DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII

AN APPROACH TOWARDS RURBANISATION

VANKANER Village

SURAT District

PREPARED BY

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BHAGWAN MAHAVIR COLLEGE OF ENGINEERING & TECHNOLOGY

NODAL OFFICERS NAME

ASST PRO. DIXIT CHAUHAN

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 Engineering successfully submitted

Detail Project Report for,

VILLAGE: VANKANER

DISTRICT: SURAT

Under

Vishwakarma Yojana: Phase-VIII

in partial fulfillment of the project offered by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

during the academic year 2020-21.

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

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College Stamp:	

ABSTRACT

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

The name of the Vankaner village is Vankaner located in Bardoli taluka of Surat district. This village has comprises of 1658 households. It has a total population of 7472 with 3724 female population against 3748 males according census 2011 data. The main aspects for development of this village are Public toilets, community hall, library etc. Some of the physical infrastructure like dairy, panchayat building, primary school, and well exist in the village and are properly maintained and utilized. More over Water tank is present but in bad condition. On the basis of survey data, we have observed that there are some physical infrastructures like water tank, dairy, primary school, etc. but among them some are not in usable condition which creates problems for villagers. Widening of roads are needed. More such problems are identified and are to be designed and renovated in the project phases.

In part 1 on the basis of survey data, which we have collected from Vankaner village and interaction with villagers, Sarpanch and Talati, we have finalized some designs for the further development of the village as, Library, Community hall, Skill Development Centre, public toilet, Village entrance gate, and lake garden.
By introducing above mentioned amenities all the facilities can be made available to villagers which may reduce the migration. This will sustain the culture of cooperative living. Socioeconomic development will occur giving a sense of livelihood to the dwellers yet maintaining the essence of a village. And in part 2 we have decided some designs for future scope of the village development as Cyber-café, sport ground, primary school, Child welfare & Maternity home, Overhead tank and Super market.

Key Words: Rurbanization, Infrastructure facilities, Socioeconomic development, Sustainability, Rural Development.

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ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
VY	Vishwakarma yojana
PHC	Primary Health Center
CHC	Community Health Center
TDO	Taluka Developer Officer
DDO	District Developer Officer
NGO	Non-Governmental Organization
RCC	Reinforced cement concrete
PCC	Plain cement concrete
BM	Brick masonry
WC	Water closet
NH	National highway
SBA	Swachh bharat abhiyan
SC	Schedule cast
ST	Schedule tribe

SWOT	Strength, weakness, opportunity, threats

CHAPTER: 1

IDEAL VILLAGE VISIT FROM DISTRICT OF GUJARAT STATE

1.1 BACKGROUND & STUDY AREA LOCATION

BACKGROUND:

The Vishwakarma Yojana is aimed to Rurban development of the village. For that purpose study area is decided for taking detail information of the village. The study area includes education, health and safety, drainage, transportation facilities, social life etc.

Prime minister Narendra Modi has launched 'ADARSH GAON YOJANA' from October 2014 under this scheme, every MP has to adopt one village in his area, to develop it. But in the case of Baben village, there is no contribution of any MP or any political leader. But they themselves have made their village a role model for the whole country.

STUDY AREA LOCATION:

Baben is a town situated in Bardoli taluka of Surat district in Gujarat.
It placed in urban region of Surat district of Gujarat. Baben is one among the town of Bardoli block of Surat district. Which is located some 35km from Surat city. Pin code of baben is 394601. Town number of this village is 524347 as per administration register.

Fig. 1.1.1 baben village map

1.2 CONCEPT: IDEAL VILLAGE, NORMAL VILLAGE

NORMAL VILLAGE:

A village is a smaller settlement unit, situated in a rural area, with living and farming units and very few commodities for the people living there. As an administrative unit, villages are governed by the elected officials of the nearest town.

A village is a smaller settlement unit, situated in a rural area, with living and farming units and very few commodities for the people living there. As an administrative unit, villages are governed by the elected officials of the nearest town. They have schools but only up to the secondary phase of learning, and have clinics or small local practices instead of hospitals.

Although there are jobs to be had in a village as well, most people earn their living from agriculture and there is usually very little economic activity. Whether or not a village has a church, a police department, a farmer's market, or any other type of public institution depends on the local

According to the 2011 census of India, 68.84% of Indians (around 833.1 million people) live in 640,867 different villages. In Gujarat villages are spread into 26 districts of the state. The villages of Gujarat present a wonderful scenic beauty and the villagers love to live together in peace and harmony. The economical and industrial strength of the state largely depends on the villages of Gujarat.

The principal occupation of people in the villages of Gujarat is agriculture. People in the villages of Gujarat cultivate the crash crops like cotton, quite extensively. The state is the highest producer of cotton in India. However, the cultivation pattern in the villages of Gujarat varies according to the variations in climate and topography.

1.2.1 OBJECTIVES

- Prevent distress migration from rural to urban areas, which is a common phenomenon in India's villages due to lack of opportunities and facilities that guarantee a decent standard of living.
- Make the model village a "hub" that could attract resources for the development of other villages in its vicinity.
- Provide easier, faster and cheaper access to urban markets for agricultural produce or other marketable commodities produced in such villages
- Contribute towards social empowerment by engaging all sections of the community in the task of village development.
- Create and sustain a culture of cooperative living for inclusive and rapid development
- To facilitate and undertake developmental programs in impoverished communities that includes: healthcare and health education, water supply and sanitation, housing, education and literacy, programs for women's rights and women's leadership, development of community leadership, vocational skills training for alternative income

generation, agriculture, ecologically sustainable development and environment education.

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

1. Punsari (Gujarat): Punsari is located in Gujarat, puts most metros to shame. Funded by the Indian government and the village's own funding model, Punsari is no NRI-blessed zone. The village also boasts of a mini-bus commute system and various other facilities.

2. Dharnai (Bihar) First fully solar powered village: Dharnai, a village in Bihar, beat 30 years of darkness by developing its own solar-powered system for electricity. With the aid of Greenpeace, Dharnai declared itself an energy-independent village in July,2015. Students no long need to limit their studies to the day time, women no longer limit themselves to stepping out in the day in this village of 2400 residents.

3. Pothanikkad (Kerala): The village with 100% literacy rate: Unsurprisingly in Kerala, Pothanikkad village was the first in the country to achieve a 100% literacy rate. Not only does the village boast of city-standard high-schools, but it also has primary schools and private schools. According to the 2001 census there are 17563 residents living in the village.

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

1.2.3 The Idea of a model/Smart Village

The idea of an "Adarsh Gram" or model village has been explored earlier as well, most notably through the Pradhan Mantri Adarsh Gram Yojana, launched by the Central Government in 2009-10. The scheme was implemented in pilot mode in 1000 villages of Assam, Bihar, Himachal Pradesh, Rajasthan and Tamil Nadu, with an allocation of Rs 10 lakh per village. This limit was later raised to Rs 20 lakh per village. The target villages under the scheme were those with more than 50% of the population belonging to Scheduled Castes (SCs).

Additionally, State governments have also taken steps in this direction. Himachal Pradesh launched a Mukhya Mantri Adarsh Gram Yojana along similar lines in 2011, with the allocation of Rs 10 lakh per village.

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

Villages in India

India is a vast country with a majority of its total populations living in the villages. The Indian society is predominantly divided into two divisions like the rural society and the urban society. Villages have always been an integral part of society in India. No specific timeframe can be mentioned about the conception of villages in India. However, the concept of village was not present there in the ancient period.

The Indus valley civilization is so far known to be the ancient civilization in India and it mainly comprised two cities of Harappa and Mohenjo-Daro. However, the concept of village seems to be absent during this era.

History of Indian Villages:

The history of Indian villages, in fact, goes back to the Vedic era when the kingdoms comprised a major city and several villages. The villages were a cluster of houses and the surrounding land was cultivated by the villagers.

The concept of villages in India flourished during the late Vedic era or during the reign of the Maurya's. The Maurya Dynasty was founded by Chandragupta Maurya during 323 BC and the villages were a predominant part of the Indian social system at that time. The villages were administered in a structured way, through a Gram Sabha during the Maurya Dynasty. The religious and cultural scenario of the villages was primarily dominated by the Hindus, especially the Brahmans. The caste system of Hinduism was strictly maintained during that period.

Structure of the Indian Village System:

A social structure of the Indian villages changed drastically during the reign of Muslim emperors like the Mughals or Afghans. This period in the history of Indian villages saw the villagers being influenced by Islam and the equality for religious practice, among all parts of the society was also maintained. During the British period, the Indian villagers got influenced

by the Christian religious culture and a rich diversity of several religions was seen during that period. The social structure in the Indian villages also changed accordingly with the change of religious and cultural scenarios.

Political Scenario of the Indian Village System:

The political scenario in the Indian villages has witnessed interesting changes from the ancient period to medieval period to the contemporary period. In the ancient period, the Indian villagers were not inclined to politics and they blindly followed the rules of their kings.

This tradition of political unawareness among the Indian villagers continued during the medieval period also. However, the Indian villagers started to be politically aware during the British period. In the contemporary period, the Indian villagers are very much inclined to political activities and they also take active part in all kinds of political decisions making process in independent India.

Transport System of the Indian Village System:

Walking was the only way of transport in ancient Indian villages. There was no alternative transport system for the villagers, until the vehicles like Bullock Carts, or Palkis, or Horse Carts, Boats, Ships, etc. came into existence.

These continued to be the principal means of transportation for a long period, till the end of the medieval period. However, the British rulers brought about a huge change in the transport system of Indian villages by introducing the busses, trains and other automobiles.

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

Socio economic:

Around 16 year ago baben village was a barren land. Based on their mind and knowledge, the husband-and-wife Bhadveer and sulkshna naar changed the history and geography of the baben village. Dilipbhai patel, who developed Avadh lake city in baben, said “when we wanted to develop this farmhouse scheme in this village some farmers did not want to sell their land initially. However, after a while those farmers of village agree to sold their land.

Physical:

Literacy rate of Baben village is 65%. Among male the literacy rate is 71% as 6173 males out

of 8642 are educated but female literacy rate is 57% as 4038 out of total 6968 females are literacy in this town.

The number of occupied persons of Baben village is 6628 yet 8982 are non-working. And out of 6628 occupied individual 131 individuals are fully dependent on agriculture. Total area of baben is 4.66 hectare.

Demographic:

The dismal part is that illiteracy rate of Baben town is 34%. And 5399 out of total 15610 individuals are illiterate. Male illiteracy rate here is 28% as 2469 male out of total 8642 are uneducated. In females the illiteracy rate is 42% and 2930 out of total 6968 female are illiterate in this town.

A Population of Baben village is 15,610 of which, 8642 are males and 6968 are females according to census 2011. Between them 1164 are boys and 957 are girls. This town has 3146 homes.

Infrastructure details:

1) Road facilities and Transportation Service:

Here villagers enjoy all the facilities that one living in the city does. The 2km road from Bardoli to baben gives a commuter the feeling of passing through a highway.

Fig. 1.3.1 12m wide roads

This is because the village road is 12meter wide and is well lit with street light. This road hasn't laid with government money, but the fund for it was raised through various ingenious schemes by the villagers.

They take contribution from real estate developer, who come to develop land and houses in the village and use that money to develop basic amenities for the residents of the village.

Fig. 1.3.2 footpath and roads.

The village panchayat collected Rs.3 crore in the past years from the real estate developers and used that money on roads, street lights, a lake, public toilet, drainage and water system for the 15,000 people of baben village.

2) Recreation area:

Baben village in 30 feet statue of sardar Vallabhbhai Patel in the middle of lake. A beautiful lake which is built at a cost of Rs 1.5 crore.

Fig. 1.3.3 A huge lake

3) Drinking water facilities:

There are 6 water head tank and pump house available in village and 3 R.O water plant is free of cost use by villagers.

Fig. 1.3.4 water head tank

4) Water for Agriculture:

A Distributary canal is all around the village and farmers easily use water for land preparation, growing crop and other agriculture purposes.

Fig. 1.3.5 canal

5) Bank:

There are 3 banks available in village. Banks has all necessary machine and villagers uses all the facilities.

Fig. 1.3.6 bank

6) Education facilities:

In baben village Schools, degree and diploma engineering collage and Skill development center available for young men and women according to their interests. Six Anganwadis center for children for develop creativity and knowledge.

Fig. 1.3.7 school


Fig. 1.3.8 private school

7) factory

One sugar factory is present in village. In this village many farmers their sugarcane crops direct sell to sugar factory.


Fig.1.3.9 sugar factory

FACILITIES

- 12m wide clean roads with street light.
- A huge lake in the mid of village.
- The colorful light all around the lake.
- 3 R.O water plant is free of cost use by villagers.
- 6 water head tank and pump house
- 30 feet statue of Sardar Vallabhbhai Patel in the middle of lake
- CCTV camera in whole village.

- Underground sewers for water disposal.
- Arrangement of cleaning.
- The roads are cleared early in the morning
- A team of 22 scavengers for collecting garbage from home by tractor and tempo.
- More than 30,000 trees.
- Skill development center available for young men and women according to their interests.
- 6 Anganwadis center for children for develop creativity and knowledge.
- Health center, public toilet, primary school, secondary school and degree/diploma engineering collage is available at the baben village.
- The village also has a degree and diploma engineering collage, a school and a restaurant.

1.4 SWOT analysis of Ideal village

Strength	Weakness
1. Basic physical infrastructure	Public library
• Water supply	Minor slum area
• Transport	
• Sewerage	
• Telecommunication	
2. Basic social infrastructure	
• Recreational facilities	
• Education facilities	
• Health facilities	
• Huge lake	
3. Quality of housing	
4. Door to door solid waste collection	
5. Wells	
6. Street lightening	
7. C.C.T.V. camera	
8. N.R.I. housing	
9. Post office	

10. Better connectivity	
11. Banking facilities	
12. Temples	
13. Sub-station	
Opportunities	**Threats**
To making free Wi-Fi zone	No Threats

Table:1.4 SWOT analysis of Ideal village

1.5 Future prospects of Development of the Ideal village:

For future prospect, the village baben can use more advanced technologies for agricultural prospect and for other requirements also.

They can make the village Wi-Fi zone and can improve the minor slum area in baben village.

1.6 Benefits of the visits of Ideal village

By the visit of the village baben, we got an idea about an ideal village.

We had seen many facilities for villagers in baben that idea we will used in our allotted village vankaner by this visit of baben, it improved our communication skills and we learn how to interact with the different peoples like sarpanch, villagers etc.

CHAPTER 2

Village Literature Review

2.1 Introduction: Urban & Rural village concept

Urban:

Urban is that area where the population density is more and new facilities are provided to the people. Urban area is the region surrounding a city.

Most of inhabitants of urban areas have non-agricultural jobs. An urban area is an area where many people live and work close together. A population density is higher than in the surrounding area. It is where buildings are close together.

Fig 2.1.1 urban

Urban areas have municipality, corporation, cantonment board or notified town area committee etc. According to census 2011, there are 7,935 towns, 4,041 statutory town and 3,894 census towns. The contribution of the agricultural sector to the GDP of India started to decline and the percentage contribution from secondary sector increased.

The period after 1941, witnessed rapid growth of four metropolitan cities in India, which were Kolkata, Delhi, Mumbai, and Chennai. The nation's economy saw a rise due to industrial revolution and the invention of new technologies increased the standard of living of people living in urban areas. The growth of public sector resulted in development of public transport, roads, water supply, electricity, and hence the infrastructure of urban areas.

Urban areas are created and further developed by the process of urbanization. Urban areas are measured for various purposes, including analyzing population density and urban sprawl.

Rural:

All the areas which are not characterize as urban area is called rural area. In which the population is very low compared to urban areas. Mainly they depend on agricultural activities.

According to census 2011, there are 6,40,867 villages in India. The area where more than 75% of male population is associated with agricultural activity is known as rural area.

Fig 2.1.2 rural area

2.2 Importance of the Rural development

Rural development is important not only for the majority of the population residing in a rural area but the growth of rural activities is necessary to stimulate the speed of overall economic expansion of the nation.

Rural development is pretended to be noticeable importance in the country today than in the olden days in the process of the evolution of the nation. It is a strategy trying to obtain improved rural creation and productivity, higher socio-economic equality, and ambition, stability in social and economic development.

The primitive task is to decrease the famine roughly about 70 percent of the rural population, implement sufficient and healthy food. Later, serve fair equipment of clothing and footwear, a clean environment and house, medical attention, recreational provision, education, transport, and communication.

The planet's population is growing more and more, which is why we are going to need more resources, especially food and building materials, but fuels as well. Thus, agriculture has and will always have to be a major interest, only from now on it has to be done in such a way that it meets human needs without depleting resources for future generations.

The modernization of the world, the expansion of urban areas and the spread of touristic attractions and niche manufacturing have switched the focus of rural development however, and now we have to focus on more than agriculture. It can be said that the planet's future rests on rural development.

2.3 Ancient Villages / Different Definition of Rural Urban Villages

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 activities.
- RBI defines rural areas as those areas with a population of less than 49,000 (tier -3 to tier-6 cities).

It is generally said that the rural areas house up to 70% of India's population. Rural India contributes a large chunk to India's GDP by way of agriculture, self-employment, services, construction etc. As per a strict measure used by the National Sample Survey in its 63rd round, called monthly per capital.

Rural areas have low population density and large amount of undeveloped land. Agricultural activities are more in rural areas.

Census rural refers to individuals living in the countryside outside centers of 1000 or more population. Rural and small town refers to individuals in towns or municipalities outside the commuting zone of larger urban centers.

2.4 Scenario: Rural / Urban village of India population Growth

For the first in since independence, the absolute increase in population is more in urban areas that in rural areas.

Population (in crore)

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

Table 2.4.1 Population of Rural and Urban areas as per census 2001 and 2011

Rural-Urban Distribution: 68.84% & 31.16 Level of urbanization increased from 27.81% in 2001 census to 31.16% in 2011

Literacy rates (in %)

	2001	2011	Difference
India	64.8	74.0	+9.2
Rural	58.7	68.9	+10.2
Urban	79.9	85.0	+5.1

Table: 2.4.2 Literacy Rates in Rural and Urban areas as per Census 2001 and 2011

The improvement in literacy rate in rural area is two times that in urban areas. The rural urban literacy gap which was 21.2% points in 2001, has come down to 16.1% points in 2011.

Literacy Rates (in %)

	2001	2011	Difference
Male			
India	75.3	82.1	+6.8
Rural	70.7	78.6	+7.9
Urban	86.3	89.7	+3.4
Female			
India	53.7	65.5	+11.8
Rural	46.1	58.8	+12.7
Urban	72.9	79.9	+7.0

Table: 2.4.3 Literacy Rates in Rural and Urban area as per the males and females

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

Population	2001	2011
Male	26,385,577	31,491,260
Female	24,285,440	28,498,432
Total	50,671,017	60,439,692

Table: 2.5.1 Population of Gujarat as per census 2001 and 2011

	rural	urban
population (%)	57.40 %	42.60 %
Total Population	34,694,609	25,745,083
Male Population	17,799,159	13,692,101
Female Population	16,895,450	12,052,982
Population Growth	9.31 %	36.00 %
Child Sex Ratio (0-6)	914	852
Child Population (0-6)	4,824,903	2,952,359
Child Percentage (0-6)	13.91 %	11.47 %
Literates	21,420,842	19,672,516
Average Literacy	71.71 %	86.31 %
Male Literacy	81.61 %	90.98 %
Female Literacy	57.78 %	70.26 %

Table: 2.5.2 Gujarat rural & Urban Population 2011

	2001	2011
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

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

Table: 2.5.3 Gujarat Population 2011 & 2001

2.6 Rural Development Issues - Concerns – Measures

Following issues are concern with rural areas:

- People are directly or indirectly dependent on agriculture and a large number of

landowners have small and medium-sized landholding.

- Economy of the people living in rural areas is low.
- The price the farmers get for their produces is less in relation to the work they put in.
- People have to migrate to the urban areas due to unavailability of education.
- The other rural problems are due to the fact that since the rural people do not live-in concentrated masses, the availability of specialized service to them is minimum.
- Very less people are employed in the rural areas.
- Lack of physical facilities in rural areas.
- Lack of recreation facilities.
- Farmers are not having market area for selling their goods directly to the market.

Rural development is the national necessity and it has following measures:

- To develop rural area as whole in terms of culture, society, economy, technology and health.
- To develop living slandered of rural mass.
- To develop rural youths, children and women.
- To develop and empower human resource of rural area in terms of their psychology, skill, knowledge, attitude and other abilities.
- To develop infrastructure facility of rural area.
- To provide minimum facility to rural mass in terms of drinking water, education, transport, electricity and communication.
- To develop rural institutions like Panchayat, cooperatives, post, banking and credit.
- To provide financial assist to develop the artisans in the rural areas, farmers and agrarian unskilled labor, small and big rural entrepreneurs to improve their economy.
- To develop rural industries through the development of handicrafts, small scaled industries, village industries, rural crafts, cottage industries and other related economic operations in the rural sector.
- To develop agriculture, animal husbandry and other agricultural related areas.
- To restore uncultivated land, provide irrigation facilities and motivate farmers to adopt improved seed, fertilizers, package of practices of crop cultivation and soil conservation methods.

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

Importance of infrastructure facilities:

It needs to be emphasized that good quality infrastructure is important not only for faster economic growth but also to ensure inclusive growth. By inclusive growth we mean that benefits of growth are shared by the majority of the people of a country. Thus, the inclusive growth will lead to the alleviation of poverty and reduction in income inequality in the country.

For example, micro, small and medium enterprises (MSME) are dispersed throughout the economy and production by them and their growth require access to quality and reliable infrastructure services to compete efficiently with large-scale enterprises which can often build some of their own infrastructure such as installing their own small power plants or generators. Besides, large-scale firms can even locate themselves near ports and near transport hubs where required infrastructure is available.

Small enterprises, on the other hand, are dispersed widely in the economy and have to rely on the availability of the general infrastructure facilities. Thus, by building up general infrastructure facilities helps the small enterprises to compete successfully with large-scale industries and being labor-intensive generate large employment opportunities for the workers. This will help to alleviate the poverty in developing countries.

Scope of infrastructure facilities in rural /India:

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

2.9 Other Projects / Schemes of Gujarat / Indian Government

Following are the projects/schemes by Govt. Sector:

1) Pradhan Mantri Adarsh Gram Yojana (PMAGY)
2) Pradhan Mantri Kaushal Vikas Yojana (PMKVY)

3) Gujarat Kisan Sarvoday Yojana 2020

4) Gujarat Digital Seva Setu Phase 1

1) Pradhan Mantri Adarsh Gram Yojana (PMAGY)

PMAGY is a rural development program launched by the central government in India in the financial year 2009–10 for the development of villages having a higher ratio (over 50%) of people belonging to the scheduled castes through convergence of central and state schemes and allocating financial funding on a per village basis.

