DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION
LEKWADA Village

GANDHINAGAR District

PREPARED BY

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COLLEGE NAME
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COLLEGE LOGO

YEAR:2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda,Ahmedabad– 382424 Gujarat

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Chandkheda,Ahmedabad– 382424 Gujarat

CERTIFICATE

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

Detail Project Report for,

VILLAGE LEKWADA

DISTRICT GANDHINAGAR

Under

VishwakarmaYojana: Phase-VIII

In partial fulfillment of the project offered by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

During the academic year 2020-21.

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

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ABSTRACT

VishwakarmaYojana is one of the approaches to reduce urban city Pressure and lower the migration rate by developing village with a 'rural soul' but with all urban amenities that a city may have. The developmental work in villages that could undertake as per the need of the village in particular includes Physical, Social and Renewable infrastructure Facilities
The Next Two Billion People will live in cities and town; so we need To Plan Now. Almost all future population growth in the next 40 years will be absorbed by cities of the developing world, which are unprepared for such rapid expansion. Planning needs to begin now to take advantage of the many benefits cities can offer. While cities concentrate poverty, they also provide the best means of escaping it. Cities have long been the engines of economic growth. Densely populated areas can be more environmentally sustainable than sprawling communities and allow for more
efficient provision of services. The ideas, connections and activities in cities often generate the solutions to the problems they create.

Lekwada is a Village in Thasram Taluka in Gandhinagar District of Gujarat State, India. It is located District headquarters Gandhinagar. 08 KM away
Urban areas around Lekwada village are pathika and gandhinagar nearest town from Lekwada village is Pathika and it is 5 km away from Lekwada.

By studying the present status and techno-economic survey of Lekwada village in Gandhinagar districts of the Gujarat state in terms of basic services, public amenities, other infrastructural facilities for the need of the people and to prepare a report on the expected socio-economic growth of the area with the consultation of TDO, DDO and Sarpanch; will help full in providingbetter facilities and services in village.

Form the above observation we selected following facilities are develop first for better life of village people
Community hall, Garden /playing area, Public Health Centre, E-suvidha, ATM.

Key Words: Rural,Urban,Development,Facilities

ACKNOWLEDGEMENT

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

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

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We are also thankful to our **Prof.(Dr.)H.N SHAH Principal**, faculties of our colleges for their encouragement and support to complete this project work.

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

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

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

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ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
ATM	ATOMATIC TELLER MACHINE
PHC	PUBLIC HEALTH CENTER

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

1.1 Background & Study Area Location

In Lekawada village out of total population, 991 were engaged in work activities. 68.92 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 31.08 % were involved in Marginal activity providing livelihood for less than 6 months. Of 991 workers engaged in Main Work, 109 were cultivators (owner or co-owner) while 237 was Agricultural labourer

The need of the study is to provide the basic requirements of people in the village and for Urban Development of the village. For this purpose the information of the village is collected based on different categories such as Education, Water Facilities, Drainage Facilities, Transportation Facilities, Primary Health Care, Bank Facilities, Public Toilets, Community hall and other amenities.

65% of the population of the country lives on agriculture which contributes only 15 % to the country's GDP. If we compare this with China which has a similar sector contribution to the GDP, only 30% of people depend on agriculture whereas in country like USA just 2% of the people are dependent on agriculture.

GRAM PANCHAYAT		LEKWADA	
BLOCK/ TENSIL		GANDHINAGAR	
DISTRICT		GANDHINAGAR	
STATE		GUJARAT	
PINCODE		382048	
AREA		528.18 HECTARS	
POPULATION		2723	
HOUSEHOLD		596	
NEAREST TOWN		GANDHINAGAR 8KM	

(T-1.1A-Lekwada Village Data)

Particulars	Total	Male	Female
Total No. of Houses	596	-	-
Population	2,723	1,390	1,333
Child (0-6)	392	207	185
Schedule Caste	4	3	1
Schedule Tribe	30	18	12
Literacy	84.26%	94.51%	73.69 %
Total Workers	991	745	246
Main Worker	683	-	-
Marginal Worker	308	121	187

(T-1.2 B-Lekwada Data)

(F-1 Lekwada map)

1.2 Concept : Ideal Village, Normal Village

Creating ‘big village’ with a ‘rural soul’ but with all urban amenities that a city may have”. The idea of Urbanization is to provide urban amenities in rural areas and maintaining the rural soul. This will help to reduce migration from villages and prevent the cities from the burden of migration.The scheme is being pioneered by Gujarat’s Chief Minister, Shree Narendra Modi. According to him,“Rurbanisation” combined a process of preserving the “soul of villages” by providing all the civic and infrastructure facilities available in big towns and cities to arrest migration and at the same time, bringing down the

burden on big cities and towns bursting at their seams. He said it would be made possible by providing all the facilities and amenities, including jobs by setting up industries in rural areas so that people did not think of migrating to cities and preferred to stay in their own villages.

1.2.1 Objectives:-

- To provide insufficient Social infrastructure facilities like health and education facilities and to ensure proper delivery of facilities to village dwellers.
- To provide internal roads within village settlement & efficient mass transportation systems between clusters of villages to improve connectivity.

To Identification sanitation facilities that are needed to be improve like sewerage and drainage line, dumping facilities, Electricity connections.

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

Nandasan is a village panchayat located in the Mahesana district of Gujarat state, India. The latitude 23.3719491 and longitude 72.4080604999999 are the geocoordinate of the Nandasan. Gandhinagar is the state capital for Nandasan village. It is located around 24.0 kilometers away from Nandasan. The other nearest state capital from Nandasan is Lucknow and its distance is 354.9 KM.

Census Parameter	**Census Data**
Total Population	13440
Total No of Houses	2605
Female Population %	48.1 % (6468)
Total Literacy rate %	73.5 % (9876)
Female Literacy rate	33.4 % (4483)
Scheduled Tribes Population %	0.1 % (7)
Scheduled Caste Population %	8.7 % (1163)
Working Population %	30.4 %
Child(0 -6) Population by 2011	1895
Girl Child(0 -6) Population % by 2011	47.7 % (903)

(T-1.3C-Nandasan Village Data)

(F-2 Sarpanch Of Nandasan Village)

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

Mahatma Gandhi is often quoted as having said: “Real India lives in its villages.” The fact that in the early decades of the 20th century, India’s urban segment constituted only 11 per cent of the total population gave strength to his argument. It was the villages in which 89 per cent of the population lived. That made India an agricultural country.

The development of Village India, for Gandhi, was the development of India. Illiteracy, ignorance, and poverty characterized the vast population of rural India. Gandhi organized mass movements to draw attention to the problems of the rural people, and also to involve the peasants in the freedom struggle. Social scientists also became interested in studying rural problems, particularly the deteriorating rural economy.

The growing rural discontent also worried the British Government. It felt the need to investigate the actually existing conditions. S.J. Patel, in his book Agricultural Laborers in Modern India and Pakistan, talks about the growth of village studies: With the end of the First World War, the beginnings of an agrarian crisis was accompanied by the entry of peasants into the political arena, as exemplified during the Champaran and Kaira campaigns led by Gandhiji. As a result, the cultivator of the soil began to attract considerable attention from students of Indian society. G. Keatings andHarold Mann in Bombay, Gilbert Slater in Madras, and E.V. Lucas in the Punjab initiated intensive studies of particular villages and general agricultural problems.

ANICIENT VILLAGE:-

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

Villages Today:
There were 580,781 villages in India, according to the 1991 Census. Of these; the largest number (390,093) consisted of small-sized villages with a population of less than 1,000. In the category of 1,000-2,000 population are another 114,395 villages. Taken together, they represent 86 per cent of the villages of India.

Villages with 2,000-5,000 population total 62,915, and those having a population of between 5,000-10,000 numbers 10,597. The highest concentration of very large villages, with more than 10,000 people, is to be found in the state of Kerala, which has 1,007 (of the 2,779) large villages.

It is obvious that the number of villages in a given state is dependent upon the size of the state and the proportion of population dependent on agriculture. In this context, it will be useful to understand two concepts, namely that of 'agricultural crowding' and Village group'.

RURAL DEVELOPMENT:-

Particulars	Total	Male	Female
Total No. of Houses	2,605	-	-
Population	13,440	6,972	6,468
Child (0-6)	1,895	992	903
Schedule Caste	1,163	598	565
Schedule Tribe	7	4	3
Literacy	85.54 %	90.18 %	80.56 %
Total Workers	4,092	3,565	527
Main Worker	3,708	-	-
Marginal Worker	384	268	116

(T-1.4D-Nandasan Data)

Rural development is the process of improving the quality of life and economic well-being of people living in rural areas, often relatively isolated and sparsely populated areas.[1]

Rural development has traditionally centered on the exploitation of land-intensive naturalresources such as agriculture and forestry. However, changes in global production networks and increased urbanization have changed the character of rural areas. Increasingly tourism, niche manufacturers, and recreation have replaced resource extraction and agriculture as dominant economic drivers.

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

The proposed project is to be carried out at New Survey No. 421 (Amalgamate), Village: Laximpura (Nandasan), Taluka: Kadi, District: Mehsana, Gujarat.The geographical information of the proposed project is as given below:

Co-ordinates of the proposed project site: 23°21'23.77"N & 72°23'33.99"E

WORK PROFILE:-

In Nandasan village out of total population, 4092 were engaged in work activities. 90.62 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 9.38 % were involved in Marginal activity providing livelihood for less than 6 months. Of 4092 workers engaged in Main Work, 613 were cultivators (owner or co-owner) while 864 was Agricultural labourer.

(F-3 Nandasan Village)

(F-4 Market area)

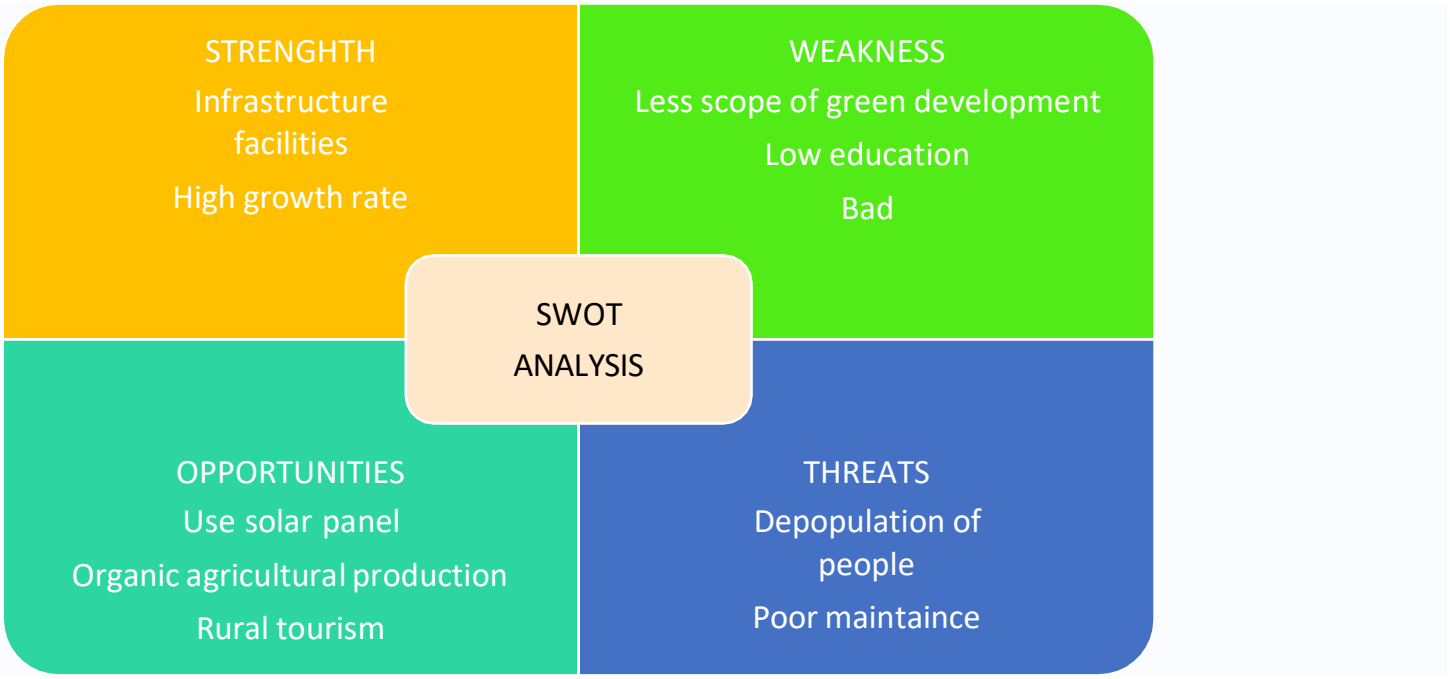

(F-5 Shopping Complex)

(F-6 Market)

1.4 SWOT analysis of Ideal village / Smart Village.

SMART MOBILITY, SMART GOVERNANCE, SMART ECONOMY, SMART ENVIRONMENT, SMART LIVING, SMART PEOPLE

SWOT analysis is a strategic planning tool used to evaluate the Strengths, Weaknesses, Opportunities and Threats in a project or an organization. It is used to develop a plan that takes into consideration different factors, maximizes the potential and minimizes the impact of weaknesses and threats. Strengths describe tangible and intangible positive attributes like resources and competency available (knowledge, background, education, skills etc.) in individuals, community or organization) Weaknesses stand for those attributes of an individual, community or organization that are harmful to achieving the objectives. These are features that are under your control, but for a variety of reasons they need improvement. Opportunities are external the conditions that are helpful in achieving the objective. Threats are the external conditions that can be harmful to achieving the objective. They are major unfavorable situations in an organization's environment.



(F-7 SWOT Analysis)

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

After visiting Nandasan village we had interaction with people and we had discussed about the future aspects for the development of Nandasan village are as follows:-

1. Biogas Plant
2. Rain Water Harvesting
3. Cyber security
4. Solar lights etc.

This is the aspects needs to be improved in future village.

1.6 Benefits of the visits of Ideal village / Smart Village

1. Locally produced and locally consumed energy: In villages if the mountains, hilly area are present then use of solar energy & wind energy then energy is produce in thatvillage itself & use for development of village

2. Creation of job: Generally village people migrate from village to city for purpose of job. If village becomes smart so all the job requirements are fulfills & people not migrate from one place to another.

3. Creation of job: Generally village people migrate from village to city for purpose of job. If village

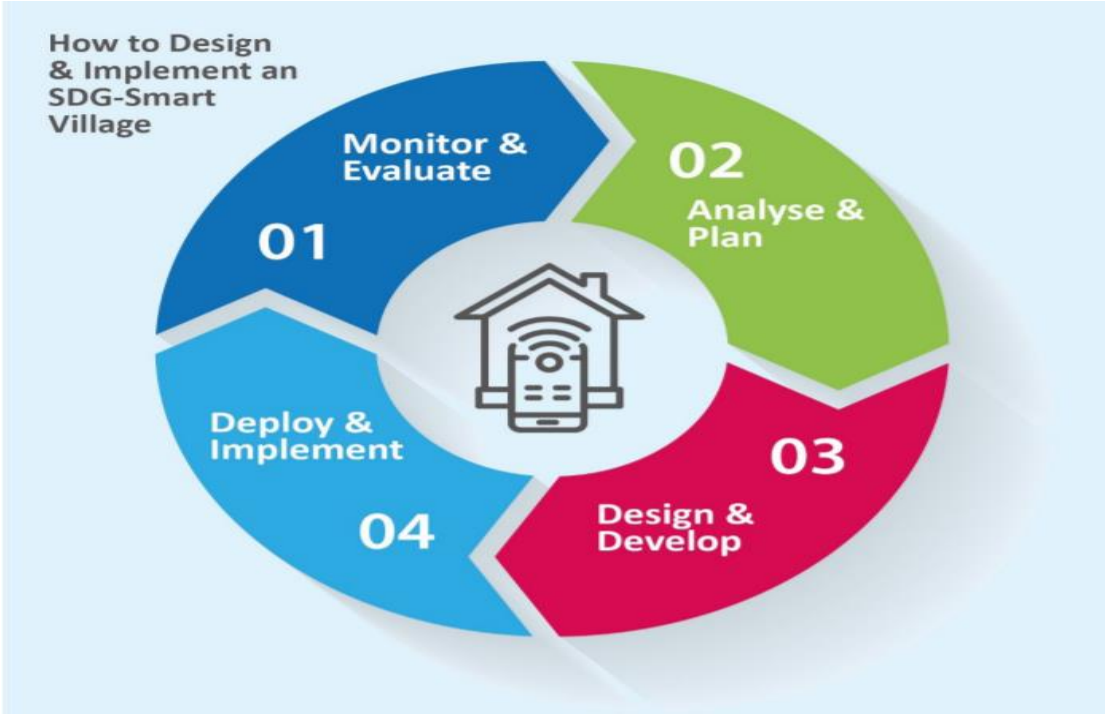
1.7 Civil aspects required in Ideal village / Smart Village

We have observed the balance of commercial, residential and recreational land use in the Nandasan village but as per the feedback which were given by villagers some facilities are lacking in the village from civil aspects and these are Biogas Plant, Cold Storage Area, Rain Water Harvesting, Solar Street Lights, etc.

Moreover, by providing skill development centers for the youth, panchayat should also focus on enabling the youth to setup the self-employment units. Water harvesting, Ground water recharge and improvement of village tanks/lakes are also projects to be pursued.

The process of designing a smart village will require an approach that is iterative and consistently guided by the local conditions in the village and its sustainable development needs. Such an approach requires strong local leadership, a citizen-centric planning, design, implementation and continuous evaluation based on effectively-led multi-stakeholder partnerships.

Such an approach is comprised of reinforcing phases: analyse and plan, design and develop, deploy and implement, and monitor and evaluate on an ongoing basis, as shown in Figure



Chapter 2.

LEKWADA VILLAGE Literature Review – (Civil Concept)

2.1 Introduction: Urban & Rural village concept

2.1.1 Urban Village Concept

Urbanization began in ancient Mesopotamia in the Uric Period as, it is speculated, a particularly prosperous and efficient village attracted the attention of other, less prosperous, tribes who then attached themselves to the successful settlement. This process, then, gave rise to the densely populated centers which came to be known as 'cities'.

Urbanization in India was mainly caused after independence, due to adoption of mixed system of economy by the country which gave rise to the development of private sector. Urbanization is taking place at a faster rate in India. Population residing in urban areas in India, according to 1901 census, was 11.4%.This count increased to 28.53% according to 2001 census, and crossing 30% as per 2011 census, standing at 31.16%. According to a survey by UN State of the World Population report in 2007, by 2030, 40.76% of country's population is expected to reside in urban areas.

2.1.2 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. The quest to discover the real rural India stillcontinues in great earnest. Almost every economic agency today has a definition of rural India. Here are a few definitions: According to the Planning Commission, a town with a maximum population of 15,000 is considered rural in nature. In these areas the panchayat makes all the decisions. There are five people in the panchayat. The National Sample Survey Organization (NSSO) defines 'rural' as follows:-

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

2.2 Importance of the Rural development

The Ministry of Agriculture and Rural Development is charting directions for development in line with the spirit of change that has occurred in the rural landscape in recent years. The aim of the plan is to remove statutory obstacles for regional rural development while at the same time allow for sustainable development, so that the characteristics, heritage and qualities of the rural settlementmay be preserved. This effort will emphasize agriculture's importance and its integration into the openspaces that characterize the rural landscape.

The Ministry of Agriculture and Rural Development gives direct funding to support planning. Plans that receive assistance are master plans and outlines, both regional and topic related, as well as settlement specific plan and detailed designs for carrying out environmental and landscape development. Typical plans include that have already received assistance include plans for open spaces, stream improvement, bike and hike trails, tourism, and a biosphere region.

2.3 Ancient Villages / Different Definition of: Rural Urban Villages

Mahatma Gandhi is often quoted as having said: “Real India lives in its villages.” The fact that in the early decades of the 20th century, India’s urban segment constituted only 11 per cent of the total population gave strength to his argument. It was the villages in which 89 per cent of the population lived.

That made India an agricultural country. The development of Village India, for Gandhi, was the development of India. Illiteracy, ignorance, and poverty characterized the vast population of rural India. Gandhi organized mass movements to draw attention to the problems of the rural people, and also to involve the peasants in the freedom struggle. Social scientists also became interested in studying rural problems, particularly the deteriorating rural economy. The growing rural discontentalso worried the British Government. It felt the need to investigate the actually existing conditions.
S.J. Patel, in his book Agricultural Laborers in Modern India and Pakistan, talks about the growth of village studies: With the end of the First World War, the beginnings of an agrarian crisis was accompanied by the entry of peasants into the political arena, as exemplified during the Champaran and Kaira campaigns led by Gandhi.

As a result, the cultivator of the soil began to attract considerable attention from students of Indian society. G. Keating’s and Harold Mann in Bombay, Gilbert Slater in Madras, and E.V. Lucas in the Punjab initiated intensive studies of particular villages and general agricultural problems.The results of these investigations evoked great interest and stressed the necessity for still further study. Economists and social anthropologists later joined the movement of village studies. In the 1950s, several studies of individual villages were undertaken. In 1955, four major publications came out, three of which were anthologies of articles written by social anthropologists/sociologists on thevillages studied by them, and the fourth one was a full-length monograph – the very first and by an Indian social scientist.

2.4 Scenario: Rural / Urban village of India population Growth

The report published by UN speculates the overall change in population in the coming century The report has taken cognizance of many aspects of the population such as population growth, aging, migration, and urbanization. If we take a look at the trends of urbanization and migration, it seems like the urban population will exceed the rural population by the end of 2050.

The report speculates that by 2050, the urban population will have increased to 87.7 million and the rural population will account for 78.3 million people. However, this overhaul will take place somewhere after 2045 itself, suggests the data. The urban population of India has seen a rise from 17.1 per cent to 29.2 per cent between 1950 and 2015. Meanwhile, the rural population declined from 82.9 per cent (in 1915) to 2015's 67.2 per cent. The speculation for the year 2050 suggests that the urban-rural segregation will be 52.8 and 47.2 with a difference of 5.6 per cent. The population growth rates in both urban and rural areas suggest a similar story. The urban rate has consistently overpowered the total population growth rate over the last seventy years. This trend is set to continue for the next 30 years.

There was a clear increase in the population growth rate from 1950 to 1975. But, the growth rate took a hit as a result of the forced sterilization program under the Indira Gandhi government. Though the effect was not as evident in rural parts, the overall rate of population growth declined in those years. It came down to 1.23 from the all-time high figure of 2.31 during 1975-80.The urban population saw a steep decline following the implementation of the sterilization program with the growth rate decreasing to 3.35 from 3.84 in the year 1975.The report suggests that the rural population growth rate will turn negative in the next fifteen years. Thus, in 2050, it is expected to be 1.06, in contrast to the urban growth rate of 1.54.The report suggests that the rate of urbanization, which has been increasing since 1950, is expected rise further till 2035. It is supposed to start decreasing slightly in the next few years.

Within a decade of globalization, the rate of urbanization increased by one-third of its previous growth. This has resulted in stress on the country's urban conglomerations; Delhi, Chennai, Kolkata, and Mumbai being four among them. The swelling of the population in the cities has been a result of labor migrations that have taken place in the past decade because of industrial growth. This created millions of employment opportunities for the rural poor. The national capital, Delhi, especially has seen an explosion of population. It saw a 26-time increase since 1950 when the population was just amillion people. The current population of the national capital is 28 million, which equals to half of the population of all the ten ASEAN country capitals combined

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

(T-1.5E-Scenario of rural and urban)

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

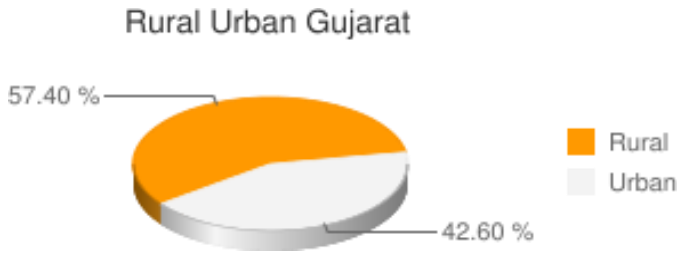
As per projection, population of Gujarat in 2020 is 7.04 Core...

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

(T-1.6F-Scenario of rural and urban 2011)

Gujarat Urban Population 2011:

Out of total population of Gujarat, 42.60% people live in urban regions. The total figure of population living in urban areas is 25,745,083 of which 13,692,101 are males and while remaining 12,052,982 are females. The urban population in the last 10 years has increased by 42.60percent. Sex Ratio in urban regions of Gujarat was 880 females per 1000 males. For child (0-6) sex ratio the figure for urban region stood at 852 girls per 1000 boys. Total



children (0-6 age) living in urban areas of Gujarat were 2,952,359. Of total population in urban region, 11.47 % were children (0-6). Average Literacy rate in Gujarat for Urban regions was 86.31 percent in which males were 90.98% literate while female literacy stood at70.26%. Total literates in urban region of Gujarat were 19,672,516.

2.6 Rural Development Issues - Concerns - Measures

Lekwada Population - Gandhinagar, Gujarat :

Lekawada village is located in Gandhinagar Tehsil of Gandhinagar district in Gujarat, India. It is situated 8km away from Gandhinagar, which is both district & sub-district headquarter of Lekawada village. As per 2009 stats, Lekawada village is also a gram panchayat.
The total geographical area of village is 528.18 hectares.

Lekawada has a total population of 2,723 peoples. There are about 596 houses in Lekawada village. Gandhinagar is nearest town to Lekawada which is approximately 8km away
The issues faced by residents of rural communities are very different than those in urban areas. Rural residents may face disparities due to:

- A disproportionate burden of chronic disease relative to the general public
- Restricted access to quality health care
- Insufficient or lack of health insurance coverage
- Geographic isolation
- Lack of public transportation
- Poor infrastructure
- Low educational attainment
- Low health literacy

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

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

Empirical studies also report a strong relationship between infrastructure, economic growth, rural development and poverty reduction. In spite of the crucial importance of infrastructure, significant deficiencies have persisted in rural infrastructure across Indian states. The quantity and quality of infrastructure facilities are substantially lower in rural areas than in urban areas. A relatively low density of population, low household incomes and the absence of scale economies are considered to be challenges to the expansion of basic infrastructure facilities in rural areas.
Basically, rural infrastructure has the potential to provide basic amenities to people that can improve their quality of life.

To give an example, development of rural infrastructure can lead to improved access to market centers for the rural producers, better availability of inputs and raw materials at reduced prices and

improved mobility. Here is a look at how different sections of rural infrastructure play their role in improving the rural economy as well as life of the people.

