DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION

Limda Village
Vadodara District

PREPARED BY

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BABARIA INSTITUTE OF TECHNOLOGY

YEAR:2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda,Ahmedabad– 382424 Gujarat

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CERTIFICATE

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

Detail Project Report for,

VILLAGE : LIMDA
DISTRICT: VADODARA

Under

Vishwakarma Yojana: Phase-VIII

In partial fulfillment of the project offered by

GUJARAT TECHNOLOGICALUNIVERSITY,CHANDKHEDA

During the academic year 2020-21.

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

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College Name:	**BABARIA INSTITUTE OF TECHNOLOGY**
College Stamp:	

ABSTRACT

The Government of Gujarat has launched **Vishwakarma Yojana** (scheme) for development of villages by identifying the requirements of villages. Under this scheme, the villages are surveyed and this project was identified and selected for implementation.

Rurbanisation is to bring peace of mind to the villagers by providing them the basic amenities required and still keeping the village soul intact. This project gives one new idea for Development of rural villages also gives procedure how they fulfill requirement of the villages.

The name of the allocated Village is **Limda** located in Waghodia Taluka of **Vadodara** district. It has Total Population of 2608 in 2011. **Agriculture** is the main profession of this village. Some of the physical infrastructure like dairy, primary school exist in the village and are properly maintained and utilized.

In **Part 1** on the basis of survey data, which we have collected from our Allocated village Limda and interaction with villagers, Sarpanch and Talati, we have finalized some designs for the further development of the village as, Community hall, Medical store, Library, Gram Panchayat Office, Club house and CCTV Surveillance Building.

By introducing above mentioned amenities all the facilities can be made available to villagers would reduce the migration. This would help in increase in living Standard of Villagers And in **Part 2** we have decided some designs for future scope of the village development as, Rain water harvesting, Bio Gas Plant, Sakhi-Mandal , Cybercafé, Public Toilet and Entrance Gate.

Keywords: Infrastructure development, Infrastructure facilities, Rural development, Rurbanization, etc.

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ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
Km	Kilometers
RCC	Reinforced cement concrete
NHDP	National highway development program
PMGSY	Pradhan Mantri Gram Sadak Yojana
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
PPP	Public Private Partnership
UDPFI	Urban and regional development plans formulation and implementation
NGO	Non-Government Organisation
SDG	Sustainable Development Organisation
IoTs	Internet Of Things
PHC	Primary health centre
CHC	Community health centre
VY	Vishwakarma Yojana
NH	National Highway
SH	State highway
BARC	Bhabha Atomic Research Centre
BM	Brick Masonry
D	Door
V	Ventilator
W	Window
WC	Water Closet
O	Opening

Chapter 1.

Ideal village visit from District of Gujarat State

1.1 BACKGROUND AND STUDY LOCATION PUNSARI VILLAGE:

BACKGROUND

Punsari is a village located in Sabarkantha district in the state of **Gujarat, India.** Punsari is considered as India's **smartest village.**

VILLAGE STUDY LOCATION

Punsari village is located at about 80km from the state capital, Gandhinagar. **Punsari** is 20km from Parvati Hills. Parvati Hills is the largest table top land of India and about 170 km from the Vadodara district,Gujarat.

F-1 Location Map of Punsari Village

F-2 Satellite Image of Punsari Village

1.2 Concept: Ideal Village, Normal Village:

An Ideal Villages project assists in this by putting concepts Such as hygiene education, environmental health, health promotion and environmental protection into action in rural communities is known as ideal village. An ideal Villages project enables a village to mobilize the human and financial resources needed to address many health and quality-of-life issues. It has Transportation facilities, Primary and Secondary Schools and Gram Panchayat for settling disputes.

1.2.1 Objectives:

-To prevent distress migration from rural to urban areas, which is a common phenomenon in India's villages due to lack of opportunities and facilities that guarantee a decent standard of living.
-To make the model village a "hub" that could attract resources for the development of other villages in its vicinity.
-To contribute towards social empowerment by engaging all sections of community in the task of village development.
-To Create and sustain a culture of cooperative living for inclusive and rapid development.

1.2.2 EXAMPLE/LIVE CASE STUDY OF IDEAL VILLAGE OF INDIA/GUJARAT

Ideal village:
An ideal Villages project assists in this by putting concepts Such as hygiene education, environmental health, health promotion and environmental protection into action in rural communities. An ideal Villages project enables a village to mobilize the human and financial resources needed to address many health and quality-of-life issues

1) Dharnai : First fully solar-powered village

Residents of Dharnai had been using diesel-based generators and hazardous fuel like cow dung to meet the electricity requirement for decades, which were both costly and unhealthy. Since the launch of Greenpeace's solar-powered **100 kilowatt micro-grid** in 2014, quality electricity is being provided to more than **2,400 people** living in this village in Jehanabad district.

2) Punsari: The smart village of India with Wi-Fi, CCTVs, AC classrooms & much more.
Punsari, located in Gujarat first smart village, puts most metros to shame.
-The village is funded by the Indian government and the villages own funding model. The village also boasts of a mini-bus commute system and various other facilities.

-Every home in **Punsari** village has toilets; there are two primary schools, a primary health centre, street lights and a drainage system.

-The entire village is **wifi** enabled, has **CCTV** cameras installed at strategic points and a public address system which covers the entire population with the help of about 140 loudspeakers installed all over the village.

F-3 Dharnai First Solar village

F-4 Punsari the Smart Village of India

3) Payvihir, Maharashtra: Eco Village

Payvihir has set an example for the country by consistently showing how communities and NGOs can work together to conserve the environment and ensure sustainable livelihood for people.

In 2014, Payvihir got the Biodiversity Award from the **United Nation's** Development Programme for turning a barren, 182-hectare land under community forest right, into a forest. Recently, the village also came up with an out-of-the-box idea of selling organic sitafals (custard apples) and mangoes in Mumbai.

F-5 Payvihir: Eco Village

F-6 Common Biogas Plant Payvihir

1.2.3 The Idea of Model/Smart Village

The idea of an "**Adarsh Gram**" or **Model village** has been explored earlier as well, most notably through the **Pradhanmantri Adarsh Gram Yojana**, launched by the Central Government in 2009-10. The scheme was implemented in pilot mode in **1000 villages** of Assam, Bihar, Himachal Pradesh, Rajasthan and Tamil Nadu, with an allocation of Rs 10 lakh per village. This limit was later raised to Rs 20 lakh per village. The target villages under the scheme were those with more than 50% of the population belonging to Scheduled Castes (SCs). Additionally, State governments have also taken steps in this direction. Himachal Pradesh launched **a Mukhya Mantri Adarsh Gram Yojana along similar lines in 2011, with the allocation of Rs 10 lakh per village.**

1.2.4 Ancient History Civil concept about Indian Village and its new development

India's history and culture is dynamic, spanning back to the beginning of human civilization. It begins with a mysterious culture along the **Indus River** and in farming communities in the southern lands of India. The history of India is punctuated by constant integration of migrating people with the diverse cultures that surround India.

Available evidence suggests that the use of iron, copper and other metals was widely prevalent in the Indian sub-continent at a fairly early period, which is indicative of the progress that this part of the world had made. By the end of the fourth millennium BC, India had emerged as a region of highly developed civilization

The Indus Valley Civilization

The Indus valley civilization was basically an urban civilization and the people lived in well-planned and well-built towns, which were also the centers for trade. The ruins of **Mohenjodaro** and **Harappa** show that these were magnificent merchant cities-well planned, scientifically laid, and well looked after. They had **wide roads** and a well-developed **drainage system**. The houses were made of **baked bricks** and had **two or more storeys.**

F-7 Indus Valley Civilization

Vedic Civilization

The **Vedic Period** or Vedic Age (1500 - 500 BCE) was the period during which the Vedas, the oldest scriptures of Hinduism were composed.

During the early part of the Vedic period, the Indo-Aryans settled into northern India, bringing with them their specific religious traditions.

The associated culture was initially a tribal, pastoral society centered in the north-western parts of the Indian subcontinent; it spread after 1200 BCE to the Ganges Plain, as it was shaped by increasing settled agriculture, a hierarchy of four social classes, and the emergence of monarchical, state-level polities.

Pre INDEPENDENCE INDIA

During the British rule, Britishers were not concerned with the socio-economic development of India and thus our rural economy severely damages resulting in the miserable conditions of the rurarlites. The primary concern of the administration was maintenance of law and order and collection of revenue, not the development. Thus colonial interests were primary objectives and the rural development was secondary.

Post INDEPENDENCE ERA

In the post-independence era, the development of rural areas can be considered wisely through various programmes and schemes which have been launched by the government. The country adopted the planned development. The very first five year plan laid stress on agricultural development. It took a number of measures to bring more land under irrigation. Major irrigation Dams like Bakra Nangal, Hirakud, Nagarjunasagar, Tungabhadra were constructed which generated power for industrialization of the country and water for the irrigation. The Indian farmer, as a result, is now not exclusive depending on the monsoon

1.3 Detail study

Physical,Socio economic and Demographic Details:

Socio-economic details

1. Schools: 5 WITH CCTV
2. RO plant
3. MINI Bus
4. Wi-Fi connectivity
5. 25 cctv in prime junction of village
6. Hospital
7. ATAL EXPRESS for women for import of milk

Economic profile:
1. Occupation details:
2. Farming - 70 %
3. Business -10%
4. Dairy - 10%
5. Employee - 10%

PHYSICAL DETAILS and INFRASTRUCTURE DETAIL
The most important concern in rural development is to provide basic amenities to each person living in the rural area. Punsari stands out in this regard as it has constructed a reverse osmosis plant and since then provided house-to-house piped connections to supply chlorinated water. It also has its own 66 KVA substation for electricity generation and 100 per cent coverage of all streets with LED streetlights. A public address system with 120 waterproof speakers for announcing information and spreading messages has been another striking feature of this village. The village headperson uses this public announcement system to share what s/he thinks, plans, and is doing at the gram Panchayat. The entire village has been put under CCTV surveillance, which has helped to bring down crime rate to almost zero per cent. Each household has a personalised lavatory and the whole village has a well-designed drainage and storm water disposal system. Atal Express is a free bus service available for commutation to all the villagers. Punsari is the first fully Wi-Fi-covered village in India. There are also plans to do GIS mapping for the better implementation of many government schemes. Some of the popular national banks and their ATM centres are now available as well.

Demographic detail
The population of Punsari was 5500 as per 2011 census of India which has increased to 5500 in 2011. As of June 2012, the population is 6000.

1.4 SWOT Analysis of ideal village

SWOT analysis is a strategic planning technique used to help person or organization identify strengths, weaknesses, opportunities, and threats related to business competition or project planning.

STRENGTH: RCC road,24×7 water availability Street light, CCTV camera ,Wi-Fi availability**,** Speaker for announcement.
WEAKNESS: Only 50% roads closed drainage system should be constructed
50% road should be constructed -Mosquito nuisance due to open drainage system.

OPPORTUNITIES: USE OF MODERN TECHNOLOGY
THREAT: Post Pandemic

1.5 Future prospects of Development of the Ideal Village

For the future prospects there are many things can be apply for safe and better future for next generations. We know that there will be also requirement of energy sources for the next generation people and there for we have to do maximum use of renewable sources.
Nearly 73 percent of India's population lives in more than 5.5 lakh villages. The ministry has been supporting programs for the use of renewable energy products and devices such as biogas plants, solar thermal systems, photovoltaic devices, biomass gasifiers, etc. as well as the Integrated Rural Energy Programme.

For the Future Prospects some Suggestion is as follows:
-National Bio gas and Manure Management Program (NBMMP)
-Solar Thermal Energy
-Remote Village Electrification Programs
-Village Energy Security Project
-Village Pandemic Combating System

1.6 Benefits of the visit of Ideal village

Almost all the civil benefits such as, Water supply network, Pucca roads, LED Street lights, Drainage network, Waste disposal, Water storage tanks, waste collection system were observed in the village.

By Visiting the Village We Got Benefits are:
-Lifestyle of a village,culture of Village, functioning of Village ,Importance of infrastructure facilities ,Condition of Village.

1.7 civil aspect required in Ideal village

We have observed the balance of commercial, residential and recreational land use in the Ideal village but as per the feedback which were given by villagers and sarpanch some facilities are lacking in the village from civil aspects.

Such as Rain Water Harvesting System, CCTV surveillance Building

This are some civil Aspects required in **Ideal Village**.

Chapter 2.

Limda Village Literature Review –(Civil Concept)

2.1 Introduction Urban & Rural village concept

RURAL VILLAGE CONCEPT:

Rural areas are also known as the 'countryside' or a 'village' in India. It has a very low population density. In rural areas, agriculture is the chief source of livelihood along with fishing, cottage industries, pottery etc.

According to the Planning Commission, a town with a maximum population of 15,000 is considered rural in nature. In these areas the panchayat makes all the decisions. There are five persons in the panchayat. The National Sample Survey Organisation (NSSO) defines 'rural' as follows:

-An area with a population density of up to 400 per square 46on-toxic,

-Villages with clear surveyed boundaries but no municipal board,

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

URBAN VILLAGE CONCEPT:

For the Census of India 2011, the definition of urban area is as follows;

1. All places with a municipality, corporation, cantonment board or notified town area committee, etc.

2. All other places which satisfied the following criteria:

- A minimum population of 5,000;

-At least 75 per cent of the male main working population engaged in non-agricultural pursuits; and

- A density of population of at least 400 persons per sq. km.

The first category of urban units is known as Statutory Towns. These towns are notified under law by the concerned State/UT Government and have local bodies like municipal corporations, municipalities,municipal committees, etc., irrespective of their demographic characteristics.

2.2 Importance of the Rural development:

Rural development introduction:

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.

-Need for Rural Development in India:

The rural economy is an example of an agrarian economy. Although farming and agriculture are one of the most important primary activities, the problem lies in the fact that they share in the GDP of the agriculture sector is on a constant decline. At the same time, about two-thirds of India's population depends on agriculture. As a result, the productivity is not up to the mark, with conditions only getting worse. Moreover, public investment declined since 1991 coupled with a lack of adequate infrastructure, credit,transport, employment, etc. Henceforth the agricultural output has grown at only 3.2% during 2007-2011.All these factors have been denting the process of development. Therefore there is a need to focus on rural development and not just urban development.

2.3 Ancient Villages/ Different definition of: Rural Urban Village

Rural areas have low population density and large amount of undeveloped land. Agricultural activities are more in rural areas.
Census rural refers to individuals living in the countryside outside centres of 1000 or more population. Rural and small town refers to individuals in towns or municipalities outside the commuting zone of larger urban centers. These individuals may disaggregate into zones according to the degree of a larger urban center.
A rural area is an open swath of land that has few homes or other buildings and not many people**.**

2.4 Scenario: Rural/Urban village of Indian Population Growth

Agenda of census of India is to release of provisional population totals-rural urban distribution.

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

Table1: Population of Rural and Urban areas as per census 2001 and 2011

For the first since independence, the absolute increase in population is more in urban areas that in rural areas.
-Rural-Urban Distribution: 83.30% & 37.70% in 2011.
-Level of urbanization increased from 28.60% in 2001 census to 37.70% in 2011

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

Gujarat:

The total population growth of Gujarat in this decade was 19.28 percent while in previous decade it was 22.48 percent. The population of Gujarat forms 4.99 percent of India in 2011. In 2001, the figure was 4.93 percent.

Gujarat Urban Population 2011

Out of total population of Gujarat, 42.60% people live in urban regions. The total figure of population living in urban areas is 25,745,083 of which 13,692,101 are males and while remaining12,052,982 are females. The urban population in the last 10 years has increased by 42.60percent.Sex Ratio in urban regions of Gujarat was 880 females per 1000 males. Average Literacy rate in Gujarat for Urban regions was 86.31 percent in which males were 90.98%literate while female literacy stood at 70.26%. Total literates in urban region of Gujarat were 19,672,516.

	DESCRIPTION	2011
GUJARAT	Approximate Population	6.04 crores
	Male	31,491,260
	Female	28,948, 432
	Population Growth	19.28%
	Sex Ratio	919
	Density/km2	308
	Literacy	78.03%
	Area(Km2)	1.96,244

Table2: Population of Gujarat

2.6 Rural development Issue-Concern-Measure

Following **issue** and **concern** with Rural Area are as follows:
1. People are directly or indirectly dependent on agriculture and a large number of landowners have small and medium-sized landholding.
2. Economy of the people living in rural areas is low.
3. Total amount available to farmers as per their work is insufficient
5. Very less people are employed in the rural areas.
6. Lack of Medical facility compared to urban areas
7. Lack of recreation facilities.
8. Farmers are not having market area for selling their goods directly to the market

***Various Measures are taken for rural developments are as follows:**
-To develop rural area as whole in terms of culture, society, economy, technology and health.
-To improve living standard of rural mass.
-To engage rural youths, children and women.
-To empower human resource of rural area in terms of their psychology, skill, knowledge, attitude and other abilities.
-To create infrastructure facility of rural area.
-To provide minimum facility to rural mass in terms of drinking water, education, transport, electricity and communication.
-To provide rural institutions like Panchayat, cooperatives, post, banking and credit.
-To give financial assist to develop the artisans in the rural areas, farmers and agrarian unskilled labor, small and big rural entrepreneurs to improve their economy.
-To develop rural industries through the development of handicrafts, small scaled industries, village industries, rural crafts, cottage industries and other related economic operations in the rural sector.
-To promote agriculture, animal husbandry and other agricultural related areas.
-To improve rural area as per Pandemic norms
-To develop Village as Green building Norms

2.7 Various Infrastructure Guidelines with the Norms for Village for the provision of different Infrastructure Facilities

Rural Infrastructure in India: Scope and Importance:

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

Importance of rural infrastructure in India:

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

Scope for development of rural infrastructure in India:

Living conditions of people in rural areas has still not improved much and there are majoriwho live in kutcha houses which are highly vulnerable to rainfall, wind blow, fire and othenvironmental hazards. Hence, good rural housing infrastructure is needed in the country.

As per the reports from Census 2011, merely 30 per cent of rural areas are covered with tap water supply. In addition, the sanitation facilities in the rural areas are also not adequate. Thus, there is huge scope for developing drinking water infrastructure and sanitation facilities in the rural areas. With these points, it is clear that there is huge scope for development of all kinds of infrastructure in rural areas. In fact, the gaps in the rural infrastructure need to be addressed properly and as fast as possible so as to achieve redistributive growth and alleviate poverty in the country.

2.8 Other Project /Schemes of Gujarat /Indian Government

Following are the projects/schemes by Govt. Sector:

I). Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)

ii). Pradhan Mantri Gram Sadak Yojana (PMGSY)

iii). Indira Awas Yojana (IAY)

i) Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA): MGNREGA launched on 2nd February 2006 as a momentous initiative towards pro-poor growth. For the first time, rural communities have been given not just a development programme but also a regime of rights. The National Rural Employment Guarantee Act, 2005 (NREGA) guarantees 100 days of employment in a financial year to any rural household whose adult members are willing to do unskilled manual work.

This work guarantee also serve other objectives: generating productive assets and skills thereby boosting the rural economy, protecting the environment, empowering rural women, reducing rural urban migration and fostering social equity, among others. The Act offers an opportunity to strengthen our democratic processes by entrusting principle role to Panchayats at all levels in its implementation and promises transparency through involvement of community at planning and monitoring stages.

ii) Pradhan Mantri Gram Sadak Yojana (PMGSY):

Pradhan Mantri Gram Sadak Yojana (PMGSY) was launched on 25th December 2000 as a fully funded Centrally Sponsored Scheme to provide all weather road connectivity in rural areas of the country. The programme envisages connecting all habitations with a population of 500 persons and above in the plain areas and 250 persons and above in hill States, the tribal and the desert areas.
According to latest figures made available by the State Governments under a survey to identify Core Network as part of the **PMGSY** programme, about 1.67 lakh Unconnected Habitations are eligible for coverage under the programme. This involves construction of about 3.71 lakh km. of roads for New Connectivity and 3.68 lakh km. under upgradation.

The President of India, in his address to Parliament on 25th February, 2005 announced a major business plan for rebuilding rural India called Bharat Nirman. The Finance Minister, in his Budget Speech of 28th February,2005, identified Rural Roads as one of the six components of Bharat Nirman and has set a goal to provide connectivity to all habitations with a population of 1000 persons and above (500 persons and above in the case of hilly or tribal areas) with an all-weather road. A total of 59564 habitations are proposed to be provided new connectivity under Bharat Nirman. This would involve construction of 1, 46,185 kms of rural roads.

iii) Indira Awas Yojana (IAY) :

Housing is one of the basic requirements for human survival. For a normal citizen owning a house provides significant economic security and status in society. For a shelter less person, a house brings about a profound social change in his existence, endowing him with an identity, thus integrating him with his immediate social background.

Objective:
The objective of Indira Awaas Yojana is primarily to help construction of dwelling units by members of Scheduled Castes/ Schedule Tribes, freed bonded labourers and also non-SC/ST rural poor below the poverty line by providing them with grant- in-aid.

