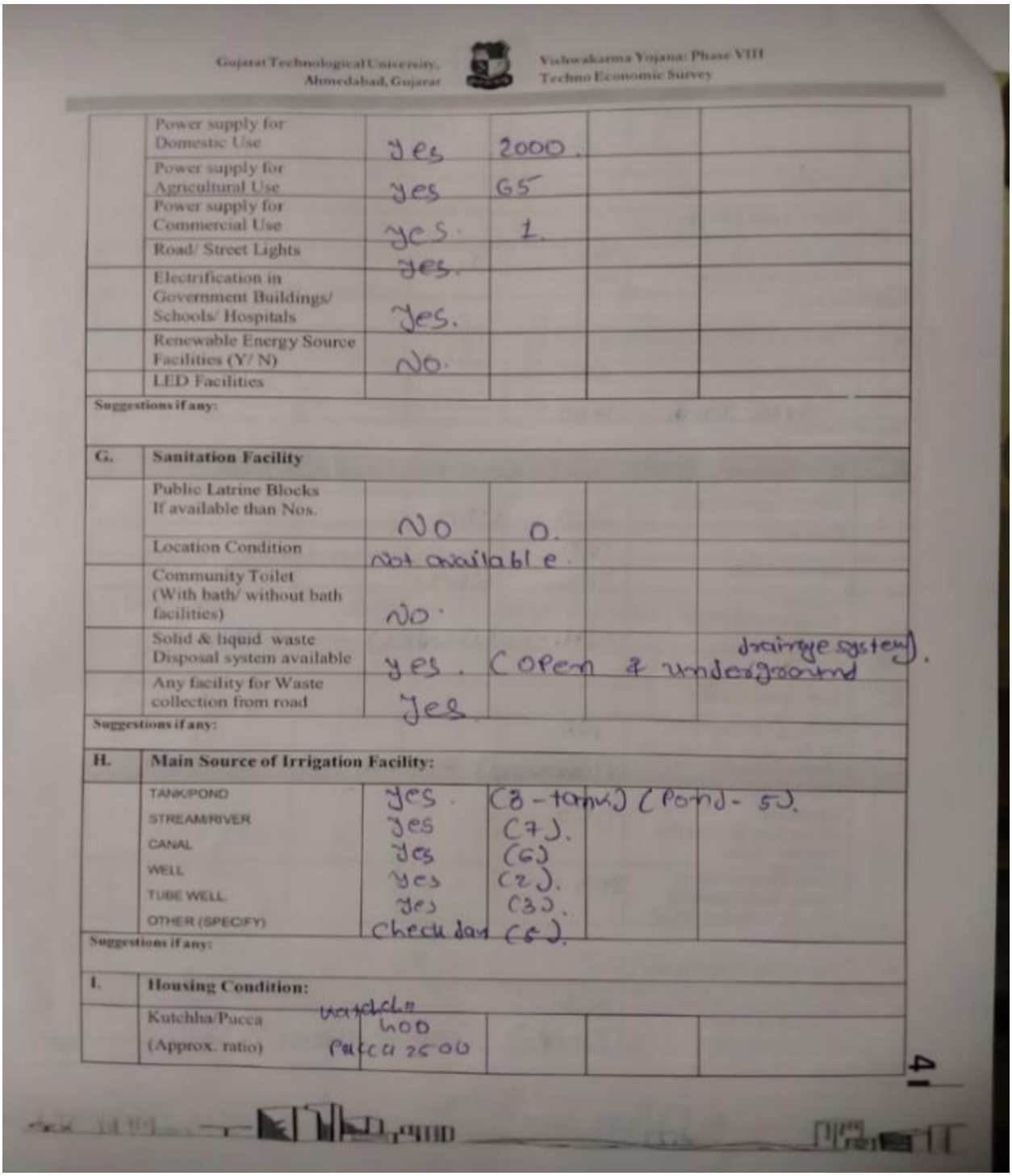
	Other(Specify)Lake/ Pond				
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	4.		
	Underground Sump	Capacity:			
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1 Septic tank	600. 1600.			
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Yes.	WBM.		
	Main road	No.			
	Internal streets	yes.	WBM.		
	Nearest NH/SH/MDR/ODR Dist. in kms.	NH.-Chikhlodra) —	10Km.		
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No. (Vasiamsad) — 5Km			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	yes			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	yes.			
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	yes. (Govt.)	(More than	6 hrs.)	