Rural road infrastructure: It provides mobility and connectivity to people living in rural areas. It also provides the much needed boost to agricultural activities by making available water, seeds and other raw materials to the farmers. By improving connectivity, rural roads also enhance employment opportunities for the rural people in non-agriculture sector, thereby, increasing livelihood opportunities. Rural roads also ensure that the rural areas are served with better public services and all the benefits offered by the state reach the far-flung areas easily. They can even provide access to education and health services.

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

Scope for development of rural infrastructure in India

As per the road statistics published by central government for the year 2012-13, rural roads span 60.39 km of every 100 km. The sad part is that most of these rural roads in the country are in bad shape i.e., they are of poor quality, potholed and unable to withstand the loads of heavy farm equipment, thereby, affecting the rural population's quality of life and ability of the farmers to transporttheir produce to the market. Further, the rural surfaced road is just 33 per cent of the total rural road network in India and remaining are kutcha roads which are highly vulnerable and inaccessibleparticularly during the rainy season. Thus, there is increasing need for surfaced rural roads in the country. Living conditions of people in rural areas has still not improved much and there are majority who live in kutcha houses which are highly vulnerable to rainfall, wind blow, fire and other environmental hazards. Hence, good rural housing infrastructure is needed in the country.

Although there are schools in the rural areas but they lack in terms of the number of classrooms, availability of safe drinking water facilities, toilet facilities etc. Hence, the education infrastructure in rural India also needs a lot more improvement. It goes without saying that the health infrastructure is poorly developed in rural India. Even if it is there, there are no good doctors because the rural areas have very low connectivity and doctors or skilled health workers are unable to access these areas. This poses a great threat to the lives of rural population in the country. 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 clearthat there is huge scope for development of all kinds of infrastructure in rural areas. In fact, the gapsin 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.

Other Facilities:

- Janani Suraksha Yojana
- Kishori Shakti Yojana
- Balika Samriddhi Yojana
- Mid-day Meal Programme
- Intergrated Child Development Scheme (ICDS)
- Mahila Mandal Protsahan Yojana (MMPY)

2.8 Other Projects / Schemes of Gujarat / Indian Government

Rural development is characterized by its emphasis on locally produced economic development strategies. The main objective of the rural development is to remove poverty of the people and fill the widening gaps between rich and poor. Various policies and scheme by Government of India are:

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

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

Nine projects for farmers, rural Gujarat in state budget

Rs 1,400 crore for new schemes, biggest of which is to provide electricity to farmers during the day Unveiling a string of nine new projects for farmers and rural areas of the state, the Gujaratgovernment while presenting the budget estimates for the year 2020-'21, made a provision of Rs1,400 crore for these new schemes, the biggest of which was the "Dinkar Yojana", that targets toprovide electricity to farmers during day time.

The government, which has been providing about eight hours of electricity to farmers mostly after nightfall, announced a Rs 3,500-crore scheme to provide power during day time. "Our government is providing sufficient power connections, constant and qualitative power supply to farmers. Now we have decided to provide power supply to farmers during day time to satisfy their long-standing demand. As part thereof, I announce the new Dinkar Yojana

Chapter 3.
Smart (City/Village) Concept Idea and its Visit (Civil Concept)

3.1 Introduction: Concepts, Definitions and Practices

Introduction:- Abstract Smart Village refers to a concept developed in rural area that provides solutions to problems occurred and improves the quality of life. The main problems faced by rural areas are cover poverty, low level of education, and limited access to technology.

Nandasan village is a smart village.

Nandasan is a village positioned in Kadi Block of Mahesana district in Gujarat. Positioned in rural area of Mahesana district of Gujarat, it is one among the 120 villages of Kadi Block of Mahesana district. As per the government records, the village code of Nandasan is 509623. The village has 2605 houses.

Population of Nandasan village

According to Census 2011, Nandasan's population is 13440. Out of this, 6972 are males while the females count 6468 here. This village has 1895 kids in the age group of 0-6 years. Out of this 992 are boys and 903 are girls.

Literacy rate of Nandasan village

Literacy rate in Nandasan village is 73%. 9876 out of total 13440 population is literate here. In males the literacy rate is 77% as 5393 males out of total 6972 are literate however female literacy rate is 69% as 4483 out of total 6468 females are literate in this Village. The Negative side is that illiteracy rate of Nandasan village is 26%. Here 3564 out of total 13440 individuals are illiterate. Male illiteracy rate here is 22% as 1579 males out of total 6972 are illiterate. In females the illiteracy rate is 30% and 1985 out of total 6468 females are illiterate in this village.

Agricultural status of Nandasan village

The number of occupied people of Nandasan village is 4092 however 9348 are un-employed. And out of 4092 working person 613 individuals are fully dependent on cultivation.

Nandasan Pincode – 382705

Village/Locality Name	Nandasan
Office Name	Dangarwa
Office Type	B.O
Pincode	382705
Post Office/Sub-Office	Dangarwa
Sub-District/Taluka	Kadi
District	Mahesana
State/Circle Name	Gujarat
Delivery Status	Delivery
Division Name	Mahesana
Region Name	Ahmedabad
Head Office	Mahesana
Phone/Mobile/Telephone	NA

(T-1.7G Smart Village Data)

(F-8 Nandasan Map)

(F-9 Nandasan Location)

Smart Village Concept:-

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 NarendraModi launched SansadAdarsh Gram Yojana (SAGY) or SAANJHI) on 2 October 2014, Gandhi's birthday, in addition to Smart Cities and Digital India, as a development program for India. The Parliamentarian's Model Village Scheme main goal is for each Member of Parliament and Minister to adopt a rural village and develop it into a model by 2019 under the SAGY guidelines. The vision of SAGY is an integrated village development plan, encompassing Personal, Human, Social, and Economic dimensions. Smart Village India gets its foundation from Mahatma Gandhi's vision of Adarsh Gram (model village) and Gram Swaraj (Village self-rule/independence). Gandhi in two texts, Hind Swaraj and Gram (Village) Swaraj, promotes the concept of integrated rural development to impact majority of the population, as the primary initiative after India Independence in 1947.

The Eco Needs Foundation has initiated the concept of "Smart Village". Under this project the Foundation is adopting villages and putting efforts for sustainable development by providing basic amenities like sanitation, safe drinking water, internal road, tree plantation, water conservation. The Foundation is also working for inculcating moral values in the society and for improving the standard of living of the villagers. In the concept of "Smart Village" the development of the village shall be based on the five paths Retrofitting, Redevelopment, Green fields, e-Pan, Livelihood. Under the concept of Smart Village, the Foundation has adopted Village Dhanora, Teh. Bari, District Dholpur, a small and remote village of Rajasthan to develop it as India’s First Smart Village.

The village is situated 30 km away from Dholpur district head quarter and 248 km from Jaipur. The population of the village is about 2,000. The village was devoid of its basic needs like sanitation, internal roads. It was also facing various other similar problems such as lack of access to potable water, non-availability of water conservation system, encroachment on the roads, power fluctuation, non-availability of employment oriented education, unemployment and poverty, so on and so forth. Prof. PriyanandAgale Founder of Eco Needs Foundation and Dr. Satyapal Sing Meena (IRS) Joint commissioner of Income Tax has converted this idea into reality and now Dhanora has become role model of Rural Development. Dhanora village was also given an award by Prime minister of India Mr. NarendraModi in the year 2018.

Smart Village Definitions:

An urban area that uses different types of electronic data collection sensors to supply information which is used to manage assets and resources efficiently. This includes data collected from citizen, devices, and assets that is processed and analyzed to monitor and manage traffic and transportation systems, power plants, water supply networks, waste management, law enforcement, schools, hospitals etc. Smart city is one that uses technologies to improve and transform the lives of its citizens and the environment, while closing the digital divide and allowing businesses to thrive and

innovate. It's an idea of inclusion and not division, collaboration between citizens, and the public and private sectors for sustainable transformation and growth.

Community's integrity. The willingness of the people as human resources at rural level to develop their capacities and promote changes to achieve better quality of life History and culture.

Characteristic of rural history and culture as consideration to develop knowledge based development. Spatial context in urban and regional planning perspective.

Rural areas as an integrative component of regional and national spatial system Economic sectors. Primary and secondary sectors that could facilitate harmonious relationships with tertiary and quarter sectors of growth area (urban area) Technology readiness.

It depends on the rural spatial function in regional context, including specific rural resources to be encouraged in ensuring rural urban linkages. In addition, the smartness concept promotes a sustainable and resilient rural area. Technological impacts.

- Physical and development synergies. There are synergies among rural physical infrastructure and rural telecommunication system.

- Substitution effects. The limited rural physical flows can be substituted and facilitated by rural virtual flows.

- Generational effects. A rural area will be more sustainable and competitive by the synergy between physical and telecommunication infrastructures along with the growth of rural economic activities.

- Enhancement effects. A rural area will be more attractive, efficient, and rural physical network (road, rail, water, energy, and irrigation) will more adequate to ensure rural-urban connectivity. Technical and political processes. As an innovative translation of rural policy into rural collective action to promote better rural condition

3.2 Vision-Goals, Standards and Performance Measurement Indicators

India is a rural dominated country and villages are said to be the heart of this nation. According to 2011 Census, the population of rural areas comprised of 68.84 per cent. Migration of the people from rural areas to urban areas causes some burden on the urban areas. If the vision of the founders of this nation is to be respected and implemented, then we all need to have the responsibility to make our villages smart, which means self-sufficient, efficient, healthy and educated villagers.

To make the villages smart means to make the country self-reliant, stronger and secured. India lives in its villages. Villages are the food basket of the nation. Village Panchayats are the centers of grass root democracy. However, the holistic development of rural India is still under tremendous pressure owing to the declining farm output, increasing trend of distressed migration, absence of basic amenities and emerging problems of environmental pollution and conflicts.

The smart village concept is needed for a sustainable and a secured future of the villages. It is about understanding the villages towards the growth model which is inclusive. It's about achieving a higher goal without compromising the roots and the sense of belongingness of the masses. The concept of smart village is contemporary and very reliable today as there is a limit of the growth of cities which is leading to creation of urban jungles, where the population ratio and its related issues per km of land is way above the expected targets.

Smart city development vision- Goals - activities :-

➢Identify the transportation challenges and needs of the citizen and business community and demonstrate how advanced technologies can be used to address issues in safety, mobility, and climate change, now and into the future. VishwakarmaYojana: Phase VIII Village: Kamrol District: Vadodara Gujarat Technological University 2020-2021

➢ Determine which technologies, strategies, applications, and institutional arrangements demonstrate the most potential to address and mitigate, if not solve, transportation challengesidentified within a city.

➢ Support and encourage cities to take the evolutionary and revolutionary steps to integrate advanced technologies – including connected and automated vehicle technologies – into the management and operations of the city, consistent with the USDOT vision elements.

➢ Demonstrate, quantify, and evaluate the impact of these advanced technologies, strategies, and applications towards improved safety, efficiency, and sustainable movement of people and goods.

➢ Examine the technical, policy, and institutional mechanisms needed for realizing the potential of these strategies and applications – including identifying technical and policy gaps and issues – and work with partners to address them.

➢ Assess reproducibility and qualify successful smart city systems and services for technology and knowledge transfer to other cities facing similar challenges.

The core infrastructure elements in a smart city would include:-

- adequate water supply,
- assured electricity supply,
- sanitation, including solid waste management,
- efficient urban mobility and public transport,
- affordable housing, especially for the poor,
- robust IT connectivity and digitalization,

- good governance, especially e-Governance and citizen participation,
- sustainable environment,
- safety and security of citizens, particularly women, children and the elderly, and
- Health and education.

As far as Smart Solutions are concerned, an illustrative list is given below. This is not, however, an exhaustive list, and cities are free to add more applications.

(F-10 Smart Solutions)

3.3 Technological Options

Smart Villages is a relatively new concept. It will ensure good education, better infrastructure, proper sanitation facility, health facilities, waste management, renewable energy, environment protection, clean drinking water, resource use efficiency etc. The emerging concept of Smart Villages refers to rural areas and communities which build on their existing strengths and assets as well as ondeveloping new opportunities. In Smart Villages traditional and new networks and services areenhanced by means of digital, telecommunication, internet technologies, innovations and the better use of knowledge, for the benefit of inhabitants and businesses. Digital technologies and innovations may support quality of life, higher standard of living, public services for citizens, better use ofresources, less impact on the environment, and new opportunities for rural value chains in terms of products and improved processes.

The civilization is witness for various changes related to its development through different catalysts like industrial development, green revaluation, science and technology, etc. India has more than 72% of its population living in villages. Near about seven decade had been passed since India got freedom, but the scenario in villages in our country is still unchanged. On one side India has recently selected 100 cities for Smart City project and ready to adapt all the advanced technologies for these

smart cities and on other hand villages in our country are still struggling for getting basic amenities like 24 x 7 electricity. On one hand 4G internet technology is being utilized all over the urban areas but on other hand villages in our country are still searching for genuine mobile networks. Our Governments are joining hands with developed countries like America, China, Japan to run bullet trains to connect big cities in India whereas villages in our country are still disconnected and are lacking with basic facilities like drinking water, healthy food, sanitization, toilets, transportation, education, etc.

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

- Enhanced Use of Smart Phones and Optical Fiber Technology for Internet Techniques
- Online Library and E- 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

Mahatma Gandhi said, “the future of India lies in its villages”. Despite government’s focus on villages for many decades, villages remain poorly serviced and governed. India has been an agricultural economy yet the sector is still not a well-paying livelihood option. Generating new avenues of employment in villages, reviving agriculture and improving services in rural areas are some of the components that need to be included right away in rural development policies.

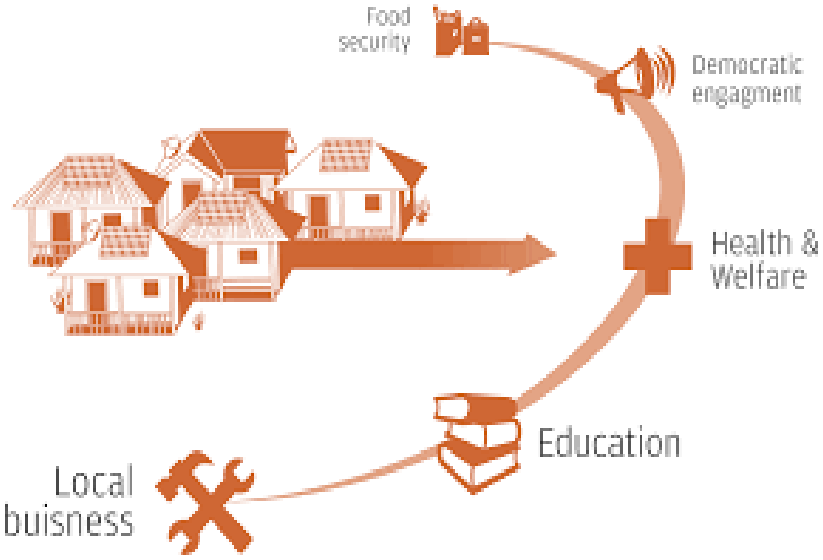
The visual perception of Indian villages has not changed much though certain corrective policy measures and infrastructural reforms have taken place. Governmentsneed to transform our villages into smart habitats by generating lucrative economic opportunities and addressing the basic challenges rural areas are facing for decades. Delhi and Mumbai add almost 200 migrants every day. A combination of factors like agriculture becoming less remunerative, poor civic services, defunct infrastructure, and unavailability of good career opportunities has accelerated the migration from rural areas to cities.

New avenues

Like any other field agriculture needs to be viewed with a new prism to make it economically rewarding. Most of the initiatives targeted to transform agriculture have always been seen as philanthropy gestures, not as a sustainable business model in India. The country is supporting start- up culture to give boost to entrepreneur skills among youngsters. There must be some provision

where government bodies support the idea of reviving agriculture through various transformative solutions like opening up of market for agriculture produce in strategically targeted locations for greater economic output, providing technical and financial support to the new ideas of marketing and innovation.

For example: a growing demand in cities for organic and chemical-free food was driving a spurt in online and offline stores that sell such products. Many social enterprises were being formed and the concept was being widely discussed to enable villagers to market their goods to cater to this demand. Even Prime Minister NarendraModi has promoted the idea in many of his election speeches in north eastern states. Rural Development Ministry must take this into account.



(F-11 Smart Village Idea)

Government initiatives

Pradhan Mantri Gram SadakYojana (PMGSY) has proved to be a transformative scheme. Thousands of villages which were cut-off from the outside world were connected. The national rural road construction program has built paved roads to over 100,000 villages since its launch in 2000. A research report 'Market Access and Structural Transformation: Evidence from Rural Roads in India' by Sam Asher and Paul Novo sad examines the labor market consequences of high rural transport costs by estimating the causal effects of a USD 37 billion rural road construction program, which has provided over 100,000 Indian villages with paved connections to the wider road network. It states, "These effects are driven by villages close to large cities, where a new rural road represents a larger proportional decrease in total transportation costs to external demand for rural labor and production." Similarly the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) has brought

significant improvement in employment generation in rural India. The scheme that is termed the biggest poverty reduction scheme provides jobs to over 50 million households. However, the government needs to find out some innovative ways through which rural workforce can be provided skills and improve their employability in the evolving markets in rural India.

3.5 Issues & Challenges

1. Religion and belief system - If only our ancestors were wise and had a long vision, they would not have dared to write holy books. Mostly, we believe what our society believes without thinking or reasoning. It has taken away our freedom and turned us against each other.

2. Our irresponsibility - We do not take responsibility for our actions. If only we could think how it affects everything in the future. Why are we increasing our population only to leave the world to its terrible fate? We play a role to shape our future whether we realize it or not.

3. Misuse of resources - We have been misusing resources because we do not know why it matters and what it does in the long run. It does not even comes to mind as we have been doing all our lives. This includes money.

4. Technological evolution - It has taken a dangerous turn and will come to bite us in the ass. The process has already started; things we used to see in movies are becoming bitter truth of the society. We want comfort; ease and we are getting it at the cost of our civilization. Simple examples - Social Media and Mobile Phones.

Education / Job opportunities development

The following are the main problems faced in the progress of education:
1. Lack of funds:
The lack of sufficient funds is the main problem in the development of education. Outlay for education in Five Year Plans has been decreasing. Due to insufficient funds most educational institutions lack infrastructure, science equipment and libraries etc. Due to this reason, desired results cannot be achieved.

2. Expensive higher *education:*
University, professional and technical education has become costly in India. Fee structure of technical and professional institutes like IIM's is quite high IIM's charge Rs. 2 lakh per semester for MBA classes. It is beyond the reach of common man. Privatization of higher education has led to the growth of profit hungry entrepreneurs. Now a day's higher educationis much costly affair.

3. Neglect of Indian languages:
The medium of instruction particularly in science subjects is English. So rural students who are not well versed in English, cannot study science properly in English. They suffer a lot; Indian languages are still under developed. Standard publications are not available in Indian language.

Urban water and sanitation challenges

For urban India, the situation is critical. In 2015, about 377 million Indians lived in urban areas and by 2030; the urban population is expected to rise to 590 million. Already, according to the National Sample Survey, only 47% of urban households have individual water connections and about 40% to 50% of water is reportedly lost in distribution system due to various reasons. Further, as per the 2011 census, only 32.7% of urban Indian households are connected to a piped sewerage system. When distribution becomes challenging, the workaround is to tap ground water. According to a study by the Centre for Science and Environment, 48% of urban water supply in India comes from ground water. Ground water exploitation for commercial and domestic use in most cities is leading to reduction in ground water level.

Distribution and water loss issues: - Distribution challenges, such as water loss due to theft, pilferage, leaky pipes and faulty meter readings, result in unequal and unregulated distribution of water. In New Delhi, for example, water distribution loss was reported to be about 40% as per a study.

3.6 Smart Infrastructure - Intelligent Traffic Management

Smart traffic management systems apply controllers, communications, displays and sensor technologies to surface transportation infrastructure. Cities can deploy these systems to quickly retrofit existing infrastructure and support greater traffic capacity without the cost and disruption of widening or adding more roadways. With these highly adaptive systems, cities can gather more city- wide data and exert more control at intersections by implementing a dependable, high-speed communications network.

Digi delivers the cellular communications necessary between IoT devices and assets to a centralized traffic management control center. 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.

Smart Infrastructure

A smart infrastructure is indispensable when providing new services. The prefix “smart” indicates that the target infrastructure is enhanced in its function or efficiency through the use of information and communication technology (ICT). In particular, the use of interinfrastructure data and secondary use of data are expected to establish new smart community services. For example, a smart grid is composed of the interaction of the power grid and ICTs, and it accomplishes high-functioning grid operation and effective electricity usage. However, the control of electricity usage often impacts the convenience and comfort of our lives. Detailed Heating, Ventilation, and Air-Conditioning (HVAC) control will need to estimate human behavior (Dong and Burton, 2009). Electric vehicle (EV) technology isexpected to be a spinning reserve of the power grid and can become part of a smart grid system. However, the main purpose of utilizing EV is to provide mobility. To maximize the requirements of grid stability and mobility, cooperation between a smart grid and smart transportation is required.

To achieve efficient charge or discharge management of EVs, it is indispensable to combine data from EVs and electric power systems with traffic information (Lund and Kempton, 2008). Smart agriculture improves product value by controlling the growing environment and total efficiency of farming. To maximize efficiency, the prediction of the environment, such as weather, is important; therefore, it should corroborate with smart weather forecasting. In other words, it is meaningless when these smart infrastructures are independently implemented in the target region. As shown in Fig. 10.1, smart communities provide new services by integrating and linking the information of different smart infrastructures, and data management in smart communities is indispensable to the provision of attractive services such as aggregation, recommendation, and data brokerage.

3.7 Paver Block Road

Although pavers made out of concrete may be a new product, the use of paving blocks as a surfacing material is anything but new. Flagstones were being used to pave village streets. Cobblestones were the traditional method of stone paving, being uncut and often water-worn stones or large pebbles about 150mm in size. Later hand-cut stone blocks were introduced. Road-making using brick were also common depended on the availability of clay bricks in India. Concrete paving blocks were first manufactured in the Netherlands in 1924. It was probably World War II that led to the growth of concrete blocks as a paving material. Large areas of the Netherlands were destroyed during the War and, because clay bricks were in short supply, concrete blocks were introduced as an alternative. Subsequently, concrete block paving

3.8 Retrofitting- Redevelopment- Greenfield Development District Cooling

Cities are engines of growth for the economy of every nation, including India. Nearly 31% of India's current population lives in urban areas and contributes 63% of India's GDP (Census 2011). With increasing urbanization, urban areas are expected to house 40% of India's population and contribute 75% of India's GDP by 2030. This requires comprehensive development of physical, institutional, social and economic infrastructure. All are important in improving the quality of life and attracting people and investments to the City, setting in motion a virtuous cycle of growth and development. Development of Smart Cities is a step in that direction.

In the approach to the Smart Cities Mission, the objective is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions. The focus is on sustainable and inclusive development and the idea is to look at compact areas, create a replicable model which will act like a light house to other aspiring cities. The Smart Cities Mission of the Government is a bold, new initiative. It is meant to set examples that can be replicated both within and outside the Smart City, catalysing the creation of similar Smart Cities in various regions and parts of the country.

The core infrastructure element in smart city includes:

1. Adequate Water Supply
2. Assured Electricity Supply

3. Sanitation, including Solid Waste Management
4. Efficient Urban Mobility and Public Transport
5. Affordable housing, especially for the poor
6. Robust IT connectivity and digitalization
7. Good governance, especially e-Governance and citizen participation
8. Sustainable environment
9. Safety and security of citizens, particularly women, children and the elderly, and
10. Health and Education.

The strategic components of area-based development in the Smart Cities Mission are city improvement (retrofitting), city renewal (redevelopment) and city extension (green-field development) plus a Pan-city initiative in which Smart

The strategic components of area-based development in the Smart Cities Mission are city improvement (retrofitting), city renewal (redevelopment) and city extension (Greenfield development) plus a Pan-city initiative in which Smart Solutions are applied covering larger parts of the city. Below are given the descriptions of the three models of Area-based smart city development:

Retrofitting will introduce planning in an existing built-up area to achieve smart city objectives, along with other objectives, to make the existing area more efficient and live able. In retrofitting, an area consisting of more than 500 acres will be identified by the city in consultation with citizens. Depending on the existing level of infrastructure services in the identified area and the vision of the residents, the cities will prepare a strategy to become smart. Since existing structures are largely to remain intact in this model, it is expected that more intensive infrastructure service levels and a large number of smart applications will be packed into the retrofitted smart city. This strategy may also be completed in a shorter time frame, leading to its replication in another part of the city.

Redevelopment will effect a replacement of the existing built-up environment and enable co-creation of a new layout with enhanced infrastructure using mixed land use and increased density. Redevelopment envisages an area of more than 50 acres, identified by Urban Local Bodies (ULBs) in consultation with citizens. For instance, a new layout plan of the identified area will be prepared with mixed land-use, higher FSI and high ground coverage. Two examples of the redevelopment model are the Saifee Burhani Upliftment Project in Mumbai (also called the Bhendi Bazaar Project) and the redevelopment of East Kidwai Nagar in New Delhi being undertaken by the National Building Construction Corporation.

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

redevelopment, green field developments could be located either within the limits of the ULB or within the limits of the local Urban Development Authority (UDA).

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

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

Key features

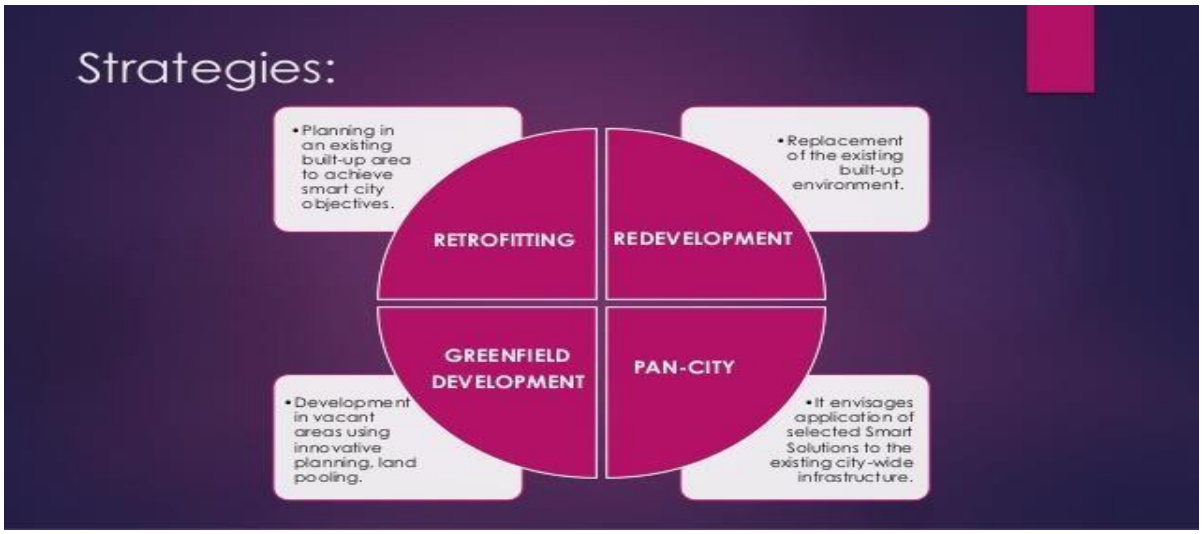
- 50% energy efficiency improvement while electricity consumption is decreased by 35%.
- 50% CO2 emissions savings and decrease of water usage by 65%.
- Architectural heritage preservation.