***OTHER PROJECTS OR SCHEMES**:

In other projects for the development of the rural area is the **Public Private Partnership (PPP)**. Public-Private-Partnership - The Concept:

Public-Private-Partnership or PPP is a mode of implementing government programmes/schemes in partnership with the private sector. The term private in PPP encompasses all non-government agencies such as the corporate sector, voluntary organizations, self-help groups, partnership firms, individuals and community based organizations, PPP, moreover, subsumes all the objectives of the service being provided earlier by the government, and is not intended to compromise on them.

Essentially, the shift in emphasis is from delivering services directly, to service management and coordination. The roles and responsibilities of the partners may vary from sector to sector. While in some schemes/projects, the private provider may have significant involvement in regard to all aspects of implementation; in others s/he may have only minor role.

The potential benefits expected from PPP could be mentioned as below:
Cost-effectiveness- since selection of the developer/ service provider depends on competition or some bench marking, the project is generally more cost effective than before.

Higher Productivity- by linking payments to performance, productivity gains may be expected within the programme/project.

Accelerated Delivery – since the contracts generally have incentive and penalty clauses vis-a-vis implementation of capital projects/programmes this leads to accelerated delivery of projects.
Clear Customer Focus - the shift in focus from service inputs to output create the scope for innovation in service delivery and enhance customer satisfaction.

Enhanced Social Service- social services to the mentally ill, disabled children and delinquents etc. require a great deal of commitment than sheer professionalism. In such cases it is Community/Voluntary Organizations (VOs) with dedicated volunteers who alone can provide the requisite relief.

Recovery of User Charges- Innovative decisions can be taken with greater flexibility on account of decentralization. Wherever possibilities of recovering user charges exist, these can be imposed in harmony with local conditions.

Chapter 3.

Smart Village/City Concept Idea and its Visit

3.1 Introduction: Concepts, Definitions and Practices:

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

Smart Village Definition:
Smart village means all the necessaries facilities is developed in the village and no need to moves in city for any kind of requirement is called Smart City.

Smart Village Practices:
1. Procurement practice involves:
- Selecting Appropriate Method for Construction Management
-Selection of Best team for the design
-Selection of best team to deliver
- Select best team to operate the facility

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

3. Benchmarking: This method is practiced by comparing with other completed projects. The performance of different 3projects are compared each other. The

lessons from each project are used to make best performances for new projects. Benchmarking is a method that improves the performance of the project in a logical and systematic way.

4. Whole Life Costing
Here, the cost of ownership is measured of a building. This will take into consideration the sum of:
- Initial Capital Cost for making the building
-Cost of maintenance of the building
-Cost of servicing the building
The cost of maintenance of the building is practically more when compared to the initial capital cost. This makes the whole life costing an essential practice in construction.

5. Sustainable Construction
Sustainable construction focuses to have social, economic and environmental performance of the industry.
The practices focus on:
- Getting maximum profit that help to recognize the business.
- Deliver buildings with greater satisfaction, well-being and value
- Respect and fair treatment of the employees. Considering health and safety factors, welfare conditions etc.
- Protection and enhancement of the environment.
-Waste reduction and pollution during the construction process
-Energy efficient buildings by taking energy from renewable resources.

3.2 Visions-Goals, Standards and performance Measurement Indicators

Visions
The vision of smart village is that modern energy access can act as catalyst for development in education, health, productive enterprise, clean water, sanitation, environmental sustainability and participatory democracy which helps to support further improvement in access to energy.

Goals ands Standards
Based on an integrated approach to digital development, the Smart Village model enables accelerated impact on multiple SDGs – such as health, commerce, education and agriculture – by increasing last-mile access and making sure that the right digital solutions reach the people**.**

The Smart Village Performance Measurement Indicator is as Follows.

The indicators for smart cities focus on the monitoring the evolution a city towards an even smart city. The time component "development over the years" is an important feature.

The city indicators may be used to show to what extent overall policy goals have been reached or are within reach.

F-8 Framework of Smart Village

3.3 Technological Options:

Various technologies for developing smart villages:

Following various techniques can be promoted improving the life of people in villages and for actual development of smart villages.

-Smart Energy
-Smart Iot devices
-Online Education
-Smart Agriculture
-Smart and Efficient Public Transport System
-Smart Sewage Management System and Sanitation
-Renewable Energy Sources and Solar Energy
-Latest and Affordable Medical Facilities

3.4 Road Map and Safe Guards

Local governments that are thinking about embarking smart city initiatives need to start by developing a roadmap. The top three components to develop a roadmap for a smart city are studying the community, developing a smart city policy, and engaging the community through government and a solid citywide Wi-Fi infrastructure. Figure 3 illustrates the three-step road map process.

The first step in establishing a road map for a smart city is to know why there is a need for a smart city initiative. This can be done by studying the city's demographics, including the residents who are the principal stakeholders in the city.

The second step in establishing a smart city roadmap is by developing a policy that drives the whole initiatives. The policy needs to define the roles, responsibilities, strategies, and objectives of the smart cities.

The third element in developing a smart city roadmap is engaging the citizens through the use of e-government and effective governance, which leads to the increase of efficiency and enhancing delivery of services.

3.5 Issues and Challenges

India is a developing country and expenditure available for village is very small as compare to city area. Even the basic sanitation facilities are not available to all across India. According to the 2011 census, only 32.7% of rural households have access to toilets.

There are many challenges like budget and financial constraints, smart technology and lack of knowledge for smart technology and ideas which slow down the growth of village.

There is a huge requirement for smart technology to be used in these smart villages. There is a need of proper financial resources and a market to create these smart technologies. But as of now there are a lot of constraints to get the ecosystem ready for financial resources as well as for proper marketization.

Some Key Issues and Challenges for development of Smart Village.

Budget Constraints

There is a huge issue of budget constraints, which essentially has limited innovative thinking and created obstacles for many other initiatives. The budget constraints have created many hindrances for a lot of smart initiatives that if properly nurtured could be more cost- effective and efficient.

Smart Technology

It is considered that smart technology for these smart villages is still in the pre commercial or in some cases the conceptual stage. And since the technology is in the pre-mature or conceptual stage, it generates uncertainties regarding return on investment as far as financial parameters are concerned. This also results in

apprehension of a long payback period, and investors are unwilling to invest, which contributes to financial uncertainties for smart technology initiatives.

Lack of Knowledge

The other challenges related to smart village initiatives in India is the lack of knowledge of the people using modern technology. The citizens' experience of these smart technology initiatives has largely not been good for several reasons, one of which is due to the paucity of knowledge of the common people as to how to use modern digital technologies, Internet and other modern technology, and also the fact that there are very few people, especially in rural areas of India, as with other parts of the developing world, who know how to efficiently use and apply modern digital technologies, such as "smart meters" (Bracknell Forest Homes). There are other constraints that, though not so vital, also deserve mention, such as lack of technology-related skills, constraints on integration, and limited understanding and influence over the basic available services.

3.6 Smart Infrastructure Intelligent Traffic Management

Smart Infrastructure:

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

Intelligent Traffic Management System for Smart city:

Smart Cities creates a perfect platform for addressing traffic-related issues, thus leading to the establishment of Intelligent Traffic Management Systems (ITMS). The intelligent traffic management system lays foundation on Cloud computing, Internet of Things and Data Analytics. The system helps to resolve the numerous challenges being faced by traffic management authorities, in terms of predicting an optimum route, reducing average waiting time, traffic congestion, travel cost and the extent of air pollution. The system aims at using machine learning algorithms for predicting optimum routes based upon traffic mobilization patterns, vehicle categorization, accident occurrences and levels of precipitation. Finally, the system comes up with the concept of a green corridor, wherein emergency services are allowed to travel without facing any kinds of traffic congestion**.**

3.7 Cyber Security

Computer security, also known as cyber security or IT security is the protection of computer systems from the theft and damage to their hardware, software or information, as well as from disruption or misdirection of the services they provide.

Cyber security includes controlling physical access to the hardware, as well as protecting against harm that may come via network access, data and code injection. Also, due to malpractice by operators, whether intentional, accidental, IT security is susceptible to being tricked into deviating from secure procedures through various methods.

The field is of growing importance due to the increasing reliance on computer systems and the Internet, wireless networks such as Bluetooth and Wi-Fi, the growth of "smart" devices, including smart phones, televisions and tiny devices as part of the Internet of Things.

3.8 Retrofitting-Redevelopment-Greenfield Development District Cooling

District cooling is the cooling equivalent of district heating. Working on broadly similar principles to district heating, district cooling delivers chilled water to buildings like offices and factories needing cooling. In winter, the source for the cooling can often be sea water, so it is a cheaper resource than using electricity to run compressors for cooling. Alternatively, District Cooling can be provided by a Heat Sharing Network which enables each building on the circuit to use a heat pump to reject heat to an ambient ground temperature circuit.
District heating is a system for distributing heat generated in a centralized location for residential and commercial heating requirements such as space heating and water heating. The heat is often obtained from a cogeneration plant burning fossil fuels but increasingly also biomass, although heat-only boiler stations, geothermal heating, heat pumps and central solar heating are also used, as well as nuclear power. District heating plants can provide higher efficiencies and better pollution control than localized boilers.

According to some research, district heating with combined heat and power (CHPDH) is the cheapest method of cutting carbon emissions, and has one of the lowest carbon footprints of all fossil generation plants

3.9 Strategic Option for fast development

Standard local development strategy components, such as
-Description of assets and opportunities of the village as well as challenges and needs and a SWOT analysis;
-A clear intervention logic including a hierarchy of objectives to respond to SWOT, key actions to achieve objectives, expected outputs and results;
-Planning of financial and human resources;
-Specification of the capacity needed for implementation, management and monitoring procedures.

3.10 India's Urban water and Sanitation Challenge and Role of Indigenous Technology

Water and its management are a critical issue in India and there is an urgent need for investment in water and sanitation infrastructure across the country. Since 1992, countries around the world have marked World Water Day every March 22 to promote awareness and understanding about issues related to water. This year it is timely to highlight effective ways to attract the resources and expertise necessary to support such investment.

Partnerships between public and private entities have a proven record for raising project financing and bringing in technical expertise for infrastructure projects, including water and sanitation. They can accelerate solutions, and enhance operations and service.
Investment in water and sanitation has indisputable economic benefits. The World Health Organization (WHO) estimates that every U.S. dollar invested in water & Sanitation generates an economic benefit of $3 to $34, depending on the type of water system installed and the region where the investment is made. Whatever the exact number, investment in water and sanitation not only improves service and quality of life, but also has a direct impact on the economy generally.

***The Tirupur example**

On February 7 in Chennai the Tamil Nadu Chief Minister inaugurated a public-private partnership that is now providing water and sewerage services to thousands of Tirupur area residents. The project was initiated in the mid-1990s when the Tirupur Exporters Association recognized the need to improve the area's infrastructure to remain competitive in the knitwear industry but did not have the resources to finance the project.

The solution was to establish the New Tirupur Area Development Corporation, Limited, a group of private and public entities, which became the first public-private partnership in the water and sanitation sector in South Asia operating on a Build- Own-Operate-Transfer (BOOT) basis. Today, thanks to this initiative, Tirupur residents receive water every day for 4-6 hours, as opposed to receiving water only on alternate days at the best of times prior to the project. Household water connections have increased by 8,000 and local industry now has a reliable source of water. One hundred per cent of new domestic users have paid for the water connections to access high quality water the fee covers the capital costs of each new connection.

The Tirupur project is a great example of how private sector involvement in public service delivery can dramatically improve access to water and sanitation. In India, where about 13 per cent of the world's population that is un-served for water and 43 per cent of the world's population that is un- served for sanitation resides, such improvements show the way forward.

Role of Indigenous Technology: Swachh Bharat Abhiyaan was launched by Hon'ble Prime Minister of India on 2nd October, 2015**,** which caught attention of everybody not only in India, but also in the world. The Government has taken various steps to create awareness among the masses for keeping the area surrounding them neat and clean. Government is also paying special attention for cleaning of rivers, railway stations, tourist destinations and other public places. To achieve the target of cleanliness, the technologies to treat the waste material should also be developed along with creating awareness.

There are many technologies that are used to treat waste material. They are usually very costly, very complex to be understood and viable only for large size units. At the same time, indigenous technologies are low cost capital and easy to use and they can also be used by different size units. In India, they are particularly suitable for the small and medium units.

In this regard, a National workshop on Indigenous water, Waste water and Solid Waste Treatment Technologies was organized by the Department of Atomic Energy (DAE) in January, 2015 at Gujarat Technological University (GTU) in Ahmadabad.

The objective of the workshop was to disseminate indigenous technologies of water, wastewater and solid waste treatment developed by the Bhabha Atomic Research Centre (BARC) under "Swachh Bharat Abhiyan" and to bridge gap

between the research at the research centers and the practical application of the technologies.

The BARC is playing a pivotal role in the development of these technologies. Some of these technologies are as follows:

Indigenous water purification technologies: These technologies can improve the drinking water quality of smaller villages as well as larger cities. It uses the Pressure Driven Membrane Processes. These are suitable for all capacity units e.g. they are adaptable from household level unit or community level unit to large scale unit.Water purification technologies make use of the nuclear energy and solar energy also.

Environment friendly Plasma technologies: Solid waste dumping sites or landfill sites need more amount of land which is not available in urban areas. Incineration of solid waste pollutes the environment if the incinerators are not designed or operated properly. Thermal Plasma Technology is ideally suited for waste treatment. By plasma technology Hazardous & toxic compounds are broken down to elemental constituents at high temperatures; Inorganic materials are converted to Vitrified Mass; and Organic material share Pyrolysed or Gasified, Converted to flue gases (H2 & CO) & Lower hydro carbon gases when operated at low temperature (500 – 600OC)

Unique Multi Stage Biological Treatment Solution: Multi Stage Biological Treatment Solution (MSBT) can be implemented on existing STP which is not able to process Sewage to optimum efficiency. MSBT can be implemented as a modular or container on the banks of rivers on Drains/Nalas which discharge waste water to the river. It can also be implanted in small urban societies and housing complex for better water management. Benefits of MSBT are: No Surplus of Organic Sludge, No Outdoor problem, drastic reduction of Electrical Power usage which minimizes operating costs, No need for return sludge pumping (minimizing electromechanical component which ultimately reduces operating cost).

Role of environmental isotope techniques in the water resources development and management: There are two types of isotopes, stable isotopes and radioactive isotopes. Isotope techniques are used to find out the type of contamination in surface water and ground water, the sources and origin of contamination, pollutant dispersion in surface water bodies, to assess the ground water salinity, to assess the

changes due to long-term exploitation of groundwater, for hydro-chemical investigation and to carry out geochemical evolution of groundwater.

Deployment of BARC Domestic Water Purifier in Rural Area through AKRUTI Program:
Rural Human & Resource Development Facility is disseminating BARC technologies, namely Nisargruna Biogas, Soil Organic Carbon Testing Kit, Seed Bank, Domestic Water Purifier, Weather Forecasting, LLL, RIA, FSD, VTD
Under the AKRUTI (Advance Knowledge of Rural Technology Implementation) Program Activities carried out under the AKRUTI program are surveys for safe drinking water, Interaction with the villagers, Entrepreneurship development for domestic water purifier production and Awareness programs for benefits of use purified water. RHRDF has also launched a scheme for safe drinking water for village under CSR.

Radiation Hygienization of Municipal Sewage Sludge: The Sewage is the waste water generated from domestic premises and consists mainly of human waste. It typically contains 99.9% water and about0.1% solid. The solid waste in sewage is typically organic in nature and is broken down in the sewage treatment plants resulting in sewage sludge as a byproduct. In Radiation Hygienization process dry sludge generated at STP'sis hygienized using radiation technology using standard Gamma facility at a Dose of 10kGs. such radiation plants are operating in India for sterilizing medical products.

Refuse Derived Fuel: An Emerging Processing Technology in MSWM: Refuse Derived Fuel (RDF) is a processed form of **Municipal Solid Waste (MSW**) and it can be a substitute to coal energy. The process of conversion of garbage into fuel pellets involves primarily Drying, Separation of incombustible, Size reduction and Pelletisation. The above mentioned technologies can be of great help in the treatment of water and solid waste management. This shows that solid waste which is normally treated as the cause of concern, if treated properly it can become a sustainable source of energy.

3.11 Initiatives in village development by local self-government:

The institutions of Local Government have flourished in India since time immemorial. The Panchayats or Village Governments, as they were called, were ancient institutions and were themselves small republics. They exercised power in various spheres such as industrial, commercial, administrative, and social including

civic education and religious functions. The development of Urban Local Self-Government, as compared to that of Rural Local Self Government, has been very slow after independence.

- The first two Plans did not carry much for the improvement of Urban Local Bodies. It was only at the end of the Second Plan that the planners focused their attention on the Urban Local Bodies. In the Third Plan, it was suggested strengthening the Municipal Administration by the way of better Personnel and Finances and by enlarging their jurisdiction and functions. It was also suggested to cover all the Towns and Cities having a population of over one lakh under the scheme of planning in an organic way. Election to Municipalities- The superintendence, direction, and control of the preparation of the electoral rolls for, and the conduct of, all elections to the Panchayats and Municipalities shall be vested in the State Election Commission.

3.12 Smart initiatives by District Municipal Corporation

District Municipal Corporation may initiate following technologies to make smart city:

1) Smart Physical Infrastructure: Infrastructure is about establishing new technologies, reuse or optimization of existing infrastructure, which is consistent with the principles of urban sustainability and global sustainable development.
The Physical Infrastructure module mainly comprises hard infrastructure projects of transport & water sector with one component of live ability.

2) Affordable Housing: Urban poor constitute around 40 % of the population of Pune city. They contribute through their work, largely in the informal sector, to city's economic growth. Also they pay local taxes for goods and services purchased in the city. Thus their basic need of a shelter becomes a prime subject and hence under the affordable housing module 20,000 houses will be built in next 10 years.

3) Customer Care: The successful functioning of any organization is dependent upon efficient, Transparent& multi directional flows of information. Thus for efficient working a complete mapping & survey of customer is proposed along with a centralized customer center where the citizens would be able to register their grievances, enquiries, billing information and payment etc.

4) River Water Cleaning: The city of Pune is situated on the confluence of river-

Mula, Mutha & Mula-Mutha. Discharge of untreated domestic and industrial waste water, garbage dumping and open defecation on the banks have been the main causes of pollution in the rivers. Understanding the acute need of cleaning the river and its beautification the project has been envisaged.

5) Startup Zone: A fundamental shift is happening towards startup, friendly policies and a business friendly environment. The need is to nurture the entrepreneurial ecosystem to create more start-ups as well as opportunities For the vast young population of the city. Pune has large technical talent available due to its many universities, along with cost-effective real estate and good infrastructure.

6) Transit Hub: In the passenger system, poor modal connectivity is a significant barrier to the use of public transport. Pune city will soon be functional with Metro, BRTS, Feeder system etc.

The transit hub will provide the public transportation services a smoother intermodal interfaces and travel route connection opportunities that tend to promote higher ridership along with economic benefits.

3.13 Any Projects contributed working by Government/NGO/OTHER DIGITAL COUNTRY concept:

Digital India Initiative: Some Govt. Project which will enhance the Digital India Initiative

-BHIM UPI
- MyGov.in
- Kisan Credit Card
-Swachh Bharat Mission mobile app
-National Scholarship Portal
-eHospital
- Digitize India Platform
-Bharat Net
-Wi-fi Hotspots
- Next Generation Network
-Electronics Development Fund
-Centre of Excellence on Internet of Things (IoT)
-Health Card

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

Smart Environment:
From Smart Villages they can improve the water quality, soil condition, farming technique by using technology it will enhance the efficiency.They can also use the bio-gas plant for generation for fuel.

Regarding Employment:
-With increased urbanization, urban areas are expected to house 40 per cent of India's population and contribute to over 75 per cent of India's GDP by 2030. This calls for large scale infrastructural development which is not just physical and institutional but also social and economic infrastructure. Only then would these cities will attract investments leading to continuous growth and development.

-Application of smart solutions will enable cities to use technology, information & data to improve their services. Integration of technology is a major challenge and implementation of technology across smart cities needs a lot of hand holding at the moment. To understand the dynamics of smart cities and to create a strong eco-system it is important that the workforce has advanced skill sets. Smart cities have emerged as a potential job creator in the past few months. Many new-age profiles are likely to witness potential growth especially in the field of Data Management &Analytics and e-Governance.

Chapter 4.

About limda Village

4.1 INTRODUCTION

4.1.1 Introduction about Limda Village details

Limda is a Village in Waghodia Taluka in **Vadodara District** of **Gujarat State**, India. It is located **23 KM** towards East from District **Vadodara.** 149 KM from State capital Gandhinagar

Limda Pin code is 391760 and postal head office is Waghodia Vadodara, Padra, Karjan, Rajpipla are the nearby Cities to Limda. Limda is one of the 94 villages of Vaghodia Block of Vadodara district. As per the administration records the village has 574 homes.

4.1.2 Justification/Need of study

The developmental work in villages that could under taken as per the need of the village in particular includes Physical infrastructure facilities (Water, Drainage, Road, Electricity, Storm Water Network, Telecommunication & other), Social infrastructure facilities (Education, Health, Sanitation), Socio- Cultural Facilities (Community Hall, Library, Recreation Facilities &other) and Sustainable Infrastructures (Rain water harvesting, Biogas plant, Eco Toilets, Solar Street lights & other) for effective development of Villages.