The plan is considered ambitious as it aims to bring a number of development programs to the villages. Some of these programs are Bharat Nirman, Pradhan Mantri Gram Sadak Yojana (PMGSY) for rural roads, water supply, housing, electrification and other big-ticket schemes like Sarva Shiksha Abhiyan, Mahatma Gandhi National Rural Employment Guarantee Act, Integrated Child Development Services, and sanitation.

This program would be applicable to around 44,000 villages which had a scheduled castes population above 50% and so qualified for PMAGY.

2) Pradhan Mantri Kaushal Vikas Yojana (PMKVY):

PMKVY is a skill development initiative scheme of the Government of India for recognition of skills. The aim of the PMKVY scheme is to encourage aptitude towards employable skills and to increase working efficiency of probable and existing daily wage earners, by giving monetary awards and rewards and by providing quality training to them. Average award amount per person has been kept as ₹8,000. Those wage earners already possessing a standard level of skill will be given recognition as per scheme and average award amount for them is ₹2000 to ₹2500.

In the initial year, a target to distribute ₹12000 crores has been laid down for the scheme. Training programs have been worked out on the basis of National Occupational Standards (NOS) and qualification packs specifically developed in various sectors of skills. For this qualification plans and quality plans have been developed by various Sector Skill Councils (SSC) created with participation of Industries. National Skill Development Council (NSDC) has been made coordinating and driving agency for the same.

The scheme has a target to train 1 crore Indian youth from 2016-20. As of 18 July 2016, 17.93 lakh candidates were trained out of 18 lakh who enrolled for the scheme.

3) Gujarat Kisan Sarvoday Yojana 2020

Kisan Sarvoday Yojana 2020 Phase 1 has been launched by Gujarat government to provide electricity to all farmers during day time. The change in the scheme name from Dinkar Yojana to Kisan Sarvoday Yojana became known on 20 Oct 2020 in a government release.

Dinkar is the Gujarati word for the sun and scheme was announced by Gujarat government in last state budget with the total expenditure of around Rs. 3,500 crores, the state government has plan to provide electricity to all farmers for agricultural purposes during daytime by 2022.

4) Gujarat Digital Seva Setu Phase 1 to Connect Village Panchayats with Optical Fibre Network

Gujarat government has announced to start Digital Seva Setu Phase 1 on 8th October 2020. In this programme, the state government has connected 3,500 village panchayats with 100 MBPS optical fiber network. It is a revolutionary step of the govt. towards transforming public service delivery system in rural areas of the state and realizing the dream of Digital Gujarat.

This program will facilitate online availability of public welfare services. The state govt. of Gujarat will provide various public welfare e-services to rural citizens through Digital Seva Setu at their door step.
Digital Seva Setu Programme Phase 1 is an initiative under the central govt's BharatNet project. This programme is meant to ensure optimum utilization of technology for public welfare and will bring in a "historic administrative revolution". As part of the programme, all the public welfare services will be available at e-gram offices in each panchayat.

Through Digital Seva Setu, villagers will not have to go all the way to taluka or district-level offices to avail benefits of public welfare services. The work of connecting 3,500 village panchayats through optical fire network has been completed.

CHAPTER 3

Smart (Cities / Village) Concept Idea and its Visit

3.1 Introduction: Concepts, Definitions and Practices

Concepts:

In India there are more than 6,00,000 villages out of them 1,25,000 villages are backward so there is a need for designing and building the village as a smart village. With modernization and urbanization

people migrate from one place to another place for different facilities such as education, employment and affinity of people towards the locality or city.

Village is main criteria for development of nation. So, develop the village in such a way that which is self-dependent in providing the services, employment and well connected to the rest of the world i.e. smart village. The smart village corrects the social oversight by providing accommodations for sustainable family relationships without disturbing the lifestyle of different generations. The vision of smart village is that modern energy access can act as catalyst for development in education, health, productive enterprise, clean water, sanitation, environmental sustainability and participatory democracy which helps to support further improvement in access to energy.

Smart Village is a concept adopted by national, state and local governments of India, as an initiative focused on holistic rural development, derived from Mahatma Gandhi's vision of *Adarsh Gram* (Ideal Village) and *Swaraj* (Self Reliance).

Prime Minister Narendra Modi launched Sansad Adarsh Gram Yojana (SAGY) on 2 October 2014, Gandhi's birthday, in addition to Smart Cities and Digital India, as a development programme 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 integrated village development plan, encompassing Personal, Human, Social, and Economic dimensions.

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.

Definitions and Practices:

Smart village is a global modern approach for off-grid communities. Vision behind this concept is to assist the policy makers, donors and socio-economic planner for rural electrification worldwide, with special focus on Asian and African countries.

3.2 Vision-Goals, Standards and Performance Measurement Indicators

The basic concept of smart village is to collect community efforts and strength of people from various streams and integrate it with information technology to provide benefits to the rural community. According to Mahatma Gandhi's philosophy and thoughts smart village project provides, "Global means to the local the vision of smart village is that modern energy access can act as catalyst for development in education, health, productive enterprise, clean water, sanitation, environmental sustainability and participatory democracy which helps to support further improvement in access to energy.

3.3 Technological Options

To have a comprehensive understanding on the existing models of Smart Villages across the country, a framework has been formed and shared below for reference.

1) Smart Energy

Provision of clean and sustainable energy is central to almost all other dimensions of rural development. Energy security is the secret mantra, which is helpful for development of agriculture, health-care, education and skilling of rural communities. With a wide variety of solar, wind, biomass and biogas technologies now available at competitive costs and also government provide subsidy for installing solar systems.

For rural energy supply and management, the element of 'smart' refers to creation and management of mini, micro and nano grids within the energy eco-system of a village or a group of villages.

These micro / nano grids bring in the element of self-reliance in energy for rural community and create a possibility of giving back the surplus to the grid. Developing a village with this approach can usher in a new developmental model. The vision for a smart village revolves

around energy security.

Energy is the golden thread that connects economic growth, increased social equity, and an environment that allows the planet to thrive. One such case has been shared in the below for reference.

The rural micro-grid (RMG) usually has a single generation unit, or multiple co-located units, where alternative sources of supply such as prime movers are included. The MG usually relies on renewable energy generation for its prime source of energy, and more recent systems include storage. The RMG is traditionally used to supply small villages with electricity, and the grid is bounded by the village or settlement boundaries. Solar PV is usually used as the primary source of energy, but the development of micro- and pico-hydro systems has led to the increasing use of hydropower as a primary source. Generation units are usually located separately from consumers.

The RMG concept has also been applied to small remote towns, such as in Namibia, where solar PV has been installed to reduce the usage of the prime generator, diesel power. Although this case qualifies as a remote urban mini- or micro-grid, the grid was not originally designed as such. The RMG concept is being increasingly applied to rural agriculture and small industrial establishments, where the availability of electricity has made it possible to mechanize previous manual operations.

Fig 3.3.1 solar system

Chhotkei village in Angul district of Odisha has emerged as the first smart micro grid implementing village in India. The village gets a supply of 30 kWp (kilo watt, peak) Solar-power. The village has installed a Smart Nano grid to meet the energy demands of 140 households, 20 streetlights, a temple, and three community centers. After usage the village saves around 10 kWp which they set aside for day-time use in irrigation pumps and microenterprises to improve agricultural output, to enable value-addition to agriculture, and generate employment.

2) Smart Agriculture

For any village, its agricultural eco-system is one of the most intrinsic identities that directly relates to its social, environmental and financial fabric. Efficiency and productivity in agriculture is directly related to the farming practices adopted by the communities. Fortunately, the intersection of technology and agriculture has opened up a lot of opportunities for the farmer, consumer and suppliers. This intersection is now called as Precision Agriculture (PA).

The development of PA is driven by Internet of Things (IoT), BDAA (Big data and advanced Analytics) and the plummeting cost of sensors in the semiconductor industry. Infusion of PA techniques and practices can drive transformation at every stage in agriculture. The immediate benefits are self-sufficiency for villages, generating business and increasing financial freedom for villagers (both farmers and suppliers).

An example of Smart Agriculture has been shared below in the box for reference.

What is PA and how does it work?

Precision agriculture (PA) is a technology-enabled approach to farming management that observes, measures, and analyzes the needs of individual fields and crops. By allowing farmers to apply tailored care and manage water more effectively, it boosts production, improves economic efficiency, and minimizes waste and environmental impact.

Its development is being shaped by two technological trends:

big-data and advanced-analytics capabilities on the one hand, and robotics aerial imagery, sensors, sophisticated local weather forecasts on the other. It uses a system of IoT sensors, mobile communications, big data and analytics in the cloud. They all come together to help farmers use more precise amounts of fertilizer, water and other resources.

Recommendations can be adjusted in real time to reflect changing weather conditions. Soil sensors and aerial images help farmers manage crop growth centrally, with automated detection systems providing early warnings of deviations from expected growth rates or quality. From seed genetics to environmental conditions, anything that affects farm production can be measured and analyzed.

Fig 3.3.2 smart agriculture

Digital technology can empower farmers to collect information in the field and it is expected to allow them to monitor each plot of land in future to determine precisely what crop they need to produce to thrive, with reduced usage of resources for cultivation.

Fig 3.3.3 Analyzing the crop by drone

There is a lot of room for growth with agricultural drones. With technology constantly improving, imaging of the crops will need to improve as well. With the data that drones record from the crops the farmers are able to analyze their crops and make educated decisions on how to proceed given the accurate crop information.

Post-harvest, delivery of produce to the right destination / market with least wastage is an important

consideration. This can be aided through automated systems that track, in real-time, the status, performance, and potential bottlenecks of critical equipment to optimize fleet management.

Coupling transport-management systems with agricultural sensors can allow unified hauling of inbound transportation generating huge savings.

Agriculture-specific payment systems and financial services can help farmers make their economic models more resilient.

4) Smart Education

Smart villages aim to increase the time available for students to study and will address prevalent factors that negatively affect the ability of students to acquire the knowledge and skills necessary to achieve economic goals and improve labor productivity.

ICT (information and communications technology)-equipped schools can provide a good deal of handholding in accessing internet and consequently the world's knowledge base, ending the information isolation experienced by many rural communities.

New opportunities can be generated for distance and adaptive learning, reducing the need to move to towns or cities to achieve higher levels of education. In addition, ICT and internet access also have a "pull factor", providing incentives for school attendance and for attracting and retaining good teachers, addressing issues such as school dropouts and cognitive development.

5) Smart health

At the most basic level, households in smart villages will be able to consume potable water and a more nutritious diet due to the reduced cost of boiling water and cooking food, and enhanced agricultural productivity arising from associated development initiatives and reduced wastage. ICT-enabled m-health initiatives can enable mobile health diagnostic solutions, requiring relatively low levels of local medical skill and providing access to specialist health-care services based in urban communities where necessary.

Epidemiological data can be gathered, providing the opportunity for more effective interventions and early warning capability to address health related challenges such as malnourishment, underweight child birth, anemic mother etc.

6) Smart Environment

Smart environments include smart homes, smart cities smart manufacture. Smart environment are an extension of pervasive computing. According to Mark Weiser, pervasive computing promotes the idea of a world that is connected to sensors and computers.

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.

7) Smart Infrastructure

In order to ease life of villagers in every possible way, a village has to be well supported with infrastructure to enhance efficiency of habitants and efficacy of inputs from the villagers.
The infrastructure includes roads, institution buildings, weather station equipment, hospital equipment, telephone towers etc.

Most of these infrastructures can be established with well-intended village habitants and the guiding institutions through convergence of funds, functions and functionaries. Smart element needs to be included in every stage of infrastructure development.

3.4 Road Map and Safe Guards

GIS is an essential economic tool that many cities use for planning, analysis and building lively communities that attract business and residents.

Fig 3.4.1 road map

3.5 Issues & Challenges

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

Budget Constraints:

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

Smart Technology:

It is considered that smart technology for these smart villages is still in the precommercial or in some cases the conceptual stage. And since the technology is in the pre-mature or conceptual stage, it generates uncertainties regarding return on investment as far as financial parameters are concerned. This also results in apprehension of a long payback period, and investors are unwilling to invest, which contributes to financial uncertainties for smart technology initiatives.

Sustainability problems in agriculture:

Indian culture productivity is very less compared to world standard due to use of obsolete farming techniques, technology and equipment. Coupled with this, lake of understanding of the need need for Sustainability in the poor farming community has made things worse.

3.6 Sustainable infrastructure- Intelligent Traffic management

An intelligent traffic management system (ITMS) is defined as an advanced application that without embodying intelligence such aims to provide innovative services related to different modes of transport and traffic management.

It enables users to be better informed and to make safer, more coordinated, efficient and smarter use of transport networks. In ITMS, communication and information technologies are applied in the field of road transport, road infrastructure, vehicles, users and traffic management. ITMS provides a useful interface with other modes of transport to improve the efficiency of road transport and traffic management.

Interest in ITMS is growing rapidly due to increasing concerns related to internal security, as ITMS includes surveillance of roadways, which is an important requirement in the field of internal security. ITMS is playing a major role in providing an effective and efficient means of rapid mass evacuation of people in such situations as natural disaster, fires, riots or terrorist attacks.

Video vehicle-detection system:

Traffic-flow measurement and automatic incident detection using video cameras is the most popular form of vehicle detection. Cameras are mounted on poles or structures above or adjacent to roadways. This is a non-intrusive method of traffic detection, since it does not involve installing any components directly into the road surface or roadbed.

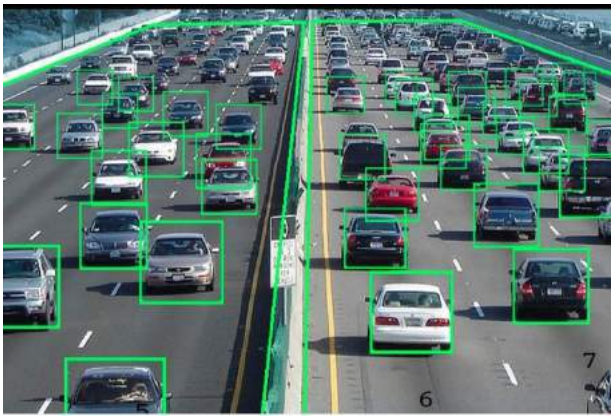


Fig 3.6.1 video detection system

Video footage from the cameras is fed to processors, which analyse the changing characteristics of the video images as vehicles pass by. A single video-detection processor can detect traffic from one to eight cameras, simultaneously. The system requires some initial configuration to familiarize the processor with the baseline background image by feeding known measurements such as distance between lane lines or height of camera above the roadway as input. Output from a video vehicle-detection system includes lane-by-lane vehicle speeds, counts and lane-occupancy readings. Some systems can also provide additional outputs such as gaps, headway, stopped-vehicle detection and wrong-way vehicle alarms.

Vehicles re-identification:

This method requires sets of detectors mounted along the road. In this technique, a unique serial number on the number plate of the vehicle is detected at one location and then detected again (re-identified) further down the road. Travel time and speed are calculated by comparing the time at which the vehicle is detected by the pairs of sensors. This can be done using Bluetooth, RFID or serial numbers from electronic toll collection (ETC) transponders (also called toll tags).

3.7 Cyber Security

Cyber security is the practice of defending computers, servers, mobile devices, electronic systems, networks, and data from malicious attacks. It's also known as information technology security or electronic information security. The term applies in a variety of contexts, from business to mobile computing, and can be divided into a few common categories.

- Network security: it is the practice of securing a computer network from intruders, whether targeted attackers or opportunistic malware.
- Application security: it is the focuses on keeping software and devices free of threats. A compromised application could provide access to the data its designed to protect. Successful security begins in the design stage, well before a program or device is deployed.
- Information security: it protects the integrity and privacy of data, both in storage and in transit.
- Operational security: it includes the processes and decisions for handling and protecting data assets. The permissions users have when accessing a network and the procedures that determine how and where data may be stored or shared all fall under this umbrella.
- Disaster recovery and business continuity define how an organization responds to a cyber-security incident or any other event that causes the loss of operations or data. Disaster recovery policies dictate how the organization restores its operations and information to return to the same operating capacity as before the event. Business continuity is the plan the organization falls back on while trying to operate without certain resources.
- End-user education addresses the most unpredictable cyber-security factor: people. Anyone can accidentally introduce a virus to an otherwise secure system by failing to follow good security practices. Teaching users to delete suspicious email attachments, not plug-in unidentified USB drives, and various other important lessons is vital for the security of any organization.

3.8 Retrofitting- Redevelopment- Greenfield Development District Cooling

1) RETROFITTING

Retrofitting is one of the strategic components which when will be introduce planning in an existing built-up area, will help us to achieve several objectives for smart city like making the

existing area more efficient and livable along with others.

In this method, generally an area more than 500 acres will be identified by the city in consultation with citizens. After identification and observation of the current situation 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. The whole process of retrofitting must be completed in a shorter time frame, as it will lead to help and assistance in other part of city or another city of similar condition. SMART-RETROFITS are projects to mitigate major issues affecting urban resilience; are catalytic in nature, effective, requires policy initiatives & some investments for pre-take-off. Now days, one of the most commonly method used for the retrofitting for any buildings is Green retrofitting.

2) REDEVELOPMENT

Redevelopment causes the tremendous development in infrastructure by using the mixed land use patterns and also increasing the density at the same time. When the area is more than 50 acres, then for the sake of concerns of citizens redevelopment is adopted. For example, by implementing high ground coverage, mixed land use is done by preparing new layout for the area. Vacant land represents both a significant problem and an attractive opportunity for many central cities. Vacant land and abandoned structures impose both economic and social costs on cities and the neighborhoods or districts in which they are located. On the economic side, such properties lower neighboring property values and tax revenues even as they create pressure to raise taxes to maintain service levels. Addressing the issue of vacant and abandoned land and structures, state governments play an important role as well. In many cases, the ability to overcome the problems associated with vacant

properties and convert them to productive use require legislative powers that are found only at the state level. Even when demand for new or restored land uses is sufficient for redevelopment to occur, the path to success is troubled by the displacement of previous residents and the elimination of their neighborhoods.

Displacement can occur directly through property clearance and conversion to new uses, or indirectly through gentrification when land prices and rents are bid-up to a level unaffordable

to the neighborhood's long-term residents.

The redevelopment process can create winners and losers, with the losers too often racial and ethnic minorities and the economically disadvantaged. Physical and economic redevelopment are virtual imperatives for cities, but paths to redevelopment that minimize displacement and offset its negative consequences are unsure. Redevelopment has created new, vibrant central city areas. Historic buildings have been restored to physical and economic vitality. At the same time, affordable housing has filtered upward in price and economic class. Historic buildings have been lost. Residences and neighborhoods have been destroyed. People have been displaced. 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.

For Bhubaneswar we can recollect the redevelopment proposal as:
Redevelopment Plans underway to promote compact, higher density, mixed-use living in the urban core of the city.
Redevelopment of Master Canteen Chowk as Bhubaneswar ‘s new Town Centre and Multi-modal Hub.

3) GREEN FIELD DEVELOPMENT

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. from a legal perspective, the challenges in obtaining timely, effective, and affordable approvals for Greenfield residential development. In particular, we focus on the constraints on Greenfield developments (not all green fields are equal); the need to integrate land use planning with the provision of infrastructure; and the opportunities provided by the Special Housing Area legislation. Greenfield areas are seen as the low hanging fruit in terms of providing land for urban expansion, however the reality is quite different. There will be no perfect sites where the conversion of land for urban use will have no effects; all areas will be constrained, and the conversion of any area will need to occur in the context of compromises

HAVING been made. One of the most important issues with Greenfield developments is to ensure that the development area can be appropriately served with infrastructure.

New areas (Greenfield) will be developed around cities in order to accommodate the expanding population in urban areas. Application of Smart Solutions will enable cities to use technology, information and data to improve infrastructure and services that includes physical as well as social infrastructure.

One well known example is the GIFT City in Gujarat. For Bhubaneswar, the constituent proposal comprises of: Identification and Preparation of Town Planning Schemes as an urban growth strategy through effective management of land resources.

Master planning of mixed-use integrated townships in Jagasara and Shyamapur. Unlike retrofitting and redevelopment, Greenfield developments could be located either within the limits of the ULB or within the limits of the local Urban Development Authority (UDA).

Some of the important determining factors about Greenfield development are:

- Areas of land that have never been used for construction, areas of natural, often grassed, land.
- Nothing to demolish, and no existing issues
- Cheaper to develop
- Demand for rural/suburban housing
- Easier to comply with environmental standards

3.9 Strategic Options for Fast Development

1) Getting Information and Developing the Village Database
2) Integrated Village Development Planning
3) Getting and Sustaining Widespread Participation
4) village development planning be participatory
5) Participatory Development Planning & Management

Getting Information and Developing the Village Database

- Decide how to quickly collect village information.
- Quickly collect and analyse the basic information - on key aspects of village and the issues and problems to kick-start planning.
- Develop a comprehensive list of items on which detailed information is to be gathered.
- Organize the system and people to collect the detailed information.
- Develop a Panchayat database – a system for recording, arranging, storing, updating and retrieving the data when required. (Using computers is most convenient).

Integrated Village Development Planning

- Integrated Village Development Planning is the process by which all aspects (sectors) of local life are addressed systematically, including their interconnections and overlaps. Typically, integrated planning includes plans for better housing, water and sanitation, health, education, infrastructure such as roads and power-supply, transport and communication linkages, livelihoods improvement, land and watershed treatment, and other related aspects that would together result in improved quality of life for all residents of the village.
- The advantage of integrated planning is that the natural cross-connections and overlaps between "sectors" and various service departments can be taken care of, and projects made successful. For example, building a school (education sector) also requires providing water to the toilets (water supply) and lighting (power-supply). In doing 'scheme-wise' or 'departmental' planning such crucial connections often get missed. However, because state and central governments function through separate departments with separate programs, doing "sectoral" planning or scheme-wise planning is more common, and projects often fail because the interconnections between sectors or subjects get little attention. By first doing integrated planning at the village level, and thereafter working out how to link the requirements to various departmental programs, these problems can be avoided.

Getting and Sustaining Widespread Participation.

- Identify one key or pressing problem faced by the whole village (or almost all the people) – the rapid assessment through the steps D1 and D2 are useful for this.
- Organize (one or more) village meetings to find a widely acceptable solution and decide on ways to implement it (i.e., planning to solve the problem).