Profitability

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

Categories of Application

- Advanced grid infrastructure
- Etc.



(F-12 Strategies)

3.9 Strategic Options for Fast Development

The scope of Smart Villages strategies can be very broad. Existing Smart Villages initiatives are commonly observed to focus on one or more of the broader aspects and conditions for rural development where cooperative rather than individual action is required to achieve real change. Depending on local circumstances and motivation, these initiatives may prioritise economic, social or environmental issues - or a combination of them. There is no need to deal with everything at once.

On the one hand, these community actions may be linked to the big 21st century societal challenges, such as climate adaptation and mitigation, including renewable energy or new opportunities for rural areas that are rapidly emerging, for example, the bioeconomy sector, smart tourist destinations etc. These are what the OECD (7) refers to as the 'mega-trends' that are bringing new challenges and opportunities for rural areas. On the other hand, issues that have persisted for many years, such as quality of rural services (e.g. health, education and mobility) and the management of natural resources (e.g. local water quality), continue to encourage local people to mobilise and take action to improve their quality of life. New solutions and approaches can bring fresh ideas to addressing these 'traditional' rural issues.

In both cases, 'social innovation' commonly sits at the core of the Smart Villages concept. Social innovation has numerous definitions, but in the context of Smart Villages, it can be thought of as "the re-configuring of social practices, in response to societal challenges, which seeks to enhance outcomes on societal well-being and necessarily includes the engagement of civil society actors. Or more simply, putting local people and their needs first, with creative solutions to complex societal challenges.

In many countries, digital innovation is also at the heart of strategies on Smart Villages and/or 'intelligent' territories, as they are often called. These approaches see the main goals of Smart Villages strategies as seizing opportunities of a rural digital transformation and overcoming the criticalgaps in infrastructure, digital skills and the application of digital innovations to rural services. However, there are also many examples of social innovation in rural areas which are not digital and even when the Smart Village Strategy does revolve around digital innovation; people are alwaysfirmly at the centre.

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

Technologies: The water supply and sanitation in India has increased greatly from 1980 to present. Still, many people lack access to clean water, toilets, and sewage infrastructure. Various government programs at national, state, and community level have brought rapid improvements in sanitation and the drinking water supply. These various programs are ongoing. In 1980 rural sanitation coverage was estimated at 1% and reached 95% in 2018. Also, the share of Indians with access to improved sources of water has increased significantly from 72% in 1990 to 88% in 2008. At the same time,local government institutions in charge of operating and maintaining the infrastructure are seen as weak and lack the financial resources to carry out their functions. In addition, only two Indian cities

have continuous water supply and according to an estimate from 2018 about 8% of Indians still lack access to improved sanitation facilities.

In 2005 none of the 35 Indian cities with a population of more than one million distributed water for more than a few hours per day, despite generally sufficient infrastructure. Owing to inadequate pressure people struggle to collect water even when it is available. According to the World Bank,none have performance indicators that compare with average international standards. A 2007 study by the Asian Development Bank showed that in 20 cities the average duration of supply was only 4.3 hours per day. None of the 20 cities had continuous supply. The longest duration of supply was 12 hours per day in Chandigarh, and the lowest was 0.3 hours per day in Rajkot. According to the resultsof a Service Level Benchmarking (SLB) Program carried out by the Ministry of Urban Development (MoUD) in 2006 in 28 cities, the average duration of supply was 3.3 hours per day, with a range from one hour every three days to 18 hours per day. In Delhi residents receive water only a few hours per day because of inadequate management of the distribution system.

Sanitation:

Most Indians depend on on-site sanitation facilities which mean mainly pit latrines in rural areas. In rural areas, the government has been promoting community-led sanitation approaches such as the Total Sanitation Campaign, with some success. In urban areas, a good practice example is the Slum Sanitation Program in Mumbai that has provided access to sanitation for a quarter million slum dwellers. Sewage, where available, is often in a bad state. In Delhi the sewage network has lacked maintenance over the years and overflow of raw sewage in open drains is common, due to blockage, settlements and inadequate pumping capacities. The capacity of the 17 existing wastewater treatment plants in Delhi is adequate to cater a daily production of waste water of less than 50% ofthe drinking water produced. Of the 892 million people in the world that defecate openly, some 15 million live in India, making it the country with the highest number of people who defecate in the open.This has serious public health implications water supply and sanitation.

Water supply and sanitation is a State responsibility under the Indian Constitution. States may give the responsibility to the Panchayati Raj Institutions (PRI) in rural areas or municipalities in urban areas, called Urban Local Bodies (ULB). At present, states are generally plan, design and execute water supply schemes (and often operate them) through their State Departments (of Public Health Engineering or Rural Development Engineering) or State Water Boards. Highly centralized decision-making and approvals at the state level, which are characteristic of the Indian civil service, affect the management of water supply and sanitation services. For example, according to the World Bank in the state of Punjab the process of approving designs is centralized with even minor technicalapprovals reaching the office of chief engineers. A majority of decisions are made in a very centralized manner at the headquarters.

According to a Planning Commission report of 2003 there is a trend to decentralize capital investment to engineering departments at the district level and operation and maintenance to district and gram panchayat levels.

3.11 Initiatives in village development by local self-government

Local government in India refers to governmental jurisdictions below the level of the state. India is a federal republic with three spheres of government: central, state and local. The 73rd and 74th constitutional amendments give recognition and protection to local governments and in addition each state has its own local government legislation.[1] Since 1992, local government in India takes place in two very distinct forms. Urban localities, covered in the 74th amendment to the Constitution,[2] have Nagar Palika but derive their powers from the individual state governments, while the powers of rural localities have been formalized under the *panchayati raj* system, under the 73rd amendment to the Constitution.[3] For the history of traditional local government in India and South Asia, see panchayati raj.

As of 2017, there are a total of 267,428 local government bodies, of which 262,771 are rural and 4,657 urban. Of the rural local governments, 632 are zilaparishads at the district level, 6,672 are panchayatsamitis at the block level, and 255,466 are gram panchayats at the village level. Following the 2013 local election, 37.1% of councillors were women, and in 2015/16 local government expenditure was 16.3% of total government expenditure.[1]

The panchayati raj system is a three-tier system with elected bodies at the village, taluk and district levels. The modern system is based in part on traditional {Panchayati raj, Panchayat governance}, in part on the vision of (Mahatma Gandhi) and in part by the work of various committees to harmonize the highly centralized Indian governmental administration with a degree of local autonomy.[4] The result was intended to create greater participation in local government by people and more effective implementation of rural development programs. Although, as of 2015, implementation in all of India is not complete, the intention is for there to be a gram panchayat for each village or group of villages, a tehsil level council, and a zillapanchayat at the district level.

Rural local governments (or panchayat raj institutions):[5]

- Zillapanchayats
- Mandal or talukapanchayats
- Gram panchayats

3.12 Smart Initiatives by District Municipal Corporation

Talking about the smart city initiative by Ahmedabad district the goal of the initiative is " Smart utilization of Ahmedabad city's potential for enhancing quality of life for the citizens of providing equal access to best quality physical infrastructure , social infrastructure and mobility through leveraging state of the art and technology : thus making Ahmedabad a futuristic Global city with focus on enhancing economy , protecting the ecology and preserving the identity and culture of the city".

The initiatives taken by Ahmedabad Municipal Corporation are :

- Solar roof Panels
- Green campaign
- Integrated command and control center.
- Installation of CCTV Cameras
- Installation of smart toilets

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

Any Projects contributed working by Government / NGO / Other Digital Country concept : Digital India Initiative : The initiative comprises of several projects which will focus on better governance, knowledge and universal phone connectivity across the country.

- ➢Digi Locker
- ➢ MyGov.in
- ➢Swachh Bharat Mission mobile app
- ➢ Digitize India Platform
- ➢ Bharat Net
- ➢Wi-fi Hotspots
- ➢ Electronics Development Fund

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

Smart villages can be stewards of the environment aided by technologies to monitor key environmental indicators such as forest health, water quality, soil conditions and changes to the landscape. They can also reduce pressure on deforestation using efficient cook stoves to decrease the need for traditional biomass energy sources such as charcoal and wood a key driver of unsustainable forest use.

Smart villages can host community-run recycling facilities ranging from those equipped to recycle wastewater and organic waste from agro -processing, to next-generation facilities for the recycling of e-waste, including energy-storage and generation technologies such as batteries and solar panels. Depending on geographical endowments, some smart villages will be able to operate as regional ecotourism hubs, an activity that can improve the welfare and connectivity of rural and urban communities.

Chapter 4.
About LEKWADA VILLAGE

4.1 Introduction

4.1.1 Introduction About LEKWADA Village details

Lekwada village is situated on 22.825 latitude and 73.342 longitudes. Nearest town from Lekwada village is Thasra and it is 14 km away from Lekwada. Lekwada Village is situated at ThasraTaluka in Gandhinagar District of Gujarat State, India. Lekwada includes some sub-villages like Lekwada
District: Gandhinagar
State: Gujarat

PHYSICAL & DEMOGRAPHICAL GROWTH
Area of Lekwada village (Approx.) is 2.04 sq. Miles (5.18 sq. km, 528.19 hectares). Total agricultural land area of village is 228.34 hectares

TABLE 2 (DEMOGRAPHICAL DETAIL)

NO	Census	Population	Male	Female
1	2001	1875	971	904
2.	2011	2723	1390	1333

(T-1.8H 2001-2011 Population)

Lekwada is a Village in ThasraTaluka in Gandhinagar District of Gujarat State, India. Itis located District headquarters Gandhinagar. 08 KM away.

Urban areas around Lekwada village are pathika and gandhinagar nearest town from Lekwada village is Pathika and it is 5 km away from Lekwada

4.1.2 Justification/ need of the study:

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

4.1.3 Study Area (Broadly Define):

Name of three major occupation groups in village are…..

1 Agriculture (70% of total population)
2 Labor work (20% of total population)
3 Business (10% of total population)

Majority Crops taken in village are Bajra, Wheat, & Cotton. In Lekwada village the labors concern with agricultural work are 25% of total population and concern with stone crushing industries are 15% of total population. Agriculture is the main occupation of Lekwada village. Accept it some people are running stores (local shops).

4.1.4 Objectives of the study:

➢ 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, transport depot etc.

4.1.5 Scope of the Study:

Reduce migration and decrease poverty in to village due to improvement givenbelow

content by using and following village development plan:

• Micro, Small and Medium Scale Industries

• Irrigation Development

• Educational Programs and Services

• Health Programs and Services.

4.1.6 Methodology Frame Work for development of your village

Project road map:

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 (Rain water harvesting, Biogas plant, waste to energy models, eco sanitation, Renewable Energy sources Application & Other)
- 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:

- Design objectives
- Technical approach
- Proposed sustainability features
- Identify customer needs
- Identify local/state/federal engineering and construction specifications
- Project management structure
- Budget.

4.2 LEKWADA Village Study Area Profile

4.2.1 Study Area Location with brief History land use details

- It is situated 8km away from Gandhinagar, which is both district & sub-district headquarter of Lekawada village. As per 2009 stats, Lekawada village is also a gram panchayat.
- The total geographical area of village is 528.18 hectares. Lekawada has a total population of 2,723 peoples. There are about 596 houses in Lekawada village. Gandhinagar is nearest town to Lekawada which is approximately 8km away.

- According to Census 2011 information the location code or village code of Lekawada village is 511259. Lekawada village is located in Gandhinagar Tehsil of Gandhinagar district in Gujarat, India. It is situated 8km away from Gandhinagar, which is both district & sub-district headquarter of Lekawada village. As per 2009 stats, Lekawada village is also a gram panchayat.

TYPE			STATUS		
PUBLIC BUS SERVICE			AVAILABLE IN VILLAGE		
PRIVATE BUS SERVICE			AVAILABE IN VILLAGE		
RAILWAY STATION			AVAILABE WITH 5-10 KMS DIST		

(T-1.9I Village Transport)

4.2.2 Base Map

(F-13 Base Location map)

4.2.3 Physical & Demographical Growth

Lekawada is a large village located in Gandhinagar Taluka of Gandhinagar district, Gujarat with total 596 families residing. The Lekawada village has population of 2723 of which 1390 are males while 1333 are females as per Population Census 2011.

In Lekawada village population of children with age 0-6 is 392 which makes up 14.40 % of total population of village. Average Sex Ratio of Lekawada village is 959 which is higher than Gujarat state average of 919. Child Sex Ratio for the Lekawada as per census is 894, higher than Gujarat average Lekawada village has higher literacy rate compared to Gujarat. In 2011, literacy rate of Lekawada

village was 84.26 % compared to 78.03 % of Gujarat. In Lekawada Male literacy stands at 94.51 % while female literacy rate was 73.69 %. As per constitution of India and Panchyati Raaj Act, Lekawada village is administrated by Sarpanch (Head of Village) who is elected representative of village. Our website, don't have information about schools and hospital in Lekawada village.

Census Data of Village Lekawada, Teshil Gandhinagar, District Gandhinagar, India --Census 2011

Population	Area (Ha)	Density (P/Ha)	Sex Ratio	Literacy
2723	528.18	5	959	84.26%

(T-1.10J Sex Ratio)

Gram Panchayat name of the Lekawada village is LEKAWADA. CD Block name is Gandhinagar and Teshil/Taluk or sub-district is Gandhinagar. Data Reference year is 2009 of Census 2011. Sub District HQ Name is GANDHINAGAR and Sub District HQ Distance is 8 Km from the village. District Head Quarter name is GANDHINAGAR and it's distance from the village is 8KM. Nearest Town of the Lekawada village is GANDHINAGAR and nearest town distance is 8 km. Pin code of Lekawada village is 382042. As per census 2011 village code of village Lekawada is 511259.

Demographics Population of Village Lekawada, Teshil Gandhinagar, District Gandhinagar

Total Population	Male Population	Female Population
2723	1390	1333

(T-1.11K Population)

Sex Ratio of Lekawada Village -Census 2011

As per the Census Data 2011 there are 959 Females per 1000 males out of 2723 total population of village. There are 894 girls per 1000 boys under 6 years of age in the village.

4.2.4 Economic generation profile / Banks

In Lekawada village out of total population, 991 were engaged in work activities. 68.92 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 31.08 % were involved in Marginal activity providing livelihood for less than 6 months. Of 991 workers engaged in Main Work, 109 were cultivators (owner or co-owner) while 237 was Agricultural laborer.

4.2.5 Actual Problem faced by Villagers and smart solution

During an interaction with people of Lekwada village we understood their problems and issues like:

1. Water problems.
2. Sanitation problems.
3. Internal roads are also not proper.
4. No pharmacy
5. No public health center (PHC)

Other than these the villagers have no any issues and they are satisfied with the work of Sarpanch and Talati of Lekwada village.

Smart solutions:

1. Rain water harvesting
2. Biogas plant
3. Construe internal roads
4. Pharmacy
5. Public garden
6. Public health center (PHC)

4.2.6 Social scenario -Preservation of traditions, Festivals, Cuisine

Gujarat Social Scenario:

Gujarat is a flourishing state with cultural diversity. It is vibrant with its true colors of rich heritage and cultural traditions. Dating back to history with the Harappan civilization, the state becomes a confluence of many religions – Hinduism, Islam, Jainism and Buddhism. The Gujarati culture blends in arts, beliefs, customs, traditions, institutions, inventions, language, technology andvalues.
Gujarat is influenced with enculturation; a culture shared with members of the society and passed on from one generation to the next. Enculturation has unified people with common sense experience and influence that lead to knowledge and appreciation of cultural traditions andlifestyles. The aspect of joining hands to greet or bow down comes through age influences as offering reverence.

Social systems of learning, religious practices and forms of artistic expressions have led way to more balanced lifestyles in Gujarat. People of Gujarat are found to be sharing cultural traits and patterns with other regions and also extend beyond national boundaries towards International culture.
As Gujarat stands as 'Heart of India', Multiculturalism is traced in Gujarat. Shared cultural background making people feel to home ground and more comfortable with other people from

their own culture. Culture shock unlike other countries is therefore, a missing point which makes people more confident and energetic as they stand for a challenge in global scenario.

Customs and Tradition:
The customs and Gujarati traditions constitutes for one of the most vibrant and colorful parts of India. The ethnicity and authenticity here is very simple, humble and age old. The entire state boasts of some of the most colorful heritage and culture of architecture, festivals, fairs, dance forms, musical numbers and so much more which makes it a one of a kind experience. Thepeople here have managed to safeguard their centuries and eons old traditions which can even be witnessed in present day in various forms and modes. Here is everything you need to know about the culture and traditions of this amazing state on the coast.

Tradition:
Gujarat has become one of the largest and the most popular metropolitans in India which is currently expanding its capacity tenfold. This is clear with the presence of various big mansions and modern homes. Although with all these technological advancements, the traditions of this place are well maintained and managed by the people residing here. Some places also feature traditional homes which is made out of wood and built in a typical Gujarati form. It is a part of the tradition that all these houses that are built should necessarily have a Chabutra feature which is for the purpose of feeding the birds. Apart from the physical features the intricately designed walls,windows and various other such features truly represent the beauty of Gujarati culture. In case of jewelry, people and women wear silver jewels other than golden like the rest of India. Women in Gujarat can be seen traditionally carrying a bunch of keys tired to their waist with the help of a keyholder that is made out of silver.

FOOD OF GUJARAT

Gujarat is every food lover's paradise. The range of delicacies offered here is simply remarkable and mind boggling. Every food stall here offers food that contains the signature sweet and savoury taste that has made Gujarati dishes a favorite among a majority of Indians. Some of the most iconic food of Gujarat which is famous throughout the world include Fafda, Undhiyu, Dhokla, Khandvi etc. what makes Gujarati food items special is the ingredients that goes into its making which are locally available and the best of it can only be experienced while in Gujarat. Some other delicacies and snacks include Handvo, Gathiya, Kachori etc. Not just this stunning coastal town the entire Indian subcontinent is famous for its delicious food.

4.3 Data Collection LEWADA VILLAGE Photograph/Graphs/Charts/Table:

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.
- Questions should be focused, clear, and encourage open ended responses.
- They should be qualitative in nature.

2. Focus groups
   - A facilitated group interview with individual that has something in common. Gathers information about combined opinions.
   - Responses are often coded in categories and analyzed.

3. Observations - Field trips
   - Allows for the study of the dynamics of a situation, frequency counts of target behavior.
   - Good source for providing extra information about a certain group, can use videography.

4. Questionary Survey
   - Responses can be analyzed with quantitative methods by assigning numerical values to like type scales
   - Results are generally easier to analyze.
   - Other than this survey forms are prepared which are distributed to responders to record their opinions, data so that it can be analyzed.

4.3.2 Primary details of survey details:

Primary survey is done in order to collect the basic information about various facilitiesavailable in the village.

In this survey data is collected by various means like house to house means door to door survey, by interviewing people, school teachers, shop keepers, and other public.

Accuracy of this data is not sufficient means that data based on primary survey is not reliable or very accurate. Variances in the data happened due to different views of people.

We checked the infrastructure condition of different buildings like school, gram- panchyat, police station, banks, etc. And also check the condition of various basic amenities like water supply, drainage, electricity, solid waste management, railway station, bus station, hospitals, PHC, etc.

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

In Lekwada: Average size of the house in the village is 6 X 12m

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

4.3.3 No of Human being in One House:

Total number of population in Lekwada is 2723 as per 2011 census. There is different number of people in each house as there are nuclear families as well as joint families, but the average no of human beings in one house is 5.

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

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

4.3.5 Geographical Detail:

The Lekawada village is located in the state Gujarat having state code 24 and having the village code 511259. The Gandhinagar is the district of this village with district code 473. The total geographical area in which this village is expanded in 528.18 hectares / 5.2818 Square Kilometers (km^2) / 1305.1612038333 acres.

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

Total No. of houses: 596

Population: 2723

(Male: 1390; Female: 1333)

SC & ST: 1.10% & 0.15%

Literacy: 84.26%

Total Workers: 991

4.3.7 Occupation Detail:

Name of three major occupation groups in village are

Agriculture (70% of total population)
Labor work (20% of total population)
Business (10% of total population)

4.3.8 Agricultural Details / Organic Farming / Fishery :

Majority of the population of Lekwada village are occupied in farming. The main crops grown in the village are: wheat, cotton, rice, Bajra etc.

4.3.9 Physical Infrastructure Facilities - Manufacturing HUB / Ware Houses:

Transportation facilities are Government bus service is available from main highway road Gandhinagar railway station are the very nearby to Lekwada. Local transportations are auto rickshaw, chagdaa, private vehicles are available in Lekwada village. ; The village approach roads are Kucha Pucha Two overhead tank is available. Apart from this primary school, anganwadi, dairy etc. are also present in the Lekwada village.

4.4 Infrastructure Details (With Exiting Village Photograph)

Drinking Water / Water Management Facilities:
Pure drinking water is supplied through underground pipes in easy way from Sabarmati River to the elevated storage tanks (fig 2) and from tank it is supplied to the village


(F-14Over head water tank)

As per standard data of NBC code, 100 liters of water is required for per person per day in village area. Total liters of water 130000 This is sufficient for the whole village.

4.4.2 DRAINAGE NETWORK

Almost in all areas of village an open ditch drainage network is available. But it is not sufficient for the monsoon season, so it is required to increase the depth of open ditch.

4.4.3 Transportation & Road Network

A good approach road (state highway 08) to reach Lekawada village is available in good condition. Streets are in acceptable condition in village. Internal streets are in fair weather condition and not suitable in all weathers like monsoon. Quality of internal streets is needed to be improving.

(F-15 Internal roads)

Government electricity is available in village and it is supplied almost for 24 hours. Road/street lights are available on main road and streets of village. In all the government buildings like gram-panchyat, police station, anganwadies, schools, post-office; good electrification is available which is adequate

4.4.4 Housing condition:

Both kutchha and pucca houses are there in Lekwada village. Approx. ratios of kutcha and pucca houses are 60:40. Housing conditions are needed to be improved. Most of houses have bath-toilet facility and electricity.

(F-16 Houses/Kutchaa Pucca)

4.4.5 Social Infrastructure Facilities, Health, Education

HEALTH FACILITIES

Primary health center is available in village in bazar area which is almost in center of village. Which have 6 bad capacities and it is not adequate as per the population of village. Accept it five private clinics & one private hospital (sonaba hospital) of 20 bed capacity with all primary health services are available in village.

(F-17 Clinic)

EDUCATION FACILITIES

Seven primary schools, three secondary schools and two higher secondary schools are available in the Lekwada village which is sufficient for whole village population. Seven aaganwadis (play group) are available in Lekwada village in different areas. ITI College is not available in village because thereis less number of people doing higher studies and ITI is available nearby in dakor village.

(F-18Anganwadi)

(F-19 Primary & Secondary School)

OTHER FACILITIES

- One post office is available in Lekwada area.
- A gram panchyat building and computer room is needed in Lekwada village.
- There are two medical shops are available in the village. Different banks like ADC BANK are available in the village.

(F-20 Bank)

(F-21 Panchyat)

(F-22 Internal Road)

(F-23 Farm)

(F-24 Solar panel)

(F-25 Cow shed)

(F-26Farmhouse)

(F-27 Small industry)

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

In the Lekwada village as per the interaction with the villagers the maintenance is required in the Community hall and public health center. Water tank is present but is not in good condition. Panchayat building, Anganwadi, Public library needed and primary school and secondary are also in good working condition. So the estimate of proper maintenance of Public Health Center library community hall is required.

4.4.7 Technology Mobile/ WIFI / Internet Usage Details

Almost in all the households the villagers are using mobile phone and they are also using the internet facility for personal usage. But in the panchayat building there is a no WIFI connection available.

4.4.8 Sports Activity as Gram Panchayat

There are no any sports activities are being done by gram panchayat. The primary school has some sports equipment and tools & also children and students are using these facilities.

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

The Lekwada village has panchayat building and it is in good condition. The separate Post office building is there in village. Public Library is not available in the village. Dairy isavailable in the village. A small playground outside the primary school is present. The village has no public garden. There is no Community hall in village & PHC.

4.4.10 Other Facilities (e.g. like foot path development-Smart toilets-Coin operated entry, self-cleansing, waterless, public building)

There is no any kind of facilities like smart toilet-coin operated No footpath etc. in the Lekwada village. There are some houses in which solar system is there like solar panel,solar water heater.

4.5 Existing Institution like - Village Administration – Detail Profile

4.5.1 Plantation for the Air Pollution:

There is no such activity done of tree plantation for the air pollution in the Lekwada village. But that kind of activities are done in the Secondary school by the students of the Lekwada village.

4.5.2 Rain Water Harvesting - Waste Water Recycling:

In the Lekwada village no one is using the system of rain water harvesting and there is no any kind of waste water recycling process done.

4.5.3 Agricultural Development:

There is No agricultural co-operative office building in the Lekwada village so all the village agriculture. The village farmers have agricultural tools and equipment. All the agri-materials are available from Gandhinagar village which is 8 km away from the Lekwada village.

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

5.1 Concept (Civil)
5.1.1 Advance Sustainable construction techniques / Practice sand Quantity Surveying

India's construction sector is assessed at Rs.4000 billion or $100 billion. As a result of government spending, private investments as well as foreign direct investment, has made India number one of the top ten spending nations on construction in the world. We manufacture more than 250 million tons of cement and are second only to China. A recent report "Global Construction 2020", estimates that India will be the third largest global construction market after China and USA. In order to improve the standard of living of her population, one of the key hurdles that faces today's India is to overcome the challenge of infrastructure bottlenecks. Consequently the federal government has announced our 11th five years plan which allocates 9% of the GDP to infrastructure projects. The National Planning commission - an apex federal body has estimated an allocation of $515 billion which is equivalent to Rs.23 trillion to infrastructure sectors over the next five years. This includes construction of Roads, Highways, Airports, Bridges, Ports, Railways as well as water supply and sanitation amongst few others. The 12th five years plan projects an investment of 10% of the national GDP into infrastructure which equates to a staggering $1 trillion or equivalently Rs.45 trillion.