"Vishwakarma Yojana" has provided the platform for real world experience to engineering students and simultaneously applies their technical knowledge in the rural infrastructure development

4.1.3 Study Area

Limda is a Village in Waghodia Taluka in **Vadodara District** of **Gujarat State**, India. It is located **23 KM** towards East from District **Vadodara.** 149 KM from State capital Gandhinagar. Limda Pin code is 391760 and postal head office is Waghodia Vadodara, Padra, Karjan, Rajpipla are the nearby Cities to Limda. Limda is one of the 94 villages of Vaghodia Block of Vadodara district. As per the administration records the village has 574 homes.

The total geographical area of village is **874.58 hectares**. Limda has a total population of 2608 peoples.

Nearby Villages of Limda:

Pavlepur,Pipaliya,Umrava, Mastupura, Ropa,Madheli,Vejalpur,Gugalpur, khervadi,kachhota,Rustampur

4.1.4 Objectives of the Study

Some Objective of the study is as follows:

-Creation of infrastructure – connectivity, civic and social infrastructure along with:
-Provision of alternative livelihood generation is the key pillars.
Basic Physical Infrastructure – Water Supply, Transport, Sewerage and Solid Waste Management should be the priority focus and be provided.
-Basic Social Infrastructure – Health and Education facilities should be provided and ensure proper delivery of facilities to village dwellers.
-Promote integrated development of rural areas with provision of quality housing, better connectivity, employment opportunities and supporting physical and social infrastructure.
-Reduce migration from rural to urban areas due to lack of basic services and sufficient economic activities in rural areas.
-Internal roads within village settlement, Efficient Mass Transportation systems to improve connectivity between urban and rural areas, Public transportation facilities that need to be developed like bus stops.

4.1.5 Scope of the project:

It can be development of the village for basic facility. Whole area and people need to change the improving. Population growth high to development village and their rural area compare to the urban area. It is very essential to develop village because India's development depends upon the progress of the villages. India is agriculture country and poverty can be removed through improvement in agriculture. Solutions of Rural problems can bring the change in the rural society.

The country and its society can be reconstructed only through rural developments. For successful implementation of democratic decentralization, the village community is to be studied in detail. Rural sociology can help to organize the disorganized Indian in detail. The extension worker must know the rural culture, rural institutions, problems, resources etc. for successful transfer of technology for improvement of agriculture. It can be achieved through the study of rural sociology.

Through the technology and communication methods are known to the extension workers. The study of rural sociology helps the extension worker to transfer the technology for successful implementation of the community development programmed the knowledge of rural sociology is very essential.

4.1.6 Methodology Framework for Development of Your Village

Project roadmap: Method for development of village

Part-I (Odd Semester) Includes:

-Literature Review
-Visit of Ideal Village of Respective District
-Data Collection- Techno economic survey
-Data Presentation
-Sustainable Design Planning Proposals
-Repair & Maintenance of Existing Infrastructure
-Facilities Suggestions and Recommendation

Part-II (Even Semester) Includes:

Gap Analysis (Guidelines, Regulation and Literature will be given for comparison)
Design Proposals for over all development of Village includes
-Physical Infrastructure Facilities
-Social Infrastructure Facilities
-Socio Cultural Infrastructures Facilities
- Recommendation & Suggestions for Village Development
Conclusion

4.1.7 Available Methodology for development of related to Civil

Methodology available related to Civil are as follows:
-Design objectives
-Technical approach
-Proposed sustainability features
-Identify customer needs
-Identify local/state/federal engineering and construction specifications
- Project management structure
-Budget
- Project schedule
- Resumes of team member

4.2 LIMDA Study Area Profile

4.2.1 Study Area Location with Breif history Land use details

Limda is a Village in Waghodia Taluka in **Vadodara District** of **Gujarat State**, India. It is located **23 KM** towards East from District **Vadodara.** 149 KM from State capital Gandhinagar Limda Pin code is 391760.

4.2.2 Base Location map:

F-9 Map of limda Village

F-10 Satellite image of Limda Village

4.2.3 Physical and demographical Growth Physical Growth

Physical and demographical Growth is shown in Table below:

Limda village has Total population is 2608, Female Population is 49.4%. Male Population is 50.6% .Village literacy rate is 69.6% and the Female Literacy rate is 31.9% Male literacy rate is 37.7% total no of houses 574.Working Population is 41.1%.Child (0-6) Population By year 2011 is 309.

Census Parameter	Census data
Total Population	2608
Total No Houses	574
Male Population	50.6%
Female Population	49.4%
Total literacy Rate	69.6%
Male literacy Rate	37.7%
Female Literacy Rate	31.9%
Working Population	41.1%
Child Population by 2011	309

Table3 Demographical Growth: Limda village Census 2011

4.2.4 Economic generation profile / Banks

Limda village economic condition is not bad. The major source of income is farming, dairy and serviceman. In this village some people have provisional store.

In this village House wives work on **GRUH UDHYOG** by making **PAPAD** and **face mask** for prevention of **COVID 19 Virus**. Village is also having one Bank Namely **Bank of Baroda** which recently started in the village with **ATM facility**

F-11Bank of Baroda limda Branch

4.2.5 Actual Problem faced by Villagers and smart solution

Some of the Problems Faced by the villagers is as follows:
-They do not have Medical facility they have to go Vadodara city or Waghodiya taluka where there is Medical Facility Available. We can use Government Yojna of ASHA health camp once in week.
-Village also have to face Internet Connectivity issue they can be solve by providing better networks as well as providing free Internet in Schools .
-The School in the Village is limited to Primary level Education for Further Studies they have to go in Waghodiya Taluka.
-They do not Have Library in Village Student in the village can Gain knowledge with the benefit of library in Village.

4.3 Data Collection Limda

The data of Village limda are as follows:

VillageLocality Name: Limda
Taluka: Waghodia
District: Vadodara
State: Gujarat
Language: Gujarati and Hindi
Time zone: IST (UTC+5:30)
Elevation / Altitude: 33 meters. Above Sea level
Telephone Code / Std Code: 02668
Assembly constituency: Vaghodia assembly constituency

Assembly MLA: Shrivastav Madhubhai babubhai
Lok Sabha constituency: Vadodara parliamentary constituency
Parliament MP: RANJANBEN BHATT
Sarpanch Name: Rekhaben Narendra Singh
Pin Code: 391760
Post Office Name: Vaghodia

4.3.1 Describe Methods for data collection:

The main methods for data collection are:

1) Individual interviews
-Interviews can be conducted in person or over telephone.
- Interviews can be done formally or informally.
2) From Internet
3) Observations-field trips
4) Group Interviews
5) From Local Authority

4.3.2 Primary detail of Survey:

Village is facilitated with good infrastructure. Some areas are needed to look upon to provide more facility in village Such as it needs new reconstruction of school and panchayat building. Village needs public toilet with caretaker staff. Street lights can enhance the view of village in night as there are few street lights available in village.

4.3.3 Average Size of the House Geo Tagging of Two to three room in average

The Average size of Room in Limda Village is 5 x 12m.

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

4.3,4 No. of Human being in One House:

Total number of population in Limda Village is 2608 as per 2011census. The no. of Human being in one house is approximate 5 people in a family.

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

Locally Available Material

Wheat,fooderGrass,Dangar,Milk and other agricultural cereals are available Locally in the limda village.

Out Sourced Material

The out sourced material is Fertilizer, Machines etc because this material generally not available in the village. So this material is purchase on out of village markets.

4.3.6 Geographical Detail

The total geographical area of village is 874.58 hectares. Limda has a total population of 2,608 peoples. There are about 574 houses in Limda village. Vaghodia is nearest town to Limda which is approximately 5km away.

4.3.7 Demographical Detail - Cast Wise Population Details

Out of 2608 people total 45% public of the village is of open cast. Remaining 55% are of schedule tribe and schedule cast category as per the information given by the Sarpanch.

4.3.8 Occupational Detail - Occupation wise Details

Mainly farming & milk production are the basic occupation here, and working in nearby factories is also an occupation for villagers**.**

4.3.9 Agricultural Details / Organic Farming / Fishery

Wheat, rice crop, Fodder grass, cotton, vegetables and other agriculture commodities grow in this village. Some Farmers also does Organic Farming.

4.3.10 Manufacturing HUB / Ware Houses

There is Apollo Tyre industry in Limda Villlage

F-12 Agriculture Farm Limda Village

F-13 Apollo tyre Industry

4.3.11 Tourism development available in the village for attracting the tourist

There is no tourism cluster involved with village.

4.4 Infrastructure Detail

4.4.1 Drinking Water / Water Management Facilities

In this village drinking water is treated and clean and this water supply going to pipe through to separate houses and hand pumps are provide in village, this water is clean and drinking.

F-14 Overhead Water Tank

F-15 Limda Village Cleaned Streets

4.4.2 Drainage Network / Sanitation Facilities

This village has an underground drainage facility; Village Streets are neat and clean. Once a week there is cleaning of the village is done.

4.4.3 Transportation & Road Network

Public Bus service is available in this village. There is no Railway Station in less than 20 km. Autos Available in this Village. No Nearest National Highway in less than 10 km. No Nearest State Highway in less than 10 km. District Road passes through this village. Pucca road, Kuccha Road and Foot Path are other Roads and Transportation within the village.

F-16 Road Network Limda

4.4.4 Housing condition

In the limda village majority of houses are Pucca houses and some are Kuccha houses. As per data approximate 60% are pucca house 40% are Kuchha House

F-17 Pucca House Limda Village

F-18 Kuccha House Limda Village

4.4.5 Social Infrastructure Facilities, Health, Education

PrimarySchool, 1aanganwadi, 1Postoffice, University, School Playground, University,Dharmashala, Gram Panchayat and 3Temples.

F-19 Primary Govt. School limda

F-20 Limda School Playground

F-21 Limda Village Dharmshala

F-22 Parul University Limda Village

		
F-23 Limda temple	**F-24 Gram Panchayat**	**F-25 Limda Post Office**

4.4.6 Existing Condition of Public Buildings & Maintenance of existing Structure

There is Requirement of a Community Hall as well as Reconstruction of Sarpanch office.

4.4.7 Technology Mobile/Wifi/Internet Usage Details

Network is well established in village, but in some area they face connectivity issue, wifi facility needs to Setup in Village, Cellular internet is available in Village.

4.4.8 Sports Activity as Gram panchayat

Playing equipment's are available in school only other than that there is no Sports activity in Limda Village so we are planning to design Recreational Park.

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

No there is no Recreational Facility available in the Village So we are planning to have one Park.

4.4.10 other facilities

Apollo Foundation NGO is Helping Village Students by providing them Books and stationeries.

4.4.11 any other detail

The NGO is also providing Free Health Care Checkup to villagers and by Gruh Udhyod Women are making Papad.

4.5 Existing Institution like - Village Administration – Detail Profile

4.5.1 Bachat Mandli: In the Limda Village there is no Bachat Mandali exist.

4.5.2 Dudh Mandali: In the Limda Village there is one Dush Mandali

4.5.3 Mahila forum: There is no forum in Limda village but Ngo is working For women empowerment.

4.5.4 Plantation for the Air Pollution: There is no such activity done in village
.

4.5.5 Rain Water Harvesting – Waste Water Recycling: Rain Water Harvesting Facility is available in School of limda Village.

4.5.6 Agricultural Development: The Village farmers have agriculture tool and equipment. All agriculture material is available in Waghodiya district.

4.5.7 Any Other: The Apollo NGO does various Activities in Village by providing free health checkup and by providing Free Educational Stationery to students in the limda Village**.**

F-26 Apollo NGO foundation Gruh Udhyog

F-27 Rain Water Harvesting System in Limda Govt School

Chapter 5.
Technical Options with Case Studies

5.1Concept

5.1.1 Advanced Sustainable Construction Technique / Practices and Quantity Surveying

1. IoT Integrated Automated Building Systems

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

2. Synthetic Roof Underlayment

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

3. Green Roofs

Another innovation for the top of commercial properties comes from green roofs. Grass, plants, flowers, bushes and other greenery grows on the roofing material. Stormwater is absorbed into the soil and managed more easily than with a bare roof. Heating and cooling costs are reduced, and the air quality is improved.

4. Grid Hybrid System

Renewable energy sources provide a sustainable way for organizations to power their commercial properties, but many grid systems lack storage to power facilities during times of low solar availability.

5. Passive Solar

Another way to leverage a sustainable solar energy source is to construct the building based on the passive solar concept.The facility's location and design maximize solar energy for heating during. winter.

6. Greywater Plumbing Systems

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

7. Electrochromic Glass

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

8. Solar Thermal Cladding

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

9. Structural 3D Printing

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

10. Self-healing Concrete

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

Green Roof Shelter on Shipping Container and on Roof Top Farming

F-28 Green Roof on Container

F-29 Roof Top Farming

Life cycle costing studies on extensive green roofs

Authors	Authors	Unit Cost ($/m2)	Method(s)	Lifespan (year)	Discount rate (%)
Porsche Köhler	USA	85-90	NPV	90	N.A.
Zhang et al	USA	31.72	NPV	40	5
Clark et al.	USA	232	NPV	40	5
Carter& Keeler	USA	158.82	NPV	40	4
Blackhurst el	USA	97.04	BCR	30	5
Niu et al	USA	306	NPV	40	6-7
Wu & Smith	USA	107.64	PBP-NPV-BEP	40	2.8
Bianchini	USA	130-165	NPV-PBP	40-55	2-8
Mullen et al.	USA	158-306	NPV	40	N.A
Sproul et al.	USA	175	NPV	50	3

Table 4: Life Cycle Costing

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. In soil mechanics, the term "liquefied" was first used by Allen Hazen in reference to the 1918 failure of the Calaveras Dam in California. He described the mechanism of flow liquefaction of the embankment dam as: If the pressure of the water in the pores is great enough to carry all the load, it will have the effect of holding the particles apart and of producing a condition that is practically equivalent to that of quicksand.

The initial movement of some part of the material might result in accumulating pressure, first on one point, and then on another, successively, as the early points of concentration were liquefied.

Example of some effects of soil liquefaction after the 1964 Niigata earthquake, Soil liquefaction allowed this sewer to float upward – 2004 Chūetsu Earthquake and Soil liquefaction in Christchurch, New Zealand. the 2011 earthquake resulted in a layer of fine sand on the street Photographs given below:

		
F-30 Effects of Soil liquefaction	**F-31 Chūetsu Earthquake 2004**	**F-32 Fine Sand on Street**

The phenomenon is most often observed in saturated; loose (low density or uncompacted, sandy soils. This is because 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).

Although the effects of soil liquefaction have been long understood, engineers took more notice after the 1964 Niigata earthquake and 1964 Alaska earthquake. It was a major factor in the destruction in San Francisco's Marina District during the 1989 Loma Prieto earthquake and in Port of Kobe during the 1995 Great Hanshin earthquake.

More recently soil liquefaction was largely responsible for extensive damage to residential properties in the eastern suburbs and satellite townships of Christchurch, New Zealand during the 2010 Canterbury earthquake and more extensively again following the Christchurch earthquakes that followed in early and mid-2011.On 28 September 2018, an earthquake of 7.5 magnitude hit the Central Sulawesi province of Indonesia.Resulting soil liquefaction buried the suburb of Balaroa and Petobo village in 3 meters deep mud. The government of Indonesia is considering designating the two neighborhoods of Balaroa and petobo, that have been totally buried under as mass graves.

Type of soil causes liquefaction: Poorly drained fine-grained soils such as sandy, silty, and gravelly soils are the most susceptible to liquefaction.

5.1.3 Sustainable Sanitation

Sustainable sanitation is a sanitation 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 user, excreta and wastewater collection methods, transportation or conveyance of waste, treatment, and reuse or disposal.The Sustainable Sanitation Alliance (Susana) 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.

Sustainable sanitation approaches focus on the "sanitation value chain" which includes collection, emptying, transport, treatment and reuse/disposal.The purpose of sustainable sanitation is the same as sanitation in general: to protect human health. However, "sustainable sanitation" attends to all processes of the system: This includes methods of collecting, transporting, treating and the disposal (or reuse) of waste.

The main objective of a sanitation system is to protect and promote human health by providing a clean environment and breaking the cycle of disease. Health aspects include the risk of exposure to pathogens and hazardous substances that could affect public health at all points of the sanitation system from the toilet via the collection and treatment system to the point of reuse or disposal.

5.1.4 Transportation Infrastructure/ System

Transport infrastructure consists of the fixed installations necessary for transport and includes roads, railways, airways, waterways, and terminals.

Transport is vital to the well-functioning of economic activities and a key to ensuring social well-being and cohesion of populations. Transport ensures everyday mobility of people and is crucial to the production and distribution of goods. Adequate infrastructure is a fundamental precondition for transport systems. In their endeavour to facilitate transport, however, decision-makers in governments and international organizations face difficult challenges. These include the existence of physical barriers or hindrances, such as insufficient or inadequate transport infrastructures, bottlenecks and missing links, as well as lack of funds to remove them. Solving these problems is not an easy task. It requires action on the

part of the governments concerned, actions that are coordinated with other governments at international level.

Future of Transportation Cyber-Physical Systems – Smart Cities/Regions
Smart transportation infrastructure:
Beyond vehicle-based advanced technologies, transportation infrastructure also has been transforming. Agencies operating transportation infrastructure have been deploying technologies to sense, collect and provide transportation system–level condition assessments and predictions to improve safety, mobility and environmental performance. Smart transportation infrastructure will accelerate the deployment of automated and connected vehicles. Several approaches have been taken by many cities and regions to deploy smart transportation infrastructure such as automated toll collection systems.

5.1.5 Vertical Farming

Introduction

Vertical farming is cultivating and producing crops/ plants in vertically stacked layers and vertically inclined surfaces. The entire world is on the verge of population explosion and there is a gravest challenge of feeding the population. The population explosion has led to the decreased per capita land. Earlier with the aim of supplying the food to ever increasing population agricultural scientist stretched their innovative approaches to the tune of developing hybrid/ improved high yielding varieties, improved techniques, improved tools and implements, integrated practices in water, nutrient management and insect, pest management, greenhouse technology and even the genetically modified crops. All these efforts once were revolutionary, now sound inadequate. In 1915, Gilbert Ellis Bailey coined the term "vertical farming" and wrote a book titled "Vertical Farming". In the early 1930s,William Frederick Gerick pioneered hydroponics at the University of Californiaat Berkley producing vegetables in cities. Professor Dickson Despommierin.In 1999 came up with an idea of vertical farming. His concept was to grow the food in urban areas itself utilizing less distance and saving the time in bringing the food produced in rural areas to the cities. Heintended in growing food

F-33 Vertical Farming

within urban environments and thus have fresher foods available faster and at lower costs.

Systems of Vertical farming

1) Hydroponics

It is a method of growing food in water using mineral nutrient solutions without soil. The basic advantages of this method are that it reduces soil-related cultivation problems like soil borne insects, pest and diseases.

2) Aeroponics:

In aeroponics, there is no growing medium and hence, no containers for growing crops. In aeroponics, mistor nutrient solutions are used instead of water. As the plants are tied to a support and roots are sprayed with nutrient solution, it requires very less space, very less water and no soil.

3) Aquaponics:

It is a bio-system that integrates recirculated aquaculture (fish farming)with hydroponic vegetable, flower, and herb production to create symbiotic relationships between the plants and the fish. It achieves this symbiosis through using the nutrient-rich waste from fish tanks to “fertigate” hydroponic production beds. In turn, the hydroponic beds also function as bio-filters that remove gases, acids, and chemicals, such as ammonia, nitrates, and phosphates, from the water. Simultaneously, the gravel beds provide habitats for nitrifying bacteria, which augment the nutrient cycling and filter water

Advantages of vertical farming

- The first and the major advantage of vertical farming is producing extremely high yields per available land or area.
- Producing the food throughout the year without the risk of vagaries of nature of nature like floods, heavy rains, uneven rains, hail and snowfall, drought, dry spells, extreme high temperatures, cold waves, epidemics of pest and diseases, etc.
- It reduces the cost over transporting loads of food grains from rural area to urban areas and reduces the spoilage occurring therein. Fossil fuel consumption in transporting the farm produce to cities from village places is also reduced to a greater extent
- Vertical farming uses 70 to 95 % less water compared to traditional farming

90%less or no soil is needed in vertical farming and thereby no pest and disease infestations.

Disadvantages of vertical farming

- Initial Hugh cost for establishing the vertical farming system is the major problem.
- It will include the cost erecting the structures along with its automation like Computerized and monitoring systems, remote control systems and software's, automated racking and stacking systems, programmable LED lighting systems, climate control system, etc.
- Hugh energy cost as growing plant is entirely with artificial lights.
- The excess nutrients used in vertical farming may interfere and contaminate the-main urban water system if not taken care of.
- Lot of garbage, plant residues, etc. will be generated around the buildings with vertical farming which needs to be dispose of properly.

India is one of the largest producers of vegetables, fruits and many other agricultural commodities. In India vertical farming has been introduced. ICAR experts are working on the concept of 'vertical farming' in soil-less conditions, in which food crops can be grown even on multi-storeyed buildings in metros like New Delhi, Mumbai, Kolkata and Chennai without using soil or pesticides.