- Ensure there is widespread involvement in implementation and management, by distributing the responsibility for detailing the design, resource raising, implementation, supervision/ monitoring and managing the process among the village residents. The essence of success is getting as many people involved as possible.
- Establish systems for transparent and accountable functioning – with regular monitoring, reporting accounts to the residents/ users, getting feedback from and resolving issues with the community and users. (social audit)
- Sustain and establish the system of participatory planning (through regular meetings and systems for people's involvement) to take up other issues and village development tasks in the same way

village development planning be participatory.

- It is required by law in most states. Many village development activities have been made the responsibility of Panchayats, and the activities, decisions and accounts of the Panchayat are 14 Manual: Integrated Village Planning and Development to be presented to the Gram Sabha periodically. In some programs (such as the MNREGS) this process, known as social audit, is compulsory.
- Participatory planning, which is planning by the local residents about the development of their own village, leads to greater success as it brings the cooperation and contribution of all people and groups to the plan.
- It also helps mobilize the required resources through help in raising additional funds and voluntary contribution of labour, time or money.
- Participation in the village development process ensures a feeling of 'ownership' and pride in the achievements of the village and therefore leads to better usage and maintenance of assets that are created.
- Also, when rules for better maintenance and use of systems and assets in the village are made with the participation of the village residents and with common decision-making, there is better adherence to the rules and therefore greater overall success of plans. Various aspects of community life, for example about restrictions on free grazing or on sharing of water, also require rule-bound behavior. This is possible only if all people have been involved in making the rules and setting the sanctions for non-adherence.

Participatory Development Planning & Management

- Identify the problems (or needs, objectives or desires) of the residents. There are likely to be a number of them, but in the beginning, it is important to identify the most pressing problem faced by the maximum number of people in the village. This can be done during village meeting. Later other issues and needs can also be taken up.
- Identify the various possible solutions, and find the most suitable and commonly acceptable solution, in consultation with the village residents, through a village meeting.
- Detail out the solution the program or project, including the location, detailed design, resources required and budget, technical inputs required, how it is to be constructed or undertaken, how it will be maintained, who will do each of these parts of the work, etc. This is also to be decided through discussion with residents.
- Prepare the implementation plan. How will the project be done, who will do the work, who will supervise, who will coordinate, how will resources be utilized, how will progress be reported to Panchayat, the village community and/or the users, etc. This is also to be decided through discussion with residents of village.
- Implement the plan of Monitoring and trouble-shooting by the leaders will be necessary during execution.
- Decide on the management system and rules, who will run the project, who will manage/ monitor and how, where will the resources come from, who will audit, who will report & how to different sets of people etc. This is also to be decided through discussion with residents of village.
- Set in place (institutionalize) the selected system for managing the project or program after it is developed and ensure transparent management of operations.

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

The problem of access to safe drinking water and sanitation facilities in urban areas of India is a major concern. There is a need to reuse treated wastewater in order to meet the current and future demands for water.

The consistent increase in the rate of growth of India's population has also led to the increase in demand for water, particularly in the urban areas where the rate of increase is high compared to rural areas. In 2001, urban population was 285 million and assuming water supply of 135

liters per capita per day, the domestic water demand is estimated at around 38,475 million liters per day (MLD), whereas as in 2011 urban population was 377 million with a domestic water demand of 50,895 MLD. It shows that growth in urban population leads to additional water demand of 12,420 MLD in urban areas. The water supply of 135 liters per capita per day (LPCD) as a service level benchmark should be given for domestic water use in urban local bodies. However, currently as per Central Public Health and Environmental Engineering Organization (CPHEEO), an average water supply in urban local bodies is 69.25 LPCD. This indicates that there is a vast gap between the demand and supply of water in urban areas of India. The problem of access to safe drinking water and sanitation facilities in urban areas of India is also a major concern. It is estimated that by 2050, half of India's population will be living in urban areas and will face acute water problems.

At present, 163 million people do not have access to safe drinking-water and 210 million people lack access to improved basic sanitation in India. In urban areas, 96% have access to an improved water source and 54% to improved sanitation. Whereas in rural areas, which accounts for 72% of India's population lives, only 84% have access to safe water and only 21% for sanitation. In addition, there is a lack of wastewater treatment facilities to treat the wastewater of a growing population. There is a need to reuse treated wastewater in order to meet the current and future demands for water.

The prevention of pollution of water sources is extremely critical in order to continue to supply water of quality standards. Available data suggests that pollution levels have increased in surface water as well as groundwater. More than 100 million people in urban areas exposed to poor water quality. A lack of sufficient infrastructure, services and funds to support water and wastewater treatment facilities required for an urban area further exacerbates the problem. Moreover, the drainage and solid waste collection services are not adequate in most of the urban areas. The systems are either poorly planned and designed, or operated without inadequate maintenance. Use of natural capacities of soil and vegetation (green infrastructure) can be applied to absorb and treat waste water. Natural systems are found to be more cost-effective and require low building, labour and maintenance costs.

In order to meet the future urban water challenges, there needs to be a shift in the way we manage urban water systems. An Integrated Urban Water Management approach must be adopted which involves managing freshwater, wastewater, and storm water, using an urban area as the unit of management.

The approach encompasses various aspects of water management, including environmental, economic, technical, political, as well as social impacts and implications.

This will be one of the key topics of discussions at the 4th India Water Forum (IWF) to be organized by The Energy and Resources Institute (TERI) in association with the Ministry of Water Resources River Development and Ganga Rejuvenation, Government of India. This event will provide a platform to highlight current and future water related issues and recognize good water governance practices and solutions through discussions among water experts from various fields such as academics, research, policy, industry and civic society.

Role of Indigenous:

Changing patterns of weather and rainfall, past policies regarding water release and storage, and a frequently resultant dry basin have forced the central and state governments of India to engage in conserving water, often looking at ways to adapt ancient and traditional techniques that are simple, reliable, and environmentally friendly.

In Indian culture water is linked to every social aspect of life. Divine water is consumed in the temple after puja worship rituals. Many other rituals also highlight the significance of water in Indian culture. The Holy River Ganges is mythologically linked to Lord Shiva as the fountain that flows through the Himalayan terrain, reaching first Haridwar and then Benares.

Fig 3.10.1 ganga river

All over India people throng for a dip in the holy river to wash away their sins, for the Holy River Ganges is the Hindu symbol for purification of the soul and rejuvenation of the mind.

Other rivers, such as the Brahamaputra, Indus, Godavari, Krishna, Narmada, Cauveri, and Mahanadi, are also symbolic places in Indian culture with thriving agriculture and plantations on their shores. The river Cauvery is linked closely to the culture, tradition, and history of the state of Tamilnadu.

The Aadi Perukku festival (Adi means a Tamil month, Perukku means swelling) is celebrated

in mid-July when the river is in full flow; and the Mettur Dam is built across it, storing water to release for the cultivation of wet lands.

During the colonial rule in India, public health and sanitation were never given priority.

Despite the population being in manageable numbers, rural sanitation, water supply were issues never taken up by the administration.

Fig 3.10.2 step well at upercot caves

The first rock-cut stepwells in India date from 200-400 AD. The earliest example of a bath-like pond reached by steps is found at Uperkot caves in Junagadh.

These caves are dated to the 4th century. Navghan Kuvo, a well with the circular staircase in the vicinity, is another example.

Fig 3.10.3 step well at upercot caves

It was possibly built in Western Satrap (200-400 AD) or Maitraka (600-700 AD) period, though some place it as late as the 11th century. The nearby Adi Kadi ni Vav was constructed either in the second half of the 10th century or the 15th century.

Fig 3.10.4 step well at Rajasthan

Tube well was used at so many years ago for irrigation purpose, drinking & daily uses during drought.

3.11 Initiatives in village development by local self-government

The 73rd amendment to the Indian Constitution (1992) clearly prescribes that the Panchayats should be institutions of self-government through which powers are devolved to the people as to the participation in the process of planning for economic development and social justice, and implementation of schemes and programmes for these purposes. To strengthen and enhance the efficiency of local governance, PRIs were structured and designed as three tier system. The base of this pyramidal structure is the gram Sabha (or village assembly), composed of all citizens eligible to vote, and so the foundation of grassroots democracy. Whatever the case, the grass roots level institutions are vital instruments in the process of development to lower levels and these processes are quicker as and when common people identify themselves as active partners.

There are so many facets to the issue of grassroots governance and development in India and it is very important because of more than 65 percent of India's population comes from rural areas and its fortune and future are determined by these PRIs.

Panchayati raj:

Panchayats as institutional means for development have been part of the Indian system since olden time. Panchayati Raj Institutions, the grass root units of local self-government have been reflected as instruments of socio-economic change in rural India. Involvement of people at the grass root level is the most important way to bring socio-economic development. Panchayati Raj is recognized as institutional expression of democratic decentralization in India. Decentralization of power to the panchayats is seen visualized as a means of empowering people and involving them in decision making process.

Local governments being closer to the people can be more receptive to local needs and can make better use of resources. The democratic system in a country can be guaranteed only if there is huge participation in the governance. Therefore, the system of democratic decentralization commonly known as Panchayati Raj is considered as an effectual means to ensure democracy and socio-economic transformation. It is well documented in past history that India has a long tradition of local governments, going back to more than 4000 years.

This institution has survived numerous political changes and disturbances in the ancient and medieval periods till the start of the British Raj. With the coming of the colonial administration, the patterns of the working of the local bodies underwent marked changes.

3.12 Smart Initiatives by Surat Municipal Corporation

Smart city Mission was launched by Prime Minister Shri Narendra Modi on 25 June, 2015. Surat city was selected among 100 cities to be developed as smart city in India due to various achievements, initiatives and all-inclusive approach.

Accordingly, Surat city had submitted "Smart City Proposal" (SCP) for Surat City in the given format on 15 December, 2015 to Ministry of Urban Development, Government of India with required consent of Government of Gujarat and statutory authority of Surat Municipal Corporation. Till deadline for submission total 97 cities had submitted their smart city proposal to Government of India.

As per the already given plan, 20 cities were to be selected in round-1 (current year) on merit of their submitted proposal. Government of India had constituted 3 teams with expert members of World Bank, ADB and other independent members for evaluation and marking of all the submitted smart city proposals from 97 smart cities and to select final list of top 20 cities based on marking.

On 28 January, Shri M.Venkaiah Naidu, Minister of Urban Development Government of India announced the much awaited 20 winners of the Smart City Challenge competition for round-1 in current financial year at a press conference. It is a matter of pride for citizens of Surat that our city is selected among 20 winning cities at Rank No.4. Shri M.Venkaiah Naidu said that the winners were from 11 States and the Union Territory of Delhi and the selection was totally objective and transparent based on standardized processes. Shri Naidu further said that Smart City Mission marks a paradigm shift towards urban development in the country since it is based on 'bottom up' approach with the involvement of citizens in formulation of city vision and smart city plans and the Urban Local Bodies and State Governments piloting the mission with little say for the Ministry of Urban Development. He also observed that it was for the first time in the country and even in the world that investments in urban sector are being made based on competition base selection of cities.

Informing that 1.52 crore citizens participated in shaping smart city plans of 97 cities and towns in the first round of competition, Shri Naidu said that this enthusiastic participation of people is a major positive outcome.

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

1. Digi Locker

The service was launched as an important facility to store crucial documents like Voter ID Card, Pan Card, BPL Card, Driving License, education certificates, etc. in the cloud.

Fig 3.13.1 Digi locker

2. MyGov.in

The portal works as an online platform to engage citizens in governance through a "Discuss", "Do" and "Disseminate" approach.

Fig 3.13.2 Mygov.in

3. ESign Framework

This initiative would enable users to digitally sign a document online using Aadhaar authentication.

Fig 3.13.3 ESign framework

4. Swachh Bharat Mission mobile app

The app will enable organizations and citizens to access information regarding the cleanliness drive and achieve the goals of the mission.

Fig 3.13.4 Swachh Bharat mission mobile app

5. National Scholarship Portal

This initiative aims at making the scholarship process easy. From submitting the application, verification, sanction and disbursal to end beneficiary, everything related to government scholarships can be done on this single portal online.

Fig 3.13.5 National Scholarship portal

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

Smart village environment:

Smart city technologies have a high, and largely unrealized, potential to improve quality of life. The idea behind smart cities is to use technology and data purposefully to make better decisions and deliver a better quality of life. Beyond benefits in terms of safety, time, health, connectedness, jobs, and cost of living, huge improvements can be realized in the environmental sector. Smart-city solutions such as air quality monitoring, energy use optimization, and electricity, water, and waste tracking can produce results such as 10-15% fewer GHG emissions**,** 30-130 fewer kilograms of solid waste per person per year, and 25-80 liters of water saved per person per day.

To achieve such benefits, three layers of smartness are required in a city, building on traditional physical and social infrastructure. First, the technology base includes networks of connected devices and sensors, such as smart phones connected by high-speed communication networks. Next, smart applications and data analysis capabilities are used to translate raw data into alerts, insights, and actions. Finally, wide adoption of applications and usage by cities, companies, and the public, together with the effective management of data, inspire better decisions and behavior change.

Smart applications contributing most to environmental improvements include (but are not limited to) those focused on mobility, water, energy, and waste. For example, real time public transit information and building automation systems can lead to fewer GHG emissions, better air quality can be realized as a secondary benefit of many energies saving and mobility applications, leakage detection and control can support water conservation, and digital tracking and payment for waste disposal can lead to solid waste reduction.

Smart cities revolution to boost employment in India

Smart cities have emerged as a potential job creator in the past few months. Many new-age profiles are likely to witness potential growth especially in the areas of ICT (Information Communication Technology), Data Management & Analytics and e-Governance.

Government of India's 'smart cities mission', a flagship initiative, is aimed at developing 100 sustainable and citizen friendly cities across the country. Each of these smart cities will be a key driver of economic growth boosting the GDP of the country and creating multiple new-age employment opportunities. With increased urbanization, urban areas are expected to house 40 per cent of India's population and contribute to over 75 per cent of India's GDP by 2030. This calls for large scale infrastructural development which is not just physical and institutional but also social and economic infrastructure. Only then would these cities will attract investments leading to continuous growth and development. A key way of developing smart cities is by enabling using smart evolved technology for local area development in the cities. Such development will generate employment for a large segment of local population. Application of smart solutions will enable cities to use technology, information and data to improve their services. Integration of technology is a major challenge and implementation of technology across smart cities needs a lot of hand holding at the moment. To understand the dynamics of smart cities and to create a strong eco-system it is important that the workforce has advanced skill sets.

Smart cities have emerged as a potential job creator in the past few months. Many new-age profiles are likely to witness potential growth especially in the areas of ICT (Information Communication Technology), Data Management & Analytics and e-Governance. As there is a large pool of data being used in the building and management of smart cities, data monitoring and surveillance will become a crucial aspect. Whether the data is used for intelligence gathering, prevention of crime, public health, investigation or surveys; surveillance will hold a lot of importance for citizens. It is important for us to understand that the existing workforce and the new workforce entering the labour market need to align their skill sets basis the requirements of smart cities. Each and every sector and job roles will need enhancement of knowledge, specialized skills training and continuous upskilling. People with varied skill sets will be needed to manage and monitor data across smart cities. Data Skills, Communication skills, Business Intelligence and Analytics, Visualization, Data Modelling, Numerical skills, Quantitative Analysis, Product Development are few key skills that will be required for continuous surveillance at smart cities.

CHAPTER 4
About Vankaner Village

4.1 Introduction

4.1.1 Introduction about Vankaner village details

Vankaner village is located in the bardoli taluka near Surat district of Gujarat state. which is located 42 km towards East form district head quarter Surat. A major occupation of the village is farming, laboring, fish farming.

Vyara, Navsari, Surat, Songadh are the nearest cities of vankaner.

Pin code- 394620

District- Surat

State- Gujarat

4.1.2 Justification/ need of the study

The developmental work in villages that could under taken as per the need of the village in Particular includes,

- Physical infrastructure facilities (Water, Drainage, Road, Electricity, Solid waste Management, Storm Water Network, Telecommunication & other),
- Social infrastructure facilities like Education, Health and Sanitation.
- Socio-Cultural Facilities like Community Hall, Library, Recreation Facilities and Sustainable Infrastructures (Rain water harvesting, Biogas plant, Eco Toilets, Solar Street lights & other) for effective Development of Villages.

“Vishwakarma Yojana” has provided the platform for real world experience to engineering Students and simultaneously apply their technical knowledge in the rural infrastructure Development.

4.1.3 Study Area

Study area mainly includes the study of the village Vankaner which is located in Bardoli taluka in Surat district of Gujarat state.

The Vishwakarma Yojana is aimed to Rurban development of the village that purpose study area is decide for taking details in information of the village. The study area includes like

education, health and safety, drainage, transportation & residential facilities, social life etc. Vankaner village is located in the bardoli taluka near Surat district of Gujarat state. It is located 42 km from Surat.

4.1.4 Objectives of the study

Basic facilities delivery to village dwellers. Reduce migration from rural to urban areas due to lack of basic services and sufficient economic activities in rural areas.

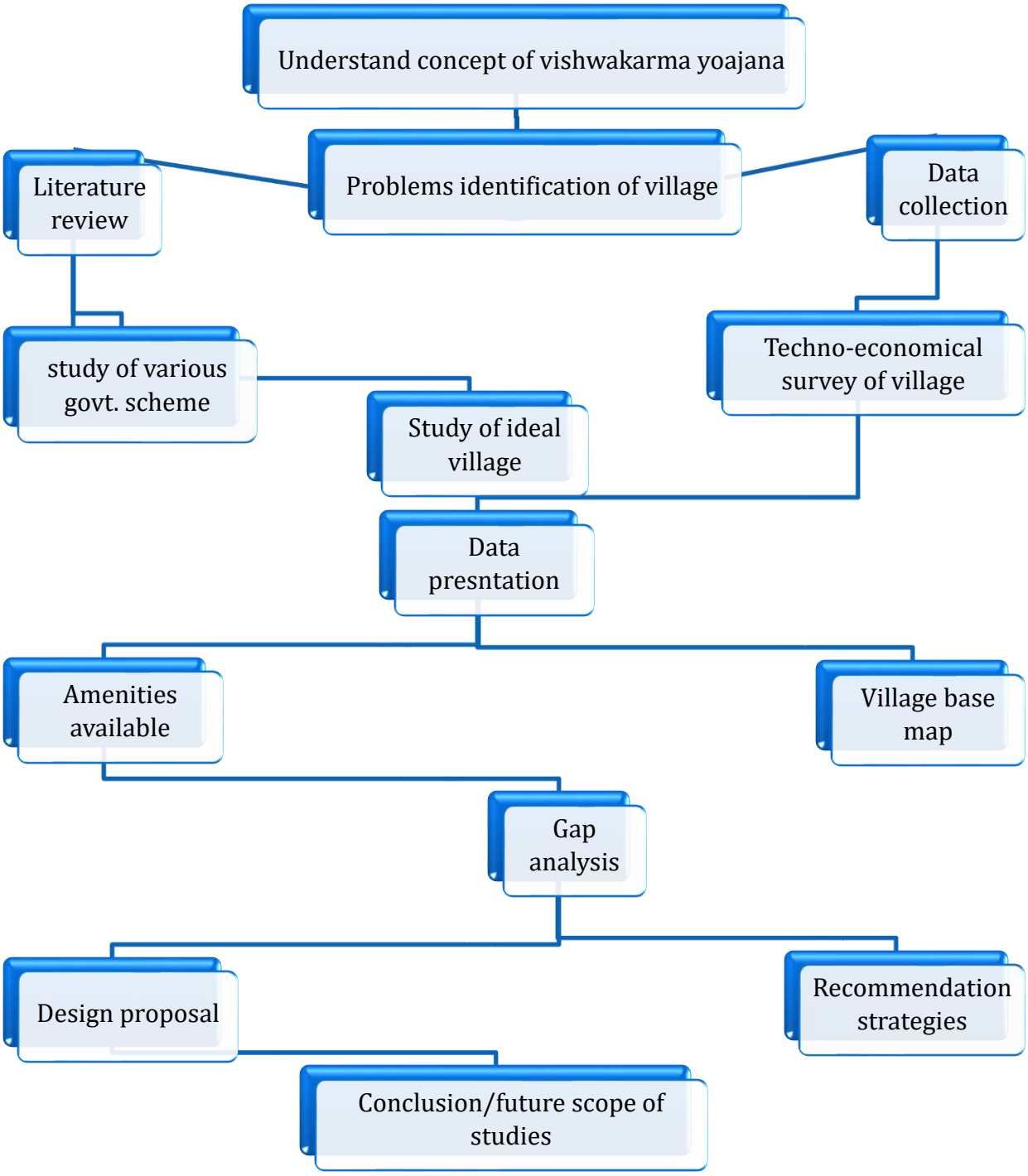
- Internal roads within village settlement, Efficient Mass Transportation systems to improve connectivity between urban and rural Areas, Public transportation facilities that need to be developed like bus stops, transport depot etc.
- Identification of sanitation facilities that need improvement – sewerage and drainage line for household connection, door to door Solid waste collection & dumping facilities.
- Electricity connections like street lighting that is energy efficient and eco-friendly.
- Refurbishing of village lakes, water tanks and Wells, construction of rain water harvesting structures for sustainable Development.
- Physical infrastructure – Water Supply, Transport, Sewerage and Solid Waste Management should be the priority focus and be Provided.
- Basic Social infrastructure – Health and Education facilities should be provided.

4.1.5 Scope of the Study

By studying the present status and survey of vankaner village near bardoli in Surat district of the Gujarat state in terms of basic services, public amenities, transportation and other infrastructural facilities for the need of the people and to prepare a report on the expected socio-economic growth of the area with the Consultation of TDO, DDO and Sarpanch; will help full in providing better facilities and services in Village.

From the gap analysis, development strategies for village development will be proposed and planning Proposals for Physical infrastructure like pukka house, Social Infrastructure and Renewable energy Source will be Suggested for the village. The study will focus on the development of the village.