1. Prefabricating Materials in Controlled Environments

Constructing as much of a structure in a controlled environment as possible has improved the quality of buildings and resulted in less trash, says Spencer Finseth, principal of Minneapolis-based Greiner Construction.

Being able to cut materials precisely decreases waste and creates buildings that are strong enough to allow contractors to use wood framing as high as five stories, he says. Mechanical contractors use Building Information Management (BIM) systems to cut sheet metal for duct work in a controlled environment instead of outside to avoid the shape-changing problems caused by cold or hot weather, according to Mike Smoczyk, director of professional development for Minneapolis-based Kraus-Anderson. That same duct work is delivered to a project “wrapped and sealed tightly and kept out of the elements” to avoid damage, he says. He estimates that prefabrication probably accounts for 15% of any project and likely more for hotels.

Roseville-based McGough Construction is prefabricating forms for use in creating the concrete superstructure of the $39 million, 57,000-sq.-ft. addition for the Ordway Center for Performing Arts addition in downtown St. Paul, according to Dan Brenteson, McGough's lean enterprise system director. McGough first creates 3D models then pre-builds forms at its White Bear Lake warehouse, a much better environment than being outside at a work site exposed to the elements and "in a constrained environment," he says.

The resulting forms are then transported — in this case to the Ordway site — where concrete is poured into them and the pieces are assembled in an Erector Set-style fashion. It's a common practice for McGough that saves time and improves quality because the planning and assembly of formwork were done in a warehouse with access to equipment not readily available on tight jobsites, such as the Ordway, Brenteson states.

2. Construction Waste Management

Reducing waste is becoming more achievable for contractors as haulers have grown more sophisticated in recent years. Where jobsites once had trash bins for different types of waste, they now need just one, in many cases, because haulers use pickers to separate materials.

"Through haulers, we can achieve 75% landfill avoidance through their process and we don't need to separate materials to do it," says Dale Forsberg, president of St. Louis Park-based Watson-Forsberg On a couple of sites, we've hit 95%."

For inner city projects with small footprints, having haulers handle materials in a single container makes all the difference because space is at a premium, Forsberg says. Some materials are recyclable on site — in particular, concrete that can be crushed and used for foundations or as aggregate beneath parking lots.

The three largest construction projects underway in the Twin Cities all have a recycling rate of more than 90%, according to Zachary Hansen, environmental health director, St. Paul-Ramsey County Public Health department, speaking at a recent conference sponsored by the Minneapolis- based Environmental Initiative. The projects include the Vikings Stadium in Minneapolis, the St. Paul Saints Ballpark and the Ford plant in St. Paul.

3. Managing the Site for Improved Environment

Storm water pollution prevention has become a "big deal" to municipalities and the state and federal government, says Smoczyk at Kraus-Anderson. "Municipalities do not want a [construction] development that dumps a bunch of bad water into the storm sewer system and overflows it," he says.

Runoff is now contained by silt fencing surrounding an area. A number of “best practice” approaches can be used to treat water on site and avoid having it flow into the local sewer system, Smoczyk says. Kraus-Anderson is now making plans to avoid runoff during construction of its new office building in downtown Minneapolis.

Forsberg says worker safety has led to restrictions and the institution of simple ways to reduce pollution. There’s no smoking on the site, for example. When workers enter a building, they travelover “walk-off mats” that remove dirt, lead and other potentially dangerous chemicals from their shoes. Contractors also bring recycling containers for food to decrease organic waste.

Recommendations:

In mapping out sustainable practices that India must adopt a "cradle to grave" analysis is required. And for this we need to have a total approach than a patch work point system or a grade based certification system. In order to have a comprehensive plan for sustainable construction, every structure may be thought about based on the following parameters:

- Planning, design and specifications based on performance and service life
- Construction Practices
- Material Conservation and Selection.

1. Planning, design and specifications:

Structures in India are designed well however so far in most specifications, there is no reference to any service life or calculations thereof. To this effect, deeper study of various service life prediction models and calculations are essential. Specifications must to be performance based as opposed to their present form of being prescription based.

2. Construction Practices:

This is in itself a large, yet relatively simple and straight forward challenge to tackle. These wastages are activities that absorb resources, man hours and materials but create no value. Most developed countries have different forums / institutes / researchers / academic institutions for seeking solutions to mitigate these wastages and lean construction practices that emerged have yielded encouraging. Lean construction is a "way to design production systems to minimize waste of materials, time and efforts in order to generate the maximum possible value". While some novel initiatives are being taken in some parts of India to adopt leaner construction practices, India does not have a fully focused lean construction forum. Creation of an industry consortium or lean construction forum may be a good beginning.

3. Material Conservation and Selection:

develop adequate engineering properties for a variety of applications, easily adapt to any shape and size and has comparatively low initial and maintenance costs. While concrete not be as big of an energy consumer as structural steel, aluminum and glass; concrete and particularly cement still remains a major energy 'sink' due to its sheer volume of production and also environmentally unsustainable due to large quantities of CO_2 evolution associated with its manufacture. Raw materials for cement manufacture include non-renewable natural resources like limestone, aggregates, manufactured sands (fine aggregates), and so on.

Conclusion:

- India is an astoundingly growing economy and hence the pressure on the use of natural resources is very heavy.
- There is an awakening about the words durability and then sustainability.
- Though the durability is understood to a point the real meaning and importance of sustainability is not fully comprehended by engineering fraternity as well as planners.
- Some sporadic efforts are carried out in the form of very repetitive academic experimentation; however, these efforts are in extreme primitive conditions.
- Industry has not opened to this "Sustainability aspect" proactively as they are busy joining the band wagon of growth machine.
- Federal authorities also are not well informed and hence not equipped to adopt 'Sustainability initiative'.
- Also use of renewable energy and resources is not much sought after option and not given due importance as the initial costs are high.

- At the same time, there is definite internal feeling in all that something is definitely needed to be done for next generation. Typically not to leave them with depleted resources.
- At the behest of ACI international – India Chapter of ACI has organized couple of international conferences on sustainability along with the help of other organizations and Institutions.

5.1.2 Soil Liquefaction:

It 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[1] in reference to the 1918 failure of the Calaveras Dam in California. He described the mechanism of flow liquefaction of the embankment dam as:

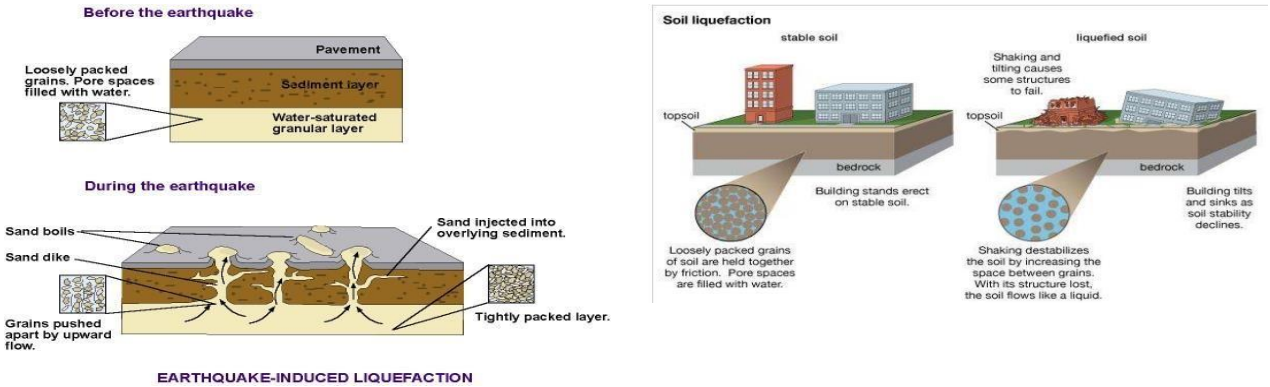
If the pressure of the water in the pores is great enough to carry all the load, it will have the effect of holding the particles apart and of producing a condition that is practically equivalent to that of quicksand… the initial movement of some part of the material might result in accumulating

pressure, first on one point, and then on another, successively, as the early points of concentration were liquefied.

The phenomenon is most often observed in saturated, loose sandy soils. This is because a loose sand has a tendency to compress when a load is applied.

Dense sands, by contrast, tend to expand in volume or 'dilate'. If the soil is saturated by water, a condition that often exists when the soil is below the water table then water fills the gaps between soil grains ('pore spaces'). In response to soil compressing, the increases and the water attempts to flow out from the soil to zones of low pressure (usually upward towards the ground surface).

However, if the loading is rapidly applied and large enough, or is repeated many times (e.g. earthquake shaking, storm wave loading) such that the water does not flow out before the next cycle of load is applied, the water pressures may build to the extent that it exceeds the force between the grains of soil that keep them in contact. These contacts between grains are the means by which the weight from buildings and overlying soil layers is transferred from the ground surface to layers of soil or rock at greater depths. This loss of soil structure causes it to lose its strength and it may be observed to flow like a liquid.

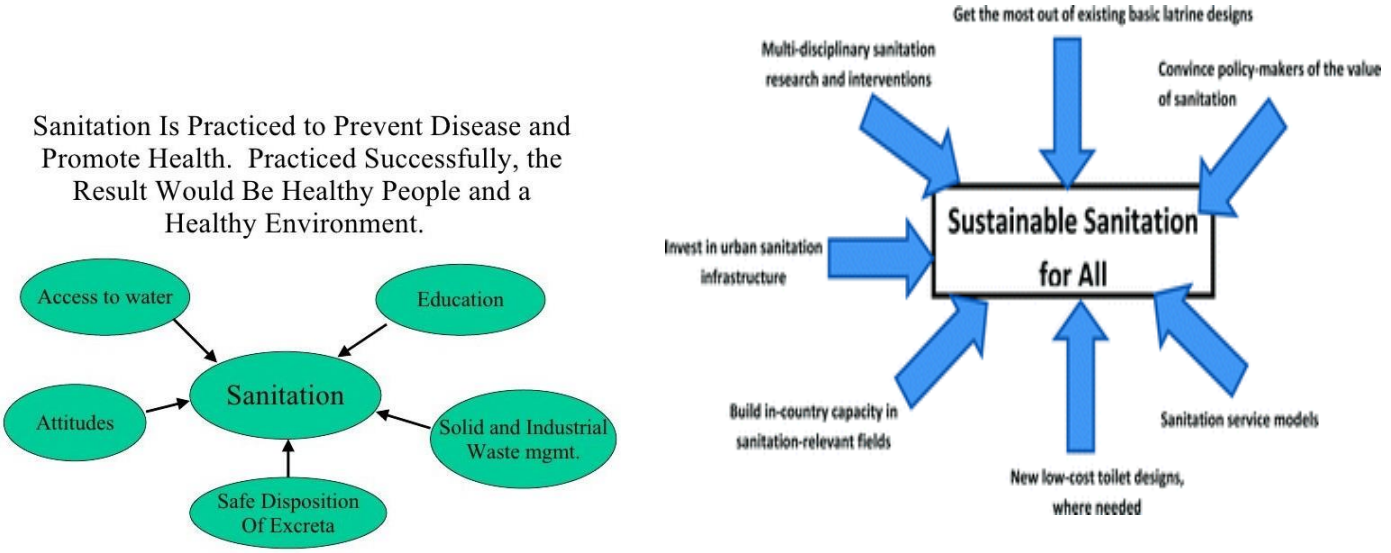


(F-28 Soil Liquefaction)

5.1.3 Sustainable sanitation

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.[3]

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.



(F-29 Sustainable Sanitation)

Planning of sustainable sanitation

Most sanitation systems have been designed with the five aspects in mind, but in practice they are failing far too often because some of the criteria are not met. Since there is no one-for-all sanitation solution which fulfils the sustainability criteria, evaluation will depend on the local framework and will have to take into consideration the existing environmental, technical, socio-cultural and economic conditions.

Some basic principles to be observed when planning and implementing a sustainable sanitation system were endorsed by the members of the Water Supply and Sanitation Collaborative Council during its 5th Global Forum in November 2000:

1. Human dignity, quality of life and environmental security at household level should be at the center of any sanitation approach.
2. In line with good governance principles, decision-making should involve participation of all stakeholders, especially the consumers and providers of services.
3. Waste should be considered a resource, and its management should be holistic and form part of integrated water resource, nutrient flow and waste management processes.
4. The domain in which environmental sanitation problems are resolved should be kept to the minimum practicable size (household, community, town, district, catchment, and city).

These planning guidelines have been revised further and are now used in various training courses for urban planners

5.1.4 Transport Infrastructure / system

Transportation Use in Rural Areas
Transportation refers to any vehicle or activity that moves people and goods from one place to another. In the United States, key modes of transportation for people and goods include buses, trains,trucks, cars, airplanes, and other forms of motorized vehicles. However, transportation can also refer to bicycles, boats, and even pedestrian traffic.

Both public and private authorities can manage transportation systems, which can involve maintaining and updating infrastructure to ensure the system runs smoothly. Transportation infrastructure may include roads, bridges, bus stations, train tracks, airports, sidewalks, or ferry terminals.

Transportation plays a critical role in the livability of a community – the factors that influence a community's quality of life. Transportation allows for access to food, healthcare, educational opportunities, and employment.

Public transportation is a type of transit available for the public on a scheduled and continual basis. There are several differences in public transportation use between urban and rural areas. While approximately 20% of the U.S. population lives in rural areas, the federal government only allocates about 11% of transportation grant funding to rural areas.

The American Public Transportation Association's Public Transportation Fact Book states that urban transit agencies provided 98% of passenger trips in 2014, while rural transit agencies provided 1.5%. The remaining 0.5% of passenger trips were provided by nonprofits.

5.1.5 Vertical Farming

Vertical farming is the practice of growing crops in vertically stacked layers. It often incorporates controlled-environment agriculture, which aims to optimize plant growth, and soilless farming techniques such as hydroponics, aquaponics, and aeroponics.Some common choices of structures to house vertical farming systems include buildings, shipping containers, tunnels, and abandoned mine shafts. As of 2020, there is the equivalent of about 30 ha (74 acres) of operational vertical farmland in the world.

The main advantage of utilizing vertical farming technologies is the increased crop yield that comes with a smaller unit area of land requirement. The increased ability to cultivate a larger variety of crops at once because crops do not share the same plots of land while growing is another sought-after advantage. Additionally, crops are resistant to weather disruptions because of their placement indoors, meaning less crops lost to extreme or unexpected weather occurrences. Because of its limited land usage, vertical farming is less disruptive to the native plants and animals, leading to further conservation of the local flora and fauna.

Vertical farming technologies face economic challenges with large start-up costs compared to traditional farms. In Victoria, Australia, a “hypothetical 10 level vertical farm” would cost over 850 times more per square meter of arable land than a traditional farm in rural Victoria. Vertical farms alsoface large energy demands due to the use of supplementary light like LEDs. Moreover, if non- renewable energy is used to meet these energy demands, vertical farms could produce more pollution than traditional farms or greenhouses.

(F-30 Vertical Farming)

5.1.6 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure

In the case of Reinforced concrete structure the ingress of moisture or air may lead to corrosion of steel, cracking and spalling of the concrete cover thereby reducing durability of the concrete structure. Repair has been suggested as the protective solution for damaged structure due to corrosion.Corrosion of reinforcing steel is a significant economic and safety problem, preventing many buildings from attaining their design life.

It is now a must look into field as corrosion of reinforcing steel is seen almost in every 10 out of 100 constructions within a life of 10 years. Nowadays the increase content of pollutants in the city atmosphere has very much affected the lifespan of RCC structures. The increased content of pollutants include a very high rates of Sulphates and Chlorides which when these mixes with rain water and falls over these structures and damages the visible parts.

Prevention:

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

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

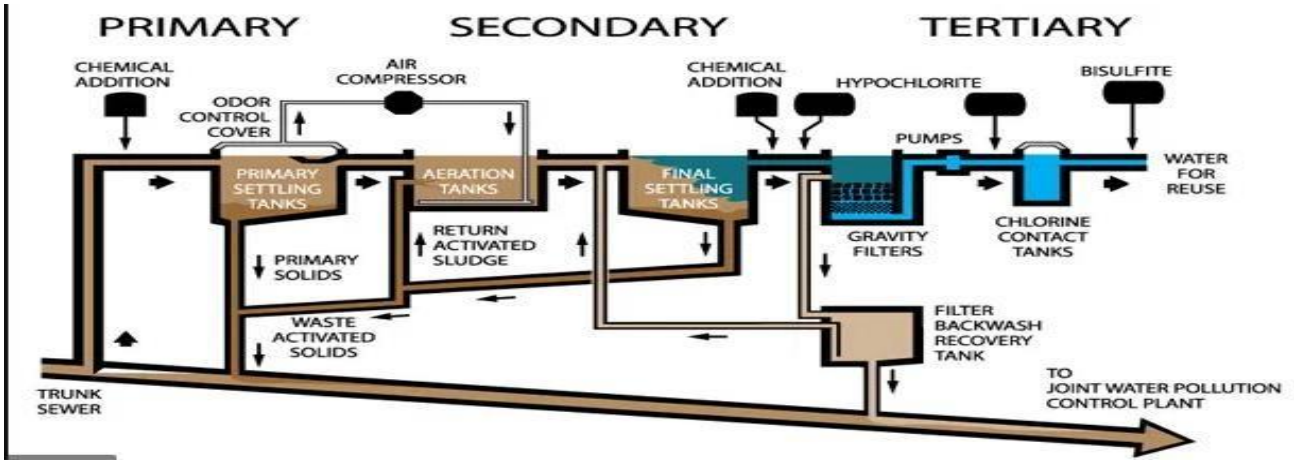
2) Barrier methods protect reinforced concrete from corrosion damage by preventing water, oxygen, and chloride ions from reaching the reinforcement and initiating corrosion.

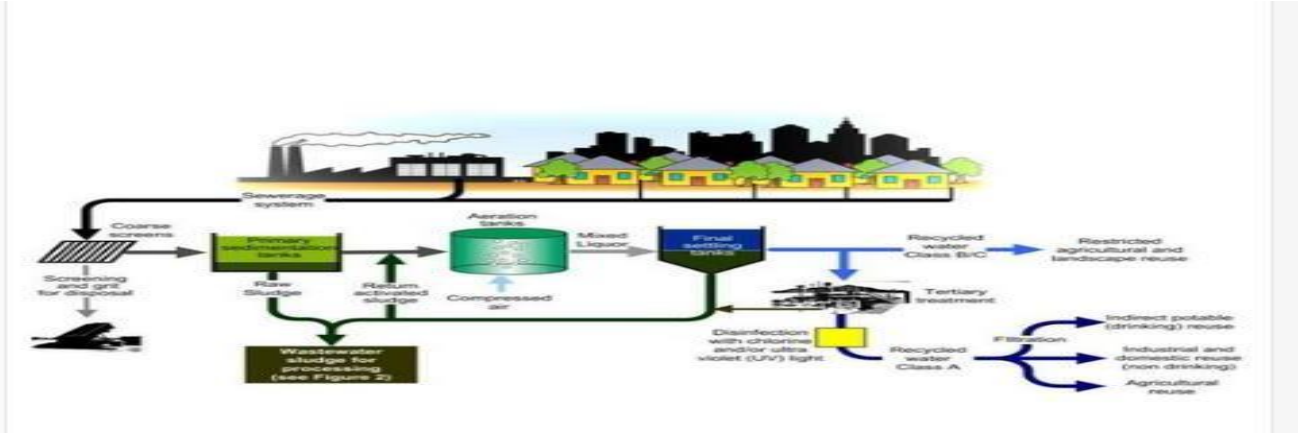
3) Electrochemical methods use current and an external anode to protect the reinforcement, even when the chloride ion concentration is above the corrosion threshold

5.1.7 Sewage Treatment plant

Sewage treatment plant is a plant where waste water is treated. Sewage treatment is the process of removing contaminants from municipal wastewater, containing mainly household sewage plus some industrial wastewater. Physical, chemical, and biological processes are used to remove contaminants and produce treated wastewater (or treated effluent) that is safe enough for release into the environment. 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. 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.





(F-31 Sewage Treatment Plant)

Chapter 6.
Swatchh Bharat Abhiyan (Clean India)

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

Initiated by the Government of India, the mission aimed to achieve an "open-defecation free" (ODF) India by 2 October 2019, the 150th anniversary of the birth of Mahatma Gandhi. The objectives of the first phase of the mission also included eradication of manual scavenging, generating awareness and bringing about a behavior change regarding sanitation practices, and augmentation of capacity at the local level. The second phase of the mission aims to sustain the open defecation free status and improve the management of solid and liquid waste. The mission is aimed at progressing towards target6.2 of the Sustainable Development Goals Number 6 established by the United Nations in 2015. The campaign's official name is in Hindi. In English, it translates to "Clean India Mission". The campaign was officially launched on 2 October 2014 at Rajghat, New Delhi by Prime Minister Narendra Modi. It is India's largest cleanliness drive to date with three million government employees and students from all parts of India participating in 4,043 cities, towns, and rural communities. At a rally in Champaran, the Prime minister called the campaign Satyagrah se Swachhagrah in reference to Gandhi's Champaran Satyagraha launched on 10 April 1916. The mission was split into two: rural and urban. In rural areas "SBM - Gramin" was financed and monitored through the Ministry of DrinkingWater and Sanitation; whereas "SBM - urban" was overseen by the Ministry of Housing and Urban Affairs.

As part of the campaign, volunteers, known as Swachhagrahis, or "Ambassadors of cleanliness", promoted indoor plumbing and community approaches to sanitation (CAS) at the village level. Other activities included national real-time monitoring and updates from non-governmental organizations (NGOs) such as The Ugly Indian, Waste Warriors, and SWaCH Pune (Solid Waste Collection and Handling).

The government provided subsidy for construction of nearly 110 million toilets between 2014 and 2019, although many Indians especially in rural areas choose to not use them. The campaign was criticized for using coercive approaches to force people to use toilets. Many households werethreatened with a loss of benefits such as access to electricity or food entitlements through the public distribution system.

6.1 Swachhta needed in Lekwada village -Existing Situation with photograph:

We have done one survey on existing condition of village regarding swachhta. The people are maintaining cleanliness of the village but in some streets there is no swachhata because there are animal and their waste, mud, etc. The village pond has to need a proper maintenance. Other than these there are clean streets, main road and approach road.

(F-32Existing Photos of swachhta)

6.2 Guidelines - Implementation in Lekwada village with Photograph:

According to Sarpanch and villagers, the people are cleaning their nearby area regularly and collect that waste and dispose it to out of the village and burn it. No daily basis waste collection is there in the Lekwada village.

(F-33 Existing Photos of village streets)

Chapter 7.

Village condition due Covid-19

With respect to COVID 19 pandemic, Ministry of Panchayati Raj, Government of India in close collaboration with State Governments has taken various initiatives. Close consultation and guidance of the State as well as District authorities is being maintained to ensure that lock down conditions are not violated and norms of social distancing are scrupulously followed to contain the spread of the disease. India has overtaken Brazil and become the second-worst affected country in the world by the corona virus pandemic, with more than 4 million cases. 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.

Taken steps in Lekwada village related to existing situation with photograph:

During interaction with the Sarpanch, he told us that quarantine place and home quarantine facility were implemented during the lockdown. According to Sarpanch and villagers; in the Lekwada village the sanitization process was done during the lockdown period when first case of covid 19 came in the village.

(F-34 Lockdown)

Any other steps taken by the students / villagers:

During interaction with the Sarpanch he told us that quarantine place and home quarantine facility were implemented during the lockdown. In the COVID-19 situation cleaning, fogging and sanitization were done in the village.

Chapter 8.

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

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

Sustainable Design: ATM Here we have designed the ATM for our Lekwada village. The population of Lekwada village is 2097 as per 2011 census. So it is required to have one ATM in the village. The villagers have to go in Lekwada village for cash requirement so that we have decided andfinalized the design of ATM.

Physical design: Public Health Center (PHC) There should be 1 PHC per 20,000 populations in tribal areas, and per 30,000 populations in normal areas. There should be 1 CHC per 80,000 populations in tribal areas, and per 120000 populations in normal areas. At the all India level, there are 9 PHCs for every CHC on an average.

Social Design: Public Toilet is a room or small building with toilets (or urinals) and sinks that does not belong to a particular household. Rather, the toilet is available for use by the general public, customers, travelers, employees of a business, school pupils, prisoners etc.

Social Cultural Design: Community Hall As show before in gap analysis that there is no community hall in Lekwada village. And as per UDPFI guide lines one community hall is required for 10000 populations. Population of Lekwada village is around 17000, so as per UDPFI guide lines one community hall is necessary for village of 2000 Sq. m for various purposes and for recreational facilities.

Smart Village Design: Concrete Outdoor Paver Block, Thickness: 60 To 80 Mm ₹ 40/Square Feet. Concrete Rectangular Paver Block, For Landscaping ₹ 40/Square Feet. Concrete Outdoor I Shape Paver Block For Pavement ₹ 40/Square Feet. Trang Grey Concrete Paver Block, Thickness: 40-60 Mm. ₹ 25/ Piece Get Latest Price.

Heritage Village Design: Garden/Playground a garden is a planned space, usually outdoors, set aside for the display, cultivation, or enjoyment of plants and other forms of nature, as an ideal setting for social or solitary human life.

8.1.1 Sustainable Design (Civil): ATM

An automated teller machine (ATM) is an electronic banking outlet that allows customers to complete basic transactions without the aid of a branch representative or teller. Anyone with a credit card or debit card can access cash at most ATMs. ATMs are convenient, allowing consumers to perform quick self-service transactions such as deposits, cash withdrawals, bill payments, and transfers between accounts. Fees are commonly charged for cash withdrawals by the bank where the account is located, by the operator of the ATM, or by both. The higher growth percentage of white-label ATM (WLA) operators is an indication of rural growth but its not limited to that. Banks have also been expanding in rural regions. However, the ATM industry numbers (3% growth) do not reflect that as the expansion was offset by the 10-PSU-bank merger plan, which led to closure of ATMs in urban areas.

Some or all of these fees can be avoided by using an ATM operated directly by the bank that holds the account.ATMs are known in different parts of the world as automated bank machines (ABM) or cash machines.

Sustainability of the design:

ATM as an important tool:

Design Utilized by,

Illiterate/ Semi-literate users; Underserved; Unbanked; People living in remote area; etc.Needs:

Basic banking facilities; Security; Ease of use; A suitable and simple product; etc.