Scientists at the Bidhan Chandra Krishi Vishwavidyalaya in Nadia have already had initial success in working on vertical farming hydroponically on a small scale. Small-scale adaptations of vertical farming have been seen in Nadia, West Bengal and in Punjab. Bidhan Chandra Krishi Vishwavidyalaya in Nadia has found initial success in growing brinjal and tomato. Punjab also has succeeded in producing potato tubers through vertical farming.

CONCLUSION

Vertical farming is definitely a solution to critical problems in Indian farming like lack of supply or oversupply of farm produce, overuse of pesticides, overuse of fertilizers, deteriorating soils and even the unemployment but there are challenges like acceptance of vertical farming by Indian farming community. Indian farmers are facing various problems like lack of electricity supply throughout the day, assurance of minimum support prices, no control over market glut, water scarcity, etc.

5.1.6 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure

The durability of concrete structures is influenced by various factors, for example, ecological presentation, electrochemical responses, mechanical stacking, affect

harm and others. Of all of these, consumption of the fortification is likely the primary driver for the disintegration of steel strengthen cement (RC) structures.
Consumption administration is ending up progressively important because of the developing number of maturing foundation resources and the expanded prerequisite for impromptu upkeep with a specific end goal to keep these structures operational all through their outline life.

The primary RCC repair, restoration and recovery approaches by and large utilized can be extensively arranged under a) ordinary, b) surface medications, c) electrochemical medicines and d) outline arrangements. The overall point of this examination was to recognize the key consumption administration strategies and embrace exact examinations concentrated on full-scale RC structures to explore their long-haul execution.

F-34 Corrosion in R.C.C structure

To accomplish this, singular research bundles were recognized from the above expansive five approaches for repair, substitution and recovery.
These were
1) Patch repairs and nascent anodes,
2) Impressed Current Cathodic Protection,
3) Galvanic Cathodic Protection, what's more,
4) Hydrophobic medications. The determination of the above research bundles depended on over a wide span of time use by the development industry to repair, renovate and restore RC structures.

Their commitments might be comprehensively arranged as Investigations on how particular medications and materials perform, Investigations on the viability of existing techniques for estimations and creating options, Changes to the current hypothesis of consumption commencement and capture furthermore Changes to administration system methodologies. The key discoveries from each examination bundle can be condensed as takes after:

Microcell movement seems, by all accounts, to be a result instead of a reason for beginning anode development in repaired solid structures, as has beforehand been exhibited Discrete galvanic anodes introduced in the parent concrete encompassing the fix repair are an achievable contrasting option to galvanic anodes inserted inside the fix repairs of RC structures; Silanes may have a lingering hydrophobic impact even following 20 long stretches of administration

5.1.7 Sewage Treatment Plant

Table 5: Sewage Treatment Plant in Massachusetts,US

Synonym	Wastewater treatment plant water reclamation plant
Position in sanitation chain	treatment
Application level	City, neighborhood
Management level	public
Inputs	Black water (waste) sewage
outputs	Sewage sludge, effluent
types	List of waste water treatment technologies
Environmental concerns	Water pollution sewage sludge disposal issues

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

F-35 sewage Treatment plant

Sewage Treatment:

Sewage treatment may also be referred to as wastewater treatment. However, the latter is a broader term that can also refer to industrial wastewater. For most cities, the sewer system will also carry a proportion of industrial effluent to the sewage treatment plant that has usually received pre-treatment at the factories to reduce the pollutant load. If the sewer system is a combined sewer, then it will also carry

urban runoff (storm water) to the sewage treatment plant. Sewage water can travel towards treatment plants via piping and in a flow aided by gravity and pumps. The first part of the filtration of sewage typically includes a bar screen to filter solids and large objects that are then collected in dumpsters and disposed of in landfills Fat and grease are also removed before the primary treatment of sewage.

5.1.8 Technical Case Study on "Chhatrapati Shivaji International Airport"

Transport Infrastructure:

We have selected an already constructed structure site named as "**Chhatrapati Shivaji International Airport"** a technical case study. It is Located In **Mumbai**,Maharashtra.

Chhatrapati Shivaji Maharaj International Airport, Mumbai formerly known as **Sahar International Airport**, is the primary **international airport** serving the **Mumbai Metropolitan Area**, India.

It is the second busiest airport in the country in terms of total and international passenger traffic after Delhi, and was the 14th busiest airport in Asia and 28th busiest airport in the world by passenger traffic in calendar year 2017.

Its passenger traffic was about 49.8 million in year 2018. It is also the second busiest airport in terms of cargo traffic. n March 2017, the airport surpassed London's Gatwick Airport as the world's busiest to operate a single runway at a time. This was later surpassed again by Gatwick Airport at the end of 2019 due to passenger numbers falling at Mumbai.

Location

F-36 Airport Location

F-37 Map

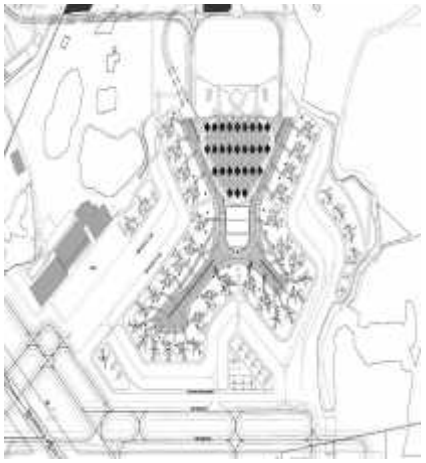
History:

The Tata committee, set up in 1967 to examine the issues concerning the airport, had recommended the construction of a **new international terminal** to meet the requirements of **traffic** in the seventies. The **Santa Cruz terminal** was to be used for **domestic traffic** alone. The **International Airport Authority of India(IAAI),** which was set up in **1972,** started planning the construction of a new terminal building for handling international passenger traffic, to be completed by 1981.
Accordingly, construction of the new International terminal at **Sahar** to the north-east of Santacruz in Andheri was taken up at an estimated cost of **₹ 110 million**. Construction of the new international terminal at Sahar began in November 1977, and the first phase took three years to build. Sahar Terminal 2A, the first phase of the three-part terminal, was opened on 5 December 1980.

AAI had been considering the modernisation of Mumbai airport in 1996 although the AAI board approved a modernisation proposal only in 2003. By then, Mumbai and Delhi airports were handling 38% of the country's aircraft movement and generating one-third of all revenues earned by AAI. At that time, the Mumbai airport handled 13.3 million passengers, 60% of which were domestic travellers. The airport faced severe congestion for both aircraft and passengers as it was handling twice as many aircraft movements per day than it was originally designed for. The bidding process for its modernisation eventually began in May 2004 with the decision by the Empowered Group of Ministers (EGoM) was announced in January 2006.

Design:

Larsen & Toubro (L&T) was awarded the contract to construct the new Terminal 2, better known as **T2**, in order to differentiate it from the older Terminal 2 building. Skidmore, Owings & Merrill (SOM) was the architectural designer of the project. SOM also provided the schematic design of structure and MEP and the detailed structural design of the roof. Detailed design of the foundations and the rest of the structure and civil works, the MEP, IT and airport systems, including the full construction documentation of the project was carried out by L&T's in-house design team, EDRC (Engineering Design and Research Center). The terminal covers a



F-38 Site Plan design

land area of **210,000 square metres** and has replaced the previous International Terminal (which has already been demolished).

The entire project was estimated to cost **₹98 billion** (**US$1.4 billion**) and employ over **12,000 workers.** The X-shaped terminal has a total floor area of **450,000** square metres across four floors and handles both domestic and international passengers. It includes new taxiways and apron areas for aircraft parking designed to cater to 40 million passengers annually. The structure has boarding gates on two piers extending southwards from a central processing building featuring a 42-metre high roof employing over 20,000 metric tonnes of fabricated steel covering 30 acres. However, the eastern pier of T2 remains truncated due to non-clearance of slums in the adjoining plot, giving an asymmetrical look when seen from above. The new T2 building operates **Multiple Aircraft Ramp System** (MARS) stands and swing gates.

Ownership

A consortium of GVK Industries Ltd, Airports Company South Africa and Bidvest, won the bid to manage and operate CSIA. To accomplish this task, Mumbai International Airport Private Limited (MIAL), a joint venture between the consortium (**74%)** and the Airports Authority of India (**26%)** was formed Since then, MIAL has made several improvements in the aesthetics, design and passenger conveniences at CSIA including the refurbishment of domestic terminals 1A & 1B, international terminals 2B & 2C and the opening of a brand new domestic terminal 1C and Terminal 2. MIAL also undertook airside improvement projects such as the commissioning of new taxiways, aprons and the reconstruction of both runways. In February 2008, MIAL entered into an agreement with Air Transport IT specialist SITA that led to CSIA becoming the first airport in India to Implement Common-use self-service Kiosks and CUTE (*Common Use Terminal Equipment*) check-in systems.
In February 2021, the Adani Group acquired both, GVK and Bidvest's stakes in MIAL, giving it a controlling interest in the venture.

Construction

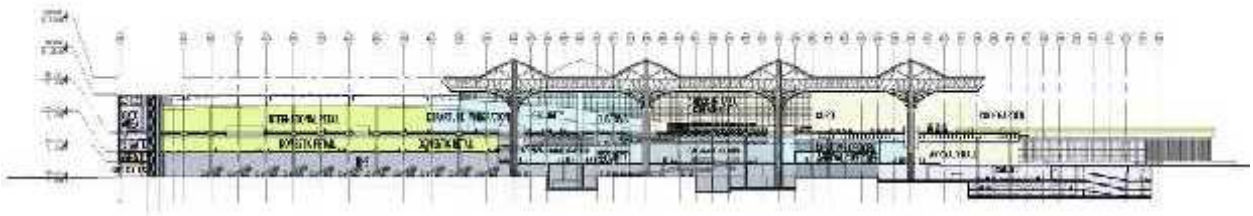
The new Integrated Terminal Building at Mumbai’s Chhatrapati Shivaji International Airport combines international and domestic operations at one of India's busiest airports. Designed to accommodate up to 40 million passengers per year, the 410,000-square-meter facility features a number of structural innovations.

A key feature is a long-span roof covering 70,000 square meters, making it one of

the world's largest roofs without an expansion joint. The roof is supported by 30 massive columns spaced at 64 meters in the north–south direction and at 34 meters in the east–west direction. SOM increased the depth of the trusses near the columns, and ran trusses in both an orthogonal grid and a 45-degree grid, resulting in generous spacing and cantilevers of 40 meters along the perimeter. The mega-columns were also designed to serve as hoist mechanisms so the entire roof could be constructed without tower cranes — a measure taken in response to site constraints and the close proximity of an existing terminal.

In addition to its superlative roof, the terminal features the largest and longest cable wall system in the world. Furthermore, the structural design prioritizes modular construction in order to optimize costs and to facilitate an accelerated construction schedule.

The construction site of the new terminal building was located in close proximity to the existing terminal which had to remain fully operational during construction. This site requirement inspired the elongated X-shape plan of the terminal, which could both mold around existing structures and incorporate modular designs to accommodate rapid and phased construction.



On site Construction

F-39 Onsite construction Airport

Construction Cost

The entire project was estimated to cost **₹98 billion** (**US$1.4 billion**) and employ over **12,000 workers.**The X-shaped terminal has a total floor area of **450,000** square metres across four floors

Table: 6 AIRPORT BASIC DETAIL

Airport type	**Public**
Operator	**Mumbai International Airport Limited (MIAL)**
Serves	**Mumbai Metropolitan Region**
Location	**Mumbai, Maharashtra, India**
Opened	**1942**
Hub for	• **Air India** • **Vistara**
Focus city for	• **Air India Express** • **Blue Dart Aviation**
Elevation AMSL	**11 m / 37 ft**
Coordinates	**19°05′19″N 72°52′05″ECoordinates: 19°05′19″N 72°52′05″E**
Website	**www.csmia.aero**

F-40 Airport View

F-41 Airport Interior

RUNWAYS

The airport has two intersecting runways and it handles an average of 980 flights per day. The runways have been upgraded to Code F, which means they can accommodate larger aircraft like the Airbus A380. Following a presentation in March 2011 by UK's air traffic service provider NATS on how the capacity of the airport can be increased, MIAL set a target of 48 aircraft movements an hour in an effort to reduce congestion at the airport. Both runways were operated

simultaneously especially during peak hours to try and attain this target. MIAL scrapped simultaneous Cross-runway flight operations in mid-2013 after it found that single runway operations were more effective for increasing aircraft movements per hour.

Runway 14/32 was henceforth to be used only when the main runway was unavailable due to maintenance or other reasons. The construction of new rapid exit taxiways helped in increasing flight handling capacity from 32 movements per hour to 44 in 2012

NATS delivered and helped MIAL implement a 'change roadmap' to help CSMIA achieve more than 50 movements per hour in 2015.The increased air-side efficiencies resulted in CSMIA overtaking Gatwick Airport in March 2017 to become the world's busiest airport with only one operational runway at a time

Number	Length	Width	ILS
09–27	3,660 m (12,008 ft)	60 metres (200 ft)	Cat. II (27); Cat. I (09)
14–32	2,990 m (9,810 ft)	45 metres (148 ft)	Cat. I (both directions)

Table 7: Runway Details

Features

-The new terminal has 188 check-in counters, 60 immigration counters for departing passengers, and 76 immigration counters for incoming fliers.

-It has Total 47 escalators and 73 elevators.
-A multi-level car park has also been built to accommodate 5,000 vehicles.
- The terminal has 21,000 square meters of area for retail shopping.
- The new terminal will have 2300 CCTV cameras for passenger safety and 4100 public address speakers.
-The X-shaped terminal also boasts of a three-kilometre-long art walk which incorporates Indian aesthetics with a white peacock theme. Titled 'Jaya He', it offers a glimpse into India's rich legacy and is an unprecedented interdisciplinary platform for the nation's cultural and creative industries.

- Though no longer India's busiest airport, the four-storey terminal will cater to an estimated 40 million passengers annually.

Car Parking and Passenger Arrivals

All vehicles arriving at T2 to pick up arriving passengers are routed via the Multi-Level Car Park and are charged a fee to counter traffic congestion at the airport. Four wheelers are charged a minimum fee of ₹140 (US$2.00) for 30 minutes in general parking and two-wheelers ₹Convert for 240 minutes

AIRPORT TRAFFIC

Its passenger traffic was about **49.8 million** in year 2018. It is also the second busiest airport in terms of cargo traffic. n March 2017, the airport surpassed London's Gatwick Airport as the world's busiest to operate a single runway at a time. This was later surpassed again by Gatwick Airport at the end of 2019 due to passenger numbers falling at Mumbai.

F-42 Multilevel Car parking

F-43 Airport Traffic

Chapter 6.
Swatchh Bharat Abhiyan (Clean India)

To accelerate the efforts to achieve universal sanitation coverage and to put the focus on sanitation, the Prime Minister of India had launched the Swachh Bharat Mission on 2nd October 2014.

Under the mission, all villages, Gram Panchayats, Districts, States and Union Territories in India declared themselves "open- defecation free" (ODF) by 2 October 2019, the 150th birth anniversary of Mahatma Gandhi, by constructing over 100 million toilets in rural India.

To ensure that the open defecation free behaviors are sustained, no one is left behind, and that solid and liquid waste management facilities are accessible, the Mission is moving towards the next Phase II of SBMG i.e. ODF-Plus. ODF Plus activities under Phase II of Swachh Bharat Mission (Grameen) will reinforce ODF behaviors and focus on providing interventions for the safe management of solid and liquid waste in villages.

6.1 Swatchhta needed in allocated village -Existing Situation with photograph

Our Group had done Survey in Village Limda there we have found that the Village is neat and clean & Apollo NGO Takes all liquid and solid based Garbage Door to Door from Village Houses but we have seen that in some of the parts there were no swatchhta Plastic packets. waste material, mud, cow dung, etc.

F-44 Existing photo of swachhta

6.2 Guidelines - Implementation in allocated village with Photograph

Cleanly drive is arranged by village administration twice in a week. There is No daily basis waste collection in Limda Village.

F-45 Existing photo after Implementation of Swachhta

6.3 Activities Done by Students for Limda village

In Limda Village we have made aware to Villagers about Swatchhta and explain ill effects of un-cleanliness. We have explain Villagers how to dispose the COVID Mask after Usage and also we have conducted Swatchhta Drive in village

F-46 Swatchhta Activities done in Limda village

Chapter 7.
Village condition due to Covid-19

While as a disease Covid-19 has remained largely confined to the cities, as a social phenomenon, it has caused widespread damage even in rural areas. The reversal of rural-urban migration is one of the major impacts experienced by vulnerable groups. It may even affect the demographic situation in villages during the next Census, depending on how long the impact plays out. There is a need for broad-basing the outreach of the relief schemes along with making their working effective. The allocation for MGNREGA has to be increased substantially. The official agencies should also publish Covid-19 data by rural-urban classification.
COVID-19 had mostly remained in India's cities, but the disease is now spreading to rural India – an area with over 850 million people and far worse healthcare. The reason for this shift appears to be migrant workers who have been returning to their villages since lockdown was eased at the end of June. The medical response to stop the spread and treat those infected has been inadequate, according to media reports.

With one trained doctor for every 1,497 people, against the World Health Organization recommended one per 1,000, and public health expenditure for 2018 at just 1.3% of GDP, India faces an uphill struggle in dealing with the pandemic. While two-thirds of India's population lives in rural areas, there are almost four times as many health workers per person in cities.

Most rural communities rely on untrained health workers. Over two-thirds of these rural health providers have no formal medical training, but remain the only option of medical support for most of the rural population.

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

During the Visit of Limda Village Sarpanch had told us that that Sanitization was done at the starting of Covid pandemic. Currently there is no sanitization process.

7.2 Activities Done by Students for allocated village

We did awareness camp regarding Covid-19. In that awareness camp we have made aware to Villagers about covid 19 situation in India and told them to take precautionary measures like wear a mask properly, wash hands regularly, maintain

social distancing in public and avoid crowdy area & firstly make yourself home quarantined if you fill any COVID-19 symptom in your body and Don't get Panic if you have COVID-19 symptoms.

7.3 Any other steps taken by the students / villagers

Sanitization was done at the road of village at starting of pandemic. Women make Face Masks at Home which Prevent from COVID 19 Virus at starting of Pandemic. Villagers are Following Precaution against Covid19 virus by following Government guidelines. Talati told us that during Lockdown Phase Home quarantine facility were implemented in Limda Dharmashala and Government School.

Limda Dharmshala

Limda Govt. school centre

F-47 Limda Quarantine centre

Chapter 8.
Sustainable Design Planning Proposal (Prototype Design) - Part- I:

8.1 Design Proposals: Observation and brief write up about each design from 8.1.1 to 8.1.6

Sustainable Design: Medical Store

In Limda Village we have designed the Medical Store for the village. The population of Limda village is 2608 as per 2011 census. So it is required to have Medical Store in the village. The villagers require PHC Or Medical store so that we have decided and finalized the design of Medical Store in Limda Village**.**

Physical design: Panchayat Building

In Limda village there it is required to have One Panchayat Building. So according to the feedback given by the villagers, one Proper Panchayat Building with Basic Facility should be there in the village So that we have designed one Panchayat Building.

Social Design: Community Hall

In Limda Village there should be a Community hall in which members of a community gather for group activities, events, festivals and social purpose. They may sometimes be open for whole community or for a specialized group example Mahila Mandal hall. A community hall of village generally consists of a hall , storage or kitchen area and washroom.

Socio-Cultural Design: Library

The prime purpose of a library is to provide access to knowledge and information. Libraries help the students to develop good reading and study habits. Public officials use libraries for research and public issues. The libraries provide information and services that are essential for learning and progress.

Smart Village Design: CCTV Surveillance Building

Control rooms sits at the heart of a security installation, bringing together video surveillance, access control and fire control into one room. It serves as a central space where a large physical facility or physically dispersed service can be monitored and controlled by security guards CCTV will help for Security and Safety Purpose in Village.

Heritage Village Design: Club House

In Limda village there is no Facility for Recreational Activity so that we have designed one Club House in the village as heritage village design.

8.1.1 Sustainable Design (Civil): Medical Store

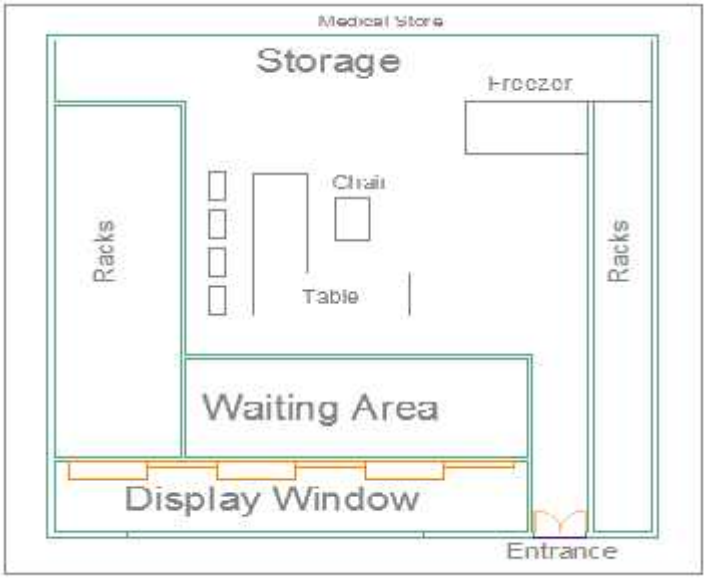
Scenario:

A Medical Store is a shop where therapeutic drugs are sold. A Medical Store is the place where most pharmacists practice the profession of pharmacy. Pharmacists play a major role in providing healthcare services by means of community pharmacy services in rural areas where physicians are not available or where physician services are too costly for meeting the healthcare necessities.