4.1.6 Methodology Frame Work for development of your village



4.1.6 frame work

4.1.7 Available Methodology for development of related to Civil

- **Health**: Health or well-being is one of the main significant which one need to give most priority. Among all, status of health of women and children are need to focus in depth. Most of development depends on the wellbeing of women of the family.
- **Education and knowledge**: Every past research found that development of educational status of a community is mostly followed by development of the masses. Education also helps the villagers in participating in the developmental process.
- **Per capita income**: it is one of the most important significant which needs special attention during rural development program. Unlike urban areas, rural India have very few sources of income among which agriculture is the primary source which in turn depend mostly on the weather. Therefore, development of village will come with the introduction of sustainable employment for all villagers. Sustainable income generation will get a success only when woman participation as well as the wages is equal in the work. That should be focused during planning for rural development.
- **Entrepreneurship development**: This helps the villagers to connect with alternate source of income. This needs to spread in other villages with other products or services.
- **Skill development program**: There are lot of skill developmental programs have been launched by Govt. But prime threat of this programs is weak participation. For a sustainable development of rural, one need to give more emphasis on developing skills of the youth of the villages.
- **Development of Social Infrastructure**: Development of physical as well as social infrastructure plays an important in the overall advance of the rural economy, role by directly contributing to employment generation and asset creation. More and more social infrastructure development of the village. One need to facilitate the communication between government authority and villagers in setting up more and more social infrastructure which enable the villagers to become independent during any rush hours, such natural calamities, political disturbances etc.

4.2 VANKANER VILLAGE Study Area Profile

4.2.1 Study Area Location with brief History land use details

Vankaner Village is in Bardoli Taluka of Surat District of Gujarat State, India. It is located 42 KM towards East from Surat and 287 KM from State capital Gandhinagar. According to

Census 2011 information the village code of Vankaner village is 524328. A pin code of vankaner is 394620.

The total geographical area of village is 1148.52 hectares. Vankaner has a total population of 7,472 peoples. There are about 1,658 houses in Vankaner village. Bardoli is nearest town to Vankaner which is approximately 10km away.

4.2.2 Base Location map, Land Map, Gram Tal Map

Fig 4.2.2.A Base Location map

Fig 4.2.2.B Land Map

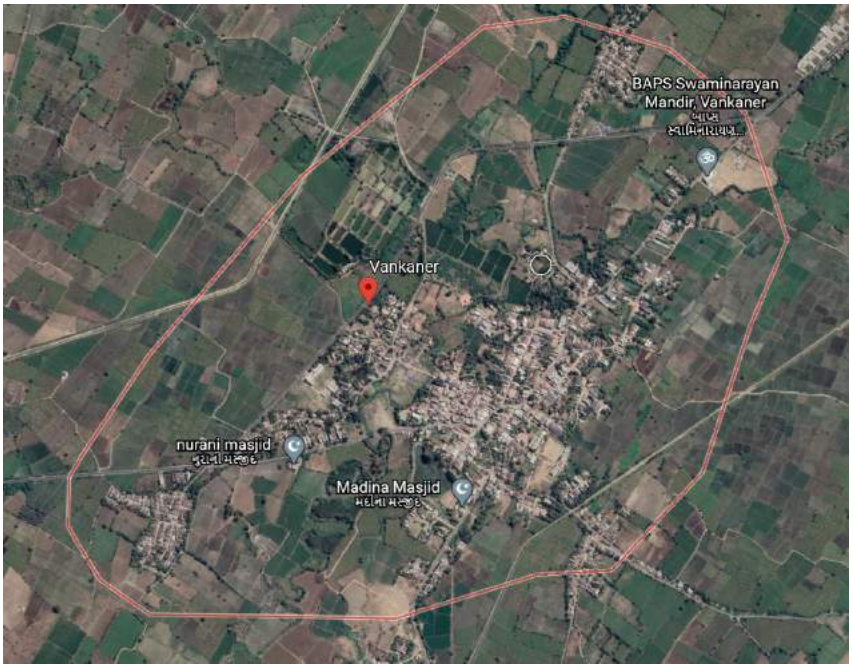


Fig 4.2.2.C Gram Tal Map

4.2.3 Physical & Demographical Growth

The whole geographical area of village is 1148.52 hectares. The total population of vankaner village is 7472 peoples. There are 1658 houses in Vankaner Village. As per census 2011 there are 3748 male and 3724 females are there in the village Vankaner. There is total 785 children out of which 398 are male and 387 are female.

4.2.4 Economic generation profile / Banks

Name of the three major occupation groups in the village:

1) Labour work and Agricultural (80% of the Total Population)
2) Business (10% of the Total Population)
3) Govt. Service (10% of the Total Population)

Majority crops taken in the village are sugarcane and paddy. Agriculture is the main occupation of vankaner Village. Some of the peoples are also running their stores (local stores).

4.2.5 Actual Problem faced by Villagers and smart solution

1) narrow road

In vankaner village most of villagers are facing problem regarding narrow road. Village has

3.5-meter concrete-bituminous road in this road villagers and peoples of out of the village have poser during two traffic in certain road.

Fig 4.2.5.A road of vankaner

Solution of narrow road:

In India maximum width of vehicle is 2.44 meter. For better movement of traffic in vankaner, a minimum width of road is shall be required is 6.0 meter.

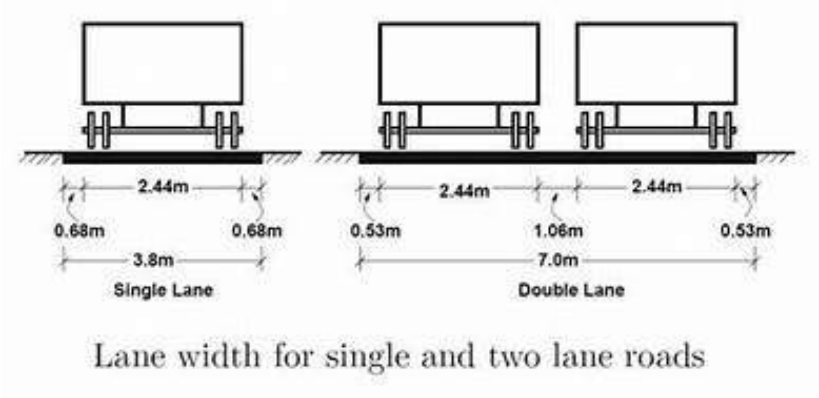


Fig 4.2.5.B double lane road

2) solid waste management

Vankaner village has no solid waste management plant. In vankaner for collecting a solid waste from villagers houses two vehicles are used. Which is collecting waste in morning and dumped at site.

Fig 4.2.5.C waste collector tempo

All the solid waste which is collected from whole villager's house is dumping on the side of the road. During monsoon season very foul smelled from this dumping site.

Fig 4.2.5.D disposal site of vankaner

Solution of solid waste management:

Solid-waste management, the collecting, treating, and disposing of solid material that is discarded because it has served its purpose or is no longer useful. Improper disposal of municipal solid waste can create unsanitary conditions, and these conditions in turn can lead to pollution of the environment and to outbreaks of vector-borne disease—that is, diseases spread by rodents and insects."

Solution of solid waste management is that use only fixed disposal site and solid waste material should be classified in category like combustible or non-combustible, depending on whether they will burn or not depending on the inherent dangers associated with its physical and chemical properties. And try to recycling of the solid waste.

Categories of Waste:

- **Organic waste:** Kitchen waste, waste from food preparation, vegetables, flowers, leaves, fruits, and market places.
- **Combustibles:** Paper, wood, dried leaves, packaging for relief items etc. that are highly organic and having low moisture content.
- **Non-combustibles:** Metal, Tins, Cans, bottles, stones, etc.
- **Toxic waste:** Old medicines, paints, chemicals, bulbs, spray cans, fertilizer and pesticide containers, batteries, shoe polish.
- **Recyclables:** Paper, glass, metals, plastics.
- **Ashes or Dust:** Residue from fires that are used for cooking.
- **Construction waste:** Rubble, roofing, broken concrete etc.
- **Hazardous waste:** Oil, battery acid, medical waste, industrial waste, hospital waste.
- **Dead animals:** Carcasses of dead livestock or other animals.

- **Bulky waste:** Tree branches, tires etc.
- **Soiled waste:** Hospital waste such as cloth soiled with blood and other body fluids.

1. Sanitary Landfill:

This is the most popular solid waste disposal method used today. Garbage is basically spread out in thin layers, compressed and covered with soil or plastic foam.

Modern landfills are designed in such a way that the bottom of the landfill is covered with an impervious liner, which is usually made of several layers of thick plastic and sand. This liner protects the groundwater from being contaminated because of leaching or percolation. When the landfill is full, it is covered with layers of sand, clay, topsoil and gravel to prevent seepage of water.

Advantage:

If landfills are managed efficiently, it is an ensured sanitary waste disposal method.

Constraint: It requires a reasonably large area.

2. Incineration

This method involves the burning of solid wastes at high temperatures until the wastes are turned into ashes. Incinerators are made in such a way that they do not give off extreme amounts of heat when burning solid wastes.

Incinerators that recycle heat energy through furnace and boiler are called waste-to-energy plants. These waste-to-energy systems are more expensive to set up and operate compared to plain incinerators because they require special equipment and controls, highly skilled technical personnel, and auxiliary fuel systems. This method of solid waste management can be done by individuals, municipalities and even institutions. The good thing about this method is the fact that it reduces the volume of waste up to 20 or 30% of the original volume.

Advantage:

The volume of combustible waste is reduced considerably by burning waste. In the case of off-site pits, it is an appropriate method to minimize scavenging.

Constraint: It can cause smoke or fire hazard and also emits gaseous pollutants.

3. Recovery and Recycling

Recycling or recovery of resources is the process of taking useful but discarded items for the next use. Plastic bags, tins, glass and containers are often recycled automatically since, in many

situations, they are likely to be scarce commodities.

Traditionally, these items are processed and cleaned before they are recycled. The process aims at reducing energy loss, consumption of new material and reduction of landfills. The most developed countries follow a strong tradition of recycling to lower volumes of waste.

Advantage:

Recycling is environmentally friendly.

Constraint: It is expensive to set up, and in most emergencies, there is limited potential.

4. Composting

Due to a lack of adequate space for landfills, biodegradable yard waste is allowed to decompose in a medium designed for the purpose. Only biodegradable waste materials are used in composting.

It is a biological process in which micro-organisms, specifically fungi and bacteria, convert degradable organic waste into substances like humus.

This finished product, which looks like soil, is high in carbon and nitrogen. Good quality environmentally friendly manure is formed from the compost that is an excellent medium for growing plants and can be used for agricultural purposes.

4.2.6 Social scenario -Preservation of traditions, Festivals, Cuisine

All the villagers of vankaner village celebrating all festival with gathering like makarsakranti, Diwali, Eid, Navratri Mahotsav, rathyatra. Some of the famous gujarati food include fafada jalebi, khandavi, dhokla, dal-dhokali, undhyu, gathiya, wada, thepla and khakhra. In Gujarati dishes, the flavors are a blend of sweet, spicy and sour tastes.

4.2.7 Migration Reasons / Trends

In vankaner most of people of village is depend on agriculture. So, there is not much migration in the village.

But some educated peoples, businessman, seller is migrating in other places. Also, student leave form village for collages and education purpose.

Graduated and other educated student after studies they are going for regarding job or businesses.

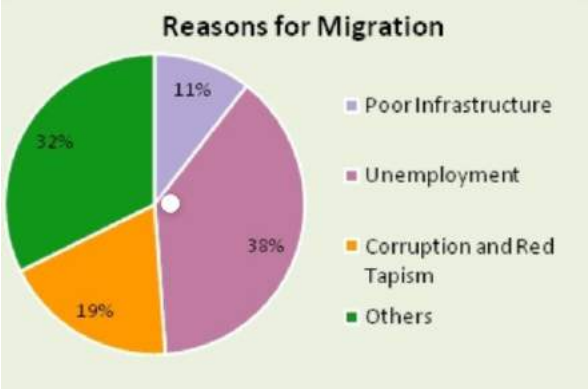


Fig 4.2.7.A Reasons for migration

Fig 4.2.7.B Most of the reason of migration

4.3. Data Collection Vankaner village (Photograph/Graphs/Charts/Table)

4.3.1 Describe Methods for data collection

- We will get as much information from the internet as possible like maps etc.
- Visit of the village
- Surveying
- Meet the sarpanch of Vankaner village
- Meet villagers
- Analysing
- Find problems
- Give solution as per our knowledge and guidance.

4.3.2 Primary details of survey:

The name of the Vankaner village is Vankaner located in Bardoli taluka of Surat district. This village has comprised of 1658 households. It has a total population of 7472 with 3724 female population against 3748 males according census 2011 data. The main aspects for development of this village are Public toilets, community hall, library etc.

Some of the physical infrastructure like dairy, panchayat building, primary school, and well exist in the village and are properly maintained and utilized.

More over Water tank is present but in bad condition. On the basis of survey data, we have observed that there are some physical infrastructures like water tank, dairy, primary school, etc. but among them some are not in usable condition which creates problems for villagers. The

work of Sarpanch and Talati is good as per the feedback given by villagers.

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

An average size of the houses in vankaner village is may be 400-1200 square meters.

Fig 4.3.3.A Houses of vankaner

4.3.4 No of Human being in One House

Normally average 4 to 5 human are being in one house. And most of people depending on agricultural works.

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

All the basic facilities and essential requirement available in village. Villagers May be bought some equipment, vehicles and others facilities and products from near cities.

4.3.6 Geographical Detail

Vankaner village is located in Bardoli Tehsil of Surat district in Gujarat, India. It is situated 10km away from sub-district headquarter Bardoli and 43km away from district headquarter Surat. As per 2009 stats, Vankaner village is also a gram panchayat. The total geographical area of village is 1148.52 hectares.

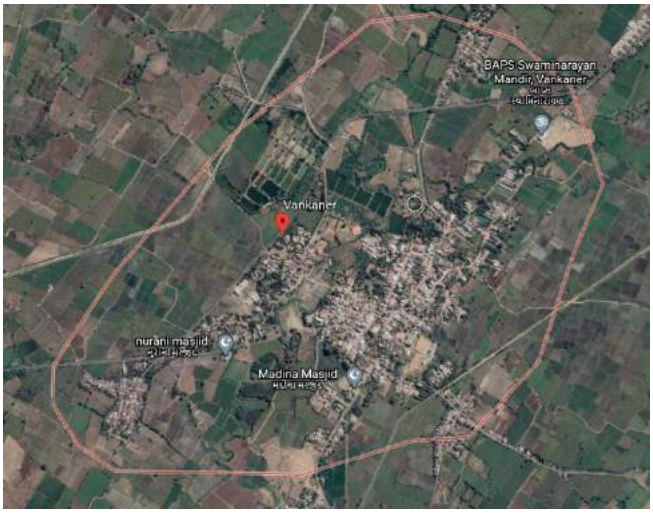


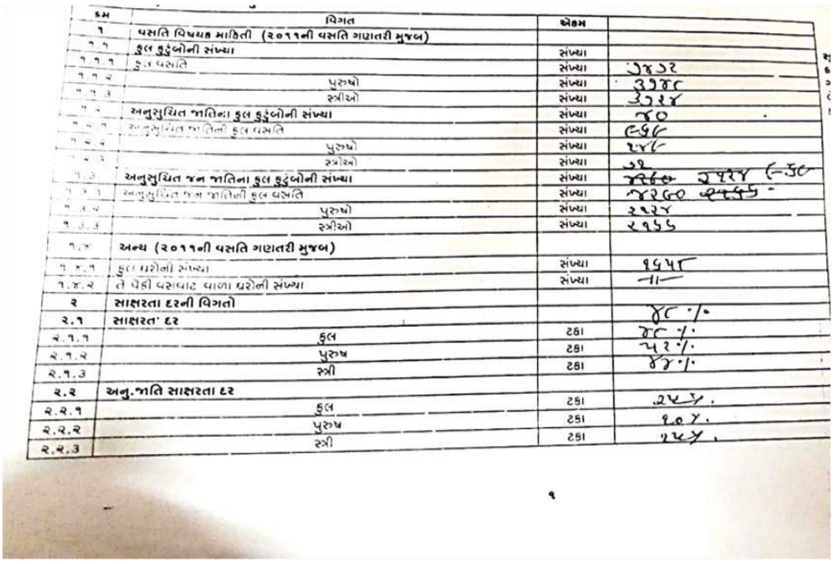
Fig 4.3.6.A Map of vankaner

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

Vankaner is a large village located in Bardoli Taluka of Surat district, Gujarat with total 1658 families residing. The Vankaner village has population of 7472 of which 3748 are males while 3724 are females as per Population Census 2011.

In Vankaner village population of children with age 0-6 is 785 which makes up 10.51 % of total population of village. Average Sex Ratio of Vankaner village is 994 which is higher than Gujarat state average of 919. Child Sex Ratio for the Vankaner as per census is 972, higher than Gujarat average of 890.

Vankaner village has lower literacy rate compared to Gujarat. In 2011, literacy rate of Vankaner village was 75.59 % compared to 78.03 % of Gujarat. In Vankaner Male literacy stands at 80.87 % while female literacy rate was 70.30 %. As per constitution of India and Panchayati Raj Act, Vankaner village is administrated by Sarpanch (Head of Village) who is elected representative of village.



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૧	વસતિ વિષયક માહિતી (૨૦૧૧ની વસતિ ગણતરી મુજબ)		
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૧.૨	અનુસુચિત જાતિના કુલ કુટુંબોની સંખ્યા	સંખ્યા	૪૦
૧.૨.૧	અનુસુચિત જાતિની કુલ વસતિ	સંખ્યા	[illegible]
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૧.૪	અન્ય (૨૦૧૧ની વસતિ ગણતરી મુજબ)		
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૨	સાક્ષરતા દરની વિગતો		
૨.૧	સાક્ષરતા દર		૭૮%
૨.૧.૧	કુલ	ટકા	૭૮%
૨.૧.૨	પુરુષ	ટકા	[illegible]
૨.૧.૩	સ્ત્રી	ટકા	[illegible]
૨.૨	અનુ.જાતિ સાક્ષરતા દર		
૨.૨.૧	કુલ	ટકા	૨૫%
૨.૨.૨	પુરુષ	ટકા	૧૦%
૨.૨.૩	સ્ત્રી	ટકા	૨૫%

Fig 4.3.7.A cast wise population

4.3.8 Occupational Detail - Occupation wise Details / Majority business

Name of the three major occupation groups in the village:

1) Labour work and Agricultural (80% of the Total Population)
2) Business (10% of the Total Population)
3) Govt. Service (10% of the Total Population)

4.3.9 Agricultural Details / Organic Farming / Fishery

In vankaner village most of farmers are depend on agriculture.

And most of farmers are growing crops like sugarcanes and paddy. And other farmers are depended on fish farming. Farmers are used water for irrigation from canal, borewell and wells.

Fig 4.3.9.A farms

Fig 4.3.9.B sugarcane crops

4.3.10 Physical Infrastructure Facilities - Manufacturing HUB / Ware Houses

Most of villagers are farmers and they are depended on agricultural related works so no any ware houses and manufacturing hub in this vankaner village.

4.3.11 Tourism development available in the village for attracting the tourist

There has no any particular thing in vankaner village for attracting tourists.

4.4 Infrastructure Details (With Exiting Village Photograph)

4.4.1 Drinking Water / Water Management Facilities

Vankaner village has five numbers of over head water tank and some wells. In which two overhead tank is having 20,000 liters capacity, second two has 50,000 liters capacity and a last one over head water tank capacity has 1,00,000 liters. All the tank is connected with canal of vankaner village. There is no any particular water management plant.

All the villagers are using this water for daily uses like drinking, washing etc.

Fig 4.4.1.A overhead tank

Fig 4.4.1.B wells

4.4.2 Drainage Network / Sanitation Facilities

The under-ground drainage system in vankaner village and currently that is in working condition.

4.4.3 Transportation & Road Network

In vankaner village most of villagers are facing problem regarding narrow road. Village has 3.5meter concrete-bituminous road in this road villagers and peoples of out of the village have poser during two traffic.

Fig 4.4.3.A road network

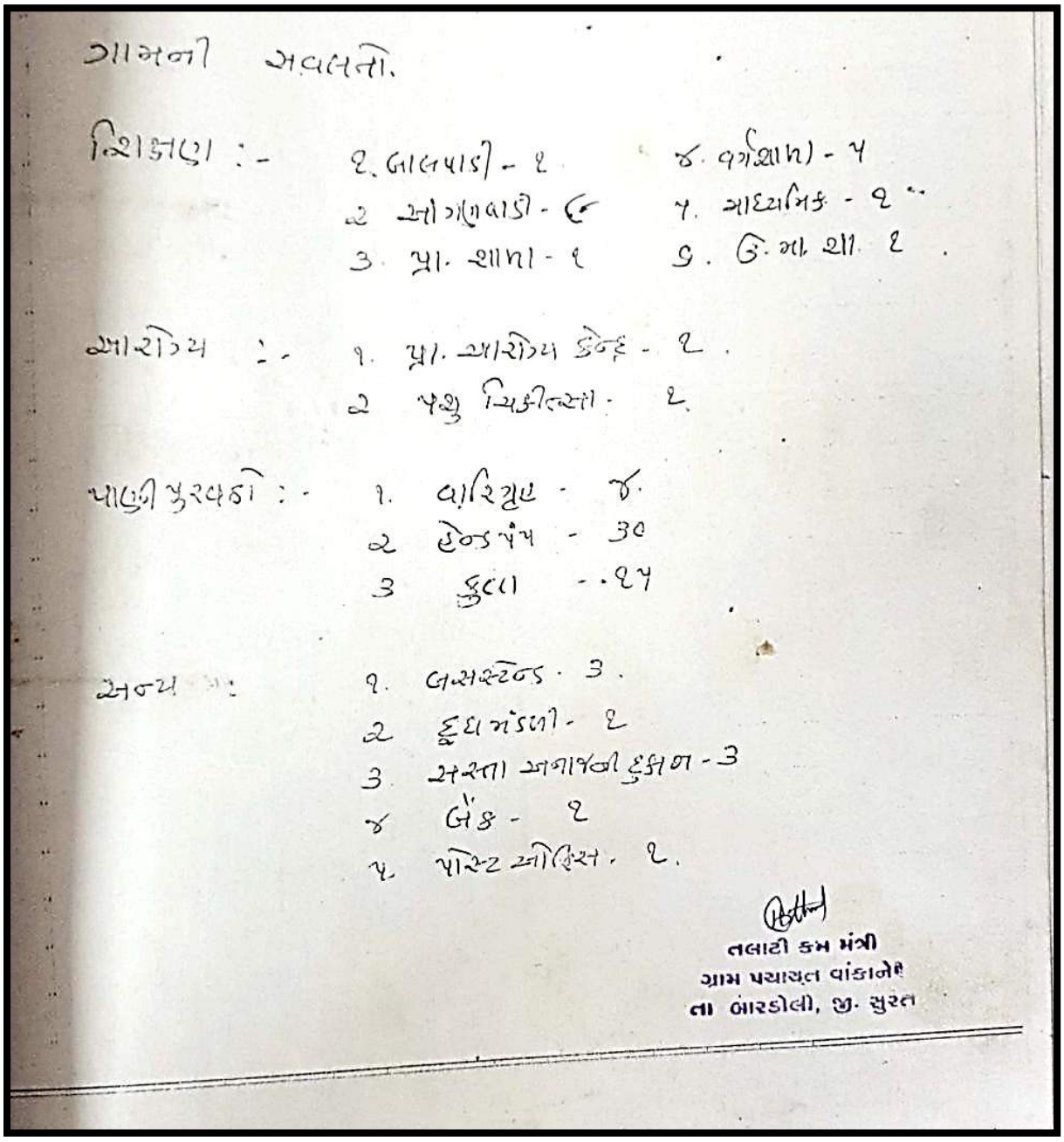
4.4.4 Housing condition

In vankaner village we saw some area is slum area. And too many kutcha houses available in this area of village.