Design brief:

Atm design to assist illiterate, semi-literate with banking; Providing services through familiar devices; Net reduction in transaction processes; Aim to help in financial inclusion policies; etc.

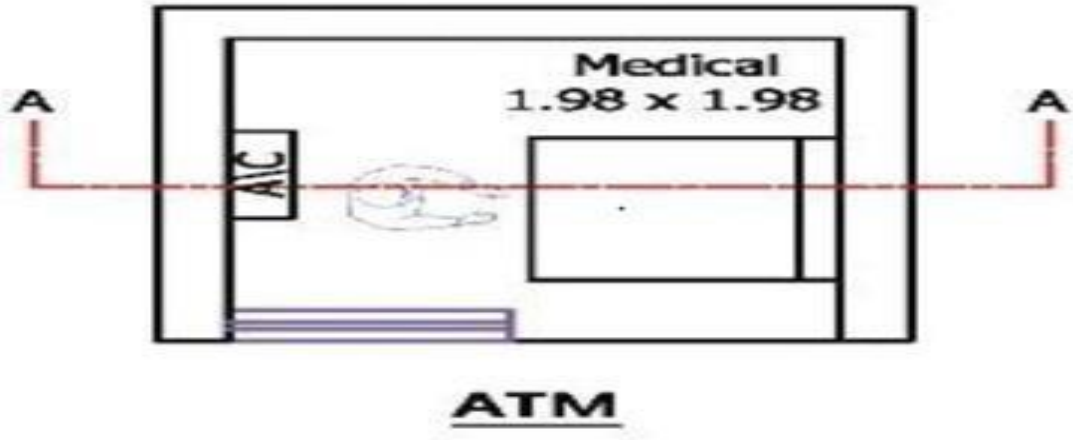
ATM Design:

Dimension: 60 * 60

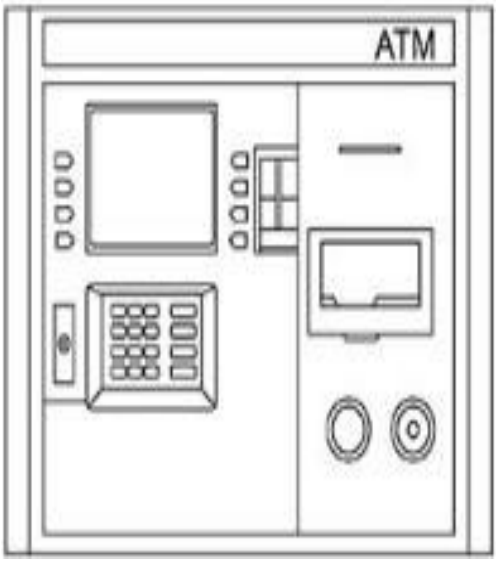
Common repair and maintenance of the structure:

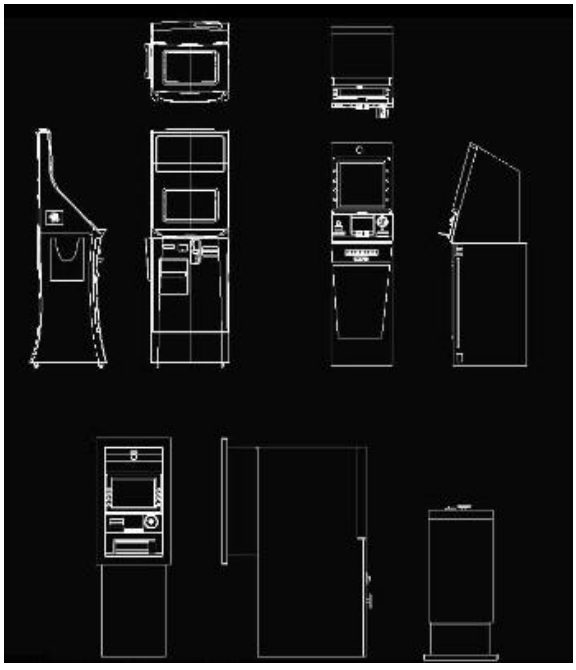
For maintenance to be most effective, it should be organized through a programme of cyclical maintenance. At the most basic level this includes daily routines, and works upwards to periodic programmes of weekly, monthly, semi-annual, annual, quinquennial and so on routines.

Proposed Design in



ATM





(F-35 ATM)

Measurement Sheet of ATM Machine

Sr no.	Item Description	No.	L (M)	B (M)	H (M)	Q (M^3)	TQ (M^3)
1.	Excavation InFoundation	1	7.96	1.0	1.0	7.96	7.96
2.	P.C.C In Foundation	1	7.96	1.0	0.3	2.388	2.388
3.	Brickwork InFoundation						
	1^{st} Footing	1	7.96	0.6	0.3	1.432	1.4328
	2^{nd} Footing	1	7.96	0.5	0.4	1.592	1.592
4	Earth filling		Total = 7.96 – 5.4128				2.5472
5	Brickwork In Masonary Wall	1	7.96	0.3	2.5	5.97	5.67
6	R.C.C Slab	1	2.58	2.58	0.15	0.998	0.998
7	Deduction						
	Door	1	1.0	0.3	2.0	0.6	
			Total Masonry Wall =				5.91
8	Smooth Plaster Inside the Wall	2	1.98	-	2.5	9.9	9.9
		2	1.98	-	2.5	9.9	9.9
9	External Plaster	2	2.58	-	2.65	13.67	13.67
		2	2.58	-	2.65	13.67	13.67
10	Celling Plaster	1	1.98	-	1.98	3.92	3.92

(T-1.12L Measurement sheet of Atm)

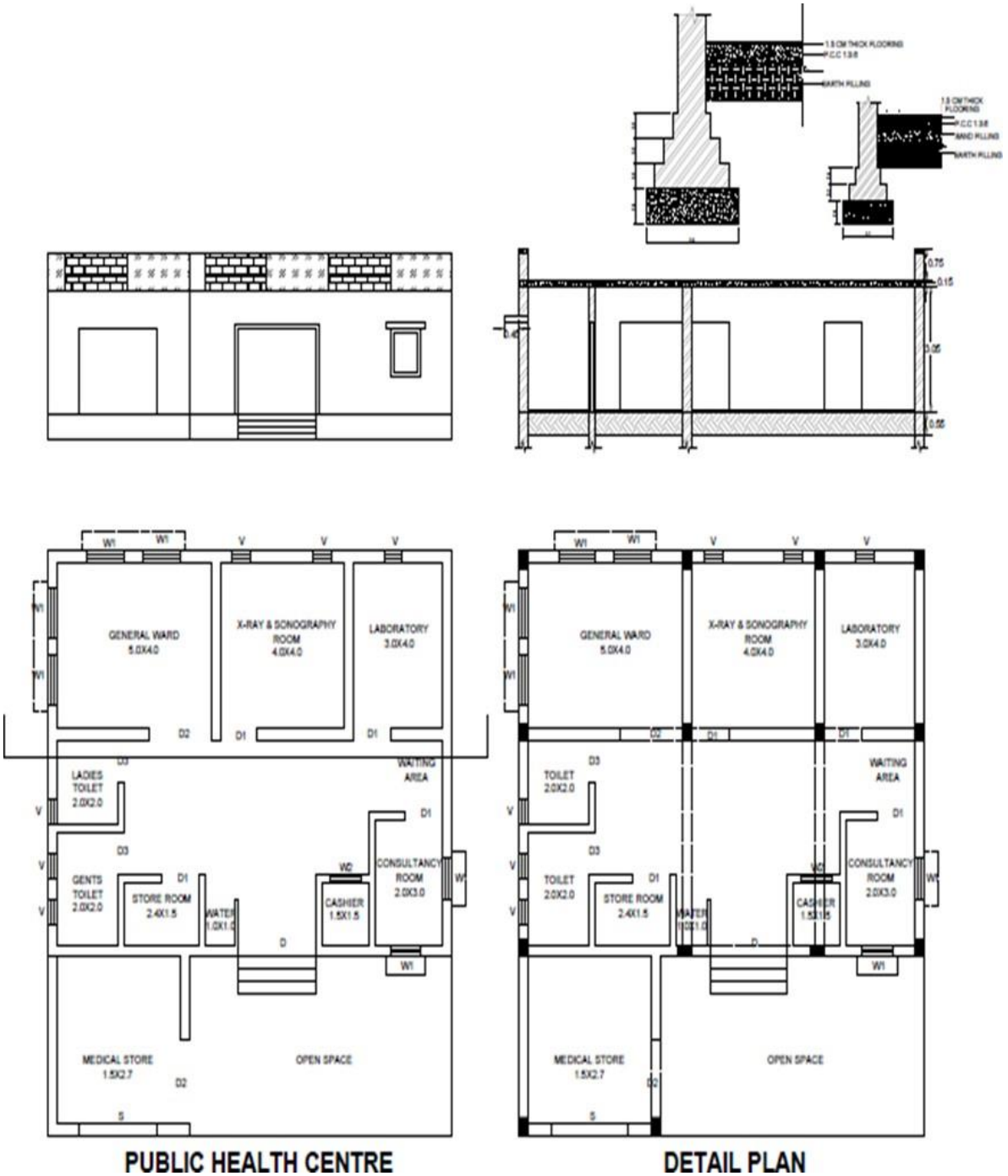
Abstract Sheet of ATM Machine

Sr no.	Item Description	Quantiy (m^3)	Rate (Rs)	Per	Amount (Rs.)
1.	Excavation in Foundation	7.96	120	M^3	955.2
2.	P.C.C. in Foundation	2.388	3000	M^3	7,164
3.	Soil Filling	2.547	80	M^3	203.76
4.	Brickwork inSuper Structure	5.97	2600	M^3	15,522
5.	Slab (1:3:6)	0.998	9000	M^3	8,982
6.	Plaster				
	External	27.34	120	M^2	3,280
	Internal	19.8	150	M^2	2,970
	Celling	3.92	180	M^2	705.6
			Total		39,782.56
			Add 1.5% water charge		596.73
			Add 10% contractor profit		3,978
			Grand total		44,357 Rs.

(T-1.13M Abstract sheet Atm)

8.1.2 Physical design: Public Health Center (PHC)

The Primary Healthcare Center (PHC) is the basic structural and functional unit of the public health services in developing countries. PHCs were established to provide accessible, affordable and available primary health care to people, in accordance with the Alma Ata Declaration of 1978 by the member nations of the World Health Organization WHO.



(F-36 PHC)

TABLE PROP. CONSTRUCTION WORK OF PUBLIC HEALTH CENTRE LEKWADA							
MEASUREMENT SHEET							
ITEM	DESCRIPTION	NO	L	B/W	H/D	QUANTIY	UNITS
ITEM NO.:- 1							
	Excavation for						
	Foundation						
	For 300 mm thick wall						
	L=66.70 m	1	66.7	0.9	2.7	162.08	Cu.m.
	For 200 mm thick wall						
	L=16.4 m	1	16.4	0.7	2.7	30.99	Cu.m
	TOTAL					193.07	Cu.m
ITEM NO.:- 2							
	P.C.C. work in foundation						
	For 300 mm thick wall						
	L=66.70 m	1	66.7	0.9	0.9	54.02	Cu.m.
	For 200 mm thick wall						
	L=16.4 m	1	16.4	0.7	0.6	6.89	Cu.m.
ITEM NO.:- 3							
	Brick masonry work in						
	Foundation						

	For 200 mm thick wall						
	1st step						
	L=18.5	1	18.5	0.4	0.4	2.96	Cu.m
	2nd step						
	L=19.2	1	19.2	0.3	0.4	2.30	Cu.m
	3rd step						
	L=19.9	1	19.9	0.2	0.45	1.79	Cu.m.
	For 300 mm thick wall						
	1st step						
	L=68.80	1	68.8	0.6	0.6	24.79	Cu.m
	2nd step						
	L=69.50	1	69.5	0.5	0.6	20.85	Cu.m
	3rd step						
	L=70.2	1	70.2	0.4	0.6	16.85	Cu.m.
	4th step						
	L=72.93	1	72.93	0.3	0.45	9.84	
	Total Brick masonry					79.38	Cu.m.

	Up to P.L.						
ITEM NO.:- 4							
	Earth filling work						
		106.09-21.22-49.469				35.401	Cu.m.
ITEM NO.:- 5							
	Brick masonry work in						
	super structure						
	For 200 mm thick wall						
	L=19.90	1	19.9	0.2	3.05	17.14	Cu.m.
	For 300 mm thick wall	1	70.9	0.3	3.05	64.87	Cu.m.
	L=70.90						
	Deduction for door & Window (for 200 mm wall)						
	D	1	2.7	0.2	2.1	1.134	Cu.m.
	D 1	4	1.2	0.2	2.1	2.016	Cu.m.
	D 2	1	1.5	0.2	2.1	0.63	Cu.m.
	D 3	2	0.9	0.2	2.1	0.756	Cu.m.
	W 1	6	1.8	0.2	1.2	2.592	Cu.m.
	W 2	1	1.2	0.2	0.9	0.216	Cu.m.
	V	6	0.6	0.2	0.6	0.432	Cu.m.
	SHUTTER	1	1	0.2	2.8	0.56	Cu.m.

		Total deduction				8.336	Cu.m.
	For 300 mm wall						
	D	1	2.7	0.3	2.1	17.01	Cu.m.
	D 1	4	1.2	0.3	2.1	3.02	Cu.m.
	D 2	1	1.5	0.3	2.1	0.945	Cu.m.
	D 3	2	0.9	0.3	2.1	1.134	Cu.m.
	W 1	6	1.8	0.3	1.2	3.89	Cu.m.
	W 2	1	1.2	0.3	0.9	0.324	Cu.m.
	V	6	0.6	0.3	0.6	0.648	Cu.m.
	SHUTTER	1	1	0.3	2.8	0.84	Cu.m.
	Total deduction(2)					27.81	Cu.m.
	Deduction for lintel (200 mm wall)						
	D	1	3.7	0.2	0.1	0.074	Cu.m.
	D 1	4	1.5	0.2	0.1	0.12	Cu.m.
	D 2	1	0.45	0.2	0.1	0.009	Cu.m.
	D 3	2	1.2	0.2	0.1	0.048	Cu.m.
	W 1	6	2.1	0.2	0.1	0.252	Cu.m.
	W 2	1	1.5	0.2	0.1	0.03	Cu.m.
	V	6	0.9	0.2	0.1	0.108	Cu.m.
	SHUTTER	1	1.3	0.2	0.1	0.026	Cu.m.
	Total deduction(3)					0.667	Cu.m.
	Deduction for lintel (300 mm wall)						

	D	1	3.7	0.3	0.1	0.111	Cu.m.
	D 1	4	1.5	0.3	0.1	0.18	Cu.m.
	D 2	1	0.45	0.3	0.1	0.0135	Cu.m.
	D 3	2	1.2	0.3	0.1	0.072	Cu.m.
	W 1	6	2.1	0.3	0.1	0.378	Cu.m.
	W 2	1	1.5	0.3	0.1	0.045	Cu.m.
	V	6	0.9	0.3	0.1	0.162	Cu.m.
	SHUTTER	1	1.3	0.3	0.1	0.039	Cu.m.
	Total deduction(4)					1.0005	Cu.m.
	Work						
	TOTAL (200)					3.137	Cu.m
	TOTAL(300)					36.06	Cu.m
	GRAND TOTAL					39.19	Cu.m
ITEM NO.:- 6							
	D.P.C. at plinth level						
	For 200 mmwall						
	L = 16.4 m	1	16.4	0.7	0.6	6.89	Cu.m
	For 300 mm wall					54.02	Cu.m
	L =66.70 m	1	66.7	0.9	0.9		

	TOTAL					60.91	Cu.m
ITEM NO.:- 7							
	Earth filling in plinth	1	5	4	0.6	12	Cu.m.
		1	4	4	0.6	9.6	Cu.m.
		1	3	4	0.6	7.2	Cu.m.
		1	2	2	0.6	2.4	Cu.m.
		1	2	2	0.6	2.4	Cu.m.
		1	2.4	1.5	0.6	2.16	Cu.m
		1	1	1	0.6	0.6	Cu.m
		1	1.5	1.5	0.6	1.35	Cu.m
		1	2	3	0.6	3.6	Cu.m
		Total Earth Feeling				41.31	Cu.m.
ITEM NO.:- 8							
	5 cm thick flooring	1	5	4		20	Sq.m.
	between walls	1	4	4		16	Sq.m.
		1	2	2		4	Sq.m.
		1	2	2		4	Sq.m.

		1	2.4	1.5		3.6	Sq.m.
		1	1	1		1	Sq.m
		1	1.5	1.5		3.25	Sq.m
		1	3	4		12	Sq.m
		1	2.5	5.2		13	Sq.m
		1	2	3		6	Sq.m
		1	1.5	2.7		4.5	Sq.m
		1	2.7	1.5		4.05	Sq.m
	TOTAL					89.95	Sq.m
		Total Flooring Work				55.280	Sq.m.
ITEM NO.:- 9							
	15cm thick inside smooth plaster work	2	5		3.05	30.5	Sq.m.
		3	4		3.05	36.6	Sq.m.
		5	4		3.05	61	Sq.m.
		3	3		3.05	27.45	Sq.m.
		2	4		3.05	24.4	Sq.m.
		4	2		3.05	24.4	Sq.m.

		4	2		3.05	24.4	Sq.m.
		2	2.4		3.05	146.4	Sq.m.
		2	1.5		3.05	9.15	Sq.m.
		4	1		3.05	12.2	Sq.m.
		4	1.5		3.05	12.2	Sq.m.
		2	2		3.05	18.3	Sq.m.
		2	3		3.05	18.3	Sq.m.
		1	1.2		3.05	3.66	Sq.m.
		3	1.5		3.05	13.72	Sq.m.
		2	2.7		3.05	16.47	Sq.m.
							Sq.m.
		Total Plaster Work				347.39	Sq.m.
	Deduction						
	D	0.5x1	2.7		2.1	2.83	Sq.m.
	D1	0.5x1	1.2		2.1	15.12	Sq.m.
	D2	0.5x2	1.5		2.1	3.15	Sq.m.
	D3	0.5x6	0.9		2.1	5.67	Sq.m.

	W1	0.5x4	1.8		1.2	4.32	Sq.m.
	W2	0.5x1	1.2		0.9	0.54	Sq.m.
	V	0.5x6	6.0		0.6	1.08	Sq.m.
	S	0.5*1	1.0		2.8	1.4	
		Total Deduction				34.1	Sq.m.
		Net Outer Plaster				313.28	Sq.m.
ITEM NO.:- 10							
	White washing inside	As Per Internal Plaster				313.28	Sq.m.
ITEM NO.:- 11							
	Concreting work in	1	13.2	9.1	0.15	18.01	Cu.m.
	Slab	1	2.1	3.0	0.15	0.945	Cu.m.
	TOTAL					18.955	Cu.m.

(T-1.14N PHC)

TABLE: PROP. CONSTRUCTION WORK OF PUBLIC HEALTH CENTRE LEKWADA

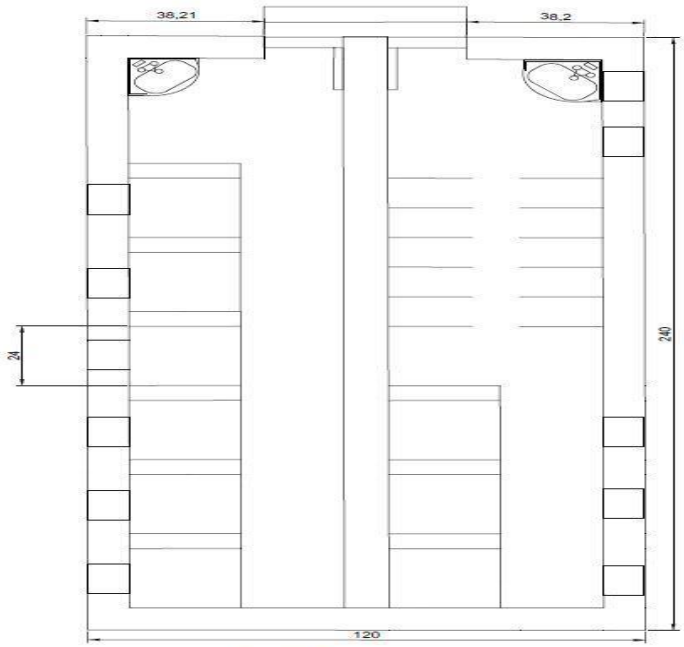
ABSTRACT SHEET

Sr.	Item description	Quantity	Rate	Per	Amount
1.	Excavation work	193.07	155	Cu.m.	29925
2.	P C.C	60.91	3000	Cu.m.	182730
3.	Brickwork in foundation	79.38	3200	Cu.m.	254016
4.	Brickwork in superstructure	39.19	3500	Cu.m.	137165
5.	Plastering	313.28	150	Sq.m.	46992
6.	Flooring	89.95	855	Sq.m.	76907
7.	R.C.C slab	18.955	4900	Cu.m.	92878
8	Painting	313.28	25	Sq.m.	7832
	Total Rupees				828445
	Conti 05.00% Rupees				41422
	10% contractor charges				82844
	2% water charges				16568
	Total Amount Rupees				9,69,279.0

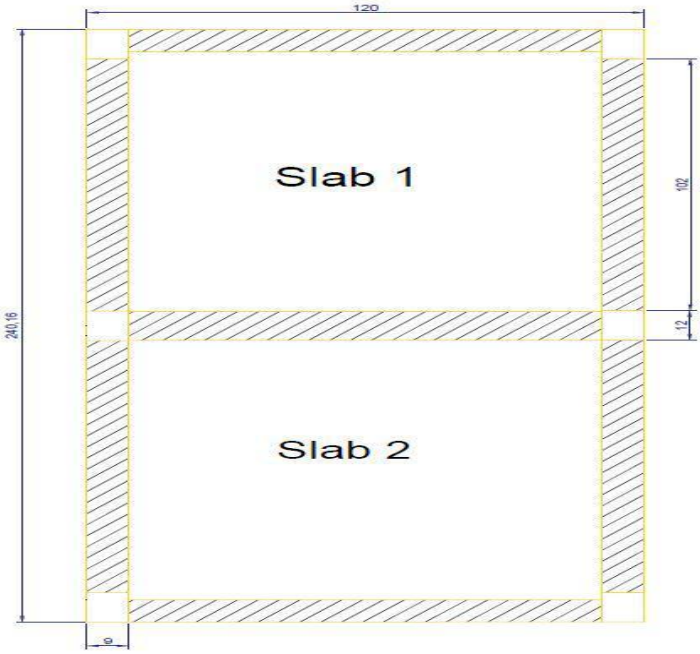
(T-1.15O PHC Cost Estimate)

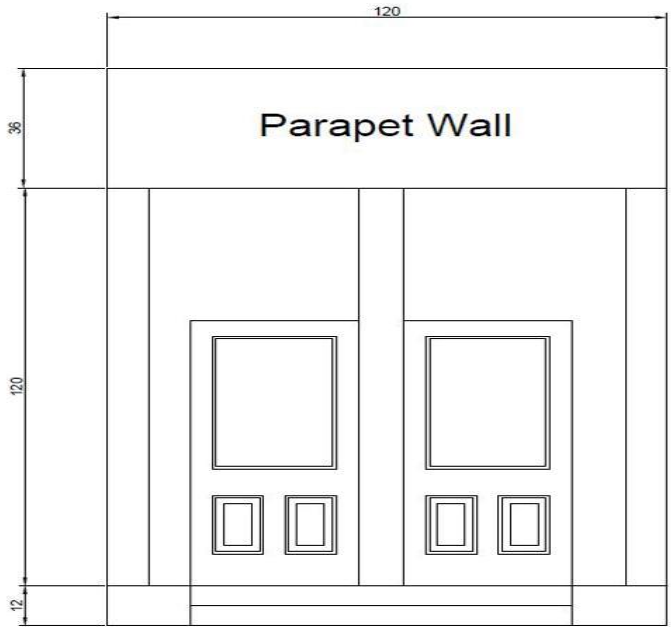
8.1.3 Social Design: Public Toilet

A public toilet is a room or small building with toilets (or urinals) and sinks that does not belong to a particular household. Rather, the toilet is available for use by the general public, customers, travelers, employees of a business, school pupils, prisoners etc. Public toilets are commonly separated into male and female facilities, although some are unisex, especially for small or single-occupancy public toilets. Increasingly, public toilets are accessible to people with disabilities. Public toilets are known bymany other names depending on the country. Examples are: restroom, bathroom, men's room, and women's room in the US, washroom in Canada, and toilets, lavatories, water closet (W.C.), ladiesand gents in Europe.