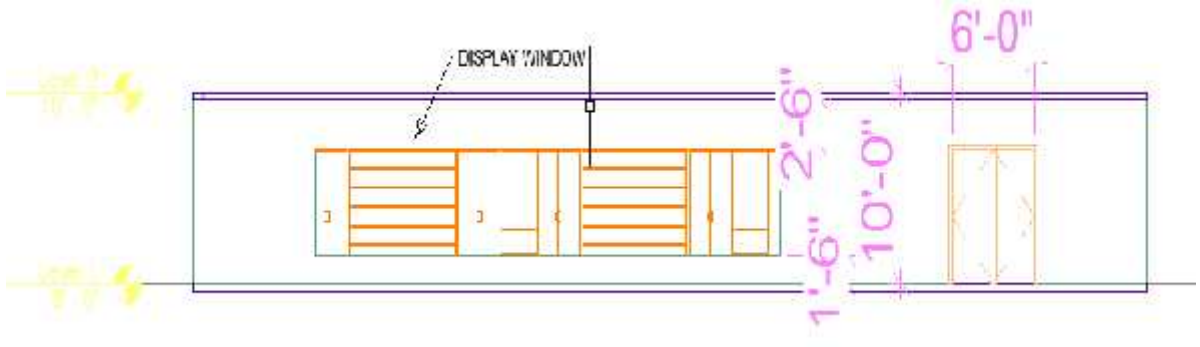
Existing Situation in Limda:

In the Limda village there is no any PHC or dispensary or medical Store or pharmacy store. So according to the feedback given by the villagers, one dispensary or Medical Store should be there in the village. So we have designed one Medical store for the urgent requirement of medicines for the villagers

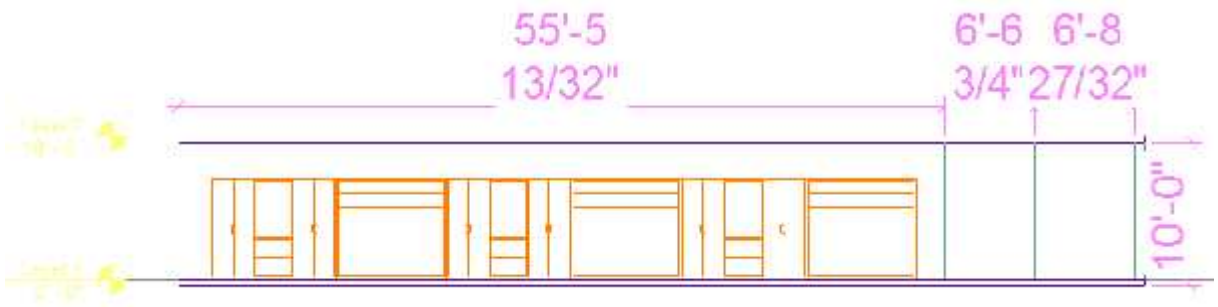
Proposed Design of Medical Store



F48-Medical Store Plan



F49-Medical Store Elevation



F-50 Medical Store Section

Table 8: MEASUREMENT SHEET

Sr No	Description	Length	Width	Height	Count Nos	Total Quantity m^3
1	Door	-	1.828	2.245	1	4.122
2	Window	-	16.76	1.76	1	29.49
3	Wall 1	6	0.3	3	2	10.8
4	Wall 2	12	0.3	3	2	21.6
5	Excavation	37.2	0.9	1.2	1	40.176
6	Roof	-	-	0.15	1	0.15

Table 9: ABSTRACT SHEET

SrNo	Description	Quantity	Rate	Per	Amount
1	Door	4.122	-	-	3250
2	Window	29.49	220	-	6500
3	Wall 1	10.8	130	ft^2	1404
4	Wall 2	21.6	130	ft^2	2808
5	Excavation	37.2	350	m^3	13,020
6	Roof	0.15	3500	m^3	65,500
				Grand Total	97,106

The rates of their respective works provided in the abstract sheet along with quantities are inclusive of water charges, contractor's profit, contingencies, utilities and labor charges.

Total Cost = ₹ 97,106

8.1.2 Physical design (Civil): Panchayat Building

Scenario:
Gram Panchayat is a basic village governing institute in Indian Village. It is a democratic Structure at the grass-roots level in India. It is a political institute, acting as cabinet of the village. The Gram-Sabha works as the general body of Gram Panchayat.

Existing Situation:
In Limda village it is required to have Panchayat Building with Full facility. So according to the feedback given by the villagers, Proper Panchayat Building is required in the village so that we have designed one Panchayat Building.

Limda village's population in year 2011 was **2363** & year 2011 population was **2608** so we have calculated total population by arithmetical increase method for year 2021.

Sr no	Census	Population
1	2001	2363
2	2011	2608

Table 10: Population of Limda Village

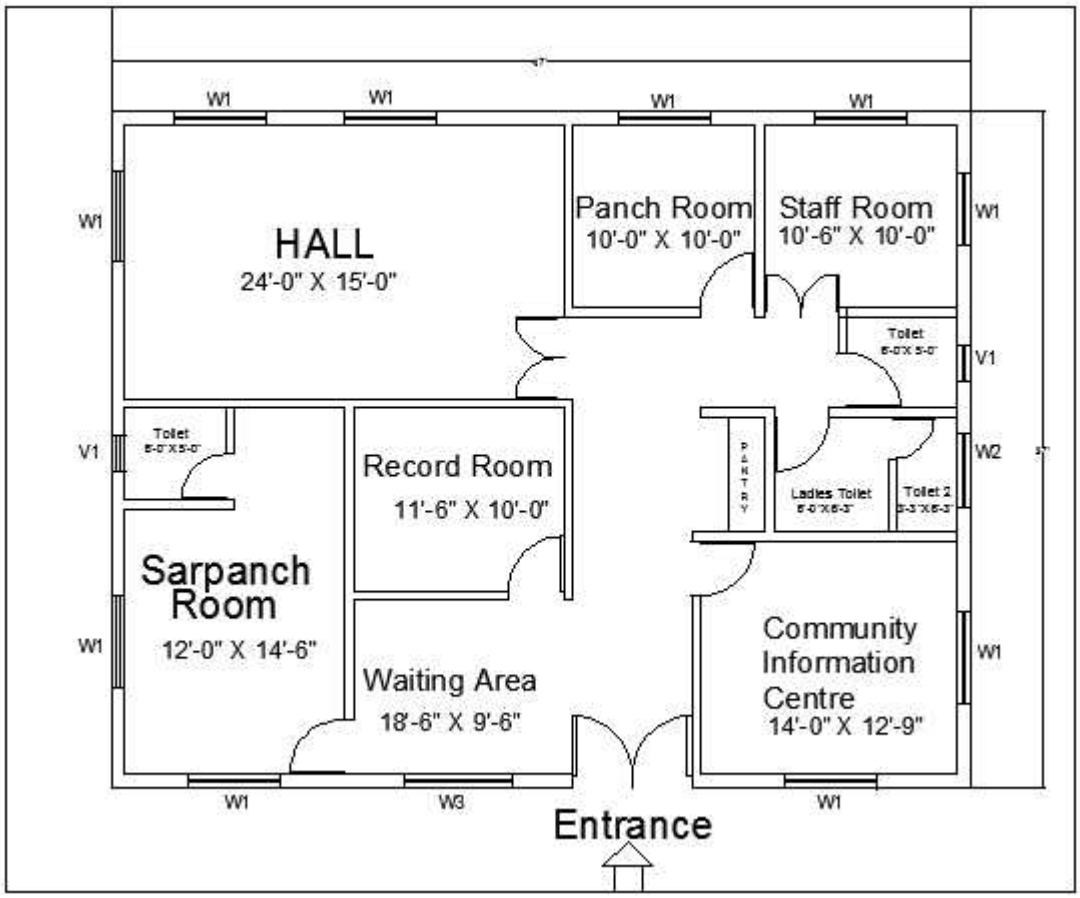
For Future forecasting Population
We have Arithmetic Method
Pn =Future Population
P=Present Population
i=average population of year
n=num of decade

Pn=P+ni
For 2021 Year
Pn = 2608+(1)x(245)
= 2608+245

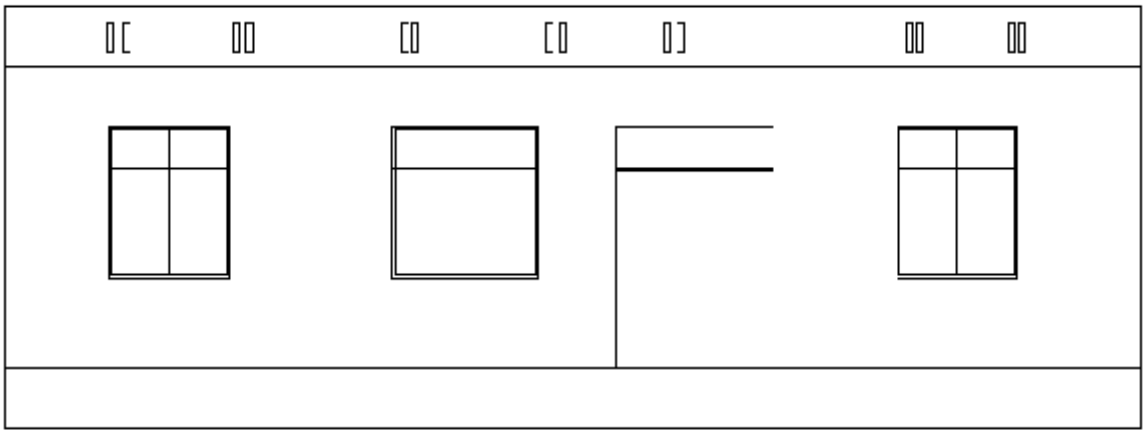
Pn =**2853**

In 2021 the population of Limda village will be 2853

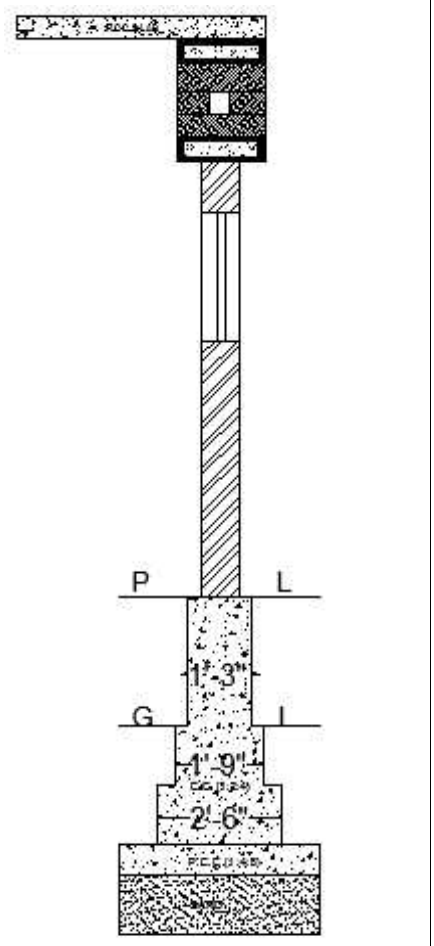
Proposed design of Panchayat Building



F-51 Plan of Panchayat Building



F-52 Elevation of panchayat Building



F-53 Section of Panchayat Building

Table 11: MEASUREMENT SHEET

Sr no	Description	Length (m)	Width (m)	Height (m)	Count (nos)	Total Quantity
1	D1	-	0.91	2.133	4	7.765
2	D2	-	0.91	2.011	1	1.830
3	D3	-	0.91	2.011	4	7.320
4	W1	-	1.74	1.82	2	6.333
5	W2	-	1.52	1.82	2	5.533
6	W3	-	0.91	1.82	1	1.656
7	W4	-	0.71	1.12	4	3.180
8	W5	-	0.60	1.01	1	0.606

9	WALL 9”	14.32	0.22	3	1	9.451
10	WALL 9”	11.27	0.22	3	1	7.438
11	FLOOR 36”	-	-	0.914	1	0.914
12	ROOF 6”	-	-	0.15	1	0.150
13	EXACAVATION	17.0	17.0	1.5	4	122.4
14	WALL 6”	10.8	10.8	0.7	1	1.134

Table 12: ABSTRACT SHEET

ITEM NO.	DESCRIPTION	TOTAL QNT.	PER	RATE	AMOUNT RS
1	D1	68.04	-	-	6100
2	D2	20.41	-	-	2000
3.	D3	51.55	-	-	6500
4.	W1	71.82	220	-	25,000
5.	W2	294	220	-	20,100
6	W3	1.656	220	-	9500
7	W4	3.180	110	-	20,550
8	W5	0.606	220	-	5000
9	WALL 9”	9.451	130	ft^2	1,55,000
10	WALL 9”	7.438	130	ft^2	1,41,000
11	FLOOR 36”	0.914	3500	m^3	71,990
12	ROOF 6”	0.150	3500	m^3	65,500
13	EXCAVATION	122.4	350	m^3	1500
14	WALL 6”	1.134	90	ft^2	50,000
15	PCC	15.2	3500	m^3	35,100
				Grand Total	=6,45,582 Rs

-The rates of their respective works provided in the abstract sheet along with quantities are inclusive of water charges, contractor’s profit, contingencies, utilities and labor charges.

So **Total cost** of **Panchayat Building** is **₹ 6,45,582**

8.1.3 Social Design (Civil): Community Hall

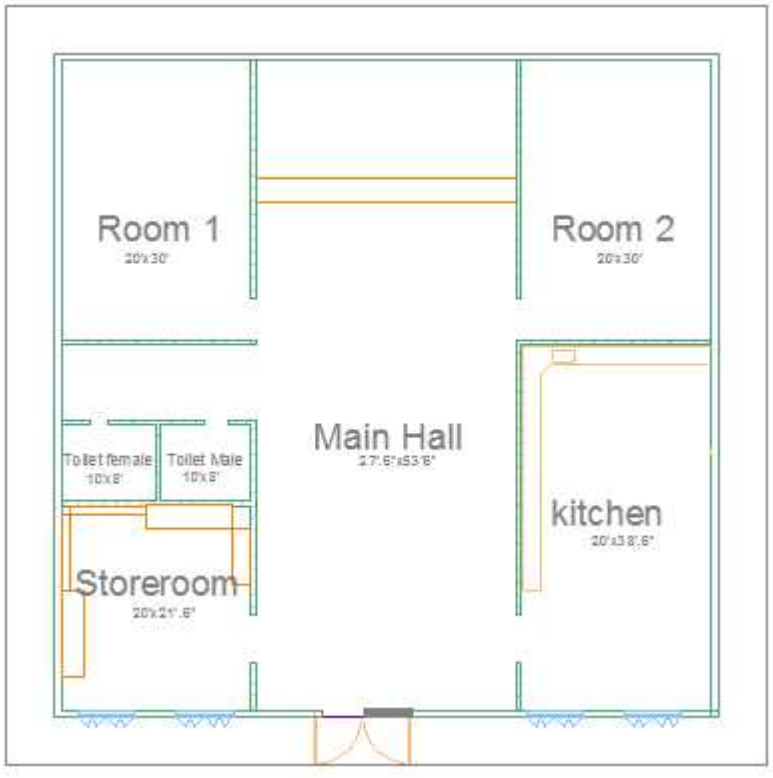
Scenario:

Community hall is a public location where members of a community gather for group activities, events, festivals and social purpose. They may sometimes be open for whole community or for a specialized group example Mahila mandal hall. A community hall of village generally consists of a hall, storage or kitchen area and washroom.

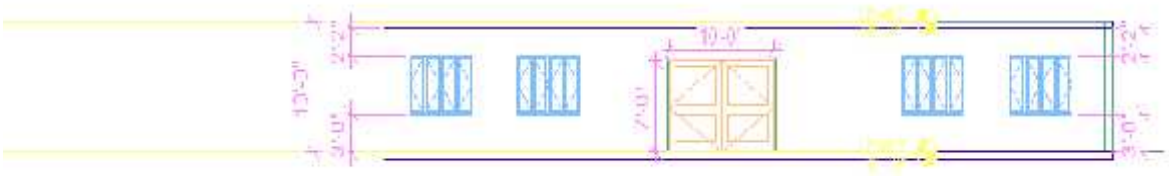
Existing Situation in Limda :

In the Limda village there is no community hall so that according to the village population there should be one community hall in village. It is a public location where members of a community gather for group activities, events, festivals and social purpose. A community hall of village consists of a hall, storage or kitchen area and washroom.

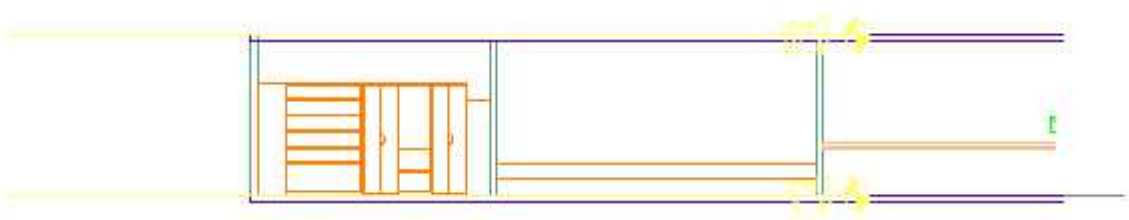
Proposed Design of Community Hall



F-54 Plan of Community Hall



F-55 Community Hall Elevation



F-56 Community Hall Section

Table 13: Measurement Sheet

Sr no	Description	Length (m)	Width (m)	Height (m)	Count (nos)	Total Quantity
1	D1	-	0.91	2.133	4	7.765
2	D2	-	0.91	2.011	1	1.830
3	D3	-	0.91	2.011	4	7.320
4	W1	-	1.74	1.82	2	6.333
5	WALL 9”	20.43	0.22	3	1	13.48
6	WALL 9”	17.67	0.22	3	1	11.66
7	FLOOR 36”	-	-	0.914	1	0.914
8	ROOF 6”	-	-	0.150	1	0.150
9	EXACAVATION	17.0	1.2	1.5	4	122.4
10	WALL 6”	10.8	0.15	0.7	1	1.134

Table 14: ABSTRACT SHEET:

ITEM NO.	DESCRIPTION	TOTAL QNT.	PER	RATE	AMOUNT RS
1	D1	68.04	-	-	6100
2	D2	20.41	-	-	2000
3.	D3	51.55	-	-	6500
4.	W1	71.82	220	-	25,000
5	WALL 9”	9.451	130	ft^2	1,95,000
6	WALL 9”	7.438	130	ft^2	1,71,000
7	FLOOR 36”	0.914	3500	m^3	71,990
8	ROOF 6”	0.150	3500	m^3	65,500
9	EXCAVATION	122.4	350	m^3	1500
10	WALL 6”	1.134	90	ft^2	50,000
11	PCC	15.2	3500	m^3	35,100
				Grand Total	=6,29,690 Rs

-The rates of their respective works provided in the abstract sheet along with quantities are inclusive of water charges, contractor’s profit, contingencies, utilities and labor charges.

So Total cost of **Community Hall** is **₹6,29,690**.