Fig 4.4.4.A slum area

Fig 4.4.4.B House condition in Vankaner

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



ગામની સવલતો.

શિક્ષણ :-
૧. બાલવાડી - ૧
૨ આંગણવાડી - ૬
૩. પ્રા. શાળા - ૧
૪. વર્ગશાળા - ૫
૫. માધ્યમિક - ૧
૬. ઉ. મા. શા. ૧

આરોગ્ય :-
૧. પ્રા. આરોગ્ય કેન્દ્ર - ૧.
૨ પશુ ચિકીત્સા - ૧.

પાણી પુરવઠો :-
૧. વોટરવૂલ - ૪.
૨ હેન્ડપંપ - ૩૦
૩ કુવા - ૧૫

અન્ય :
૧. બસસ્ટેન્ડ - ૩.
૨ દૂધમંડળી - ૨
૩ સસ્તા અનાજની દુકાન - ૩
૪ બેંક - ૧
૫ પોસ્ટ ઓફિસ - ૧.

તલાટી કમ મંત્રી
ગ્રામ પચાયત વાંકાનેર
તા બારડોલી, જી. સુરત

Fig 4.4.5.A social Infrastructure Facilities

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

A gram panchayat building is required to developed inside of office and other essential like improvement in technology, waiting room, development of parking area etc.

Fig 4.4.6.A Panchayat building

Fig 4.4.6.B primary school

Vankaner village has two primary schools in bad condition.

And we realized that a maintenance or redevelopment of these two schools will required in future for improvement of education facilities.

One primary school was permanently closed due to bad condition of school structure.

Here primary school gate photo shown in fig 4.4.6.C

Fig 4.4.6.C primary school

4.4.7 Technology Mobile/ WIFI / Internet Usage Details

In vankaner village there are many telecommunication companies like jio, Airtel, BSNL etc.
Which is in good condition and this telecommunication companies provide good services and give high speed internet service as per customer required.

Fig 4.4.7.A Tower

4.4.8 Sports Activity as Gram Panchayat

There are no any such as activity did in in sport in village.

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

There is a lake in vankaner which is in bad condition and its water is very dirty in which algae frozen and it causes a lot of trouble.

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

In the extra facilities there are need to renovate primary school which is not in good condition, and public toilets are required.

4.6 Existing Institution like - Village Administration – Detail Profile

4.6.1 Bachat Mandali

Vankaner has bachat mandali.

4.6.2 Dudh Mandali:

Dudh mandali is available in the Vankaner village.

4.6.3 Mahila forum

yes, mahila mandal is also present in Vankaner village.

4.6.4 Plantation for the Air Pollution

There is no such activity done of tree plantation for the air pollution in the Vankaner village.

4.6.5 Rain Water Harvesting

In present there is no rain water harvesting system used by any villager or gram panchayat so currently there is no such kind of system available. Also, there is not available waste water treatment process at present.

4.6.6 Agricultural Development

there is available agricultural corporative building present over there. which helps villagers to give agricultural product.

4.6.7 Any Other

There is no such thing as advance in Vankaner Village, there is just a milk community and in agriculture, those people plant more sugarcane. That is why there is a need for extra facilities. That is why this village is over need of Rurbanisation.

Fig 4.6.7.A Dudh mandali

CHAPTER 5

Technical Options with Case Studies

5.1 Concept

Advance construction technology covers range of modern techniques and the latest developments in materials technology, design procedures, quantity Surveying, facilities management, services, structural analysis and design, and management studies. Advance construction Vankaner village like a, bulldozer, truck, tempo, tractor available in during construction, maintenance, road problem and other. Construction equipment transport to bardoli village. Smaller construction techniques available in Vankaner village.

5.1.1 Advance sustainable construction techniques/ Practice and quantity surveying

The term 'advanced construction technology' covers a wide range of modern techniques and practices that encompass the latest developments in materials technology, design procedures, quantity surveying, facilities management, services, structural analysis and design, and management studies.

The construction industry is repeatedly criticized for being inefficient and slow to innovate. The basic methods of construction, techniques and technologies have changed little since Roman times. But the application of innovation in the construction industry is not straight forward.

Sustainable construction technologies typically include mechanisms to lessen energy consumption. The construction of buildings with wood, for instance is a sustainable construction technology because it has a lower embodied energy in comparison to those build of steel or concrete. Sustainable green construction also makes use of designs that cuts back air leakage and allows for free flow of air while at the same time using high performance windows and insulation techniques.

Sustainable resource sourcing as the name suggests is a prime example of sustainable construction technology because it ensures the use of construction materials designed and created from recycled products and have to be environmentally friendly. In most cases, agricultural wastes or by-products are used to produce the construction materials. Overall, the materials are remanufactured, recycled, recyclable, and obtained from sustainable sources.

Types of Construction Technology Impacting the Industry:

- Solar power
- Biodegradable material
- Green insulation
- Mobile Technology
- Drones, photogrammetry for surveying purpose
- Building Information Monitoring (BIM)
- Virtual Reality and Wearables
- 3D Printing

Solar power

Solar power has been increasingly exploited as sustainable construction technology. In green construction, it can be utilized in two ways, one pertains to active solar energy and another is passive solar power.

Active solar power utilizes functional solar systems that absorb the radiation of the sun to use for heating and electricity provision.

Fig 5.1.1A solar power

COST OF SOLAR PANEL

K.W.	330 Watt Panel	Cost Per kw	Total Cost	Subsidy 40%	Subsidy 20%	Total Subsidy	Customer Payable	Unit / Month
2.31	7	41992	97,002	38,800	---	38,800	58,202	277
2.97	9	41992	1,24,716	49,886	---	49,886	74,830	356
3.30	10	40993	1,35,277	49,192	2,460	51,652	83,625	396
3.96	12	40993	1,62,333	49,192	7,870	57,062	1,05,271	475
4.29	13	40993	1,75,860	49,192	10,576	59,768	1,16,092	514
4.95	15	40993	2,02,916	49,192	15,987	65,179	1,37,737	594
5.28	16	40993	2,16,443	49,192	18,692	67,884	1,48,559	633
5.94	18	40993	2,43,499	49,192	24,104	73,296	1,70,203	712
7.26	22	40993	2,97,609	49,192	34,926	84,118	2,13,491	871
8.25	25	40993	3,38,192	49,192	43,043	92,235	2,45,957	990
9.9	30	40993	4,05,830	49,192	56,570	1,05,762	3,00,068	1180

Fig 5.1.1 B Cost of solar panel

All mention cost of solar panel is based on Surat city.

It reduces the need for electricity or gas. On the other hand, passive solar power uses the sun

rays to warm homes through the placement of windows strategically and the use of heat-absorbing surfaces. The windows let the energy in, and the heat absorbed reduces the requirement of using power for warming the house during cold times such as winter.

3D printing:

3D printing as a construction technology has the potential to change material sourcing. For prefabrication, materials for a project can be printed and then transported to the job site, ready for use immediately. This can allow you to get materials faster and streamline the process by removing extra steps in the middle.

According to the U.K. Green Building Council, around 15% of materials delivered to construction sites end up in landfills, and the American Institute of Architects believe that building-related waste makes up between 25% to 40% of America's solid-waste stream. With 3D printing it will even be possible to print materials right on site, reducing waste and further saving on transportation and storage costs.

5.1.2 Soil liquefaction occurs when a saturated or partially saturated soil substantially

loses strength and stiffness in response to an applied stress such as shaking during an earthquake or other sudden change in stress condition, in which material that is ordinarily a solid behaves like a liquid. In soil mechanics, the term "liquefied" was first used by Allen Hazen in reference to the 1918 failure of the Calaveras Dam in California.

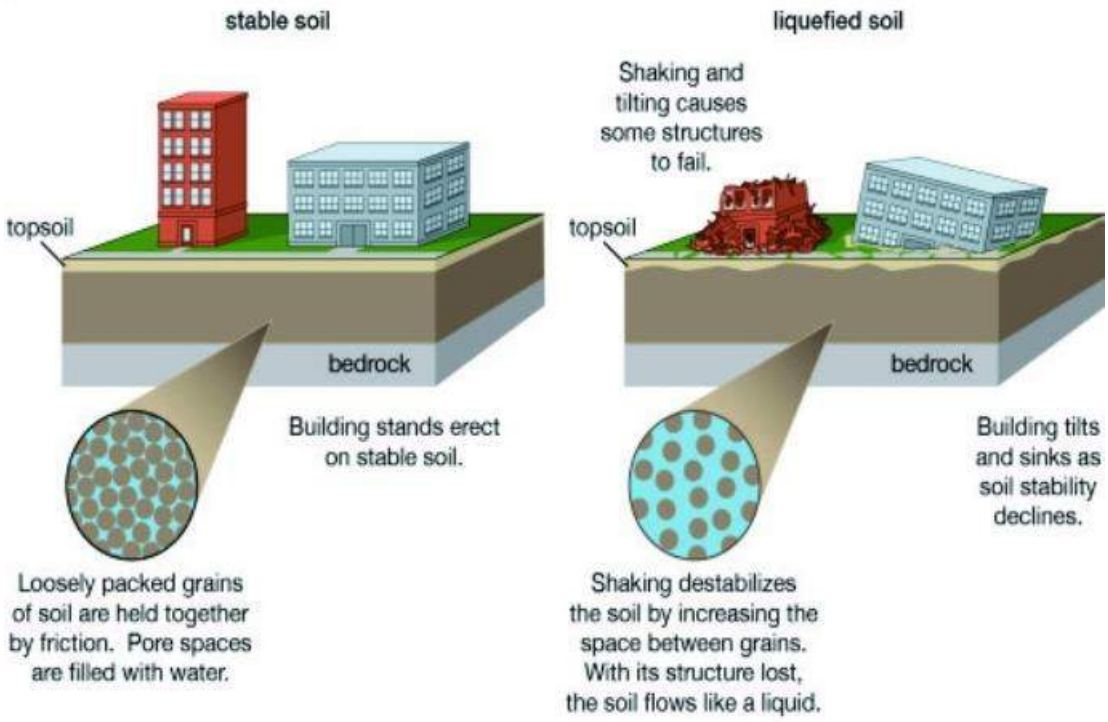


Fig 5.1.2.A soil liquefaction

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.

Fig 5.1.2.B due to soil liquefaction

The phenomenon is most often observed in saturated, loose (low density or uncompacted), sandy soils. This is because a loose sand has a tendency to compress when a load is applied. Dense sands, by contrast, tend to expand in volume or 'dilate'. If the soil is saturated by water, a condition that often exists when the soil is below the water table or sea level, then water fills the gaps between soil grains ('pore spaces'). In response to soil compressing, the pore water pressure increases and the water attempts to flow out from the soil to zones of low pressure (usually upward towards the ground surface).

However, if the loading is rapidly applied and large enough, or is repeated many times (e.g. earthquake shaking, storm wave loading) such that the water does not flow out before the next cycle of load is applied, the water pressures may build to the extent that it exceeds the force (contact stresses) between the grains of soil that keep them in contact. These contacts between grains are 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 (the ability to transfer shear stress), and it may be observed to flow like a liquid (hence 'liquefaction').

5.1.3 Sustainable Sanitation

Sustainable sanitation is a sanitation system designed to meet certain criteria and to work well over the long-term. Sustainable sanitation systems consider the entire "sanitation value chain", from the experience of the user, excreta and wastewater collection methods, transportation or conveyance of waste, treatment, and reuse or disposal.

Fig 5.1.3 A sustainable sanitation

The Sustainable Sanitation Alliance includes five features (or criteria) in its definition of "sustainable sanitation": Systems need to be economically and socially acceptable, technically and institutionally appropriate and protect the environment and natural resources. 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.

5.1.4 Transport Infrastructure / system

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

Fig 5.1.4.A transportation system

Transport is vital to the well-functioning of economic activities and a key to ensuring social well-being and cohesion of populations.

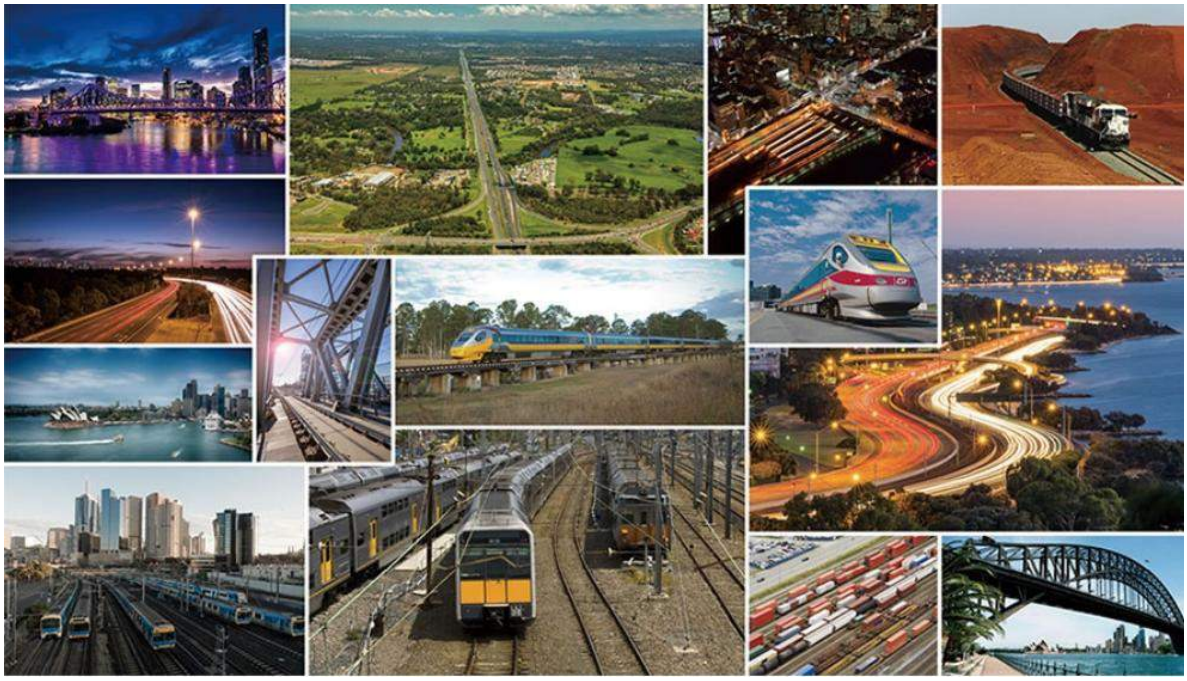


Fig 5.1.4.B transportation

Transport ensures everyday mobility of people and is crucial to the production and distribution of goods. Adequate infrastructure is a fundamental precondition for transport systems. In their endeavor to facilitate transport, however, decision-makers in governments and international organizations face difficult challenges.

These include the existence of physical barriers or hindrances, such as insufficient or inadequate transport infrastructures, bottlenecks and missing links, as well as lack of funds to remove them. Solving these problems is not an easy task. It requires action on the part of the governments concerned, actions that are coordinated with other governments at international level.

5.1.5 Vertical Farming

Vertical farming often falls in line with ‘indoor farming’, ‘urban agriculture’ and ‘controlled-environment agriculture’. 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.

As of 2020, there is the equivalent of about 30 ha (74 acres) of operational vertical farmland in the world. The modern concept of vertical farming was proposed in 1999 by Dickson Despoiler, professor of Public and Environmental Health at Columbia University


Fig 5.1.5.A vertical farming

Current applications of vertical farmings coupled with other state-of-the-art technologies, such as specialized LED lights, have resulted in over 10 times the crop yield than would receive through traditional farming methods. 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 also face 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.

5.1.6 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure

Mechanism:

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 includes 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.

- 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.
- Barrier methods protect reinforced concrete from corrosion damage by preventing water, oxygen, and chloride ions from reaching the reinforcement and initiating corrosion.
- Barrier methods protect reinforced concrete from corrosion damage by preventing water, oxygen, and chloride ions from reaching the reinforcement and initiating corrosion.
- Corrosion inhibitors offer protection by raising the threshold chloride concentration level, by reducing the permeability of the concrete, or by doing both.

5.1.7 Sewage treatment plant

Sewage treatment 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 (stormwater) 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. The term "sewage treatment plant" (or "sewage treatment works" in some countries) is nowadays often replaced with the term wastewater treatment plant or wastewater treatment station. Sewage can be treated close to where the sewage is created, which may be called a "decentralized" system or even an "on-site" system (in septic tanks, biofilters or aerobic treatment systems). Alternatively, sewage can be collected and transported by a network of pipes and pump stations to a municipal treatment plant. This is called a "centralized" system (see also sewerage and pipes and infrastructure).

Sewage Three types of treatment plant:

- Primary treatment plant
- Secondary treatment plant
- Tertiary treatment plant

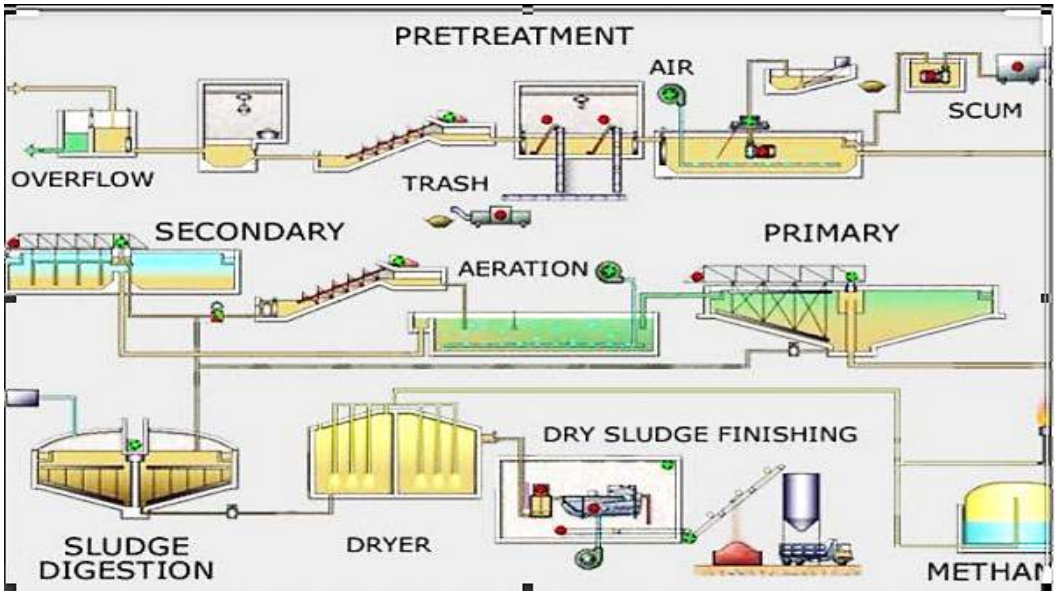


Fig 5.1.7.A sewage treatment plant

CHAPTER 6

Swatchh Bharat Abhiyan (Clean India)

6.1 Swachhta needed in Vankaner village -Existing Situation with photograph

Prime Minister Narendra Modi launched Swachh Bharat Abhiyan on October 2, 2014 with the aim of making India open defecation free (ODF) by 2019. The objective is to provide every village and every person in India, toilet and sanitation facilities, including solid and liquid waste disposal systems, safe and adequate drinking water supply and cleanliness of villages, towns and cities.

Currently, Govt. is implementing Swachh Bharat Mission Phase II. This part of phase II focuses on open defecation free plus (ODF+). This includes solid and liquid management. This phase is to be implemented between 2020-21 and 2024-25. The funds Vankaner to this phase is Rs 1,40,881 crores.

The ODF+ will mainly focus on greywater management, fecal sludge management, plastic waste management and biodegradable solid waste management.

Vankaner village has no solid waste management plant. In vankaner for collecting a solid waste from Villager's house's two vehicles are used. All the solid waste which is collected from whole villager's house is dumping on the side of the road. During monsoon season very foul smelled from this dumping site.

Fig 6.1.1 solid waste on side of the road

6.2 Guidelines

- Assess the water needs, sources, schemes, solid and liquid waste being generated – (biodegradable and non-biodegradable) through participatory surveys so that the need for water supply, sanitation, environmental sanitation and waste management facilities can be ascertained.
- Set the water and sanitation goals and targets for the Gram Panchayat.
- Select appropriate technology choice for water supply and sanitation in the Gram Panchayat based on participatory assessment.
- Ensure adequate, functional clean toilet facilities in schools (separately for boys and girls) and anganwadis.
- Ensuring maintenance of toilets of public places including those in markets and Gram Panchayat premises.
- Identify appropriate schemes, state/national/international agencies, their programmes and schemes, non-Governmental agencies and companies which can support availability of water supply, source sustainability, reduction for source contamination, sanitation and waste management programmes.
- Liaise with respective agencies for ensuring adequate water supply, cleanliness and drinking water and sanitation facilities.
- Form people's committees and building their capacity for managing the assets existing and being created.
- Educate all households on the key aspects of usage and management of water and sanitation assets.
- Undertake water budgeting annually and sharing information with villagers for appropriate crop selection.
- Monitor and problem solve during programme implementation and after.

6.3 Activities Done by Students for Vankaner village with Photograph

We went to see the condition of vankaner village regarding cleanliness of roads and houses. Vanakner village in most of house is kuccha house. And all of these peoples are depending on agricultural work and fish farming.

We realize that development of village is required because of poor condition of social infrastructure, houses, poor solid waste management.

Fig 6.3.1 visit for saw the condition of cleanliness

Fig 6.3.2 road near slum area

CHAPTER 7

Village condition due to Covid-19

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

- We maintaining social distancing to each other during visit.
- We Don't share personal items to each other.
- We Covered our mouth by mask
- Every half hour we did use Sanitizer.
- We avoid to eat in public places and we also avoid the street foods.