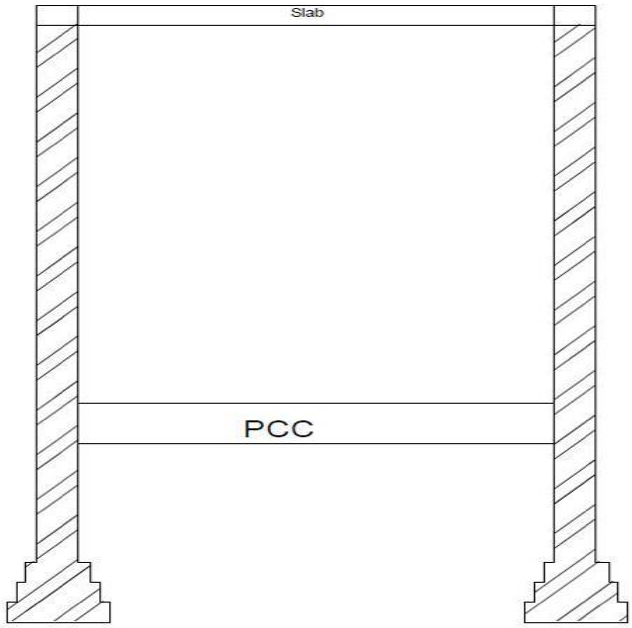


Plan

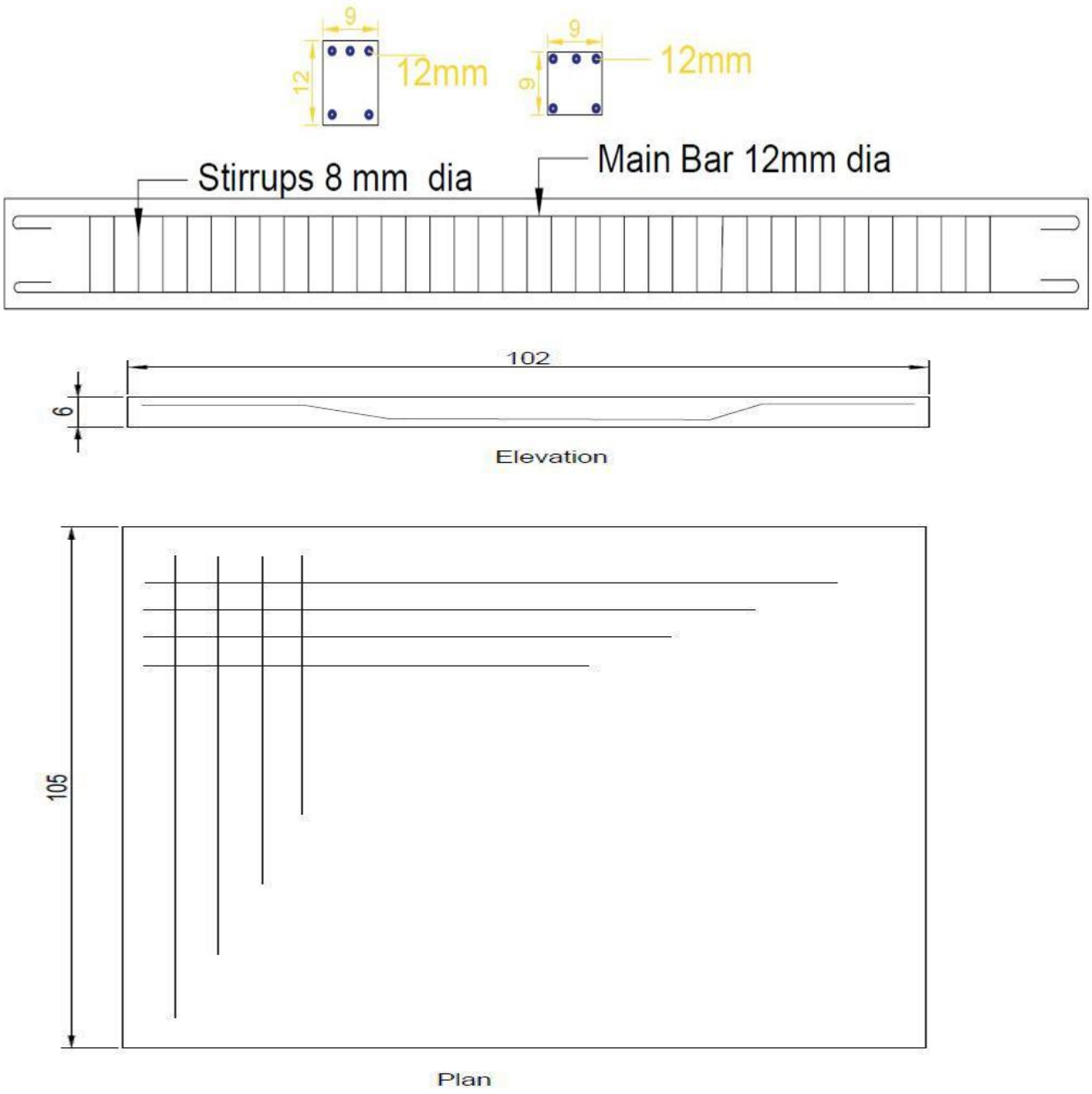




Elevation



(F-37 Public Toilet)



Bar Bending Schedule for Slab

(T-1.16P Measurement sheet)

8.1.4 Social Cultural Design: Community Hall

Community centers or community halls are public locations where members of a community tend to gather for group activities, social support, public information, and other purposes. They may sometimes be open for the whole community or for a specialized group within the greater community. Community centers can be religious in nature, such as Christian, Islamic, or Jewish community centers, or can be secular, such as youth clubs. Community Hall": a large room or building for meetings, with basic facilities, where community activities take place. "Community Resource": the physical features within a community centre or other building which can be used for the provisionof community services or for community development.

Community centers generally perform many (though rarely all) the following functions.

 As the place for all-community celebrations at various occasions and traditions.

 As the place for public meetings of the citizens on various issues.

 As the place where politicians or other official leaders come to meet the citizens and ask for their opinions, support or votes ("election campaigning" in democracies, other kinds of requests innon-democracies).

 As a place where community members meet each other socially.

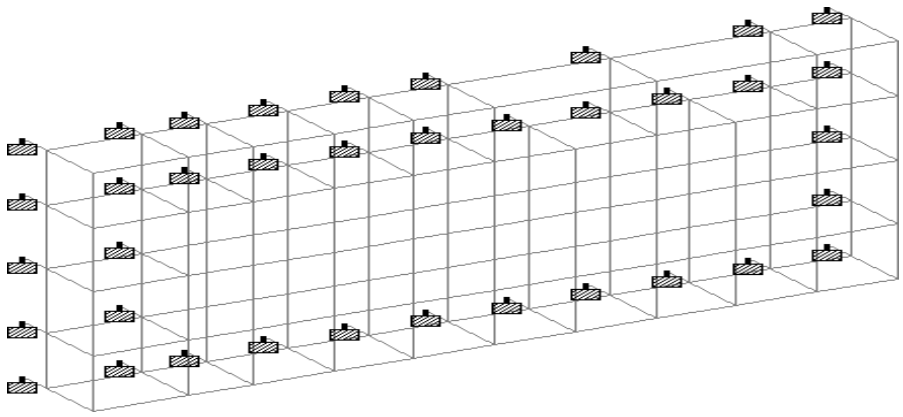
 As a place housing local clubs and volunteer activities.

 As a place that community members (and sometimes others), can rent cheaply when a private family function or party is too big for their own home. For instance the non-church parts of weddings, funerals etc.

 As a place that passes on and retells local history.

We designed the hall in AutoCAD software in which following dimensions are taken as design dimension.

Beams 0.3*0.6 And 0.4*0.6.



Columns 0.4*0.6

(F-38 Community hall)

Sr. no	Item of work	No.	L m	B m	D/H M	Quantity	Rate Rs.	Amount Rs.
1	Excavation in foundation for columns	37	0.7	0.9	0.7	16.31m3	205	3343.55
2	BBLC work in Foundation	37	0.7	0.9	0.24	4.662m3	2604	12139
3	Masonry Work							
	1st Footing	37	0.6	0.8	0.2	3.552		
	2nd Footing	37	0.5	0.7	0.2	2.59		
	3rd Footing	37	0.4	0.6	0.1	0.888		
						7.03m3	319	22481.94
4	Masonry work in superstructure	1	304.6	0.2	3	182.76	3321	60676.32
5	RCC work for all columns	37	0.4	0.6	3	26.64 m3	4937	131527.7
6	External plaster	1	152	-	3	456 m2	130	59280
7	Internal Plaster	1	462	-	3	1386m2	100	138600

8	RCC slab work	1	50	26	0.1	130 m3	4937	641810
9	Steel work							
	In slab [(130*1)/100]*78.5 =102.05 q/m3=1025 kg						54.87	560009.5
	In column [(26.64*1)/100]*78.5 =20.91 q/m3=2091 kg						54.87	114756.6
10	Parapet wall	1	152	-	0.6	91.2 m2	399	38388.8
						TOTAL	=	1781008
						Add 8%	=	142480
						GRAND TOTAL	=	1923488

(T-1.17P Estimate)

8.1.5 Smart Village Design: Paver Block Road

Segmented concrete paving is a system of individual shaped blocks arranged to form a continuous hardwearing surface overlay. Over the past two decades, paving composed of segmental blocks has become a feature of our towns and cities. It is to be found in commercial industrial and residential areas, in the paving malls, plazas, parking areas and bus stops. It has been successfully used for embankment walls, slope protection and erosion control. During this period, extensive research has been carried out on the engineering characteristics and structural performance of segmental block paving. Existing pavements subjected to heavy bus traffic and industrial loads have been monitored and their service life shown to be satisfactory.

Different types & shades of concrete paver blocks

Concrete Paver Blocks Laying patterns

(F-39 Paver Blocks)

Sr. No.	Item description	L (mt.)	B (mt.)	H (mt.)	Q	TOTAL Q
1.	Excavation / surface Excavation	926.00	3.0	0.25	694.500	694.50cum.
2.	Coarse Gravel base 100mm thick	926.00	3.0	0.10	277.800	277.800Cum.
3.	Sand base 50mm thick	926.00	3.0	0.050	138.900	138.900Cum.
4.	Paver block I-shaped (200X100X60)mm	926.00	3.0	-	2778.00	2778.00sq.mt.

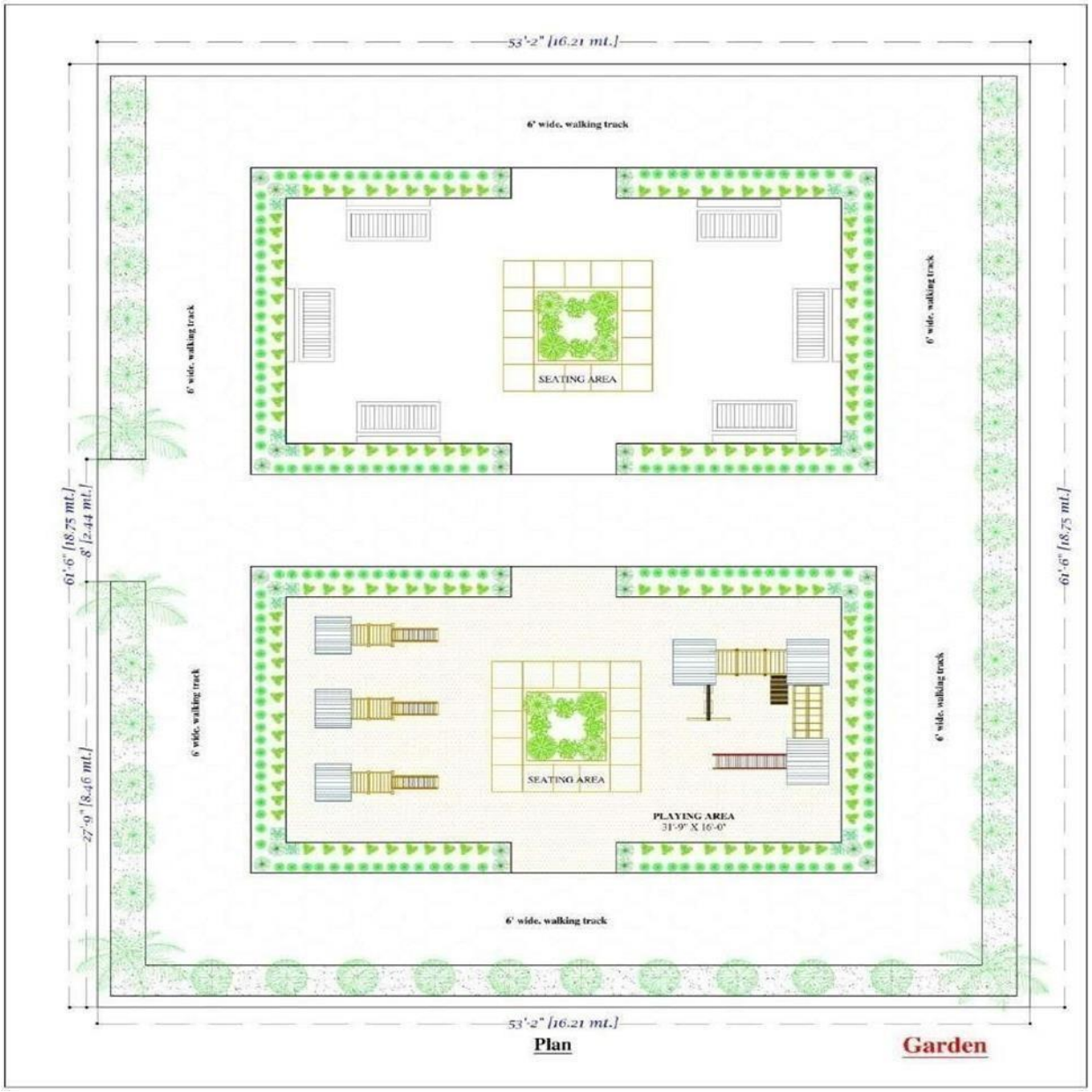
(T- 1.18Q Measurement sheet)

Sr. No.	Item description	Q	Rate	Per unit	Total Rs.
1	Excavation/ surface dressing	692.500	60.00	Cum.	41550.00
2	Coarse Gravel base 100mmthick	277.800	1000.00	Cum.	277800.00
3	Sand base 50mm thick	138.900	800.00	Cum.	111120.00
4	Paver block I-shaped (200X100X60)mm	2778.00	550.00	Sq.mt.	1527900.00
	Cost				1958370/-
	Add 2 % water charges				39167.4
	Add 10% contractor's profit				195837.00
	Total cost of road				**21,93,374.4 Rs.**

(T.18R Abstract Sheet)

8.1.6 Heritage Village Design: Garden/Playground

A garden is a planned space, usually outdoors, set aside for the display, cultivation, or enjoyment of plants and other forms of nature, as an ideal setting for social or solitary human life. The single feature identifying even the wildest wild garden is *control*. The garden can incorporate both natural and man-made materials. The most common form today is a residential or public garden, but theterm *garden* has traditionally been a more general one.



(F-40 Garden/Playing Ground)

No.	Description	No	Length	Width	Height	Quantity	Total Quantity
1	Earthwork excavationin ordinary soil	1	69.12	0.7	1.2	58.06	58.06 Cum
2	P.C.C. (1:4:8) in Foundation	1	69.12	0.7	0.3	14.52	14.52Cum
3	Brick masonry upto plinth Level						
	1st step	1	69.12	0.4	0.2	5.53	
	2nd step	1	69.12	0.3	0.2	4.15	
	3rd step	1	69.12	0.2	0.5	6.19	15.87cum
	Brick masonry above ground level	1	69.12	0.2	1.5	20.74	
	Deduction for gate	1	2.44	0.2	1.5	0.74	20.00 cum
4	Plaster for wall						
	Inside plaster						
	Wall 1	2	15.81	-	1.5	47.43	
	Wall 2	2	18.35	-	1.5	55.05	

	Outside plaster					
	Wall 1	2	16.21	-	1.5	48.63
	Wall 2	2	18.75	-	1.5	56.25
	Top of wall plaster	1	4.04	8.74	-	35.31
	Wall 1	2	16.21	0.2	-	6.48
	Wall 2	2	18.75	0.2	-	7.5
	Outside plaster					221.34 Sq.m

(T-1.19S Measurement sheet)

8.2 Reason for Students Recommending this Design:

- ATM - to provide flexibility of urgent cash requirements to the villagers
- Public Health Center - to provide immediate treatment
- Public Toilet - to provide hygiene
- Community Hall - to organize events easily for the villagers
- Cyber cafe - to provide a source of internet as a smart village concept
- Garden – for the better aesthetic of the village

8.3 About designs Suggestions / Benefit of the villagers:

1. ATM :

The population of Lekwada village is 2723 as per 2011 census. So it is required to have one ATM in the village. The villagers have to go in Lekwada village for cash requirement so that we have decided and finalized the design of ATM.

2. Public Health Center:

In the Lekwada village there is no any private clinic or pharmacy store. So according to the feedback given by the villagers, one dispensary or pharmacy store should be there in the village. The villagers have to go in Lekwada for any kind of health or medical facility. So that we have designed one Pharmacy store for the urgent requirement of medicines for the villagers.

3. Public Toilet:
There is only one Public toilet in Lekwada village to maintain the hygiene and as per villagers there should be public toilet

4. Community Hall:
There is no Community hall in the Lekwada village. Community hall is a public location where members of a community gather for group activities, events, festivals and social purpose. A community hall of village generally consists of a hall, storage or kitchen area and washroom.

5. Paver Block Road
If these blocks are used at habitation areas of rural roads then their construction cost, maintenance cost & other easiness, difficulties can be visualized for future use in different situations. As these are precast blocks, the research activities can be easily done at work sheds even at the time when the construction work is under progress.

6. Garden:

To maintain the aesthetic and for recreational area garden and playing should there.

8.4 About Maintenance:

Maintenance can help**:**

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

For maintenance to be most effective, it should be organized through a programmed of cyclical maintenance. At the most basic level this includes daily routines, and works upwardsto periodic programmes of weekly, monthly, semi-annual, annual, quinquennial and so on routines.

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.

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

For future development of Lekwada village we are proposing for part 2 design in which following point should be considered:-

- Bio gas Plant:-Biogas plants rely on anaerobic digestion, a fermentation process in which waste is digested by microbes to produce methane gas. The waste can be converted into bio fertilizer and spread directly onto fields, or the biogas itself can be used interchangeably with natural gas as fuel.

- Rain water harvesting:- Rainwater harvesting (RWH) is the collection and storage of rain, rather than allowing it to run off. The harvested water can also be committed to longer-term storage or groundwater recharge.

- Bus stand:-A bus station is a structure where city or intercity buses stop to pick up and drop off passengers.

- Re-Construction of Bank:- Renovation of Bank in Lekwada village

Recommendations:

- The Solid Waste Management system of the village has to be improved for the sake of the cleanliness and health of the people of village because there is no provision for disposal of solid waste generated. People through it out in open land areas. Recreational facilities can be provided like public garden, playground etc.
- Recreational purpose because there are no such provisions made in the village.
- Renewable energy sources can be used for the purpose of energy conservation and to reduce load on conventional energy sources.
- Rain Water Harvesting system can be implemented for individual as well as public buildings such as hospitals or schools.
- Solar Energy Sources can be used for electricity purposes in schools and hospitals. Internal road quality can be improved to provide better transportation facilities by using waste material which is produced from small stone crushing industries surrounded the village.
- Community hole should be in village for various means
- Drainage facility should be provided in village for good health and sanitation conditions. And it is also necessary to make open ditch drainage into close system for hygienic consideration. As all area of village don't have drainage facilities, it is necessary to provide it in all areas.

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

Based on gap analysis done in previous semester we developed and designed the bio gas plant, drainage system, dry compost toilet, community hall. So we can say if all the missing amenities are provided than it may stop the migration of rural people towards the urban area. This can cause reduce the load on urban areas. And this amenities designed by us is helpful for better development of village as physically as well as socially, which improves the overall lifestyle of people.

In the Lekwada village, the basic requirements like community hall, any recreational area, Health Center etc. did not exist. By implanting given design proposals, all the missing amenities can be provided which will stop the migration of rural people towards the urban area which will in turn reduce pressure on cities.

The amenities designed under this Vishwakarma project phase 8 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 indeveloping 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.

By implanting given design proposals, we can say that all the missing amenities are provided will stop the migration of rural people towards the urban area. This can cause reduce the load on urban areas as well as pollution in both sector can be minimized gradually.
These amenities designed under this project will be helpful for better development of village as physically as well as socially, which improves the overall lifestyle of people along with nation with preserving nature bit by bit.

Chapter11
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- www.ijser.org
- Gtu guidelines

Chapter 12.
Annexure attachment:

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

Techno Economic Survey

Vishwakarma Yojana: Phase VI

ALLOCATED VILLAGE SURVEY

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

Name of District:	Gandhinagar
Name of Taluka:	Gandhinagar
Name of Village:	Likwada
Name of Institute:	Gandhinagar institute of technology
Nodal Officer Name & Contact Detail:	
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Anganwadi worker/Village dweller)	Pareshben [illegible] Sinh Vaghela [illegible]
Date of Survey:	2 Oct 2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	2721	1390	1331	596

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)(Coordinates for Location	528.18
2.	Forest Area (In hect.)	
3.	Agricultural Land Area (In hect.)	
4.	Residential Area (In hect.)	
5.	Other Area (In hect.)	
6.	Distance to the nearest railway station (in kilometers):	

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Vishwakarma Yojana: Phase VI
Techno Economic Survey

7.	Name of Nearest Town with Distance:	Gandhinagar 8Km
8.	Distance to the nearest bus station (in kilometers):	Pethapur
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.	Service
	3.	Business

Major crops grown in the village:	1.	Cotton
	2.	Wheat
	3.	Bajra

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	5 Tubewell	Yes		
2.	**DUG WELL** Protected Well Un Protected Well				
3.	**WATER FROM SPRING** Protected Spring Unprotected Spring Rainwater Tanker Truck Cart With Small Tank	Not Seasonal Spring	No		
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/** Irrigation Channel Bottled Water Hand Pump				

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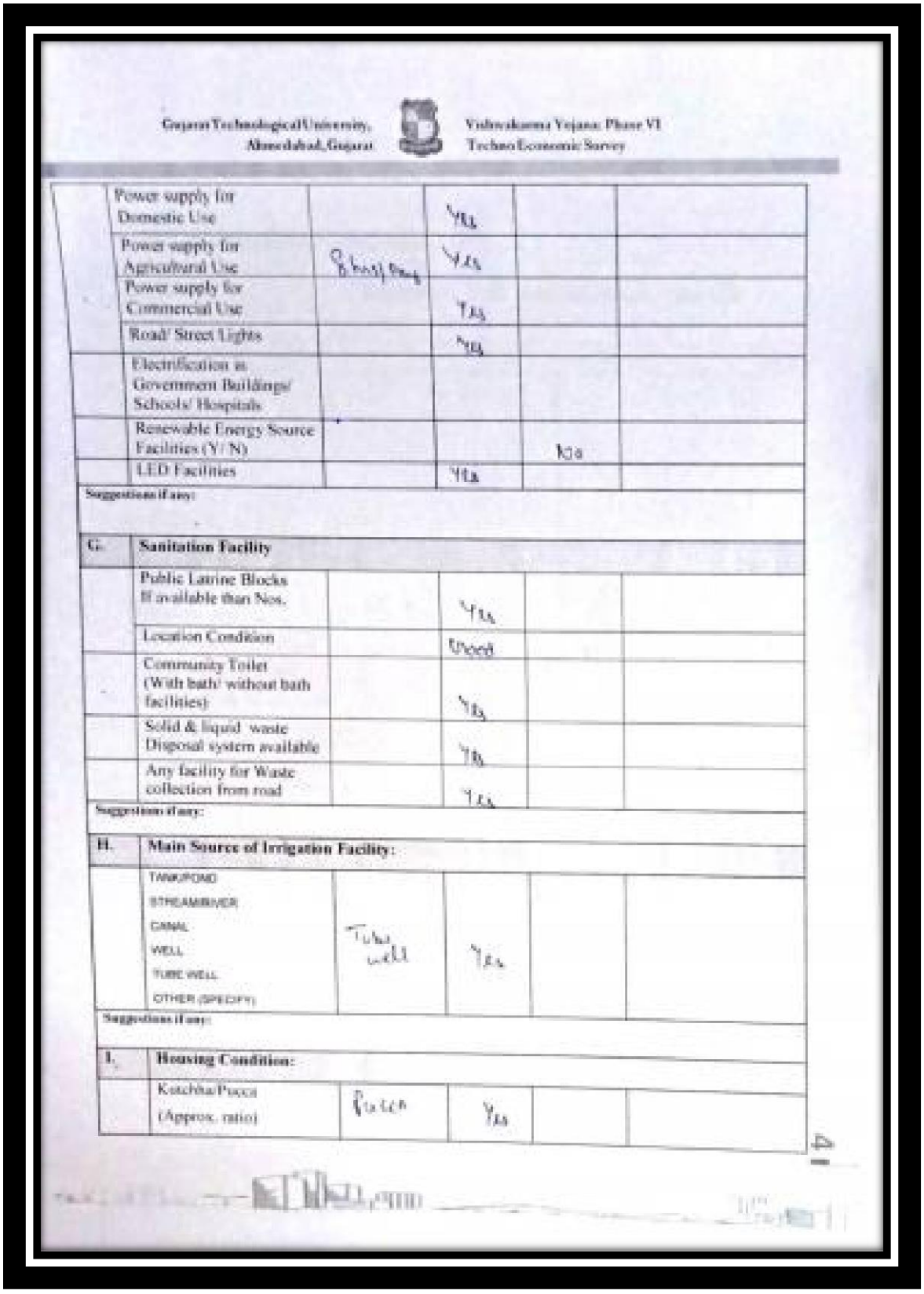
Techno Economic Survey

	Other(Specify)Lake/ Pond				
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	50000	8,000	
	Underground Sump	Capacity:	-	-	
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE	[illegible]	Yes		
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Kutcha/Pucca	Yes		
	Main road	Pucca	Yes		
	Internal streets	Pucca/Kutcha			
	Nearest NH/SH/MDR/ODR Dist. in kms.				
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Gandhinagar	Yes		
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Pakka	Yes		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Private/ Auto	Yes		
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Govt	Yes		



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VI
Techno Economic Survey

	Power supply for Domestic Use		Yes		
	Power supply for Agricultural Use	8 hours/day	Yes		
	Power supply for Commercial Use		Yes		
	Road/ Street Lights		Yes		
	Electrification in Government Buildings/ Schools/ Hospitals				
	Renewable Energy Source Facilities (Y/ N)			No	
	LED Facilities		Yes		

Suggestions if any:

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

Suggestions if any:

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

Suggestions if any:

I.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)	80% Pucca	Yes		

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	3 nos	Yes		
	Sub-Centre				
	PHC				
	BLOCK PHC		No	Yes	
	CHC/RH				
	District/ Govt. Hospital		No		
	Govt. Dispensary		No		
	Private Clinic	3 nos	Yes		
	Private Hospital/		Yes		
	Nursing Home			No	
	AYUSH Health Facility			No	
	sonography /ultrasound facility			No	
	If any of the above Facility is not available in village than approx. distance from village: ....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Anganwadi/ Play group		Yes		
	Primary School		Yes		
	Secondary school			No	
	Higher sec. School			No	
	ITI college/ vocational Training Center			No	
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities			No	