8.1.4 Socio-Cultural design (Civil): Library

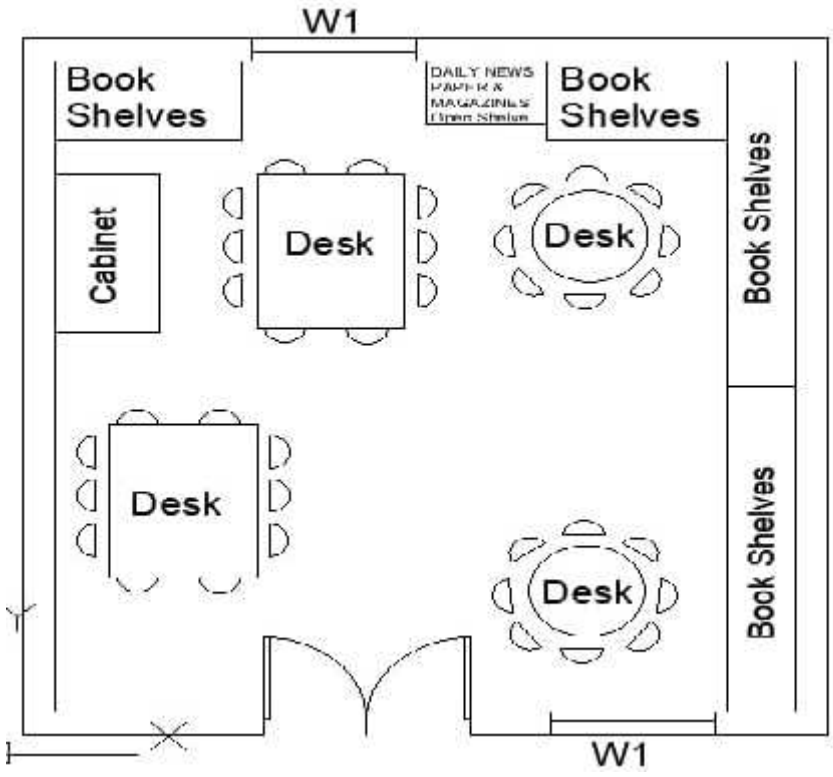
Scenario:

The prime purpose of a library is to provide access to knowledge and information. Libraries help the students to develop good reading and study habits. Public officials use libraries for research and public issues. The libraries provide information and services that are essential for learning and progress

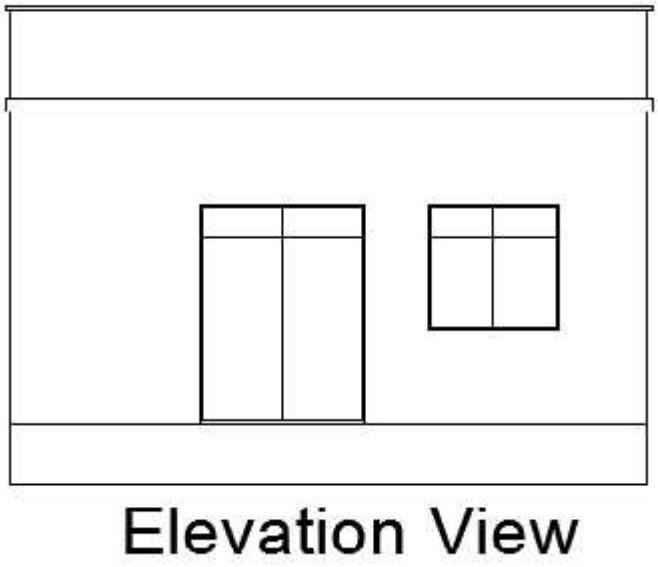
Existing Situation in Limda:

In the Limda village there is no Library So we have designed a Library as socio-cultural design or structure of the village. Library is useful for the student as well as Villagers

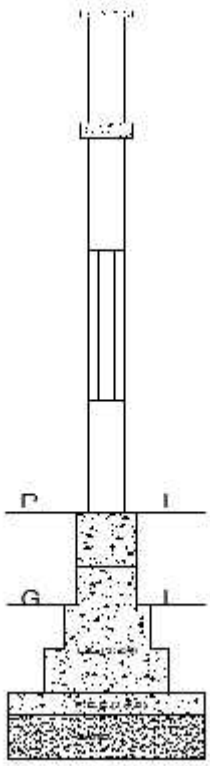
Proposed Design of Library



F-57 Plan of Library



F-58 Elevation of Library



F-59 Section of Library

Table 15: MEASUREMENT SHEET

Sr no	Description	Length (m)	Width (m)	Height (m)	Count (nos)	Total Quantity
1	D1	-	0.91	2.133	4	7.765
2	D2	-	0.91	2.011	1	1.830
3	D3	-	0.91	2.011	4	7.320
4	W1	-	1.74	1.82	2	6.333
5	WALL 9”	5.79	0.22	3	1	3.821
6	WALL 9”	6.40	0.22	3	1	4.224
7	FLOOR 36”	-	-	0.914	1	0.914
8	ROOF 6”	-	-	0.150	1	0.150
9	EXACAVATION	17.0	1.2	1.5	4	122.4
10	WALL 6”	10.8	0.15	0.7	1	1.134

Table 16: ABSTRACT SHEET:

ITEM NO.	DESCRIPTION	TOTAL QNT.	PER	RATE	AMOUNT RS
1	D1	7.765	-	-	6100
2	D2	1.830	-	-	2000
3.	D3	7.320	-	-	6500
4.	W1	6.333	220	-	25,000
5	WALL 9”	3.821	130	ft^2	1,30,000
6	WALL 9”	4.224	130	ft^2	1,21,000
7	FLOOR 36”	0.914	3500	m^3	71,990
8	ROOF 6”	0.150	3500	m^3	65,500
9	EXCAVATION	122.4	350	m^3	1500
10	WALL 6”	1.134	90	ft^2	50,000
11	PCC	15.2	3500	m^3	35,100
				Grand Total	=5,14,690 Rs

-The rates of their respective works provided in the abstract sheet along with quantities are inclusive of water charges, contractor's profit, contingencies, utilities and labor charges.

So Total cost of **Library** is **₹5,14,690.**

8.1.5 Smart Village Design (Civil): CCTV Surveillance Building

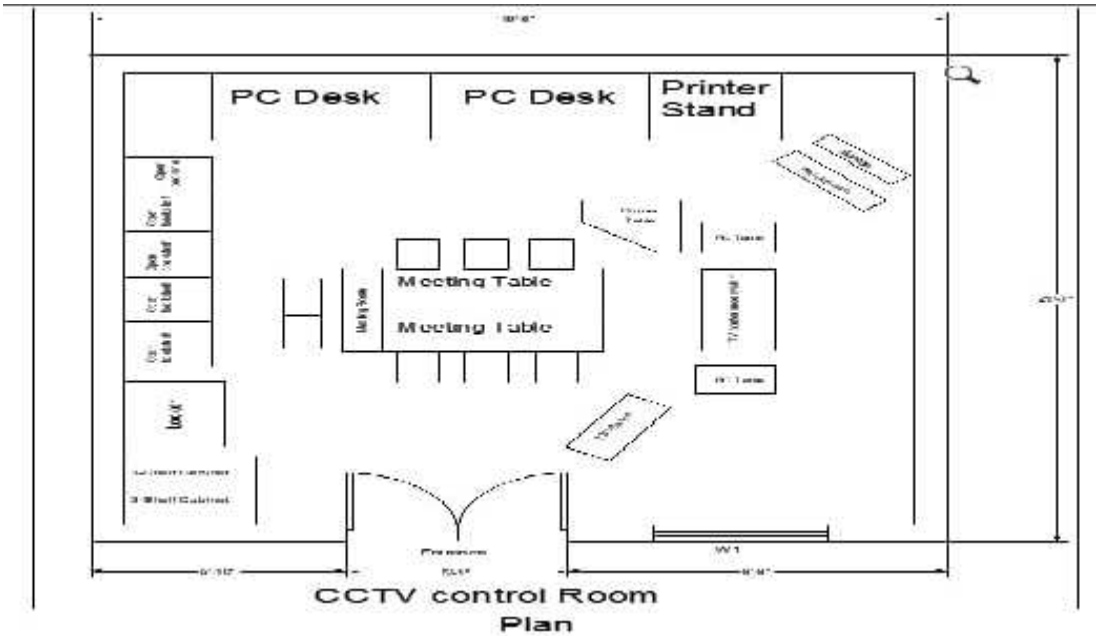
Scenario:

Control rooms sits at the heart of a security installation, bringing together video surveillance, access control and fire control into one room. It serves as a central space where a large physical facility or physically dispersed service can be monitored and controlled by security guards CCTV will help for Security and Safety Purpose in Village.

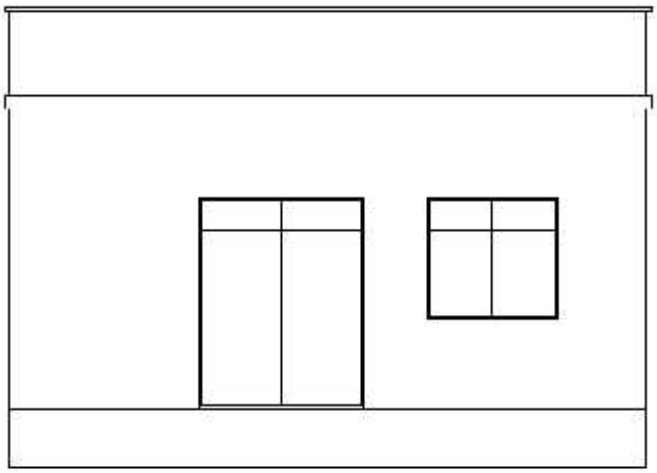
Existing Condition in Limda Village:

In Limda Village there is No surveillance control Rooms So For the Purpose of Safety and Security in the Village we have proposed one design of CCTV Surveillance Building.

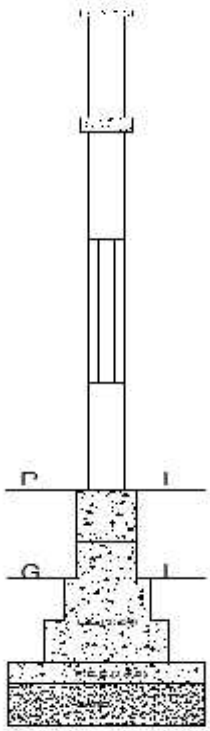
Proposed Design of CCTV Surveillance Building



F-60 Plan of CCTV Surveillance Building



F-61 Elevation of CCTV Surveillance Building



F-62 Section of CCTV Surveillance Building

Table 17: MEASUREMENT SHEET

Sr no	Description	Length (m)	Width (m)	Height (m)	Count (nos)	Total Quantity
1	D1	-	0.91	2.133	4	7.765
2	D2	-	0.91	2.011	1	1.830
3	D3	-	0.91	2.011	4	7.320
4	W1	-	1.74	1.82	2	6.333
5	WALL 9”	5.79	0.22	3	1	3.821
6	WALL 9”	6.40	0.22	3	1	4.224
7	FLOOR 36”	-	-	0.914	1	0.914
8	ROOF 6”	-	-	0.150	1	0.150
9	EXACAVATION	17.0	1.2	1.5	4	122.4
10	WALL 6”	10.8	0.15	0.7	1	1.134

Table 18: ABSTRACT SHEET:

ITEM NO.	DESCRIPTION	TOTAL QNT.	PER	RATE	AMOUNT RS
1	D1	7.765	-	-	6100
2	D2	1.830	-	-	2000
3.	D3	7.320	-	-	6500
4.	W1	6.333	220	-	25,000
5	WALL 9”	3.821	130	ft^2	1,30,000
6	WALL 9”	4.224	130	ft^2	1,21,000
7	FLOOR 36”	0.914	3500	m^3	71,990
8	ROOF 6”	0.150	3500	m^3	65,500
9	EXCAVATION	122.4	350	m^3	1500
10	WALL 6”	1.134	90	ft^2	50,000
11	PCC	15.2	3500	m^3	35,100
				Grand Total	=5,14,690 Rs

-The rates of their respective works provided in the abstract sheet along with quantities are inclusive of water charges, contractor’s profit, contingencies, utilities and labor charges.

So Total cost of **CCTV Survelliance Building** is **5,14,690 ₹**

8.1.6 Heritage Village Design (Civil): Club House

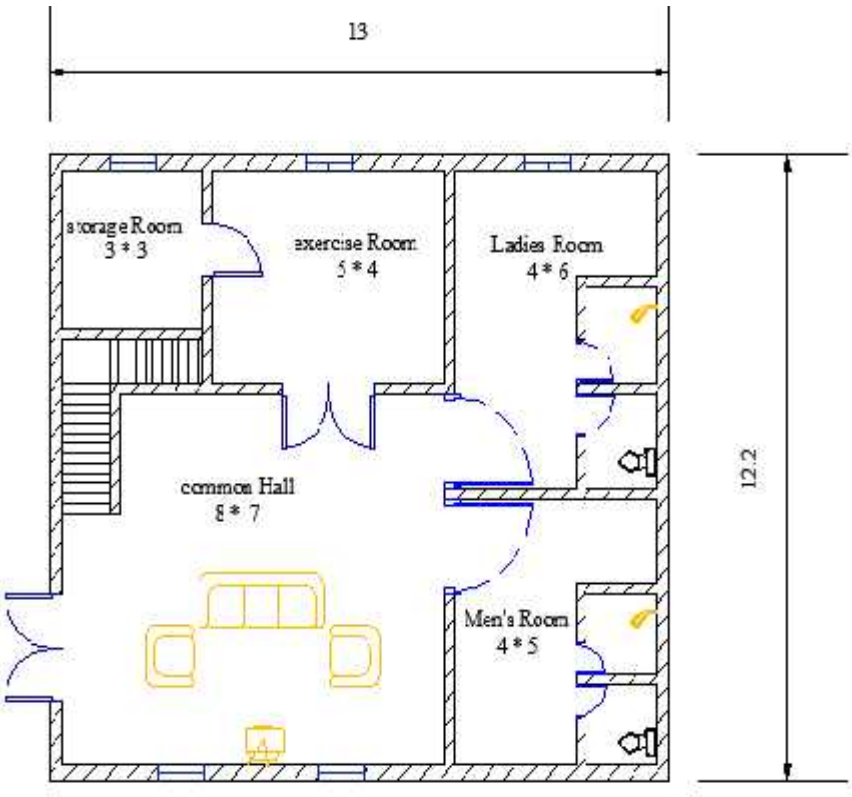
Scenario

A clubhouse is the hub of all recreational activities in one roof. It is a solution for all recreation and fitness activities of a community.

Existing Situation in Limda Village:

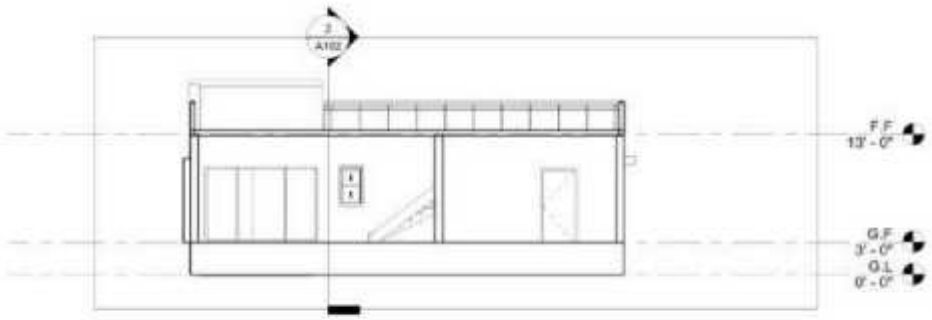
In the Limda village there is no any recreational area existing. So that for the better living standard and entertainment purpose we have proposed one design of Club House as recreational area in the Village.

Proposed Design of Club House



F-63 Plan of Club House

F-64 Elevation Club House



F-65 Section Club House

Table 19: MEASUREMENT SHEET

Sr no	Description	Length (m)	Width (m)	Height (m)	Count (nos)	Total Quantity
1	D1	-	0.91	2.133	4	7.765
2	D2	-	0.91	2.011	1	1.830
3	D3	-	0.91	2.011	4	7.320
4	W1	-	1.74	1.82	2	6.333
5	W2	-	1.52	1.82	2	5.333
6	W3	-	0.91	1.82	1	1.656
7	W4	-	0.71	1.12	1	3.180
8	W5	-	0.60	1.01	1	0.606

9	WALL 9”	13.0	0.22	3	1	8.580
10	WALL 9”	12.2	0.22	3	1	8.052
11	FLOOR 36”	-	-	0.914	1	0.914
12	ROOF 6”	-	-	0.150	1	0.150
13	EXACAVATION	17.0	1.2	1.5	4	122.4
14	WALL 6”	10.8	0.15	0.7	1	1.134

Table 20: ABSTRACT SHEET:

ITEM NO.	DESCRIPTION	TOTAL QNT.	PER	RATE	AMOUNT RS
1	D1	7.765	-	-	6100
2	D2	1.830	-	-	2000
3	D3	7.320	-	-	6500
4	W1	6.333	220	-	25,000
5	W2	5.533	220	-	20,100
6	W3	1.656	220	-	9500
7	W4	3.180	220	-	20,550
8	W5	0.606	220	-	5000
9	WALL 9”	9.451	130	ft^2	1,30,000
10	WALL 9”	7.438	130	ft^2	1,21,000
11	FLOOR 36”	0.914	3500	m^3	71,990
12	ROOF 6”	0.150	3500	m^3	65,500
13	EXCAVATION	122.4	350	m^3	1500
14	WALL 6”	1.134	90	ft^2	50,000
15	PCC	15.2	3500	m^3	35,100
				Grand Total	=6,45,582 Rs

-The rates of their respective works provided in the sheet along with quantities are inclusive of water charges, contractor’s profit, contingencies, utilities and labor charges.

So Overall cost of **Club House** is **6,45,582₹**

8.2 Reason for Students Recommending this Design:

-These are some reason, so that we have recommended this design.

-**Medical Store**: To satisfy the requirements of medicines to every Villagers we have proposed One design of Medical Store in Limda Village.

-**Panchayat Building**: To Provide Basic Governing Institute in Village and for administrative functions We Have Proposed One Design of Panchayat Building in Limda Village.

-**Community Hall**: To organize Village Events Easily for the Villagers We have proposed One design of Community Building in the village.

-**Library**: To provide access to Knowledge and Information to Villagers and Help the Student to develop Good Learning Habits We have proposed one design of Library in Limda Village

-**CCTV Surveillance Building**: For the Purpose of Safety and Security in the Village we Have propsed one design of CCTV control Room.

-**Club House:** In the Limda village there is no any recreational area existing. So that for the better living standard and entertainment purpose we have proposed one design of Club House as recreational area in the Village.

8.3 About designs Suggestions / Benefit of the villagers

1.Medical Store:

The Population of limda Village is 2608 in 2011 as per Census and it is required to have Medical store for medicines so that we have designed one Medical store for the urgent requirement of medicines for the villagers.

2.**Panchayat Building**:

In Limda Village for the Basic Governing Institute in Village and for administrative functions. So that we Have Proposed One Design of Panchayat Building in Limda Village For Smooth Functioning of Government administration.

3. Community Hall :

In the Village Limda there should be a Community hall in a public location so that members of a community gather for group activities, events, festivals and social purpose. SO We Have finalized one design for community Hall

4. Library:

In Limda Village there is no Library So it is require To have one library which provide access to Knowledge and Information to Villagers and Help the Student to develop Good Learning Habits We have finalized one design of Library in Limda Village.

5. CCTV Surveillance Building:

In Limda Village as per Smart Village We should Have CCTV Surveillance Building For the Purpose of Safety and Security in the Village we Have proposed one design of CCTV Surveillance Building

6. Club House:

In the Limda village there is no any recreational Park existing. So that for the better living standard and entertainment purpose we have proposed one design of Club house as recreational area in the Village

8.4 About Maintenance:

Maintenance can help:
- Prevent unnecessary damage from the weather or from general usage
- Prevent the process of decay and degradation.
- Ensure continued compliance with statutory requirements.
- Determine the causes of defects and so help prevent re-occurrence or repetition.
- Prevent the process of decay and degradation.
- **Maintain structural stability and safety**

8.5 Common maintenance tasks include:

-Exterior painting and plastering
-Landscaping and gardening.

-Paving repairs
-Window and door repairs
-Debris/rubbish removal and clearance
-Jet washing with chemical cleaning agents to remove fungal stain or mould
-Gutter clearance and repair.
-Carpentry
-Lighting repairs
-Re-plastering and plaster repairs
-Tiling
-Carpeting and flooring
-Plumbing
-Repairing cracking or leaning walls

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

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

1. Sustainable design: Rain water harvesting

In Limda Village we are planning to propose the design of Rain water Harvesting System in village it can be an additional source of water will be available which could be used at the time of emergency or water shortage by implementing the Rain Water Harvesting system in the village households.

2**. Physical Design:** Bio gas plant

In the Limda village there is no provision to control the waste produced by animals so we will proposed a design of biogas plant due to which the organic waste is converted into gas which can be used as fuel for domestic purposes as well as other purposes.

3. Social Design: Public Toilet

In the Limda village the design of public toilet is important for the people living in the village from social cultural point of view and For the Sanitation and health of community.

4. Socio-Cultural Design: Sakhi Mandal

In the Limda Village we are planning to design a Hall for Sakhi Mandals,Sakhil Mandal are Mutual aid groups created under the government to empower women in Rural areas through various medium.

5. Smart Village Design: Cybercafe

In limda village we are planning to propose design of Cyber Café which will help to provide Access to internet connectivity to villagers, students and also provide Computer related tasks.

6. **Heritage Design:** Entrance Gate

In Limda village we are planning to have an entrance Gate in our heritage design.

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

Besides smart cities, it is necessary for us to have **smart village** for, sustainable and inclusive future of emerging India. **Smart Villages** are the need of the hour as development is needed for both rural and urban areas for better livelihood and technology. To convert any village into Smart and Clean Village, use of more and more renewable energy resources is an option.

Vishwakarma yojana an approach towards Rurbanisation means to provide all the basic necessities of the urban areas to the rural people by conserving their soul natural surroundings.

We have visited our Allocated Village Limda that visit helped us to know about Various Situation and Problems in Village and with the help of techno-economic survey and gap analysis and also studying / surveying that really help us to Understand as well as find the solutions needed to the village.

In the Limda village, the basic requirements like community hall, any recreational area, RO water Plant etc did not exist so by implanting given design proposals, all the missing amenities can be provided which will stop the migration of rural people towards the urban area and Improve Lifestyle and standard of living.