7.2 Activities Done by Students for Vankaner village with Photograph

We did not go to vankaner village for visiting due to lockdown and covid-19 situation. During this time, we were finding data on internet. After lockdown we did visit in vankaner village and doing other thing related project

Fig 7.2.1 Vankaner village in corona situation

During visiting we follow guidelines of covid-19 like wear mask, maintain social distancing to each other, not gathering in groups and avoid to eat in public places etc.

7.3 Any other steps taken by the students / villagers

- ✓ We followed the rules and regulation.
- ✓ To wear mask
- ✓ Made a social distance
- ✓ Provide mask by our group
- ✓ not gathering in groups
- ✓ avoid to eat in public places

Fig 7.3.1 giving a mask

CHAPTER 8

Sustainable Design Planning Proposal (Prototype Design)- Part- I

8.1 Design Proposals

Sustainable Design: library

Libraries are important cornerstones of a healthy community. Libraries give people the opportunity to find jobs, explore medical research, experience new ideas, get lost in wonderful stories, while at the same time providing a sense of place for gathering. The existence of libraries ensures that knowledge and technology are available to everyone. That's why we design library for Vankaner village.

Physical design: public toilet

As an "away-from-home" toilet room, a public toilet can provide far more than access to the toilet for urination and defecation. People also wash their hands, use the mirrors for grooming, get drinking water attend to menstrual hygiene needs, and use the waste bins. Vankaner village has no public toilet.

Social design: community hall

There is no Community hall in the Vankaner 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.

Socio-Cultural design: skill development center

In today's age of globalization and technological volatility, skill building is an important instrument to increase the efficacy and quality of labour for improved productivity and economic growth. Skill building is a powerful tool to empower individuals and improve their social acceptance.

Smart Village Design: Lake Garden

In the Vankaner village there is no any recreational area existing. And there is one lake in bad condition. So that for the better living standard and entertainment purpose we have proposed one design of Lake garden as recreational area in the village.

Heritage Village Design: gate

The Vakaner village has no main entrance gate at the village approach road. So that we have designed the village entrance gate as heritage village design.

8.1.1 Sustainable Design: Library

Scenario:

A library is a curated collection of sources of information and similar resources, selected by experts and made accessible to a defined community for reference or borrowing. It provides physical or digital access to material.

Existing situation in Vankaner:

In Vankaner village there is no any Library. So, one library should be there in the village. To improve knowledge of student and villagers.

Sustainability of the design:

Design utilized by,

All the villagers of village even outsides from nearby villages can use or utilize library for their improvements of knowledge and other requirements.

Needs:

We all need libraries. They are the safe and trusted spaces in every community where we have free access not just to books, information, experiences and ideas but to the expert professional advice and support which we all need to help us find the resources we want and to use them effectively.

Design brief:

Incorporating flexibility and adaptability in the design, planning, and construction of libraries essential in order for the library serve the immediate and future needs of its community. The first step in the design of any library is a written building program that outlines the library's space needs.

In future if any particular case or due lack of space for school, first floor of the library will use as part of school or for other cases like pandemic

Library design:

Length: 120, Width:90, height:10

Common repair and maintenance of the structure:

Some common repairs and maintenances are as below; Exterior painting and plastering; Landscaping and gardening; Paving repairs; Carpeting and flooring; Plumbing; Repairing cracking or leaning walls etc.

Proposed design:

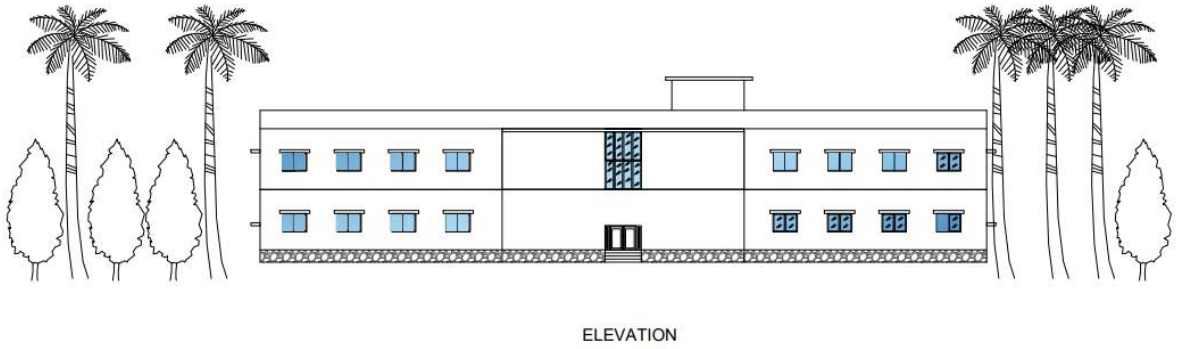


Fig 8.1.1.A Elevation of library

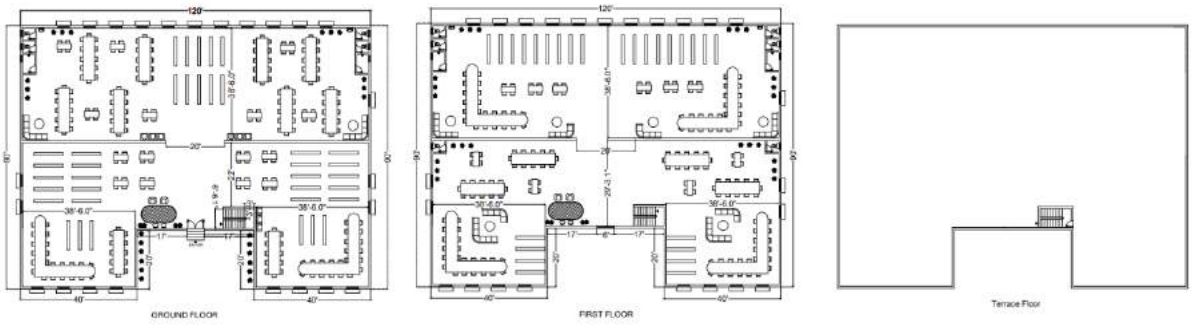


Fig 8.1.1.B Plan of library

Library Measurement Sheet

SR NO	DESCRIPTION	LENTH (FT)	WIDTH (FT)	HEIGHT (FT)	COUNT (no)	TOTAL QUANTITY (FT^3)
1	Long wall 9”	120	0.75	10	4	3600

2	Short wall 9”	90	0.75	10	4	2700
	Partition wall (1) 9”	100	0.75	10	2	1500
3	Partition wall in toilet 6”	20	0.5	10	4	400
5	Outer stair 1	6	0.83	0.5	4	9.96
6	Outer stair 2	3	0.83	0.5	20	24.9
7	slab	120	90	0.5	2	10800
8	Excavation	2	2	3	8	98
9	RCC in footing	2	2	3	8	98
10	Parapet wall	210	0.5	3	1	315

Library Abstract Sheet

SR NO	DESCRIPTION	TOTAL QUANTITY	RATE	PER	AMOUNT
1	Long wall 9”	3600	130	Ft^2	6,24,000
2	Short wall 9”	2700	130	Ft^2	4,68,000
	Partition wall (1) 9”	1500	90	Ft^2	1,35,000
3	Partition wall in toilet 6”	400	90	Ft^2	72,000
5	Outer stair 1	9.96	500	Ft^3	4980
6	Outer stair 2	24.9	500	Ft^3	12,450
7	Slab (including steel, shuttering centering etc..	10800	150	Ft^2	32,40,000
8	Excavation	98	10	Ft^3	980
9	RCC in footing	98	80	Ft^2	7840
10	Parapet wall	315	80	Ft^2	50,400
11	Deduction (window, Door)	290	130	Ft^2	50,300
				TOTAL	45,65,350

It is an approximate estimate of works which have shown in abstract sheet with quantities are inclusive cost of water charge, labour charge, steel, various building material cost etc.

8.1.2 Physical design: Public toilet

Scenario:

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

Existing Situation in Vankaner:

In the Vankaner village there is no public toilet or urinals. So we have design a Public toilet as structure of village.

Sustainability of the design:

Design utilized by,

Public toilets are used by many people and, as a result, a huge number of bacteria and microbes accumulate there.

Needs:

Public toilets are crucial for the healthy development of people. So it is sanitation facilities and services for safe disposal of human urine and feces includes maintaining hygiene through services such as garbage collection and wastewater disposal.

Design brief:

The public toilet is important as hygiene point of view. The design of public toilet will improve safety against health.

length: 41’9” width: 33’ Height: 12’9”

Common repair and maintenance of the structure:

Some common repairs and maintenances are as below; Paving repairs; Carpeting and flooring; Plumbing; Repairing cracking or leaning walls etc. For maintanance of public toilet to do regularly cleaning along use pesticides for better hygienic purpose of human being.

Proposed design:

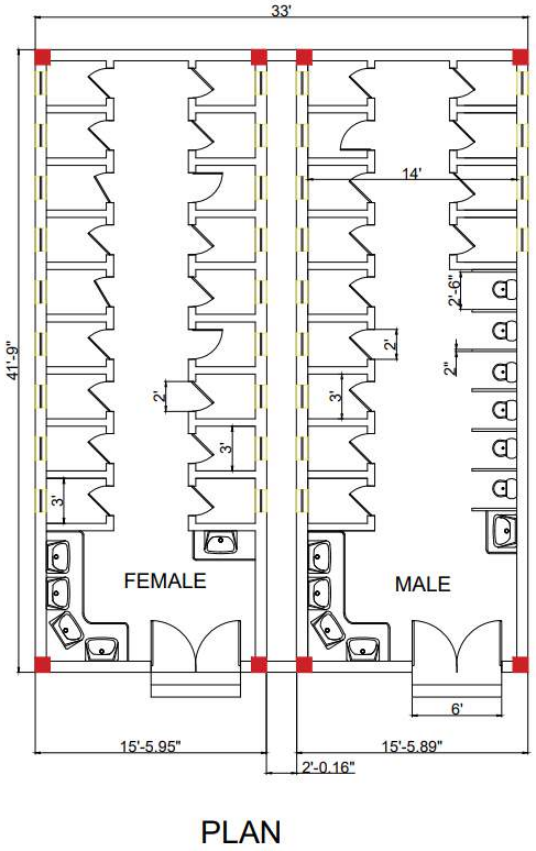


Fig 8.1.2.A Plan of public toilet

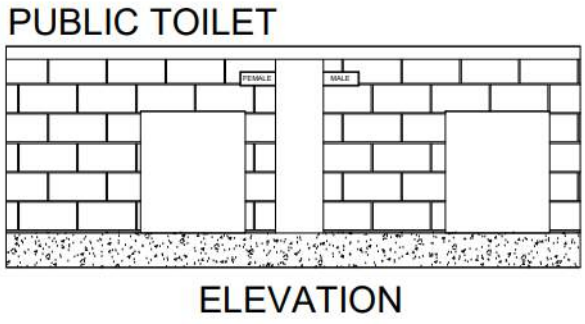


Fig 8.1.2.B Elevation of public toilet

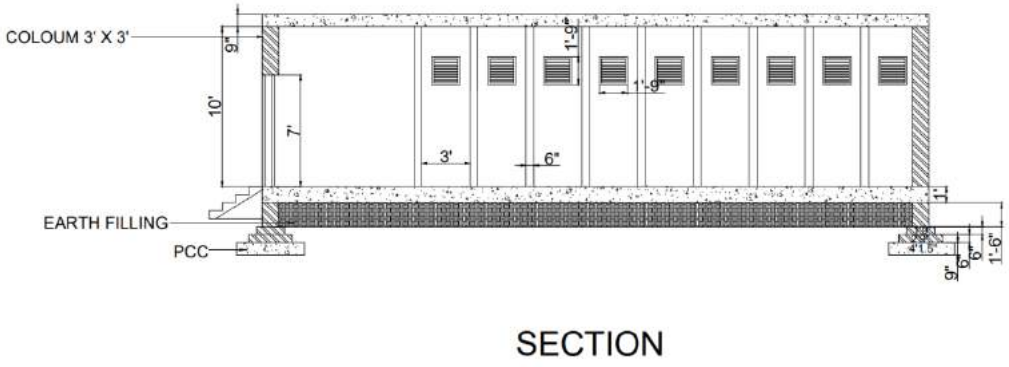


Fig 8.1.2.C Section of public toilet

Public toilet measurement Sheet

SR NO	DESCRIPTION	LENTH (FT)	WIDTH (FT)	HEIGHT (FT)	COUNT (no)	TOTAL QUANTITY (FT^3)
1	Long wall 9”	41.75	0.75	10	4	1252.5

2	Short wall 9”	33	0.75	10	2	495
3	Partition wall in toilet 6”	4	0.5	10	31	620
5	Outer stair 1	6	0.83	0.5	4	9.96
7	Slab (including steel, shuttering centering etc..	41.75	33	0.5	1	688.87
8	Excavation	4	4	1.75	4	112
9	RCC in footing	4	4	1.75	4	112

Public toilet Abstract Sheet

SR NO	DESCRIPTION	TOTAL QUANTITY	RATE	PER	AMOUNT
1	Long wall 9”	1252.5	130	Ft^2	2,17,100
2	Short wall 9”	495	130	Ft^2	85,800
3	Partition wall in toilet 6”	620	90	Ft^2	1,11,600
5	Outer stair 1	9.96	500	Ft^3	4980
7	Slab (including steel, shuttering centering etc..	688.87	150	Ft^2	1,03,330
8	Excavation	112	10	Ft^3	1120
9	RCC in footing	112	80	Ft^3	8960
10	Deduction of wall (window, Door)	72	130	Ft^2	12,480
				TOTAL	5,20,410

It is an approximate estimate of works which have shown in abstract sheet with quantities are inclusive cost of water charge, labour charge, steel, various building material cost etc.

8.1.3 Social design: Community Hall

Scenario:

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

Existing Situation in vankaner:

In the Vankaner village there is no any community hall so that according to the village population there should be one community hall in village. It is a public location where members of a community gather for group activities, events, festivals and social purpose. A community hall of village generally consists of a hall, storage or kitchen area and washroom. During the interaction with villagers, they have also suggested that their community hall is required in Vankaner village.

Sustainability of the design:

Community hall is important social infrastructure

Design Utilized by,

All the people living in the village of even outsiders from nearby villages and relatives of the villagers can use or utilize a community hall for their different uses with the permission of Sarpanch, Talati and some authorized people of the village.

Needs:

where members of a community gather for group activities, events, festivals, social purpose and mahila mandal in the village etc.

Design brief:

The Community Hall is an important public building in a prominent location. Village and community halls are the smallest buildings that can accommodate a sports programme alongside the customary social and arts pursuits. There are a wide variety of types and sizes, all with the following in common. A main activity and assembly space together with ancillary

accommodation that might include additional small halls. The place has a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.

Community Hall Design:

Length: 97 width: 92 Height: 35

Common repair and maintenance of the structure:

Some common repairs and maintenances are as below, Exterior painting and plastering, Landscaping and gardening, Carpeting and flooring, Plumbing, repairing cracking or leaning walls etc. For most effective maintenance, it should be organized through a programme of cyclical maintenance.

Proposed design:

Fig 8.1.3.A Elevation of Community

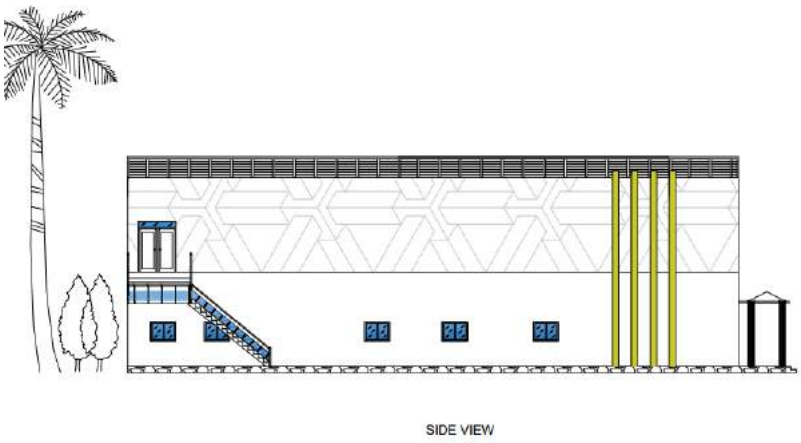


Fig 8.1.3.B Elevation of Community

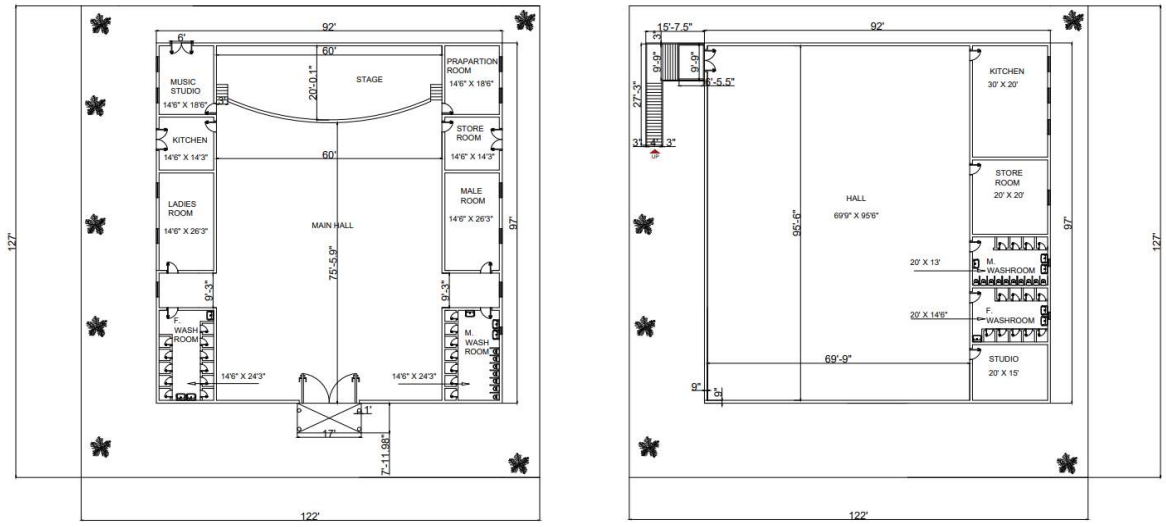


Fig 8.1.3.C Plan of Community

Community hall Measurement Sheet

SR NO	DESCRIPTION	LENTH (FT)	WIDTH (FT)	HEIGHT (FT)	COUNT (no's)	TOTAL QUANTITY (FT^3)
1	Long wall 9"	97	0.75	15	4	4365
2	Short wall 9"	92	0.75	15	2	2070
3	Internal short wall 9"	14.5	0.75	15	4	652.5
4	Partition in toilet 6"	3.5	0.5	8	30	420
5	Outer stair 1	17	0.83	0.5	2	14.11
6	Outer stair 2	4	0.83	0.67	23	51.16
7	Internal stair	3	0.83	0.5	10	12.45
8	Excavation	2	2	3	8	96
9	RCC in footing	2	2	3	8	96
10	Slab	97	92	0.5	2	8924

Community hall Abstract Sheet

SR NO	DESCRIPTION	QUANTITY (FT^3)	Rate	Per	Amount
1	Long wall 9”	4365	130	Ft^2	7,56,600
2	Short wall 9”	2070	130	Ft^2	3,58,800
3	Internal short wall 9”	652.5	130	Ft^2	1,13,100
4	Partition in toilet 6”	420	90	Ft^2	75,600
5	Outer stair 1	14.11	500	Ft^3	7055
6	Outer stair 2	51.16	500	Ft^3	25,580
7	Internal stair	12.45	500	Ft^3	6225
8	Excavation	96	10	Ft^3	960
9	RCC in footing	96	80	Ft^3	7680
10	Slab (including steel, shuttering centering etc..	8924	150	Ft^2	23,20,240
11	Deduction (door & window)	(570+153) =723	130	Ft^2	93,990
				Total	35,77,850

It is an approximate estimate of works which have shown in abstract sheet with quantities are inclusive cost of water charge, labour charge, steel, various building material cost etc.

8.1.4 Socio-Cultural design: Skill Development Centre

Scenario:

Skill Development training Centre is a platform to enhance the skill and make the students skillful for industrial Training. It is crucial for organizational development and its success which is indeed fruitful to both employers and employees of an organization.

Existing situation in Vankaner:

In Vankaner village there is no any skill Centre and most of villager are depend on farming. They are using old methods of cultivations. So with discussion to villagers that we proposed to

design skill development centre for Vankaner village.

Sustainability of the design:

Design utilized by;

The objective of our skill development centre is to provide youth and women from marginalized communities with training opportunities in industry relevant skills to secure a better livelihood.

Needs:

In today's age of globalization and technological volatility, skill building is an important instrument to increase the efficacy and quality of peoples for improved productivity and economic growth. Skill building is a powerful tool to empower individuals and improve their social acceptance.

Design brief:

In this brief we look at the skill development ecosystem in India – the need for Skill development, initiatives taken by the government and schemes introduced.

Skill development design:

Length: 48’ Width:42’ Height:10’

Common repair and maintenance of the structure:

To maintain a building, we should take some steps toward maintanance of that infrastructure. Likewise, we should do painting of infrastructure for certain time and also have to do plastering where ever it needs. It could be maintained during certain period of weekly, monthly and yearly.

Maintanance namely as below: Landscaping and gardening, Carpeting and flooring, Plumbing, repairing cracking or leaning walls etc.