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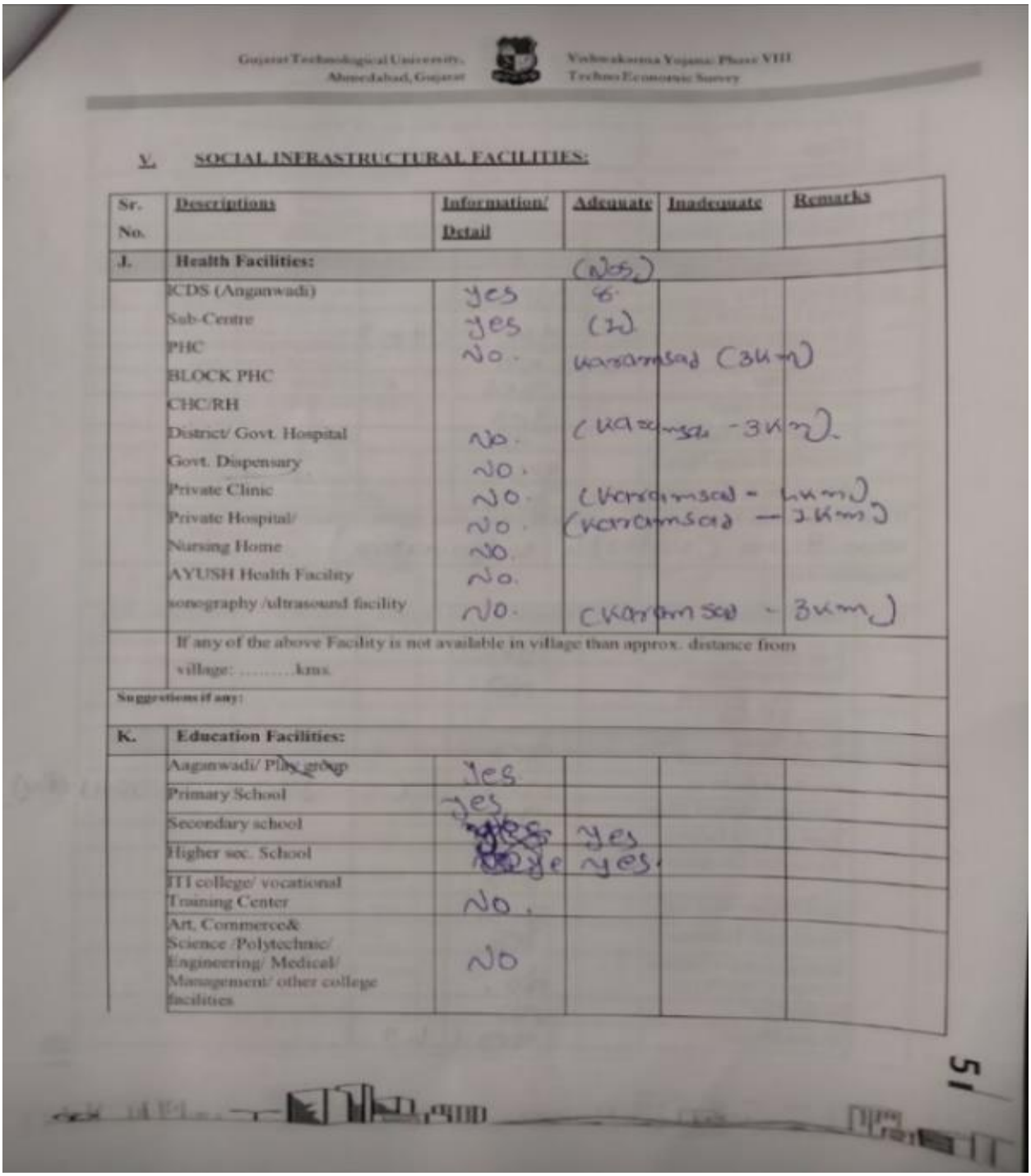
	Power supply for Domestic Use	yes	2000.		
	Power supply for Agricultural Use	yes	65		
	Power supply for Commercial Use	yes.	1.		
	Road/ Street Lights	yes.			
	Electrification in Government Buildings/ Schools/ Hospitals	yes.			
	Renewable Energy Source Facilities (Y/ N)	No.			
	LED Facilities				
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	No	0.		
	Location Condition	not available.			
	Community Toilet (With bath/ without bath facilities)	No.			
	Solid & liquid waste Disposal system available	yes. (open & underground drainge system).			
	Any facility for Waste collection from road	yes.			
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND	yes.	(8-tank) (Pond-5).		
	STREAM/RIVER	yes	(7).		
	CANAL	yes	(6)		
	WELL	yes	(2).		
	TUBE WELL	yes	(3).		
	OTHER (SPECIFY)	check dam	(6).		
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	watchha 400 Pucca 2500			