The amenities designed under this Vishwakarma project phase VIII will be helpful for better development of the village as physically as well as socially, which improves the overall lifestyle of people along with nation with preserving nature bit by bit. This will help in developing Smart villages in sustainable manner, reduce migration from villages and prevent the cities from the urban pressure. This should lead to some rethinking about the meaning of efficiency beyond the usual conceptions of economic or technical efficiency. Indeed, employment expansion is at least as important as growth in productivity. In a sense, both represent the utilization of labor as a resource.

These Project Not only Helped to Develop the Village but it also helped our Team to Gain the Real Time experience in this pandemic.

Chapter 11.
References refereed for this project

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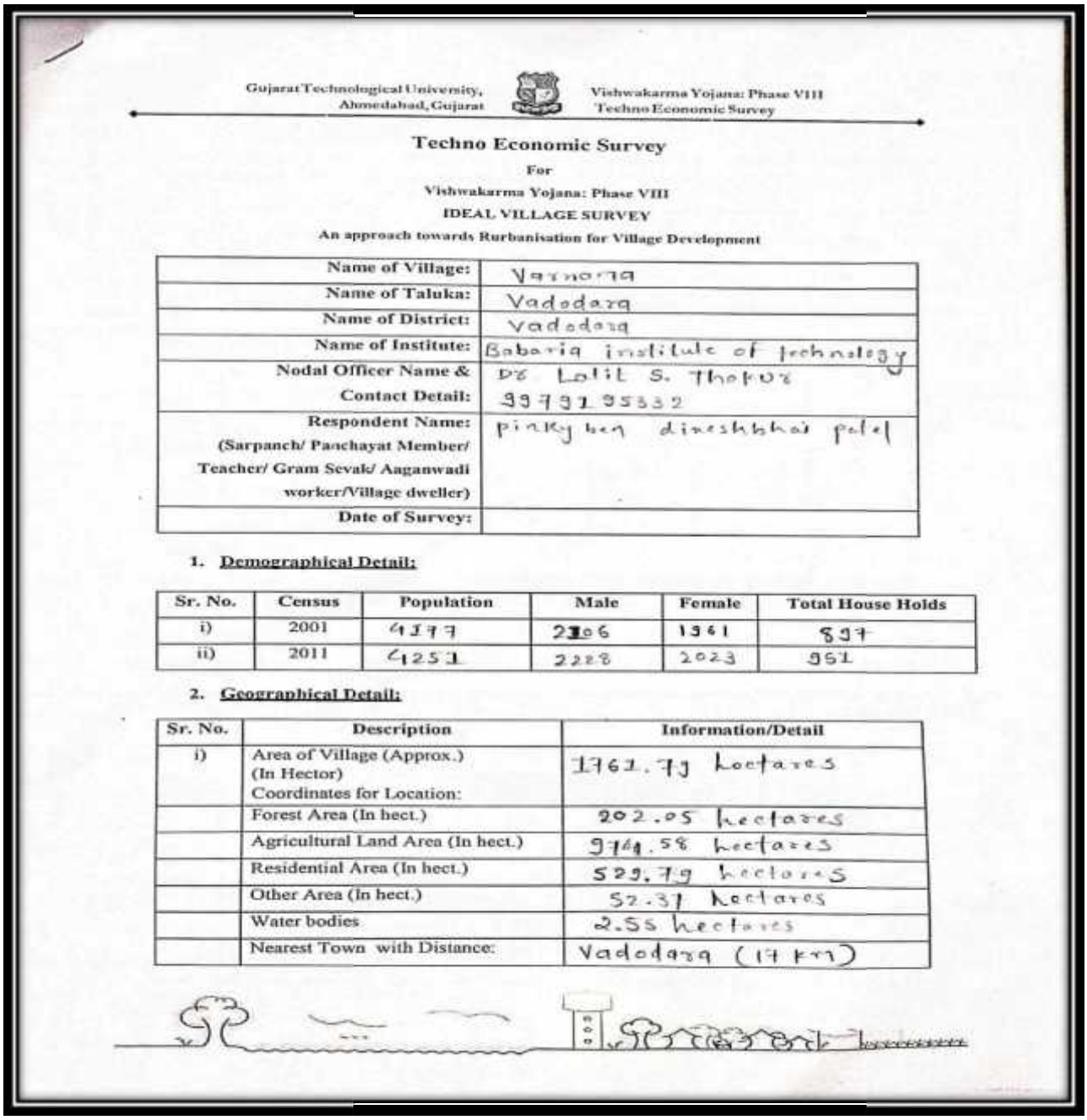
Chapter 12.

ANNEXURE ATTACHED

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



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Techno Economic Survey

Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	Varnama
Name of Taluka:	Vadodara
Name of District:	Vadodara
Name of Institute:	Babaria institute of technology
Nodal Officer Name & Contact Detail:	Dr Lalit S. Thakur 9979195332
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	pinky ben dineshbhai patel
Date of Survey:	

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	4177	2306	1361	897
ii)	2011	4251	2228	2023	951

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	1761.79 hectares
	Forest Area (In hect.)	202.05 hectares
	Agricultural Land Area (In hect.)	974.58 hectares
	Residential Area (In hect.)	529.79 hectares
	Other Area (In hect.)	52.37 hectares
	Water bodies	2.55 hectares
	Nearest Town with Distance:	Vadodara (17 km)

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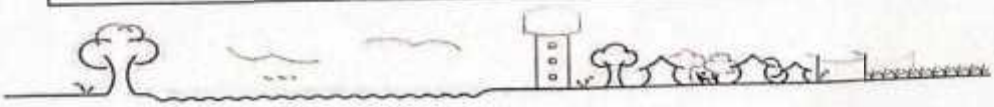
3. **Occupational Details:**

Name of Three Major Occupation groups in Village	1. Farming 2. Laborers 3. Dairy

4. **Physical Infrastructure Facilities:**

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



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E.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road		yes		Bitumin Road
	Main road	NH-48	yes		
	Internal streets		yes		Pucc Road
	Nearest NH/SH/MDR/ODR Dist. in kms.	NH-48 Road touched	yes		Bitumic Road
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Varnama railway station	yes		
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Varnama Bus stop	yes		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto/ Chhakda private vehicle	yes		
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Government more than 6 hrs.	yes		
	Power supply for Domestic Use	24 hrs.	yes		
	Power supply for Agricultural Use		yes		
	Power supply for Commercial Use		yes		
	Road/ Street Lights		yes		

	Electrification in Government Buildings/ Schools/ Hospitals		yes		
	Renewable Energy Source Facilities (Y/ N)	Solar panel	yes		
	LED Facilities		yes		
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.			No	
	Location Condition			No	
	Community Toilet (With bath/ without bath facilities)			No	
	Solid & liquid waste Disposal system available	Daily Basis waste Collection	yes		
	Any facility for Waste collection from road	Door to Door by tractor	yes		
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Canal and pond	yes		
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	80% pucca 20% kutchha	yes		

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

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K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	primary Health Centre Varnama	yes		
	Private Clinic/Private Hospital/ Nursing Home	Private clinic	yes		
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
L.	**Education Facilities:**				
	Aaganwadi/ Play group		yes		
	Primary School		yes		
	Secondary school		yes		
	Higher sec. School		yes		
	ITI college/ vocational Training Center			No	
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	Baboria Institute of Technology	yes		
	If any of the above Facility is not available in village than approx. distance from village: ...3....kms.				
Suggestions if any:					
M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location: Varnama		yes		

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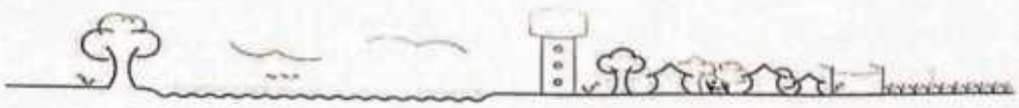
	Condition: Good				
	Public Library (With daily newspaper supply: Y/N) Location: Varnama Condition: Good	Daily Newspaper Supply	yes		
	Public Garden Location: Condition:			No	
	Village Pond Location: varnama Condition: Good		yes		
	Recreation Center Location: Condition:			No	
	Cinema/ Video Hall Location: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



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

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

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

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	No

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, there is no requirement of repair & maintenance	Good condition
2.	Additional Information/ Requirement	No	
	Daily Basis waste collection		

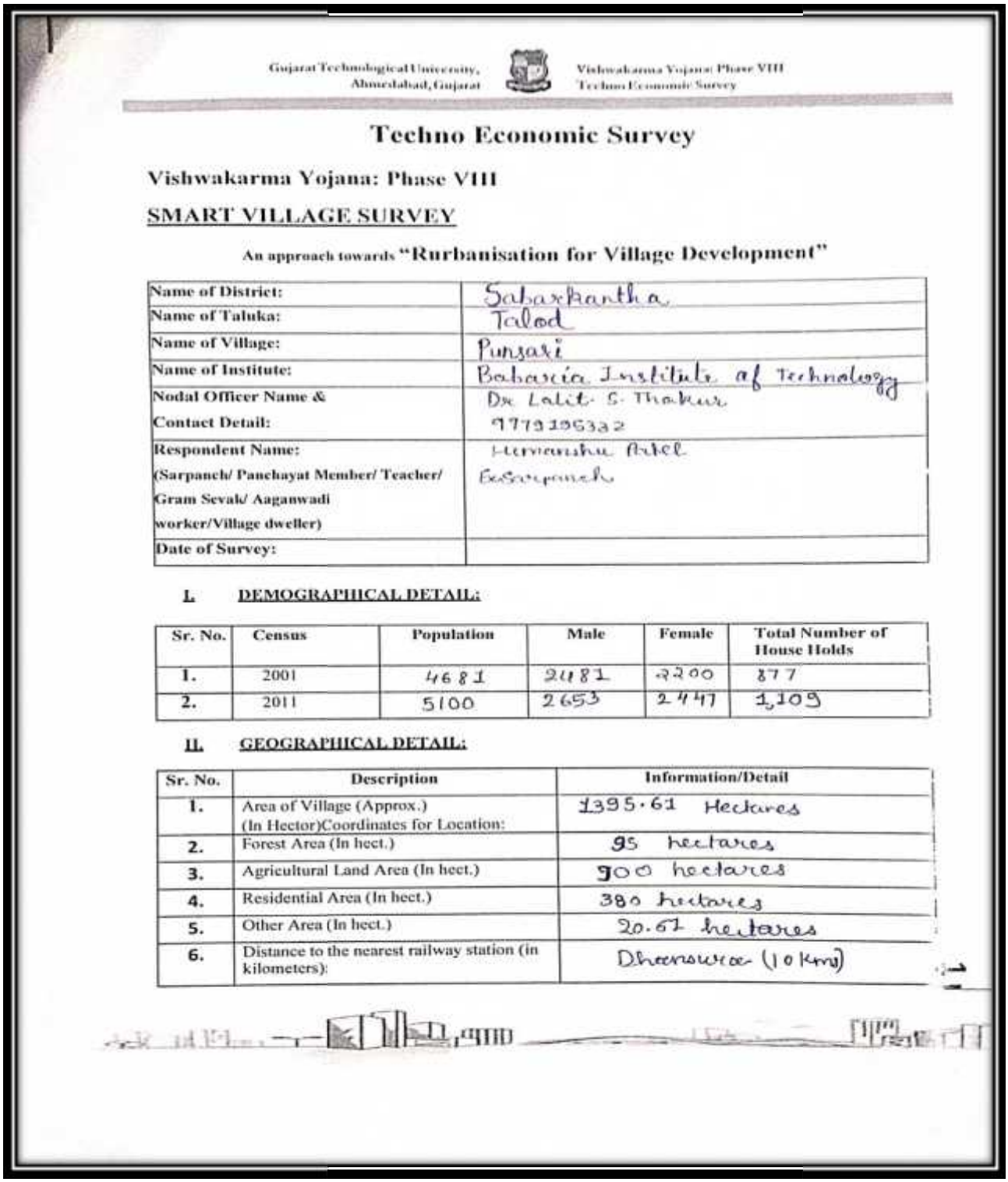
9. Smart Village Proposal Design

Sr. No.	Descriptions	Information/ Detail	Remarks
1.		No	

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

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

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



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Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

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

Name of District:	Sabarkantha
Name of Taluka:	Talod
Name of Village:	Punsari
Name of Institute:	Babaria Institute of Technology
Nodal Officer Name & Contact Detail:	Dr Lalit S Thakur 9979195332
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Hemanshu Patel Ex-Sarpanch
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	4681	2481	2200	877
2.	2011	5100	2653	2447	1,109

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1395.61 Hectares
2.	Forest Area (In hect.)	95 hectares
3.	Agricultural Land Area (In hect.)	900 hectares
4.	Residential Area (In hect.)	380 hectares
5.	Other Area (In hect.)	20.61 hectares
6.	Distance to the nearest railway station (in kilometers):	Dhansura (10 Km)

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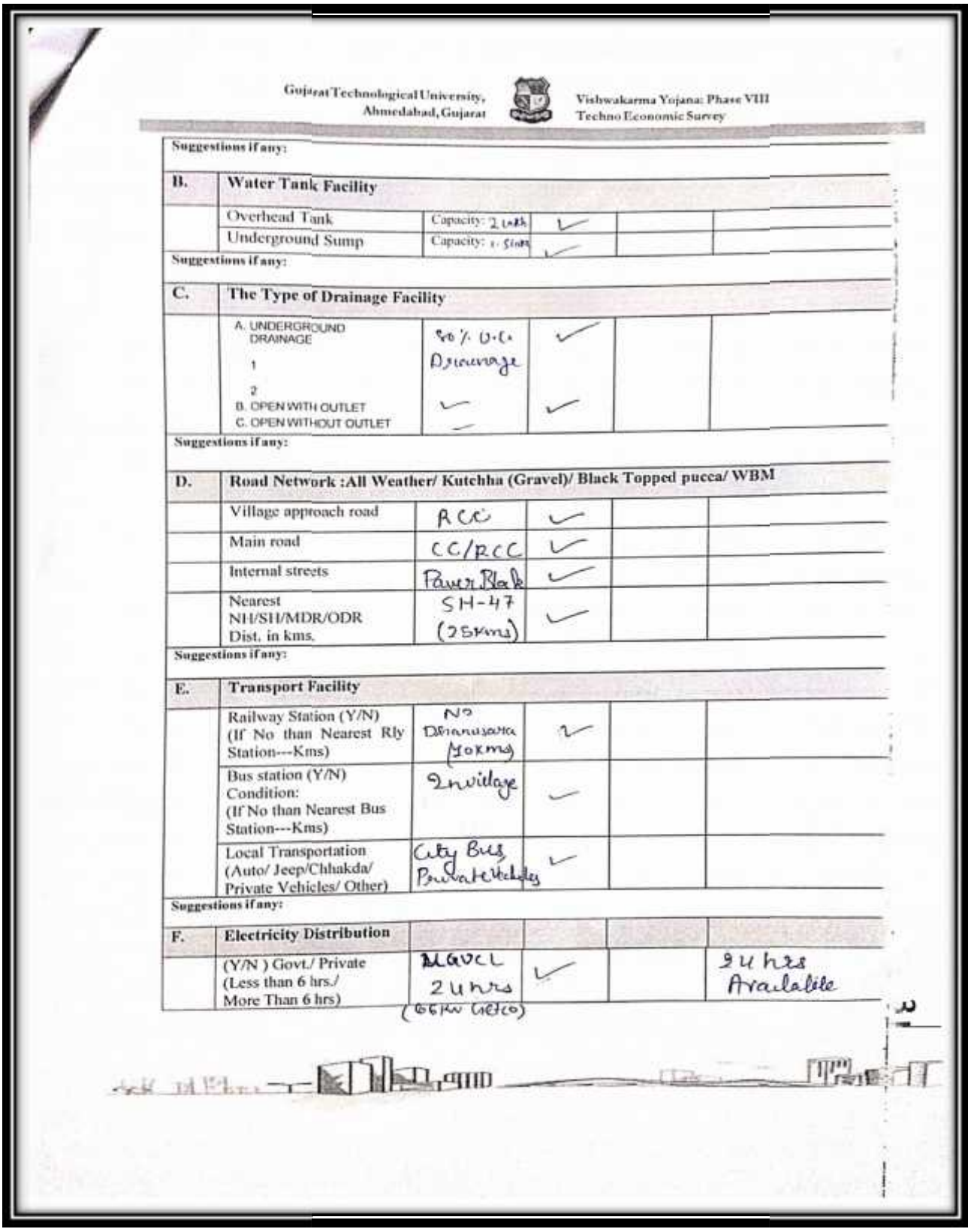
7.	Name of Nearest Town with Distance:	Talod (24 kms)
8.	Distance to the nearest bus station (in kilometers):	In Village
9.	Whether village is connected to all road for the any facility or town or City?	Yes

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Agriculture Farming
	2.	Dairy
	3.	Animal Husbandary
Major crops grown in the village:	1.	Pearlmillet / Bajra
	2.	Wheat
	3.	Ground nut

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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



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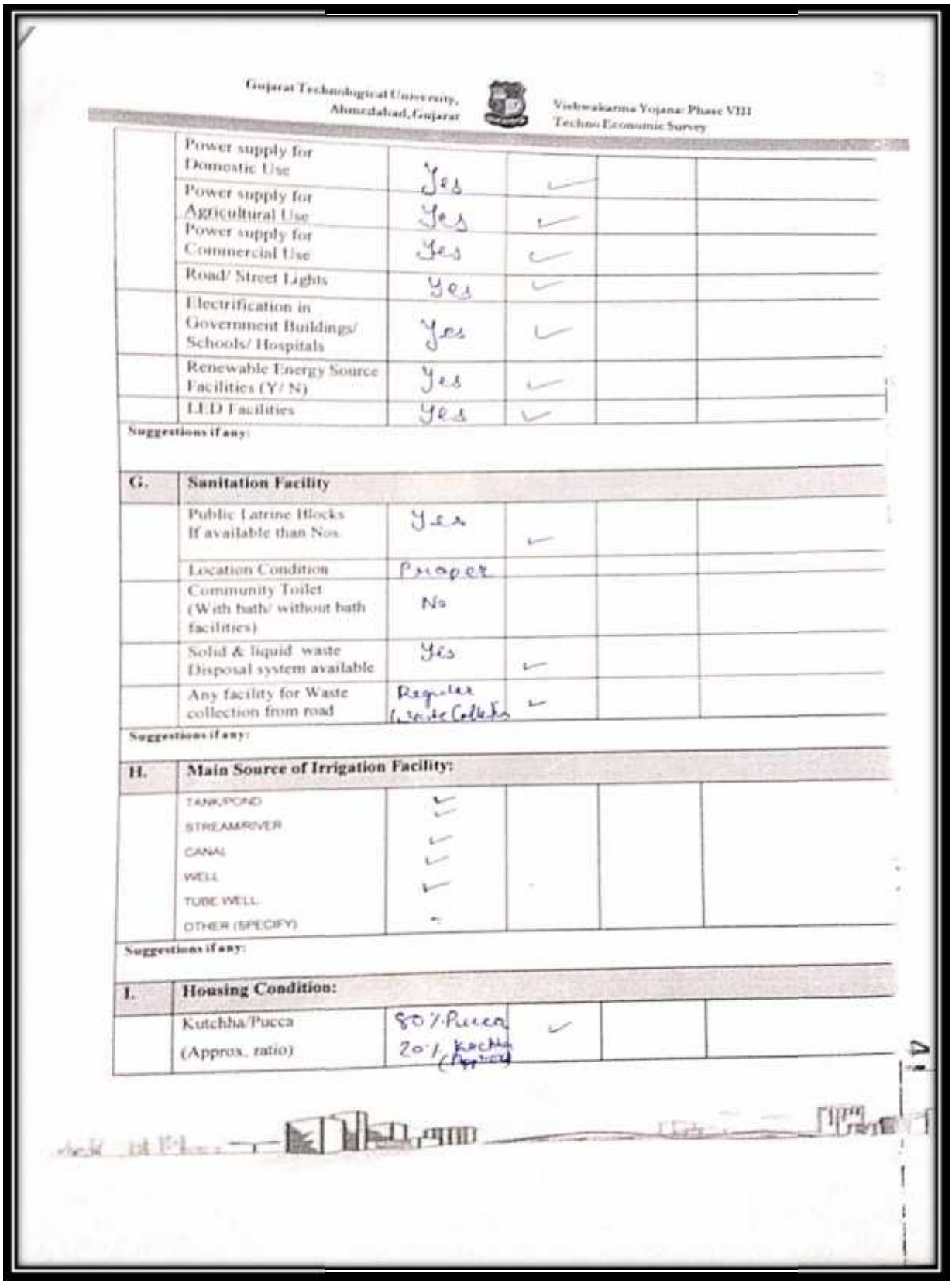
Suggestions if any:						
B.	**Water Tank Facility**					
	Overhead Tank	Capacity: 2 Lakh	✓			
	Underground Sump	Capacity: 1 Lakh	✓			
Suggestions if any:						
C.	**The Type of Drainage Facility**					
	A. UNDERGROUND DRAINAGE	80% U.G. Drainage	✓			
	1					
	2					
	B. OPEN WITH OUTLET	✓	✓			
	C. OPEN WITHOUT OUTLET	—				
Suggestions if any:						
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**					
	Village approach road	RCC	✓			
	Main road	CC/RCC	✓			
	Internal streets	Paver Block	✓			
	Nearest NH/SH/MDR/ODR Dist. in kms.	SH-47 (25kms)	✓			
Suggestions if any:						
E.	**Transport Facility**					
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No Dhanusara 40kms	✓			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	2 in village	✓			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	City Bus, Private Vehicles	✓			
Suggestions if any:						
F.	**Electricity Distribution**					
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	MGVCL 24 hrs (66KV GETCO)	✓		24 hrs Available	