Proposed design:

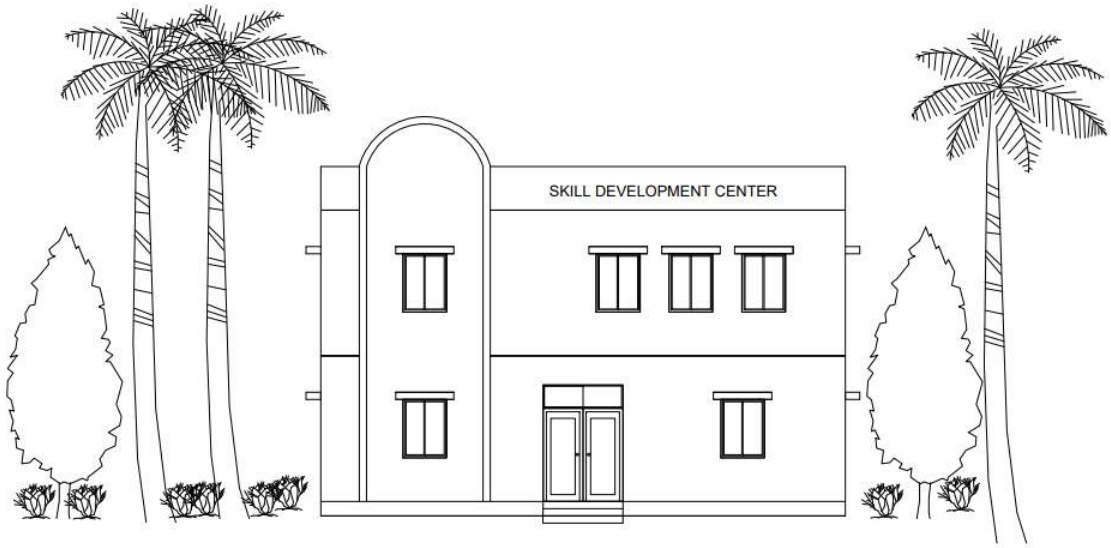


Fig 8.1.4.A Elevation of Skill development centre

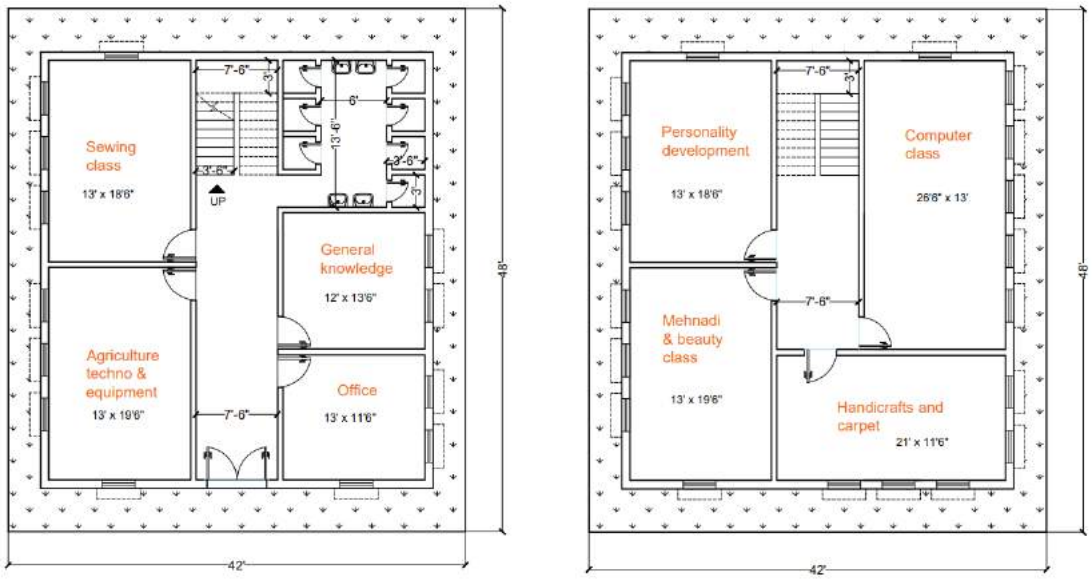


Fig 8.1.4.B Plan of Skill development centre

Skill development centre Measurement Sheet

SR NO	DESCRIPTION	LENTH (FT)	WIDTH (FT)	HEIGHT (FT)	COUNT (no)	TOTAL QUANTITY (FT^3)
1	Long wall 9”	48	0.75	10	4	1440

2	Short wall 9”	42	0.75	10	4	1260
	Partition wall (1) 9”	86	0.75	10	2	1290
3	Partition wall in toilet 6”	20	0.5	10	4	400
5	Outer stair 1	6	0.83	0.5	4	9.96
6	Indoor stair	3	0.83	0.5	20	24.9
7	Slab (including steel, shuttering centering etc..	48	42	0.5	2	2016
8	Excavation	2	2	3	8	96
9	RCC in footing	2	2	3	8	96

Skill development centre Abstract Sheet

SR NO	DESCRIPTION	TOTAL QUANTITY	RATE	PER	AMOUNT
1	Long wall 9”	1440	130	Ft^2	2,49,600
2	Short wall 9”	1260	130	Ft^2	2,18,400
	Partition wall (1) 9”	1290	90	Ft^2	1,54,800
3	Partition wall in toilet 6”	400	90	Ft^2	72,000
5	Outer stair 1	9.96	500	Ft^3	4980
6	Indoor stair	24.9	500	Ft^3	12,450
7	Slab (including steel, shuttering centering etc..	2016	150	Ft^2	5,24,160
8	Excavation	96	10	Ft^3	960
9	RCC in footing	96	80	Ft^3	7680
10	Deduction of wall (window, Door)	500	130	Ft^2	65,000
				TOTAL	11,80,030

It is an approximate estimate of works which have shown in abstract sheet with quantities are inclusive cost of water charge, labour charge, steel, various building material cost etc.

8.1.5 Smart village design: Lake (recreational area)

Scenario:

A lake 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. This recreational area would be most attractive look.

Existing situation in Vankaner:

In Vankaner village there is one lake in bad condition, so we decide to design as a recreational area of lake garden.

Sustainability of the design:

Design utilized by,

Peoples of vankaner village or outside villagers, student, aged man etc. are use this lake for different purpose like meditation, walking and relaxing etc.

- Helps fight disease.
- Builds strength.
- Improves memory
- Boosts mood.
- Reduces stress.
- Helps addiction recovery.
- Fosters human connections.
- Heals and empowers.

Needs:

Garden provide intrinsic environmental, aesthetic, and recreation benefits to our village. They are also a source of positive economic benefits.

Design brief:

Garden design is the process of creating plans for the layout and planting of garden.

Common repair and maintenance of the structure:

Some common repairs and maintenances are as below: Exterior painting and plastering, Landscaping and gardening, paving repairs, Carpeting and flooring, Plumbing, repairing cracking or leaning walls etc. For most effective maintenance, 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:

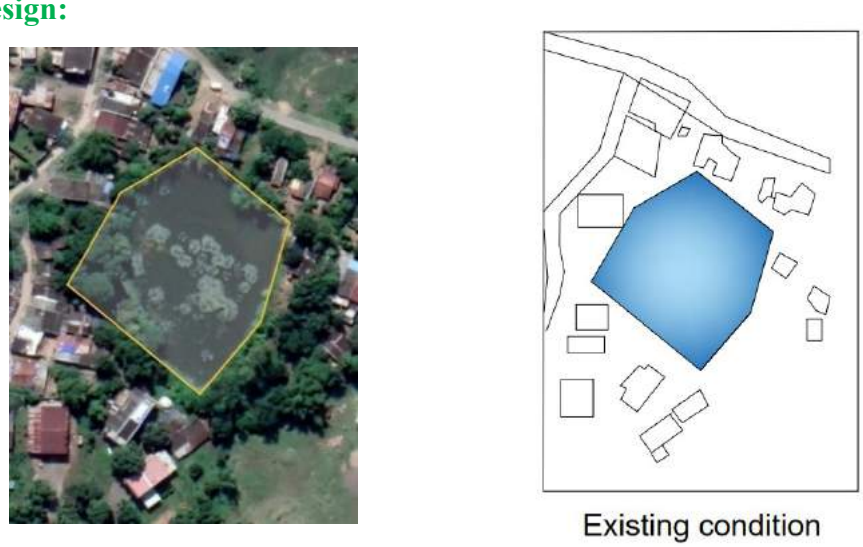


Fig 8.1.5 A plan of lake garden

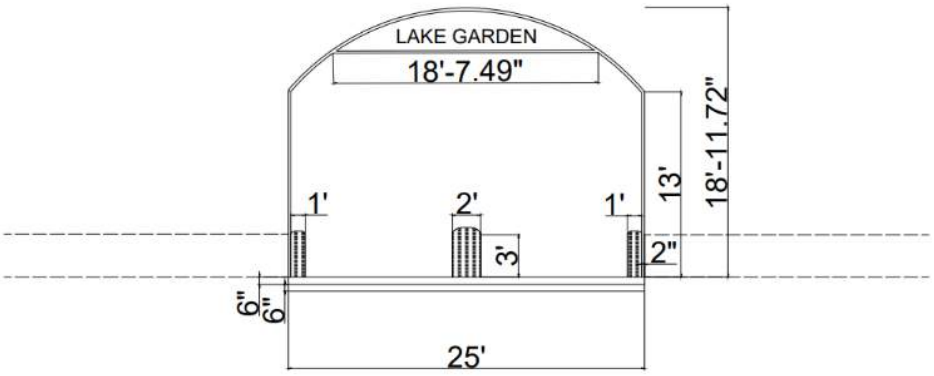


Fig 8.1.5 B Elevation of lake garden

Lake garden Measurement Sheet

SR NO	DESCRIPTION	LENTH (FT)	WIDTH (FT)	HEIGHT (FT)	COUNT (no)	TOTAL QUANTITY (FT^3)
1	Paver block on walkway				AREA (FT^2) =	1243
2	Paver block in entry				AREA (FT^2) =	441
3	Grill around lake	580	0.5	4	1	1160
4	Grass	10.63	10.63	-	5	565
5	Outer stair	25	0.83	0.5	2	20.75
6	Gate	44.5	0.5	-		8.733

Lake garden Abstract Sheet

SR NO	DESCRIPTION	TOTAL QUANTITY (FT^3)	RATE	PER	AMOUNT
1	Paver block on walkway	1243	60	FT^2	74,580
2	Paver block in entry	441	60	FT^2	26,400
3	Grill around lake	1160	100	FT^2	1,16,000

4	Grass	565	5	FT^2	2825
5	Outer stair	20.75	145	FT^2	3000
				TOTAL	2,23,805

It is an approximate estimate of works which have shown in abstract sheet with quantities are inclusive cost of water charge, labour charge, steel, various building material cost etc.

8.1.6 Heritage village design: Entrance date

Scenario:

A village entrance gate as a heritage village design, a gate or gateway is a point of entry to a space which is enclosed by walls. Gates may prevent or control the entry or exit of individuals, or they may be merely decorative. The word is derived from old Norse "gat", meaning road or path, and originally referred to the gap in the wall or fence, rather than the barrier which closed it. The moving part or parts of a gateway may be considered "doors", as they are fixed at one side whilst opening and closing like one.

Existing Situation in Vankaner:

In the Vankaner village there is no any village entrance or front gate existing in the village. So, we have designed a village entrance gate as a heritage village design.

Sustainability of the design:

Design Utilized by,

People living in the village of even outsiders from nearby villages and relatives of the villagers can entering in village through entrance gate.

Needs:

For better esthetic entrance view, Ease of use, Availability of good approach road etc.

Design brief:

The village entrance gate design as a heritage village design is for better esthetics and looks of the village approach road.

Size: 30 feet wide, 27 feet height

Common repair and maintenance of the structure:

Some common repairs and maintenances are cleaning and Exterior painting etc.

Proposed design:

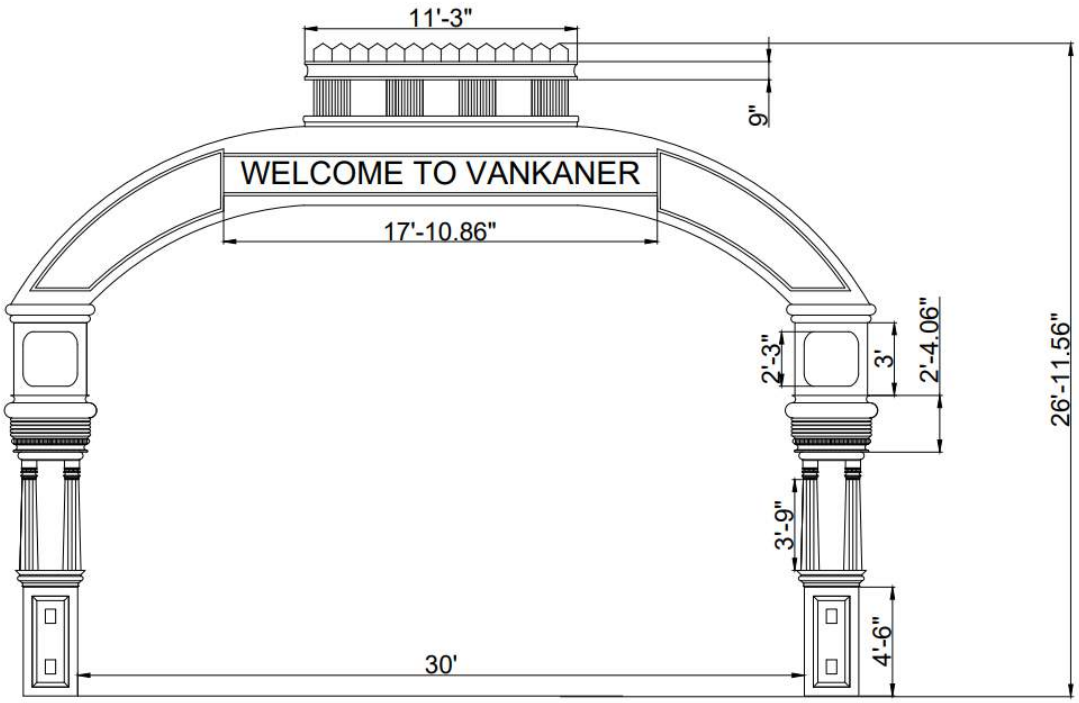


Fig 8.1.6.A Elevation of lake garden

Entrance gate Measurement Sheet

SR NO	DESCRIPTION	LENTH (FT)	WIDTH (FT)	HEIGHT (FT)	COUNT (no)	TOTAL QUANTITY (FT^3)
1	Pillar 1	2.25	2.25	4.5	2	45.56
2	Pillar 2	0.75	0.75	3.75	8	16.87
3	Pillar 3	3	3	3	2	54
4	Top Arch	33	3	3	1	297
5	Small pillar at top	1.5	1.5	1.5	4	13.5
6	Small slab above arch	11.25	2.5	2	1	56.25

7	Other shape	3	3	3.58	2	64.44
8	Excavation	2.5	2.5	3	2	37.5
9	footing	2.5	2.5	3	2	37.5

Entrance gate Abstract Sheet

SR NO	DESCRIPTION	TOTAL QUANTITY (FT^3)	RATE	PER	AMOUNT
1	pillar 1	45.56	150	Ft^3	6834
2	pillar 2	16.87	150	Ft^3	2530
	pillar 3	54	150	Ft^3	8100
3	Top Arch	297	150	Ft^3	44,550
5	Small pillar at top	13.5	150	Ft^3	2025
6	Small slab above arch	56.25	150	Ft^3	8437
7	Other shape	64.44	150	Ft^3	9666
8	Excavation	37.5	10	Ft^3	375
9	footing	37.5	150	Ft^3	5625
10	Engraving	-	-	-	50000
				Total	1,38,142

It is an approximate estimate of works which have shown in abstract sheet with quantities are inclusive cost of water charge, labour charge, steel, various building material cost etc.

8.2 Reason for Students Recommending this Design

- Library – to improve knowledge and technologies of villagers.
- Community Hall – to organize events easily for the villagers.
- Entrance Gate- for the better aesthetic of the village main entrance.
- Skill Development Centre – to provide various skills to villagers for better future.
- Lake garden – as a recreation garden
- Public toilet –to provide extra hygiene and more than access to the toilet for urination and defecation.

8.3 About designs Suggestions / Benefit of the villagers

1. Library:

The first and foremost benefit is getting free books. Library provide knowledge and technology to the villagers. Which is help in smart village concept. If in future primary school, for any study course, other Department etc. a first floor of library would be use as per requirement of village

2. Public toilet:

Vankaner village there is no public toilet. As an "away-from-home" toilet room, a public toilet can provide far more than access to the toilet for urination and defecation. People also wash their hands, use the mirrors for grooming, get drinking water attend to menstrual hygiene needs, and use the waste bins.

3. Community Hall:

There is no Community hall in the Vankaner 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.

4. Skill Development Centre:

In today's age of globalization and technological volatility, skill building is an important structure to increase the efficacy and quality of peoples for improved productivity and economic growth. Skill building is a powerful tool to empower individuals and improve their social acceptance. Improve various skills of villagers and better future.

5. lake garden:

In vankaner village lake has in bad condition. So, it required to develop and make public lake garden so that the villagers of vankaner and outsider public come and visit the village.

6. Entrance Gate:

The Vankaner village has no main entrance gate at the village approach road. So that we have designed the village entrance gate as heritage village design.

CHAPTER 9

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

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

1. Child –welfare & maternity home:

Motherhood is the most important position a woman can have in her life but can be a life-threatening event as well. During pregnancy, any woman can develop serious, life-threatening complications that require medical care. In the Vankaner village there is no any facility for maternal. So that this is very important design concept for villagers.

2. Science department:

An additional source of water will be available which could be used at the time of emergency or water shortage by implementing the Rain Water Harvesting system in the village households.

3. Cybercafé:

A cybercafe is a type of business where computers are provided for accessing the internet, playing games, chatting with friends or doing other computer related tasks and access of these is charged based on time.

4. Overhead tank:

In Vankaner village there are 4 tanks available. And as per norms 4 more overhead tank is require, also shortage of water this design is beneficial for villagers.

5.Super Market:

Supermarket is a self-service shop offering a wide variety of food, beverages, and household products, organized into sections. It is larger and has a wider selection than earlier grocery stores.

6. medical store:

There is no any PHC or pharmacy store. So, one medical store should be in vankaner village These are the proposed designs for the future development of vankaner village for Vishwakarma Yojana phase VIII, Part 2 design.

CHAPTER 10

Conclusion of the Entire Village Activities of the Project

We have visited the ideal village Baben and that visit helped us to know about the type of infrastructure needed by the village. With help of techno-economic survey and gap analysis and also studying / surveying our ideal village Baben, we were able to broadly define requirements of development for people of Vankaner village. We have visited the smart village Baben and by that visit we better understood the smart technologies and concepts as smart development of our Vankaner village Vankaner.

In the Vankaner village, the basic requirements like community hall, any recreational area, Public toilet, etc. were not existing. 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 reduce pressure on cities.

The amenities designed under this Vishwakarma project phase viii will be helpful for better development of the village as physically as well as socially, which improves the overall lifestyle of people along with nation with preserving nature bit by bit. This will help in developing Smart villages in sustainable manner, reduce migration from villages and prevent the cities from the urban pressure. This should lead to some rethinking about the meaning of efficiency beyond the usual conceptions of economic or technical efficiency. Indeed, employment expansion is at least as important as growth in productivity. In a sense, both represent the utilization of labor as a resource. Why, then, does thinking about efficiency focus on one and neglect the other It is important to reflect on this question. The answer, which calls for change in both economics and politics, could make a real difference.

Students who want to work towards preservation of rural soul of country can do many things for our own good and environment. 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 sectors 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

CHAPTER 11

References refereed for this project

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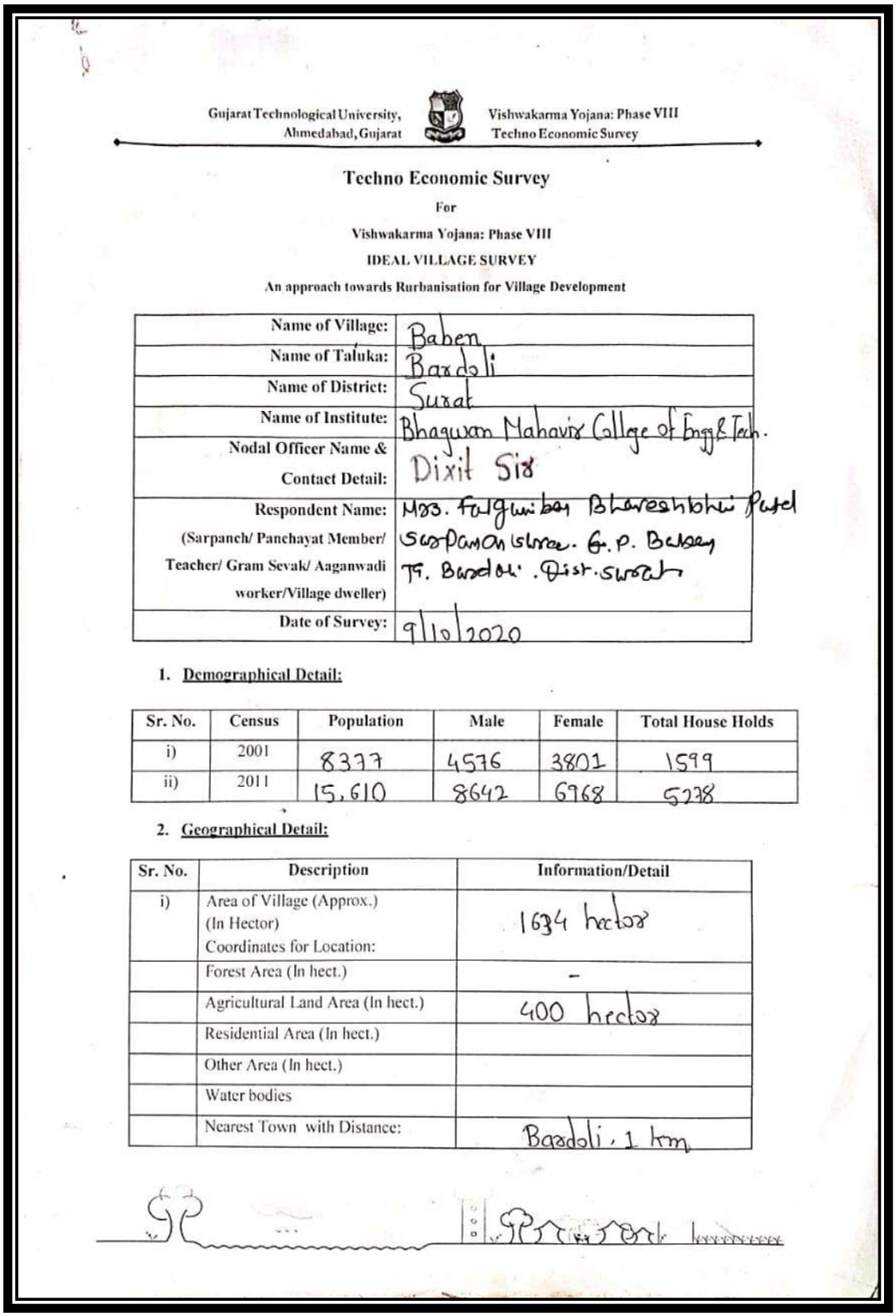
CHAPTER 12