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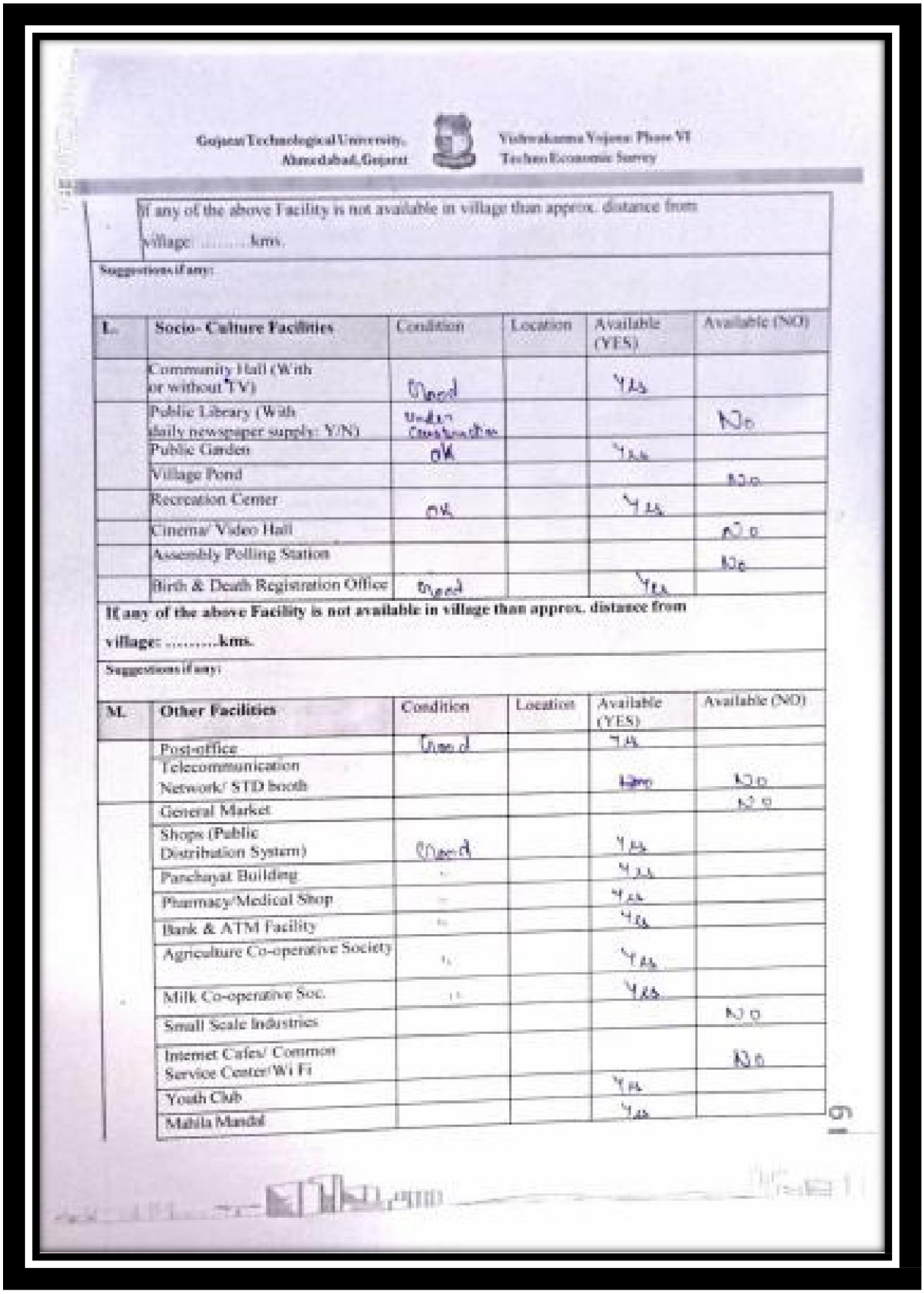

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Vishwakarma Yojana: Phase VI
Techno Economic Survey

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

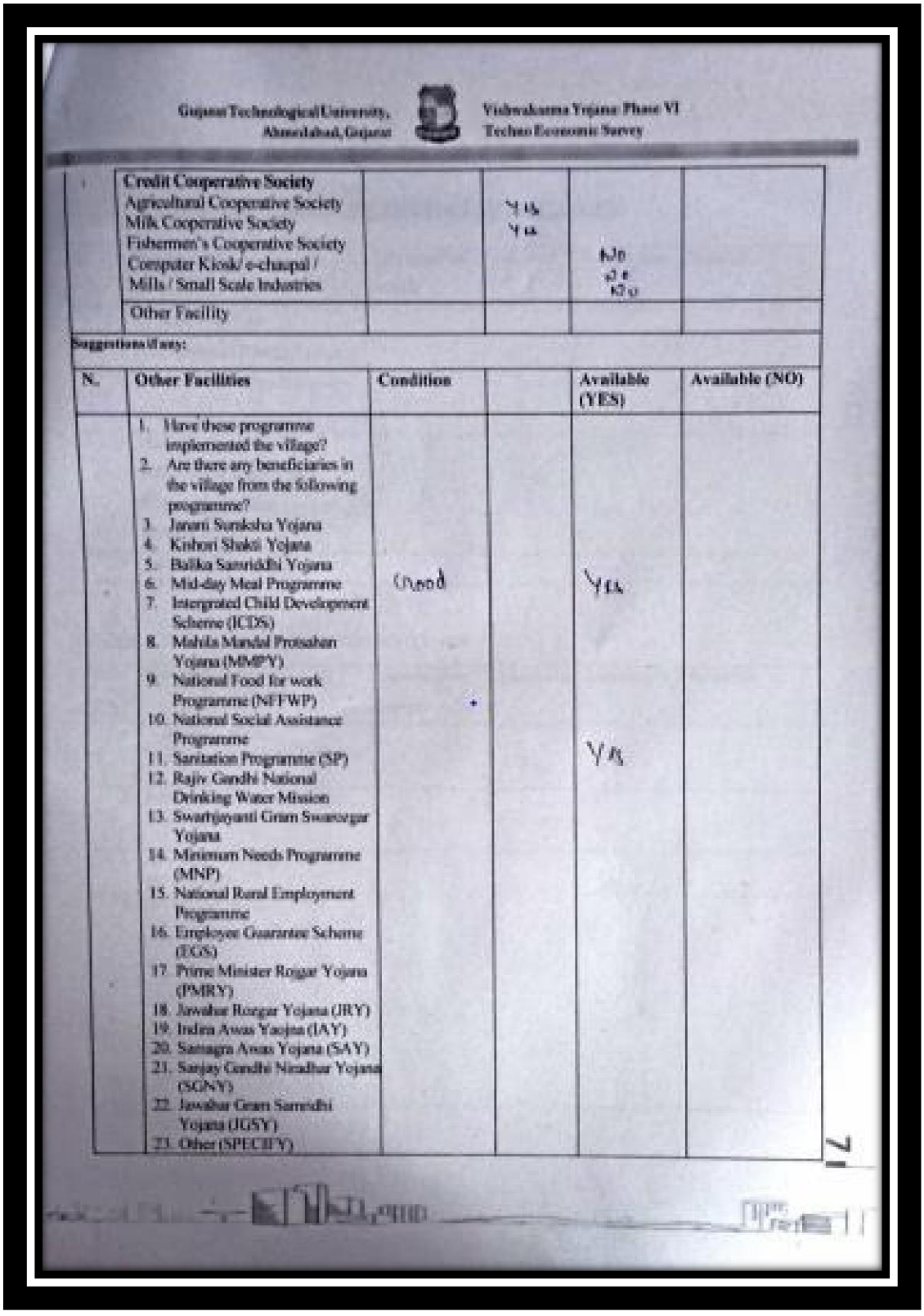
Suggestions if any:

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

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

Suggestions if any:

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



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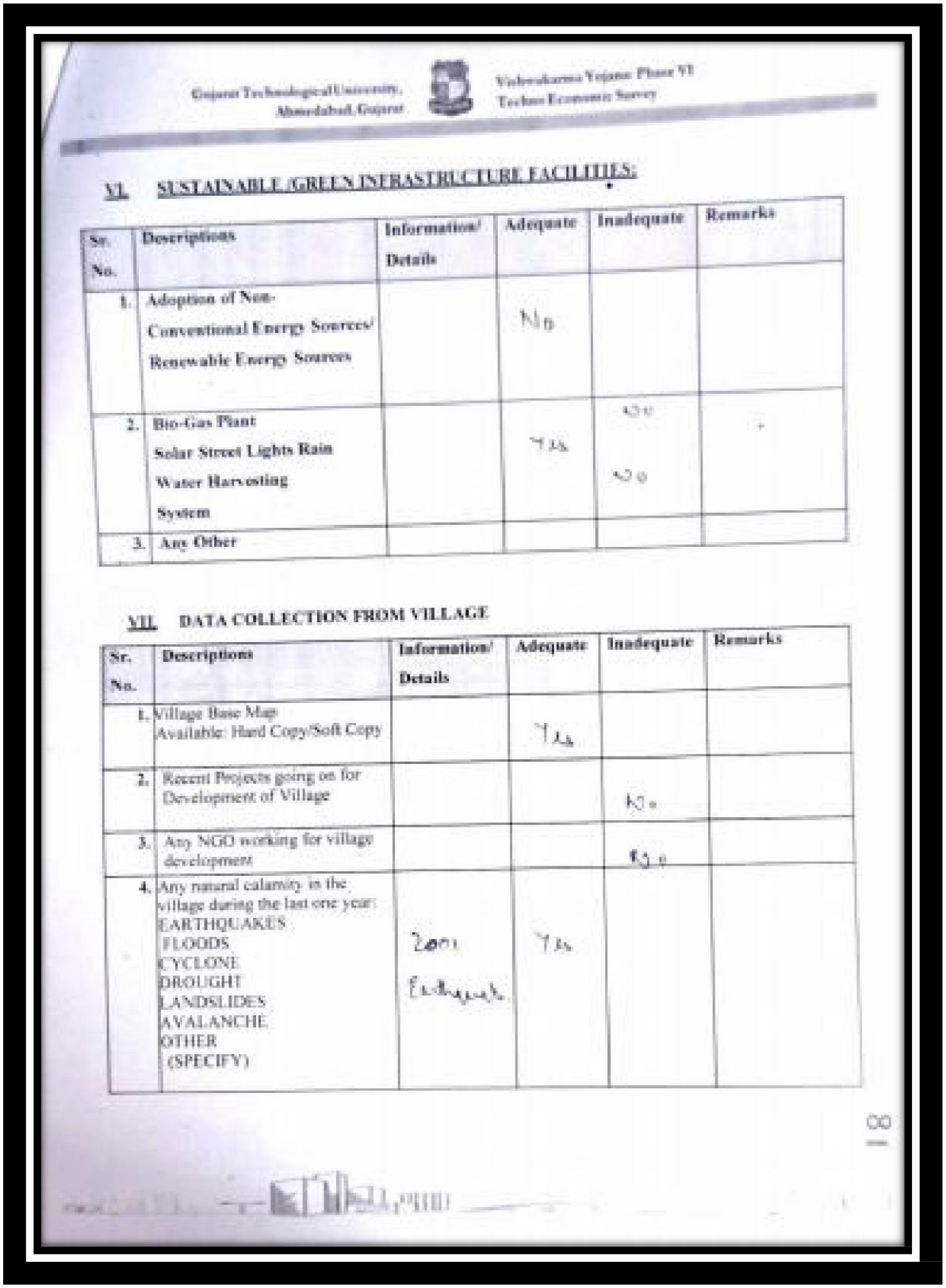
Techno Economic Survey

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

Suggestions if any:

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



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Techno Economic Survey

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Village Base Map Available: Hard Copy/Soft Copy		Yes		
2.	Recent Projects going on for Development of Village			No	
3.	Any NGO working for village development			No	
4.	Any natural calamity in the village during the last one year: EARTHQUAKES FLOODS CYCLONE DROUGHT LANDSLIDES AVALANCHE OTHER (SPECIFY)	2001 Earthquake	Yes		

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Techno Economic Survey

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

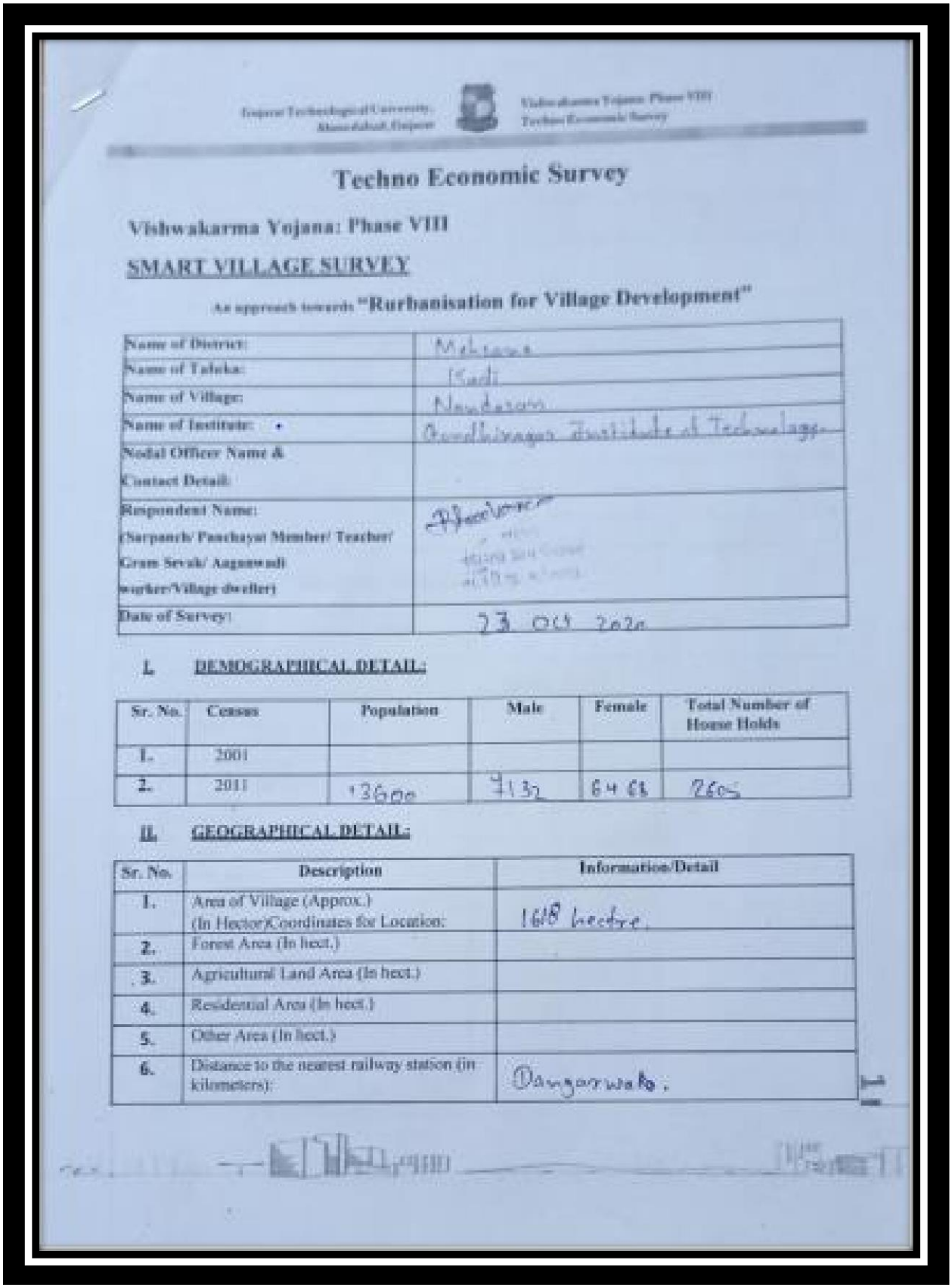
Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	૧ વર્ષ ૧૫ વર્ષ ૧૫ વર્ષ	
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING .....N/A..... FOGGING.....N/A..... Drive was undertaken in the village?		

IX. Smart Village / Heritage Details

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

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

For Any Administration queries/ Difficulties:
Ms.Darshana Chauhan,Project Co-ordinator
Contact No – 079-23267588
Email ID: ruban@gtu.edu.in



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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

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

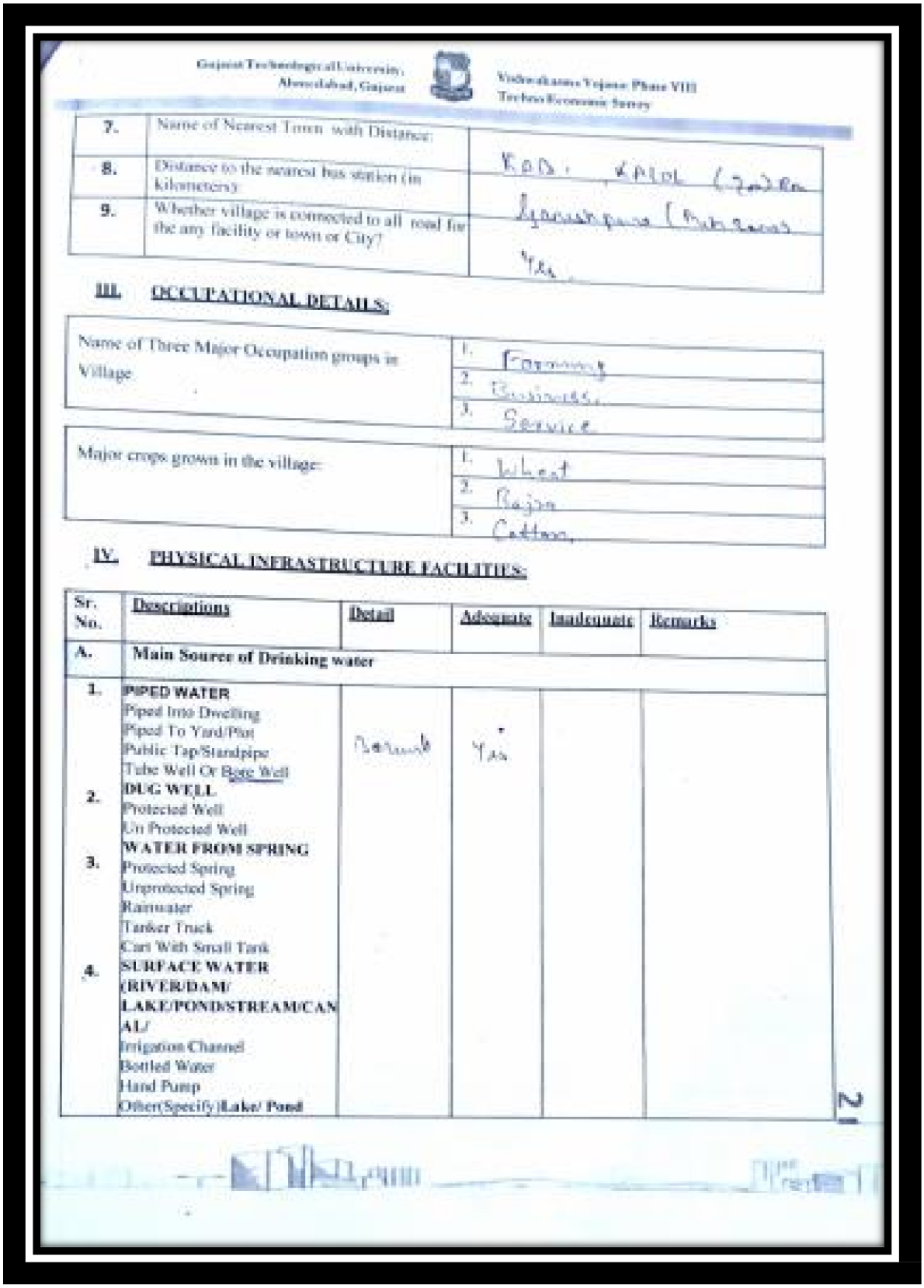
Name of District:	Mehsana
Name of Taluka:	Kadi
Name of Village:	Nandasan
Name of Institute:	Dwarkadas J. Institute of Technology
Nodal Officer Name & Contact Detail:	
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	
Date of Survey:	23 Oct 2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	13600	7132	6468	2605

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector/Coordinates for Location:	1618 hectre.
2.	Forest Area (In hect.)	
3.	Agricultural Land Area (In hect.)	
4.	Residential Area (In hect.)	
5.	Other Area (In hect.)	
6.	Distance to the nearest railway station (in kilometers):	Dangarwada.



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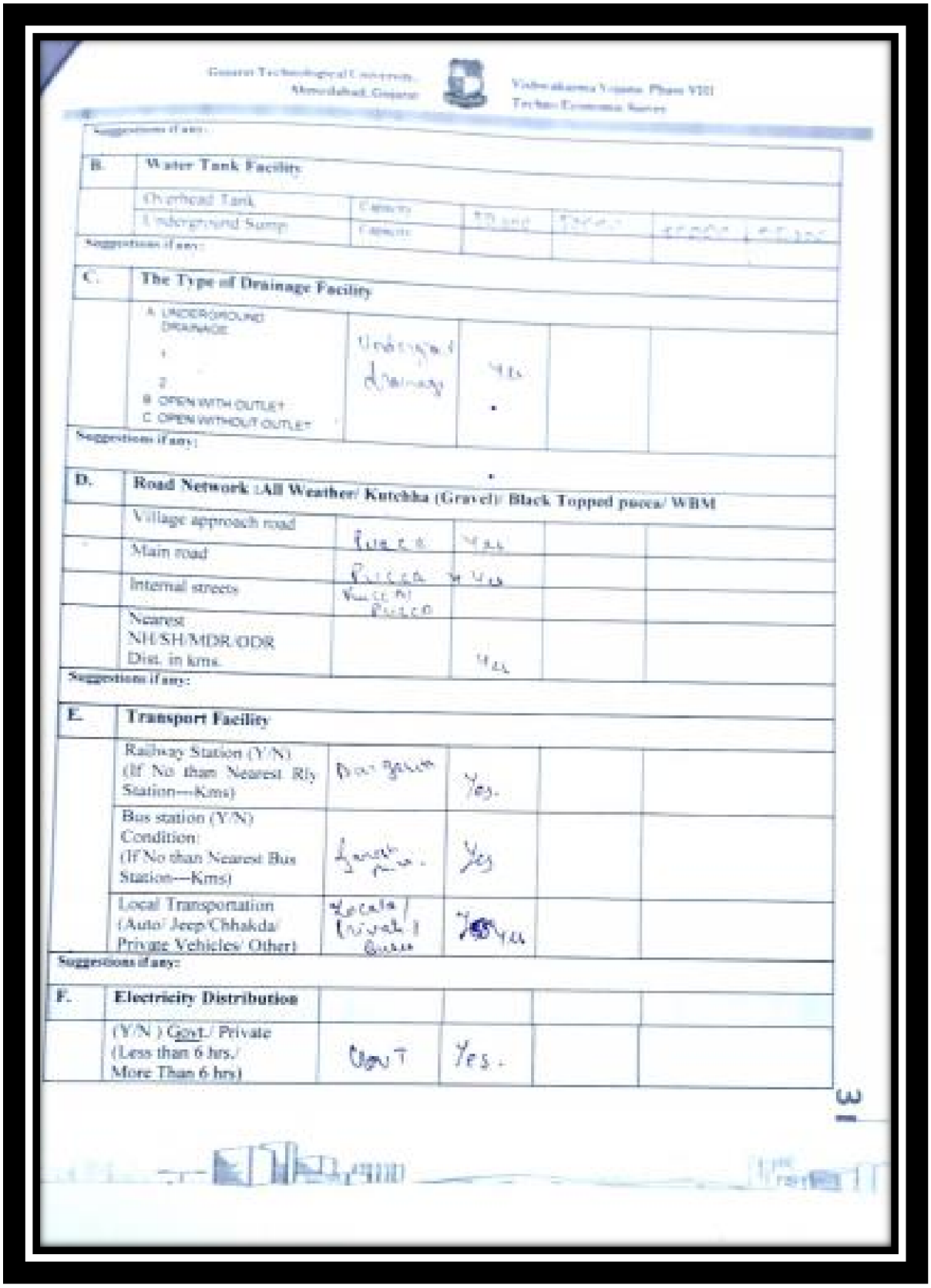
7.	Name of Nearest Town with Distance:	[illegible]
8.	Distance to the nearest bus station (in kilometers)	[illegible]
9.	Whether village is connected to all road for the any facility or town or City?	Yes

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1. Farming 2. Business 3. Service
Major crops grown in the village:	1. Wheat 2. Bajra 3. Cotton

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions if any:

B.	Water Tank Facility					
	Overhead Tank	Capacity				
	Underground Sump	Capacity				

Suggestions if any:

C.	The Type of Drainage Facility				
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	Underground Drainage	Yes		

Suggestions if any:

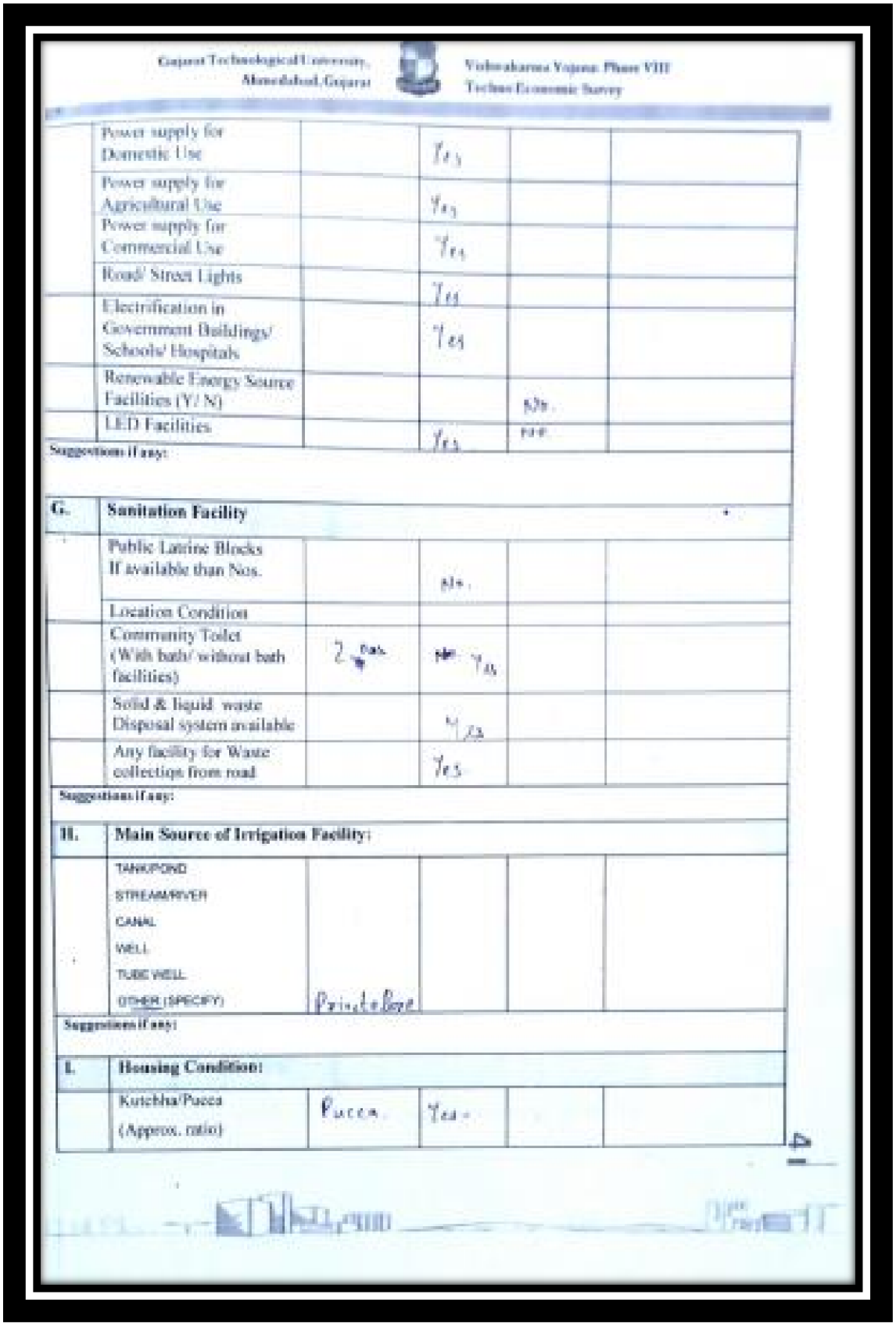
D.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	Pucca	Yes		
	Main road	Pucca	Yes		
	Internal streets	Pucca			
	Nearest NH/SH/MDR/ODR Dist. in kms.		Yes		