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	Power supply for Domestic Use	Yes	✓		
	Power supply for Agricultural Use	Yes	✓		
	Power supply for Commercial Use	Yes	✓		
	Road/ Street Lights	Yes	✓		
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
	Renewable Energy Source Facilities (Y/ N)	Yes	✓		
	LED Facilities	Yes	✓		

Suggestions if any:

G.	Sanitation Facility				
	Public Latrine Blocks If available than Nos	Yes	✓		
	Location Condition	Proper			
	Community Toilet (With bath/ without bath facilities)	No			
	Solid & liquid waste Disposal system available	Yes	✓		
	Any facility for Waste collection from road	Regular Waste Collection	✓		

Suggestions if any:

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

Suggestions if any:

I.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)	80% Pucca 20% Kachha	✓		

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	8	✓		
	Sub-Centre	1	✓		
	PHC	1	✓		
	BLOCK PHC				
	CHC/RH	–	–		
	District/ Govt. Hospital	1	✓		
	Govt. Dispensary	1	✓		
	Private Clinic	Yes	✓		
	Private Hospital/	Yes	✓		
	Nursing Home	No	–		
	AYUSH Health Facility	Yes	✓		
	sonography /ultrasound facility	No	–		
	If any of the above Facility is not available in village than approx. distance from village: ....20..kms. Taluka				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	yes	✓		
	Primary School	5 Yes	✓		
	Secondary school	1 Yes	✓		
	Higher sec. School	1 Yes	✓		
	ITI college/ vocational Training Center	NO			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	NO			
	If any of the above Facility is not available in village than approx. distance from village: 20 kms. Taluka				

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Suggestions if any:

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

If any of the above Facility is not available in village than approx. distance from village: 2.5...kms. Taluka

Suggestions if any:

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

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

Suggestions if any:

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

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

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

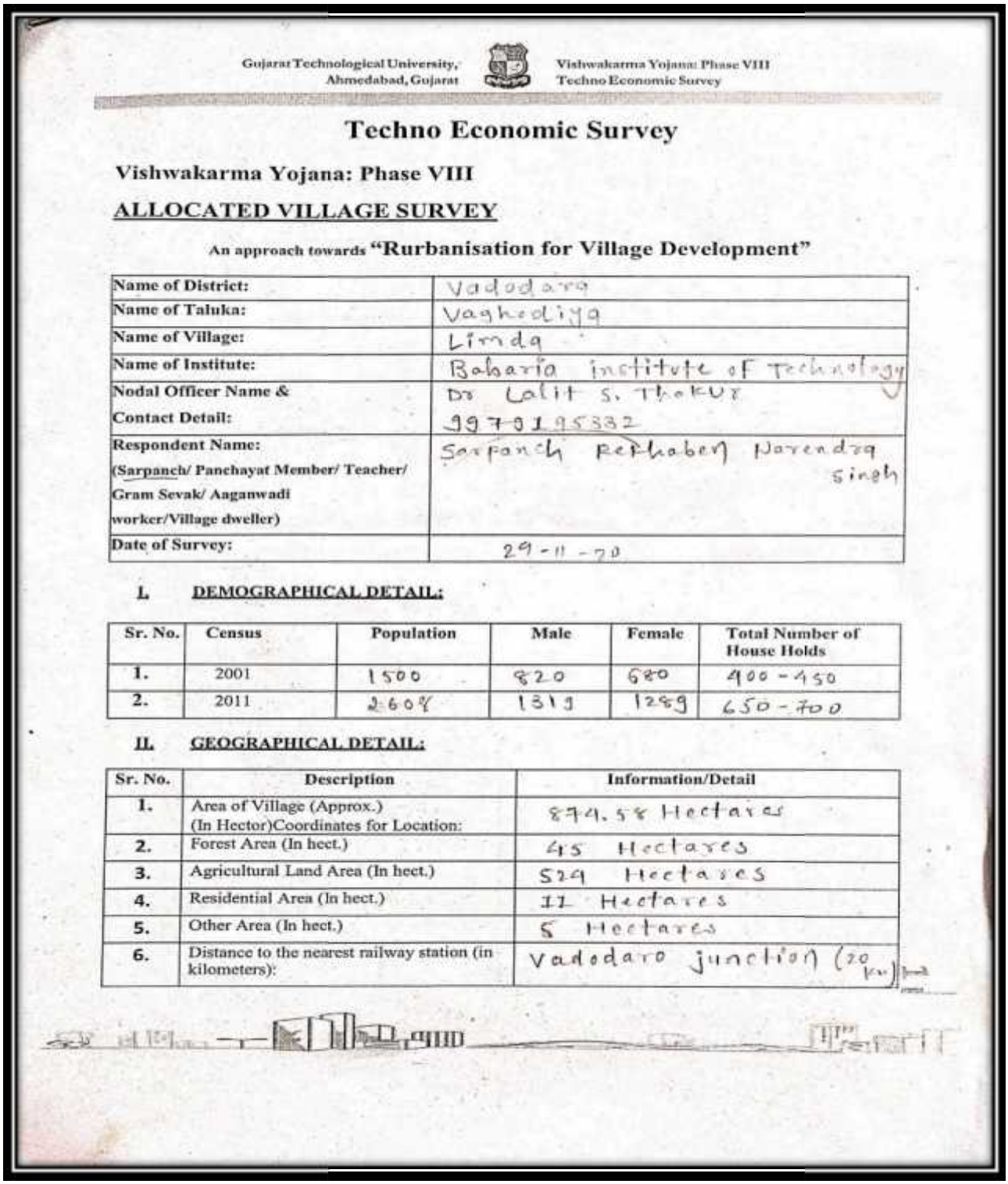
IX. Smart Village / Heritage Details

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

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

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

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



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

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Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

Name of District:	Vadodara
Name of Taluka:	Vaghodiya
Name of Village:	Limda
Name of Institute:	Babaria institute of Technology
Nodal Officer Name & Contact Detail:	Dr Lalit S. Thakur 9979195332
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Sarpanch Rekhaben Narendra singh
Date of Survey:	29-11-20

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	1500	820	680	400-450
2.	2011	2608	1319	1289	650-700

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	874.58 Hectares
2.	Forest Area (In hect.)	45 Hectares
3.	Agricultural Land Area (In hect.)	529 Hectares
4.	Residential Area (In hect.)	11 Hectares
5.	Other Area (In hect.)	5 Hectares
6.	Distance to the nearest railway station (in kilometers):	Vadodara junction (20 Km)

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7.	Name of Nearest Town with Distance:	Vaghodiya
8.	Distance to the nearest bus station (in kilometers):	Limda Bus stop
9.	Whether village is connected to all road for the any facility or town or City?	yes

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1. Farming 2. Dairy 3. Labours
Major crops grown in the village:	1. wheat 2. Dangee 3. Fooder grass

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

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	Other(Specify)Lake/ Pond	Narmada canal	yes		
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	yes		
	Underground Sump	Capacity:	yes		
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE			NO	
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road		yes		Bitumen Road
	Main road	2 km from village	yes		Bitumen Road
	Internal streets		yes		Pce Road
	Nearest NH/SH/MDR/ODR Dist. in kms.	10 km	yes		Vadodara district
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Vadodara junction		NO	
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)		yes		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto/ chhakda	yes		
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	more than 6 hrs	yes		

	Power supply for Domestic Use	24 hrs	yes		
	Power supply for Agricultural Use		yes		
	Power supply for Commercial Use		yes		
	Road/ Street Lights		yes		
	Electrification in Government Buildings/ Schools/ Hospitals		yes		
	Renewable Energy Source Facilities (Y/ N)			No	
	LED Facilities		yes		

Suggestions if any:

G.	Sanitation Facility				
	Public Latrine Blocks If available than Nos.			No	
	Location Condition			No	
	Community Toilet (With bath/ without bath facilities)			No	
	Solid & liquid waste Disposal system available	By Appol. Foundation	yes		
	Any facility for Waste collection from road	By Appolo Foundation	yes		

Suggestions if any:

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

Suggestions if any:

I.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)	Gov. kutchha 60% pucca			

V. SOCIAL INFRASTRUCTURAL FACILITIES:

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

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	If any of the above Facility is not available in village than approx. distance from village: ...5.....kms.				
Suggestions if any:					
L.	**Socio- Culture Facilities**	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)	Fair enough		yes	
	Public Library (With daily newspaper supply: Y/N)	Good	School	yes	
	Public Garden				No
	Village Pond		village	yes	
	Recreation Center				No
	Cinema/ Video Hall				No
	Assembly Polling Station	Fair enough		yes	
	Birth & Death Registration Office			yes	
If any of the above Facility is not available in village than approx. distance from village: .....kms.					
Suggestions if any:					
M.	**Other Facilities**	Condition	Location	Available (YES)	Available (NO)
	Post-office	Good		yes	
	Telecommunication Network/ STD booth				No
	General Market				No
	Shops (Public Distribution System)	Good		yes	
	Panchayat Building	Bad		yes	
	Pharmacy/Medical Shop				No
	Bank & ATM Facility	Good	village	yes	
	Agriculture Co-operative Society				No
	Milk Co-operative Soc.				No
	Small Scale Industries				No
	Internet Cafes/ Common Service Center/Wi Fi				No
	Youth Club				No
	Mahila Mandal			yes	

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

Suggestions if any:

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

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

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VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	New Renovation of school requir Health care Facility is not Available Maintenance require unavoidable	old structure old structure
2.	Additional Information/ Requirement	NO	
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?	Regular Sanitization was done once	

IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	yes development of village is possible by developing old. govt Building	

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

For Any Administration queries/ Difficulties:
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Email ID: rurban@gtu.edu.in

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તા.વાઘોડીયા. જિ.વડોદરા

12.4 Gap Analysis of the Allocated Village: Table21

VILLAGE GAP Analysis					
Village Facilities	**Planning Commission/UDPFI Norms**	**Village Name:**	**Limda** (Waghodia, Vadodara)		
		Population:2608			
		Existing	**Required as per Norms**	**Smart Village / Cities / Heritage Future Projection Design**	**Gap**
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	1	1	-	0
Primary School	Each Per 2500 population	1	1	-	0
Secondary School	Per 7,500 population	0	0	-	0
Higher Secondary School	Per 15,000 Population	0	0	-	0
College	Per 125,000 Population	1	0	-	+1
Tech. Training Institute	Per 100000 Population	0	0	-	0
Agriculture Research Centre	Per 100000 Population	0	0	-	0
Skill Development Center	Per 100000 Population	0	0	-	0
Health Facility				-	
Govt/Panchayat Dispensary or Sub PHC or Health Centre	Each Village	0	1	-	-1
Primary Health & Child Health Center	Per 20,000 population	0	0	-	0
Child Welfare and Maternity Home	Per 10,000 population	0	0	-	0
Multispecialty Hospital	Per 100000 Population	0	0	-	0
Public Latrines	1 for 50 families (if toilet is not there in home, especially for slum pockets & kutcha house)	1	1	-	0
Physical Infrastructure Facilities					
Transportation		**Adequate**		-	-
Pucca Village Approach Road	Each village	**Adequate**	Good road	-	-
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	**Adequate**	Pickup stand in village	-	-

Drinking Water (Minimum 70 lpcd)		**Adequate**	-	-	-
Over Head Tank	1/3 of Total Demand	**Adequate**	1	1	0
U/G Sump	2/3 of Total Demand	**Adequate**	1	1	0
Drainage Network - Open		**Adequate**	30% open	-	-
Drainage Network - Cover		**Adequate**	70% covered	-	-
Waste Management System		**Adequate**	-	-	-
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	0	1	-	-1
Public Library	Per 15000 Population	0	0	-	-1
Cremation Ground	Per 20,000 population	0	1	-	-1
Post Office	Per 10,000 population	1	1	-	0
Gram Panchayat Building	Each individual/group panchayat	1	1	-	0
APMC	Per 100000 Population	0	0	-	0
Fire Station	Per 100000 Population	0	0	-	0
Public Garden	Per village	0	1	-	-1
Police post	Per 40,000Population	0	0	-	0
Shopping Mall : Shops are available in village					
Electrical Design					
Electricity Network		**Adequate**			
Anv Smart Village Facility					
Technology		**CCTV camera**			
		LED STREET LIGHT	-		

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

Sr No	Village Name	Discipline	Part 1	Part 2
1	Limda	Civil	Medical Store	Rain Water Harvesting
			Sarpanch Office	Pick Up Stand
			Community Hall	Public Toilet
			Library	Sakhi Mandal
			CCTV Surveillance building	Cyber Cafe
			Club House	Entrance Gate
2	Madheli	Civil	Medical Store	Rain Water Harvesting
			Sarpanch Office	Pick Up Stand
			Community Hall	Public Toilet
			Library	Sakhi Mandal
			CCTV Surveillance building	Cyber Cafe
			Club House	Entrance Gate

Table 22: Summary Details of Village

12.6 Drawings:

All the drawings and images are attached in their respective chapters along with designs and their listing are mentioned in the list of figures along with their page numbers.

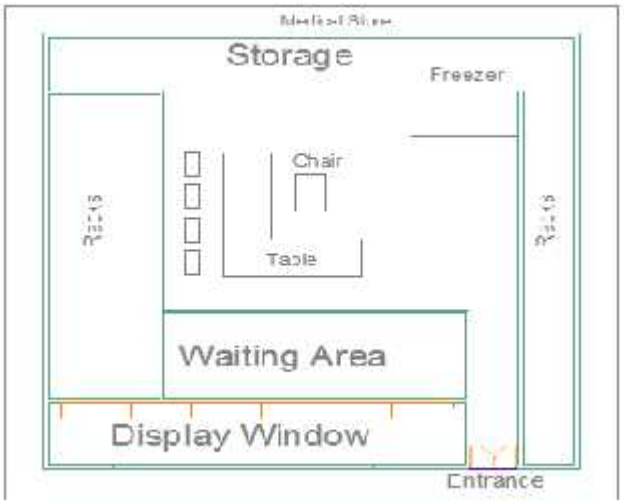
12.7 Summary of Good Photographs in Table Format (village visits, Ideal, Smart Village or any other):

Good Photographs of Limda Village

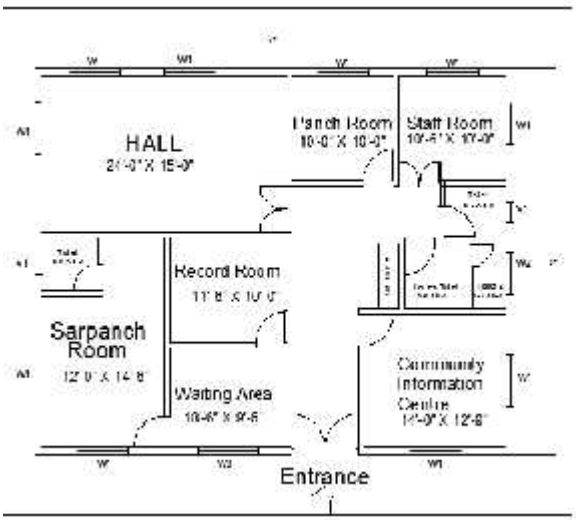
		
		
		

Table 23: Summary of Good Photographs

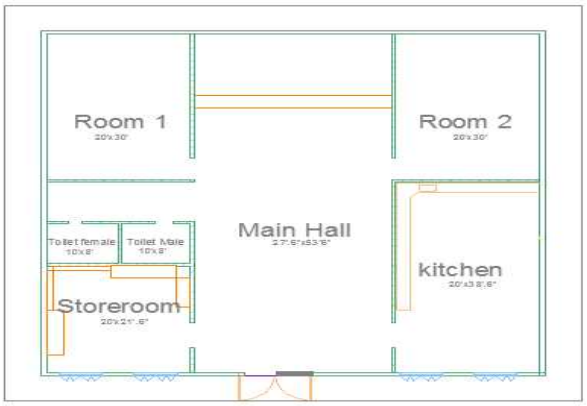
Limda Village Design (Table 24: Summary of Village design Plan)



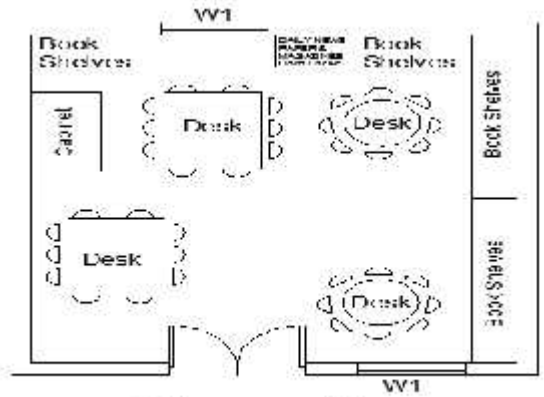
MEDICAL STORE



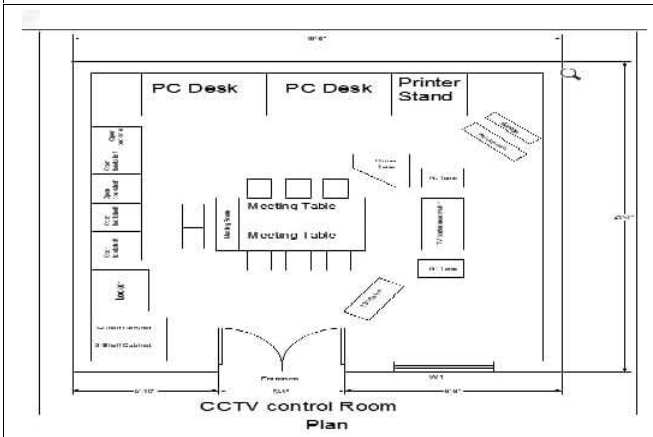
PANCHAYAT BUILDING



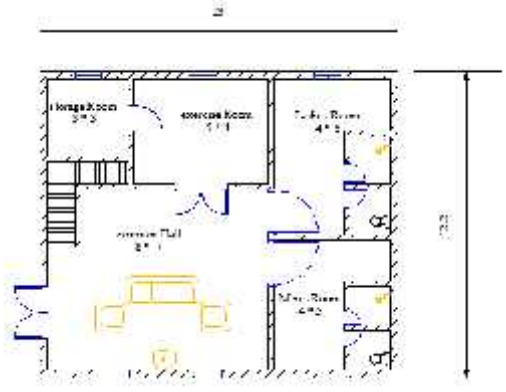
COMMUNITY HALL



Library Plan



CCTV Surveillance Plan



Club House

12.8 Village Interaction with sarpanch/talati Report with the photograph:

***Village Interaction with Sarpanch/Talati Letter**

Village Interaction With Sarpanch/Talati Letter

Vishwakarma Yojna Phase VIII

Limda Village, Waghodia Taluka, Vadodara district

Village pincode :391760

Subject : Village Interaction Form with sarpanch

I sarpanch/Talati of Limda Village undersigned gives approval of doing Village Interaction activity under Vishwakarma Yojna Phase VIII – An Approach Towards Rurbanisation by Students Of Babaria College Vadodara Named Pranay Brahmbhatt (170050106505) and Aditya Bhatt (170050106504).

Date

Sign

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લીમડા ગ્રામ પંચાયત
તા. પાદરા. જી. વડોદરા.

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તા.પાદરા. જિ.વડોદરા

Seal of Grampanchayat

12.9 Sarpanch Letter giving information about the village development:

Approval Letter For Proposed Design Approval

Vishwakarma Yojna Phase VIII

Limda Village, Waghodia Taluka, Vadodara district

Village pincode :391760

Subject : Approval of Design Proposed For Limda Village

I sarpanch/Talati of Limda Village undersigned gives approval of doing Village Intersection activity under Vishwakarma Yojna Phase VIII – An Approach Towards Rurbanisation by Students Of Babaria College Vadodara Named Pranay Brahmbhatt (170050106505) and Aditya Bhatt (170050106504).

*Approved Main Design proposals As Part 1:

1) Sarpanch Office

2)Community Hall

3)RO Water Building

Date

Sign

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Seal of Grampanchayat

*Approval Letter for Swachhta & Covid Awareness Activity approval:

Approval Letter For Swachhta &Covid Awarness Activity Approval

Vishwakarma Yojna Phase VIII

Limda Village, Waghodia Taluka, Vadodara district

Village pincode :391760

Subject : Approval of Doing Awarness Activity For Swachhta & Covid For Limda Vilage

I sarpanch/Talati of Limda Village undersigned gives approval of doing Village Interaction activity under Vishwakarma Yojna Phase VIII – An Approach Towards Rurbanisation by Students of Babaria College Vadodara Named Pranay Brahmbhatt (170050106505) and Aditya Bhatt (170050106504).

Date

Sign

Seal of Grampanchayat