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Techno Economic Survey

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**		(Yes)		
	ICDS (Anganwadi)	yes	8		
	Sub-Centre	yes	(2)		
	PHC	No.	Karamsad (3Km)		
	BLOCK PHC				
	CHC/RH				
	District/ Govt. Hospital	No.	(Karamsad - 3Km).		
	Govt. Dispensary	No.			
	Private Clinic	No.	(Karamsad - 4Km)		
	Private Hospital/	No.	(Karamsad - 3Km)		
	Nursing Home	No.			
	AYUSH Health Facilty	No.			
	sonography /ultrasound facility	No.	(Karamsad - 3Km)		
	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	Yes		
	Higher sec. School	Yes	Yes.		
	ITI college/ vocational Training Center	No.			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	No			

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	Condition:	good.			
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	NO. — —			
	Public Garden Location: Condition:	Yes. 500m. good.			
	Village Pond Location: Condition:	yes. 700m. good	Private Institute.		
	Recreation Center Location: Condition:	No — —			
	Cinema/ Video Hall Location: Condition:	No — —			
	Assembly Polling Station Location: Condition:	No — —			
	Birth & Death Registration Office Location: Condition:	yes. 0km. good			

If any of the above Facility is not available in village than approx. distance from village: ..25...kms. (Bardoli all facilities available)

Suggestions if any:

N.	Other Facilities				
	Post-office	NO.			
	Telecommunication Network/ STD booth	NO			

	General Market	NO.			
	Shops (Public Distribution System)	yes	General store		
	Panchayat Building	Yes.	Public		
	Pharmacy/Medical Shop	NO.			
	Bank & ATM Facility	No.			
	Agriculture Co-operative Society	NO.			
	Milk Co-operative Soc.	yes.			
	Small Scale Industries	NO.			
	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			
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	

12.4 Gap Analysis of Allocated Village

Village facilities	Planning commission/UDPFI norms	Village name:	Valasan		
		Population: 8050			
		Existing	Required	Smart village / cities future projection design	Gap
Education					
Anganwadi	Each or per 2500 population	1	2		1
Primary school	Per 2500 population	1	1		0
Secondary school	Per 7500 population	1	0		0
Higher secondary school	Per 15000 population	1	0		0
College	Per 125000 population	0			
Tech. training institute	Per 100000 population	0			
Agriculture research center	Per 100000 population	0			
Skill development center	Per 100000 population	0			

Health facility					
Govt/panchayat dispensary or sub PHC or health center	Each village	1	1		0
Primary health & child health center	Per 20000 population	0			
Child welfare & maternity center	Per 10000 population	0			
Multispecialty hospital	Per 100000 population	0			
Public latrines	1 for 50 families (if toilet is not there in home, especially for slum pockets & kutcha house)	0			

Physical infrastructure facilities					
Transportation		Adequate / Inadequate			
Pucca village approach road	Each village	Adequate			
Bus/auto stand provision	All villages connected by PT (ST Bus or Auto)	Adequate			
Drinking water (min. 70 lpcd)		Adequate / Inadequate			
Overhead tank	1/3 of total demand				
U/G sump	2/3 of total demand				
Drainage network		Adequate / Inadequate			
Open					
Cover					
Waste management system		Inadequate			

12.5 Summary Details of All the Village design

Sr. no	Description	Design
1	Civil + Electrical	Design of Street Light
2	Civil + Electrical	Design of Agro Storage Unit
3	Civil + Electrical	Design of Milk Dairy Unit
4	Civil + Electrical	Design of Community Hall
5	Civil + Electrical	Design of Prathmik Arogya Kendra

12.6 Summary of Good Photographs

Ideal Village





Smart Village





Allocated Village