Suggestions if any:

E.	Transport Facility				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Near Ajwa	Yes.		
	Bus station (Y/N) Condition (If No than Nearest Bus Station---Kms)	Ajwa Pur.	Yes		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Private Vehicle Auto	Yes		

Suggestions if any:

F.	Electricity Distribution				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Govt	Yes.		



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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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

Suggestions (If any):

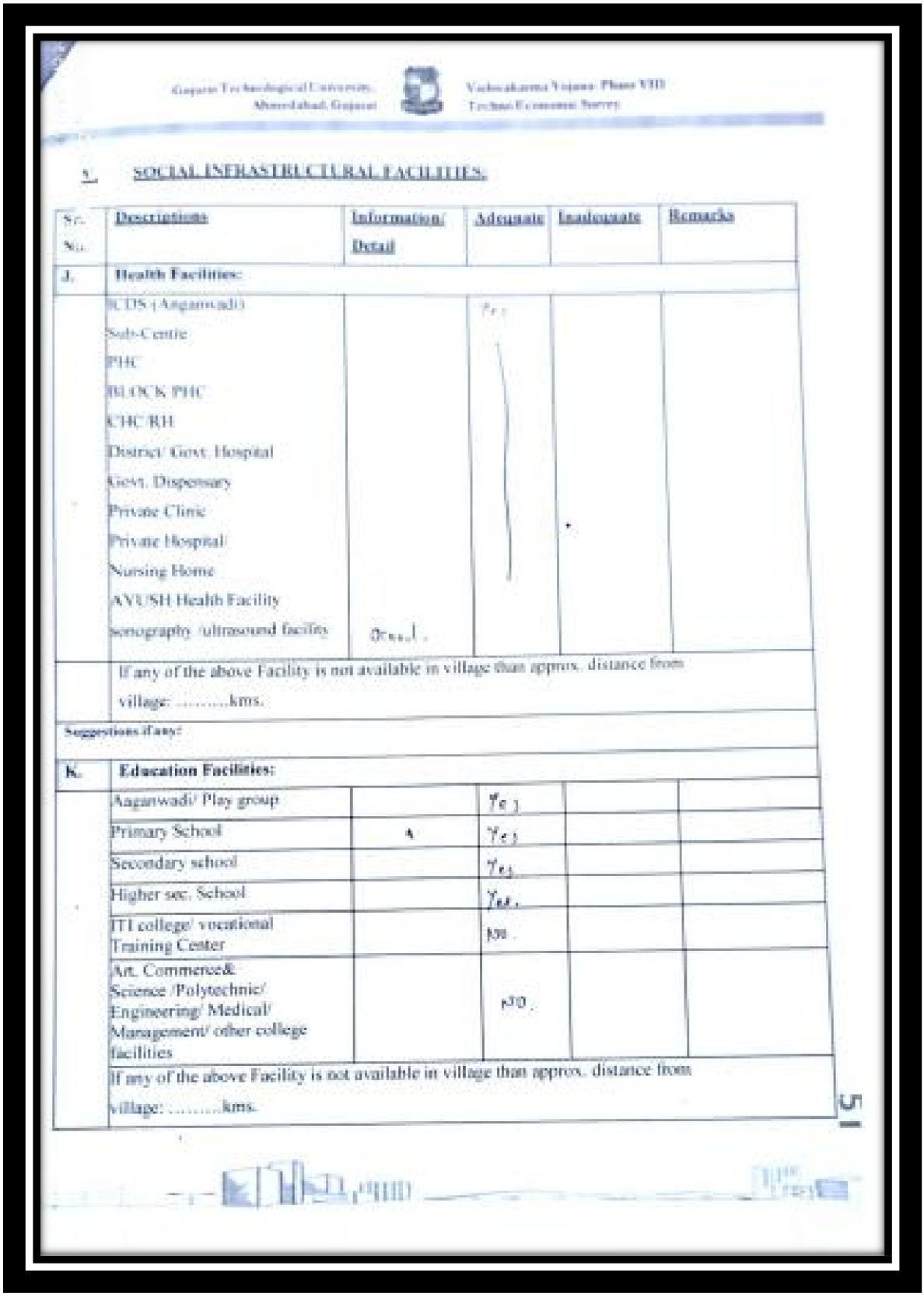
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.		No.		
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	2 Nos.	No Yes		
	Solid & liquid waste Disposal system available		No		
	Any facility for Waste collection from road		Yes		

Suggestions (If any):

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

Suggestions (If any):

I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Pucca	Yes		



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5. SOCIAL INFRASTRUCTURAL FACILITIES.

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

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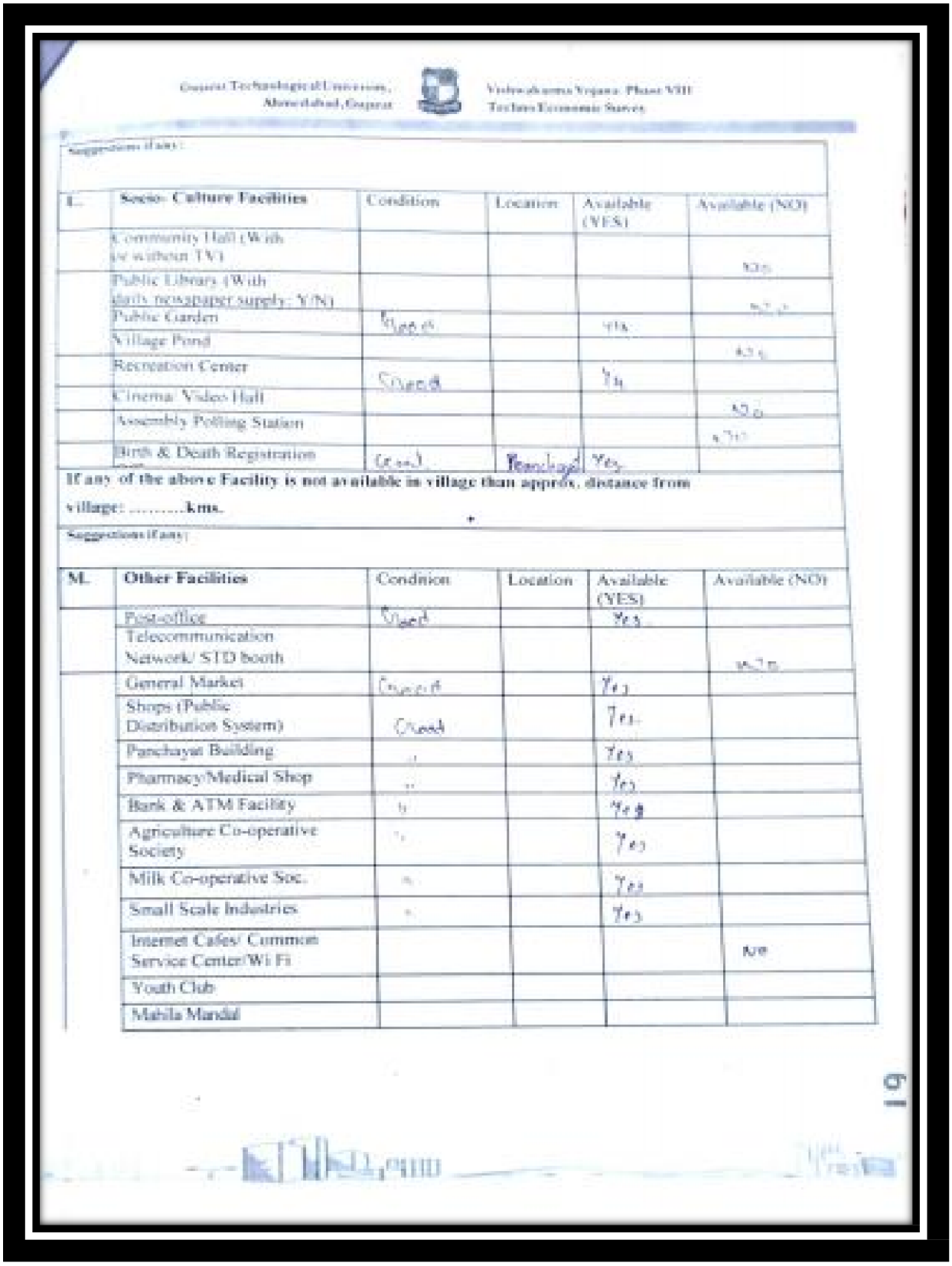

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions (if any):

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

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

Suggestions (if any):

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

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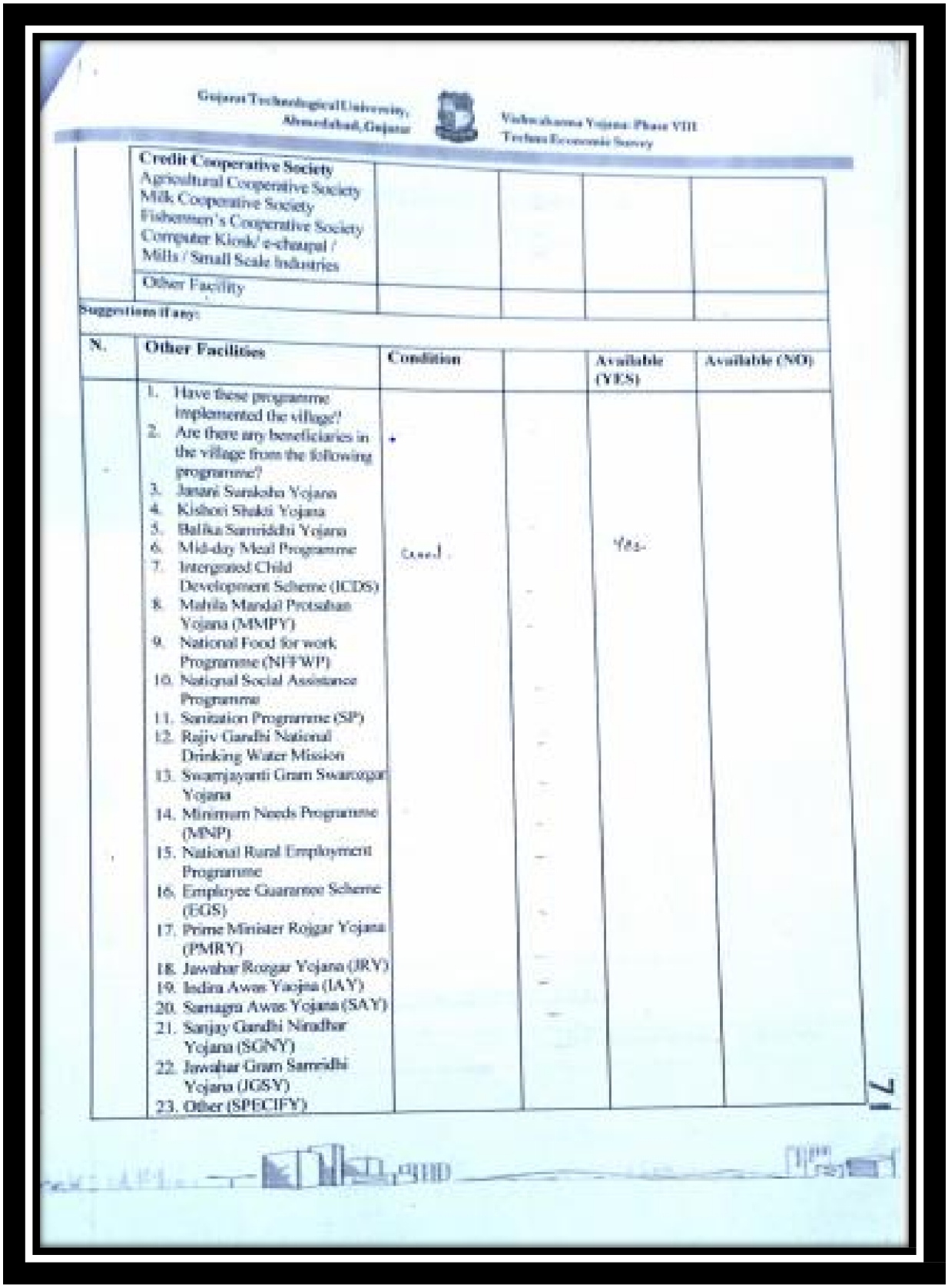

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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

Suggestions if any:

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

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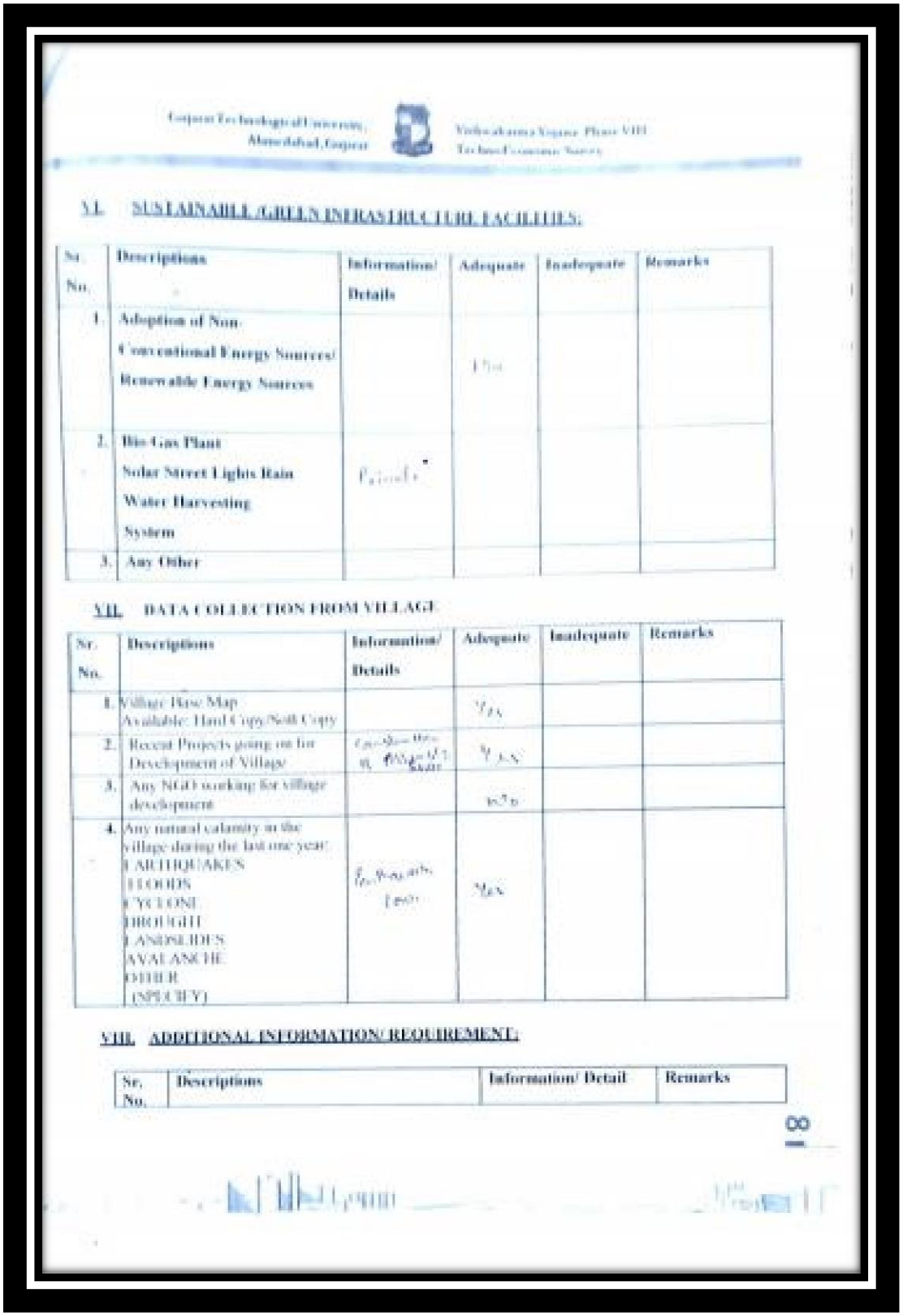

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Vishwakarma Yojana: Phase VIII
Technical Feasibility Survey

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

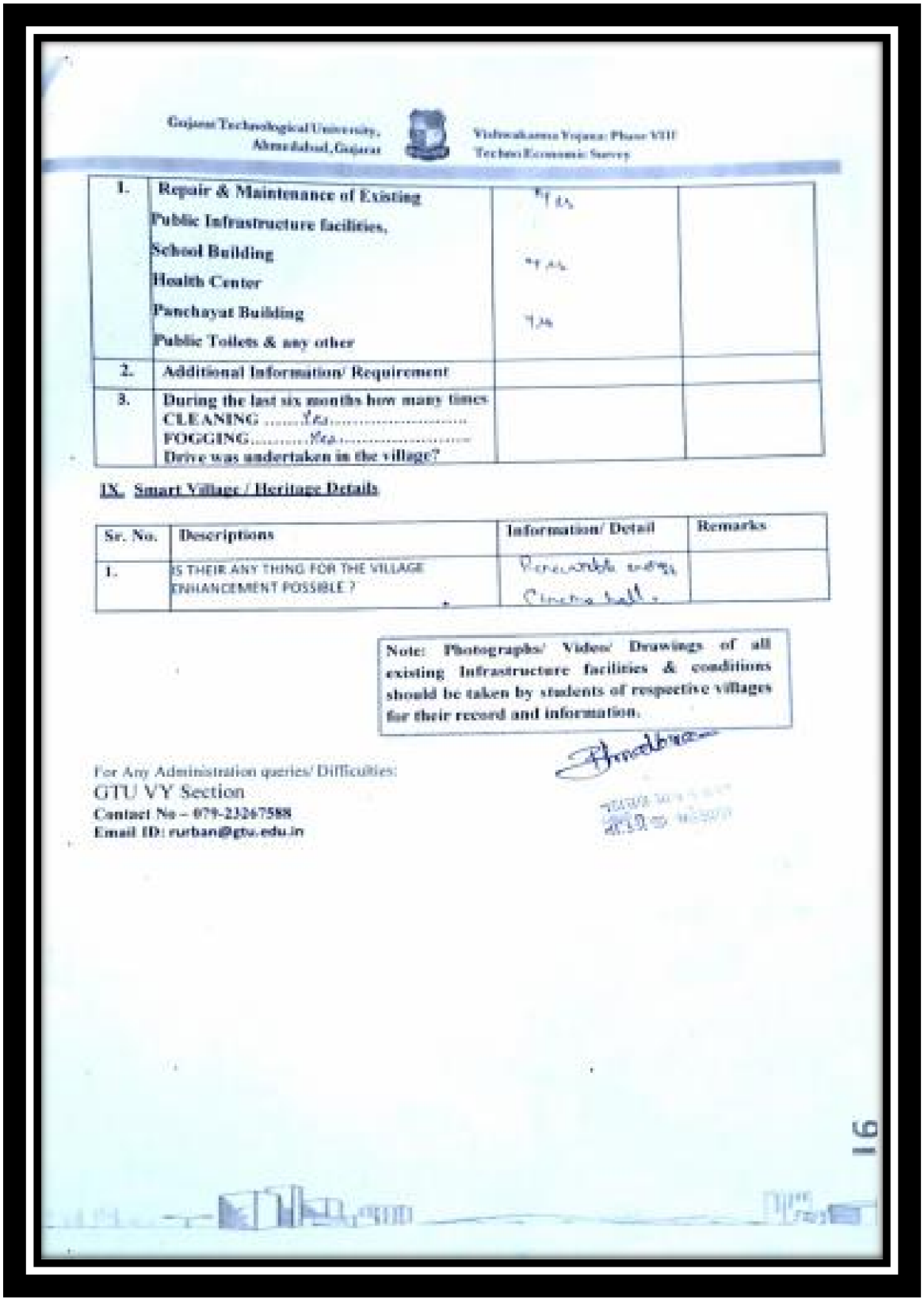
Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources				
2.	Bio Gas Plant Solar Street Lights Rain Water Harvesting System				
3.	Any Other				

VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks



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

IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	Recreation work, Cinema hall	

Note: Photographs/ Videos/ 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: ruban@gtu.edu.in

12.3 Gap Analysis of the Allocated Village

VILLAGE GAP Analysis					
Village Facilities	Planning Commission/UDPFI Norms	Village Name:	LEKWADA		
		Population:			2723
		Existing	Required as per Norms	Smart Village / Cities / Heritage Future Projection Design	Gap
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	1	2	2	1
Primary School	Each Per 2500 population	1	1	1	0
Secondary School	Per 7,500 population	1	1	1	0
Higher Secondary School	Per 15,000 Population	1	1	1	0
College	Per 125,000 Population	0	0	1	1
Tech. Training Institute	Per 100000 Population	0	0	0	0
Agriculture Research Centre	Per 100000 Population	0	0	0	0
Skill Development Center	Per 100000 Population	0	0	0	0
Health Facility					
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	0	1	1	1
Primary Health & Child Health Center	Per 20,000 population	1	1	2	1
Child Welfare	Per 10,000	1	1	2	1

and Maternity Home	population				
Multispeciality Hospital	Per 100000 Population	0	1	1	1
Public Latrines	1 for 50 families (if toilet is not there in home, specially for slum pockets & kutcha house)	3	1	3	0

Physical Infrastructure Facilities					
1 transportation		Adequate / Inadequate	YES	YES	
Pucca Village Approach Road	Each village	YES		YES	
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	YES		YES	
Drinking Water (Minimum 70 lpcd)		Adequate / YES		YES	
Over Head Tank	1/3 of Total Demand	YES		YES	
U/G Sump	2/3 of Total Demand		NO	YES	
Drainage Network - Open		Adequate / Inadequate	YES	YES	
Drainage Network - Cover			NO	YES	
Waste Management System		Adequate / Inadequate	YES	YES	
Socio- Cultural In			frastructure Facilities		
Community Hall	Per 10000 Population	0	1	1	1
community hall and Public Library	Per 15000 Population	0	1	1	1
Cremation Ground	Per 20,000 population	0	1	2	2
Post Office	Per 10,000	1	1	1	0

	population				
Gram Panchayat Building	Each individual/group panchayat	1	1	1	0
APMC	Per 100000 Population	0	1	1	1
Fire Station	Per 100000 Population	0	0	0	0
Public Garden	Per village	0	1	2	2
Police post	Per 40,000Population	1	1	1	0
Shopping Mall 1					
Electrical Design					
Electricity Network		Adequate / Inadequate YES		YES	

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

Sr. No.	Name of Village	Existing Situation AfterGAP Analysis	Design proposal Given by Institute
1	Kaso	Repairing and construction of new roads. Rain water harvesting system for government buildings. Public latrine blocks. Solar Street light facility. Maintenance of Government Library.	Design & Estimation of Rain water harvesting system with necessary drawings was provided. Design & Estimate of Toilet Blocks with necessary drawings were provided.

2	Mahelav	Public latrine blocks. Maintenance of school building Street Light	Pond beautification Development of garden Design of public latrine blocks School building alteration and modification.
Sr. No.	Name of Village	Existing Situation After GAP Analysis	Design proposal Given by Institute
1	Bandha ni	• Repairing or Design of Water storage tanks (U/G sump, overhead tank) • Repair & Maintainance of village approachroad • Waste managementby bio gas plant, Vermi composting	Estimate of Repair & Maintenanceof Internal road Design of Waste management system.
2	Bochasan	• bus stand (provision or repair &maintenance) • Public toilet blocks with rain waterharvesting system. • Waste management by bio gas plant.	Design & Estimation of bus stand. Design and Estimation of Public toilet block with rain water harvesting system. Pond development

Sr. No.	Name of Village	Existing Situation After GAP Analysis	Design proposal Given by Institute
1	LEKEWADA	• Proper road development • Water problems (drainage) Sanitary system toilets	Estimate of Repair & Maintenance of Internal road Design of Waste managementsystem. Design of Sanitation System
2	Deesa	• water issue • Road damaged • Lack of sanitation facilities	Design and Estimation of Public toilet block with rain water harvesting system. Road maintenance

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


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સરપંચશ્રી પારસભા અમરસિંહ વાઘેલા,તા.જિ.ગાંધીનગર મો.૯૨૨૭૨૪૦૫૮૧
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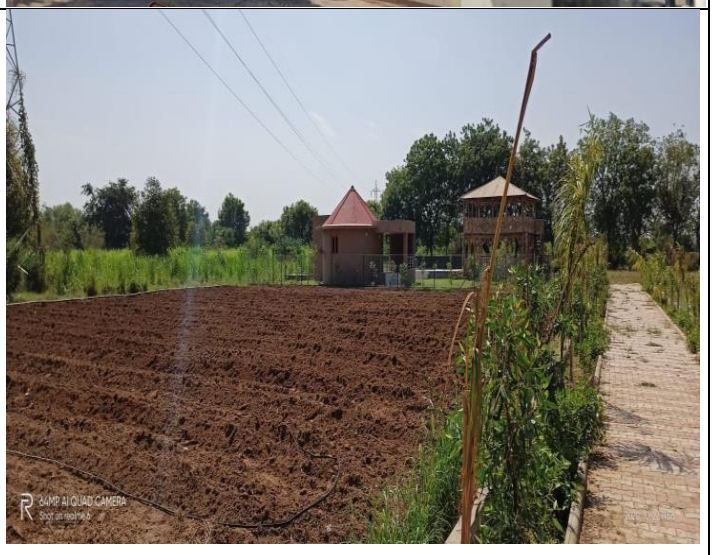
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ADC BANK
ધી અમદાવાદ ડિસ્ટ્રિક્ટ કો-ઓ. બેંક લિ.


Thank you