Annexure attachment

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



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Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	Baben
Name of Taluka:	Bardoli
Name of District:	Surat
Name of Institute:	Bhagwan Mahavir College of Engg & Tech.
Nodal Officer Name & Contact Detail:	Dixit Sir
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Mrs. Falguni bay Bhavesh bhai Patel Sarpanch shree. G.P. Baben Ta. Bardoli. Dist. Surat
Date of Survey:	9/10/2020

1. Demographical Detail:

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	8377	4576	3801	1599
ii)	2011	15,610	8642	6968	5238

2. Geographical Detail:

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

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Techno Economic Survey

3. **Occupational Details:**

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

4. **Physical Infrastructure Facilities:**

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

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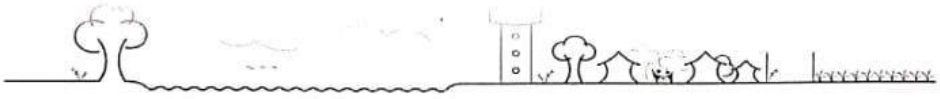
Techno Economic Survey

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

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

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks



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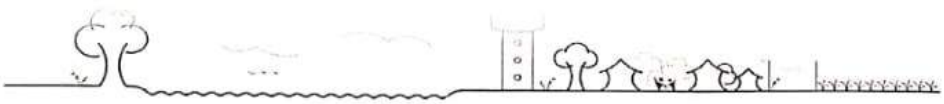
K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	Yes			Sub centre
	Private Clinic/Private Hospital/ Nursing Home	Yes			Private clinic/ hospital
	If any of the above Facility is not available in village than approx. distance from village: ……kms.				
Suggestions if any:					
L.	**Education Facilities:**				
	Aaganwadi/ Play group				
	Primary School	Yes	Yes		1
	Secondary school	Yes			
	Higher sec. School	Yes			
	ITI college/ vocational Training Center	–	–		
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	Yes	–		
	If any of the above Facility is not available in village than approx. distance from village: ……kms.				
Suggestions if any:					
M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:	No			4 km Bardoli



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

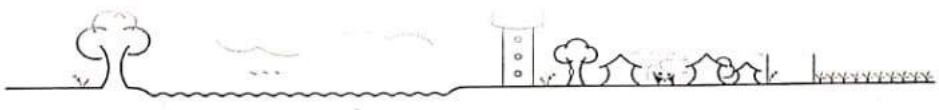
	General Market	Yes	✓		
	Shops (Public Distribution System)	Yes	✓		
	Panchayat Building	Yes	✓		
	Pharmacy/Medical Shop	Yes	✓		
	Bank & ATM Facility	Yes	✓		
	Agriculture Co-operative Society	Yes			APMC
	Milk Co-operative Soc.	NO			
	Small Scale Industries	NO			
	Internet Cafes/ Common Service Center/Wi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

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

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

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	Yes (Soft Copy)



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Techno Economic Survey

Recent Projects going on for Development of Village	No
Any NGO working for village development	Yes (2)

8. Additional Information/ Requirement:

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

9. Smart Village Proposal Design

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Renewable energy Source etc..	-	-

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

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

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

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

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

Name of District:	ENA
Name of Taluka:	Palsana
Name of Village:	Surat
Name of Institute:	Bhagwan mahavir college of engineering & Technology
Nodal Officer Name & Contact Detail:	
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Naynaben P. Ahir સરપંચ એના-ગોડીયા ગ્રુપ ગ્રામ પંચાયત તા. પલસાણા, જિ. સુરત N.P. Ahir
Date of Survey:	02/11/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	3771	1845	1882	888

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	621.93 hector
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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7.	Name of Nearest Town with Distance:	Bardoli
8.	Distance to the nearest bus station (in kilometers):	Yes
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. Farmer 2. Jobs 3. Business
Major crops grown in the village:	1. Vegetable 2. Banan 3. Sugar

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
1.	**PIPED WATER** Piped Into Dwelling Piped To Yard/Plot Public Tap/Standpipe Tube Well Or Bore Well	Yes			Tap water
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**	Yes			Canal

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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	Yes			Underground drainage
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	All Weather			
	Main road	All Weather			
	Internal streets	All Weather			
	Nearest NH/SH/MDR/ODR Dist. in kms.	Yes			SH-53
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No			Bkm gangadhara
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes			All
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes			DGVCL 24hours

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Techno Economic Survey

	Power supply for Domestic Use	Yes			24hours
	Power supply for Agricultural Use	Yes			12hours
	Power supply for Commercial Use	Yes			24hours
	Road/ Street Lights	Yes			
	Electrification in Government Buildings/ Schools/ Hospitals	Yes			
	Renewable Energy Source Facilities (Y/ N)	Yes			Solar street lights
	LED Facilities	Yes			
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	Yes			2Nos.
	Location Condition	good			
	Community Toilet (With bath/ without bath facilities)	Yes			without bath
	Solid & liquid waste Disposal system available	No			
	Any facility for Waste collection from road	Yes			Door to Door
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL. OTHER (SPECIFY)	Yes			Canal & Borehole
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Pucca			Major house are pucca

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi) Sub-Centre PHC BLOCK PHC CHC/RH District/ Govt. Hospital Govt. Dispensary Private Clinic Private Hospital/ Nursing Home AYUSH Health Facility sonography /ultrasound facility	Yes			-sub centre -Private clinic
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	Yes			
	Primary School	Yes			
	Secondary school	Yes			
	Higher sec. School	Yes			
	ITI college/ vocational Training Center	No			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	No			
	If any of the above Facility is not available in village than approx. distance from village: ..9.....kms. (Bardoli)				

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Suggestions if any:

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

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

Suggestions if any:

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

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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 7. Intergrated Child Development Scheme (ICDS) 8. Mahila Mandal Protsahan Yojana (MMPY) 9. National Food for work Programme (NFFWP) 10. National Social Assistance Programme 11. Sanitation Programme (SP) 12. Rajiv Gandhi National Drinking Water Mission 13. Swarnjayanti Gram Swarozgar Yojana 14. Minimum Needs Programme (MNP) 15. National Rural Employment Programme 16. Employee Guarantee Scheme (EGS) 17. Prime Minister Rojgar Yojana (PMRY) 18. Jawahar Rozgar Yojana (JRY) 19. Indira Awas Yaojna (IAY) 20. Samagra Awas Yojana (SAY) 21. Sanjay Gandhi Niradhar Yojana (SGNY) 22. Jawahar Gram Samridhi Yojana (JGSY) 23. Other (SPECIFY)			✓ ✓ ✓ ✓	

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

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

IX. Smart Village / Heritage Details

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

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

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

12.3 Survey form of Vankaner Village Scanned copy attachment in the report for Part-I Survey form of Vankaner Village Original copy attachment in the report for Part-II

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

Name of District:	Surat
Name of Taluka:	Bardoli
Name of Village:	Vankaner
Name of Institute:	Bhagwan Mahavir College of Engg. & Tech.
Nodal Officer Name & Contact Detail:	Dixit Sir
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Mayur Bhai Sarpanch
Date of Survey:	11/10/2020

ગ્રામ પંચાયત વાંકાનેર, તા. બારડોલી, જી. સુરત

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	–	–	–	–
2.	2011	7472	3748	3724	1658

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1148.52 hectares
2.	Forest Area (In hect.)	–
3.	Agricultural Land Area (In hect.)	969 hectares
4.	Residential Area (In hect.)	–
5.	Other Area (In hect.)	–
6.	Distance to the nearest railway station (in kilometers):	Timbarva Railway station

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7.	Name of Nearest Town with Distance:	Bardoli - 10 km from Vankaner
8.	Distance to the nearest bus station (in kilometers):	Shekhpur Bus Stop 8 km distance
9.	Whether village is connected to all road for the any facility or town or City?	

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1. Agriculture (80% of total population) 2. Business (10% of total population) 3. Gov. Service (10% of total population)

Major crops grown in the village:	1. Sugarcane 2. Dangar 3.

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	Piped into Dwelling Public Tab	Adequate		
2.	**DUG WELL** Protected Well Un Protected Well				
3.	**WATER FROM SPRING** Protected Spring Unprotected Spring Rainwater Tanker Truck Cart With Small Tank	Over head Tank			Nos. -4
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/** Irrigation Channel Bottled Water Hand Pump	Hand pump			

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	Other(Specify)Lake/ Pond	-			
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	Adequate	4	
	Underground Sump	Capacity:			
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1	-	No		
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Yes	Metal	Damar	Length - 4 km
	Main road	No	-	-	
	Internal streets	Yes	-		
	Nearest NH/SH/MDR/ODR Dist. in kms.	SH 53			
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No	Tumbarva Railway station		
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes	Shekhpur Bus Stop		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes	Auto, Jeep	Chhakda	
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes	Gov/ Private		More than 6 hours

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HOS

	Power supply for Domestic Use	Yes	Adequate		2017
	Power supply for Agricultural Use	Yes	Adequate		603
	Power supply for Commercial Use	Yes	Adequate		115
	Road/ Street Lights	Yes	Adequate		
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	Adequate		
	Renewable Energy Source Facilities (Y/ N)		No		
	LED Facilities		No		

Suggestions if any:

G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	Not Available			
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	Not available			
	Solid & liquid waste Disposal system available	No	No		
	Any facility for Waste collection from road	Yes			Door to Door Collection

Suggestions if any:

H.	**Main Source of Irrigation Facility:**		Area		
	TANK/POND	-	Checked		
	STREAM/RIVER	-			
	CANAL	Yes	956		
	WELL	Yes	10		
	TUBE WELL	Yes	10		
	OTHER (SPECIFY)	Lift Irrigation	2		

Suggestions if any:

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

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	Yes	Adequate		
	Sub-Centre	–			
	PHC	Yes	Adequate		
	BLOCK PHC				
	CHC/RH	No			
	District/ Govt. Hospital	–			
	Govt. Dispensary	–			
	Private Clinic	–			
	Private Hospital/	No		Inadequate	
	Nursing Home	No			
	AYUSH Health Facility	–			
	sonography /ultrasound facility	–			
	If any of the above Facility is not available in village than approx. distance from village: ..10..kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	Yes	Adequate		08
	Primary School	Yes	Adequate		03
	Secondary school	Yes	Adequate		02
	Higher sec. School	Yes	Adequate		01
	ITI college/ vocational Training Center	No			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	No			

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	If any of the above Facility is not available in village than approx. distance from village: 10...kms.				
Suggestions if any:					
L.	**Socio- Culture Facilities**	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)				No
	Public Library (With daily newspaper supply: Y/N)				No
	Public Garden			Yes	
	Village Pond	Poor Condition		Yes	
	Recreation Center				No
	Cinema/ Video Hall				No
	Assembly Polling Station		Vankaner 5		
	Birth & Death Registration Office	-			
If any of the above Facility is not available in village than approx. distance from village: 10..kms. Baadoli, Surat					
Suggestions if any:					
M.	**Other Facilities**	Condition	Location	Available (YES)	Available (NO)
	Post-office			Yes	
	Telecommunication Network/ STD booth	STD booth Nos - 2		Yes	
	General Market				
	Shops (Public Distribution System)				
	Panchayat Building	Very Small		Yes	
	Pharmacy/Medical Shop				
	Bank & ATM Facility	Nos - 1		Yes	
	Agriculture Co-operative Society				No
	Milk Co-operative Soc.	Nos - 1		Yes	
	Small Scale Industries				No
	Internet Cafes/ Common Service Center/Wi Fi				No
	Youth Club				No
	Mahila Mandal	Nos - 4		Yes	

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	Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-chaupal / Mills / Small Scale Industries	Milk Co-operative Society Nos - 1		Yes	
	Other Facility				

Suggestions if any:

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

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	No			
2.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	No	-		
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	Available. Soft Copy	Adequate		
2.	Recent Projects going on for Development of Village	Nothing			
3.	Any NGO working for village development	No			
4.	Any natural calamity in the village during the last one year: EARTHQUAKES FLOODS CYCLONE DROUGHT LANDSLIDES AVALANCHE OTHER (SPECIFY)	NO			

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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	Panchayat building, Recreation of lake, Roads etc	
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?		

IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	Entrance gate, Public Toilet, Library etc...	

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

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

12.4 Gap Analysis of the Vankaner Village

VILLAGE GAP Analysis					
Village Facilities	**Planning Commission/UDPFI Norms**	**Village Name:**	Vankaner		
		Population:			
		Existing	**Required as per Norms**	**Smart Village / Cities / Heritage Future Projection Design**	**Gap**
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	8	4	-	+4
Primary School	Each Per 2500 population	3	4	-	-1
Secondary School	Per 7,500 population	2	2		0
Higher Secondary School	Per 15,000 Population	1	1		0
College	Per 125,000 Population	0	0		0
Tech. Training Institute	Per 100000 Population	0	0		0
Agriculture Research Centre	Per 100000 Population	1	0		+1
Skill Development Center	Per 100000 Population	0	1		-1
Health Facility					
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	1	1		0
Primary Health & Child Health Center	Per 20,000 population	1	1		0
Child Welfare and Maternity Home	Per 10,000 population	0	1		-1
Multispecialty Hospital	Per 100000 Population	0	0		0
Public Latrines	1 for 50 families (if toilet is not there in home, specially for slum pockets & kutcha house)	0	1		-1
Physical Infrastructure Facilities					
Transportation		**Adequate / Inadequate**			
Pucca Village Approach Road	Each village	Adequate			

Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	Inadequate			
Drinking Water (Minimum 70 LPCD)		Adequate			
Over Head Tank	1/3 of Total Demand	Adequate	1 proposed		
U/G Sump	2/3 of Total Demand	Inadequate			
Drainage Network - Open		Adequate	0%		
Drainage Network - Cover		Adequate	100%		
Waste Management System		Inadequate			
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	0	1	-	-1
community hall and Public Library	Per 15000 Population	0	0	-	0
Cremation Ground	Per 20,000 population	0	1	-	-1
Post Office	Per 10,000 population	1	1	-	0
Gram Panchayat Building	Each individual/group panchayat	1	1	-	0
APMC	Per 100000 Population	0	0	-	0
Fire Station	Per 100000 Population	0	0	-	0
Public Garden	Per village	0	1	-	-1
Police post	Per 40,000 Population	0	0	-	0
Shopping Mall	Shops are available in village				

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

SR NO	VILLAGE NAME	DISCIPLINE	PART 1	PART 2
1	Vankaner	Civil	Library	Overhead tank
			Public toilet	Child welfare and maternity home
			Community hall	Cybercafe
			Skill development centre	Super market
			Lake garden	Science department
			Entrance gate	Medical store
2	Madhi	Civil	Library	Maintanance of police station

			Hospital	Public garden
			River front	Waste water treatment
			Fire station	Solid waste treatment
			Village gate	Medical shop
			Community hall	Pucca vegetable market
3	kharach	Civil	Milk collecting and distributing unit	Development of lake
			library	Primary school
			clinic	Medical store
			Overhead tank	Video hall
			Design of road	Youth club public garden
			Mahila mandal	Public garden
4	Ilav		Anganwadi	Public garden
			Girls primary school	Community hall
			Agro storage unit	Public library
			Milk dairy unit	Post office
			Animal shelter	Aro-water plant
			Public toilet	Mahila mandal
5	Vav	Civil	Post office	Bio gas plant
			Public Garden	Maintanance of PHC
			Water harvesting system	Sewage treatment plant
			Community hall	Library
			Skill development centre	Road
			hospital	Village gate
6	Palod, mangrol	Civil	Bio gas plant	Post office
			Rain water harvesting	Garden
			Library	Overhead tank
			Community hall	Low-cost house
			Skill development centre	Primary health centre
			Village gate	Chabutra
7	Ten, bardoli	Civil	Bio gas plant	Internal street road
			Primary health centre	Primary school
			Post office	Public toilet
			Public library	Community hall
			Agriculture research centre	Maintanance of overhead tank
			Village gate	Maintanance of Village pond
8	Nani Naroli, mangrol	Civil	Bio gas plant	Tank deign for water Harvesting
			High school	Road section

			Public toilet	Child welfare and maternity home
			Community Hall	Public garden
			Bank	Common Service centre
			Village gate	Chabutro

12.6 NOTE sheets of drawing are attached at last portion of report

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

Summary of photographs of baben : Ideal viilage

SUMMARY OF PHOTOGRAPH OF VANKANER: VANKANER VILLAG

12.8 Village Interaction with sarpanch Report with the photograph

Village Interaction with Sarpanch/Talati latter

Vishwakarma Yojana Phase VIII

Vankaner village, Bardoli taluka, Surat

Village code: 524328

Subject : Village Interaction Form with sarpanch/talati of vankaner village

I sarpanch/talati of vankaner village undersigned gives approval of doing village interaction activity under Vishwakarma Yojana Phase VIII- An approach towards rurbanisation by students of Bhagwan Mahavir collage of engineering and technology named Vaghela Sahil (170060106078) and pathan sayma (180064106001).

Date : 17/12/2020

Sign :

ઉપ સરપંચશ્રી,
ગામ સંસ્થા શ્રી વાંકાનેર
મુ.પો.વાંકાનેર, તા.બારડોલી
વાંકાનેર ગ્રામ પંચાયત,
તા. બારડોલી, જી.સુરત

12.9 Sarpanch Letter giving information about the village development

Approval Letter for Proposed Design Approval

Vishwakarma Yojana Phase VIII

Vankaner village, Bardoli taluka, Surat

Village code: 524328

Subject: Approval of design proposal for vankaner village

I sarpanch/talati of vankaner village undersigned gives approval for following main design proposal give under Vishwakarma Yojana phase VII- approach towards rurbanisation by students of Bhagwan Mahavir collage of engineering and technology named Vaghela Sahil (170060106078) and pathan sayma (180064106001).

Approved main design proposals as part 1:

1) Library

2) Public toilet

3) Community hall

4) Skill development centre

5) Lake garden

6) Entrance gate

Date: 25/2/2020

Sign:

સરપંચશ્રી,
ગ્રામ પંચાયત વાંકાનેર.
મુ.પો.વાંકાનેર,તા.બારડોલી
વાંકાનેર ગ્રામ પંચાયત,
તા. બારડોલી, જી.સુરત

Approval Letter for swachhta & covid awareness activity

Vishwakarma Yojana Phase VIII

Vankaner village, Bardoli taluka, Surat

Village code: 524328

Subject: Approval for doing awareness activity for swachhta & covid for vankaner village

I sarpanch/talati of vankaner village undersigned gives approval of doing swachhta and covid awareness activity under Vishwakarma Yojana phase VII- approach towards rurbanisation by students of Bhagwan Mahavir collage of engineering and technology named Vaghela Sahil (170060106078) and pathan sayma (180064106001).

Date: 19/10/2020

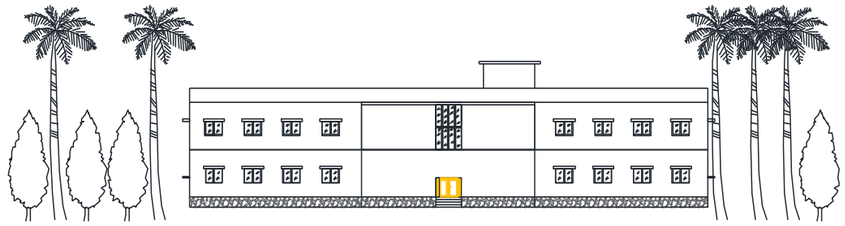
Sign:

ઉપસરપંચશ્રી
ગ્રામ પંચાયત વાંકાનેર
મુ.પો.વાંકાનેર,તા.બારડોલી

વાંકાનેર ગ્રામ પંચાયત,

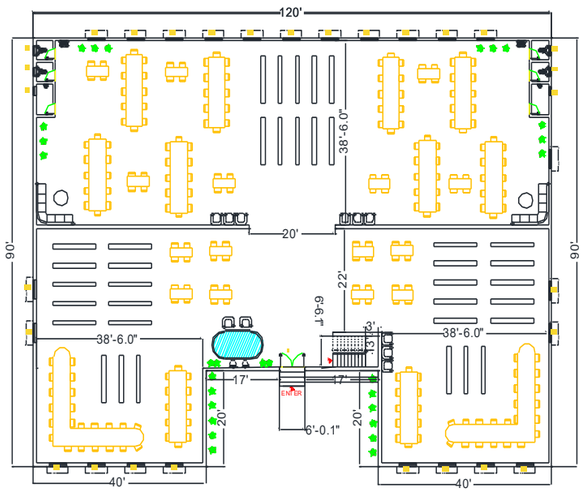
તા. બારડોલી, જી.સુરત

12.6 Drawings

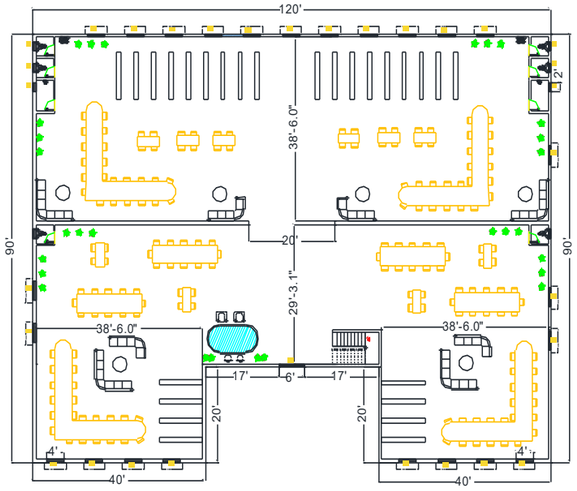


ELEVATION

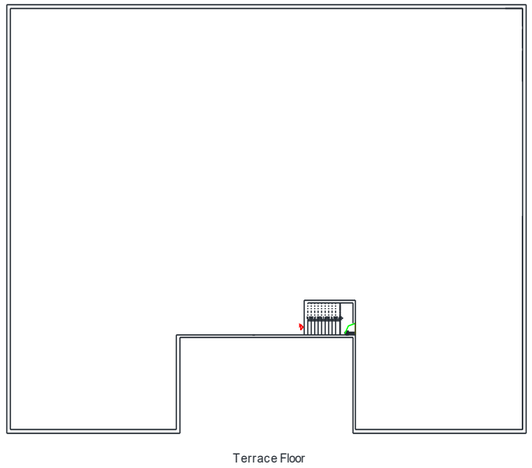
SCHEDULE OF OPENING		
NAME	NAME	QUANTITY
D	6' X 4'	1
W1	4' X 3'	48
W2	6' X 9'6"	1
V	2' X 2'	12



GROUND FLOOR



FIRST FLOOR



Terrace Floor

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-All dimension are in feet unless stated otherwise

-Drawings should be read not for scale

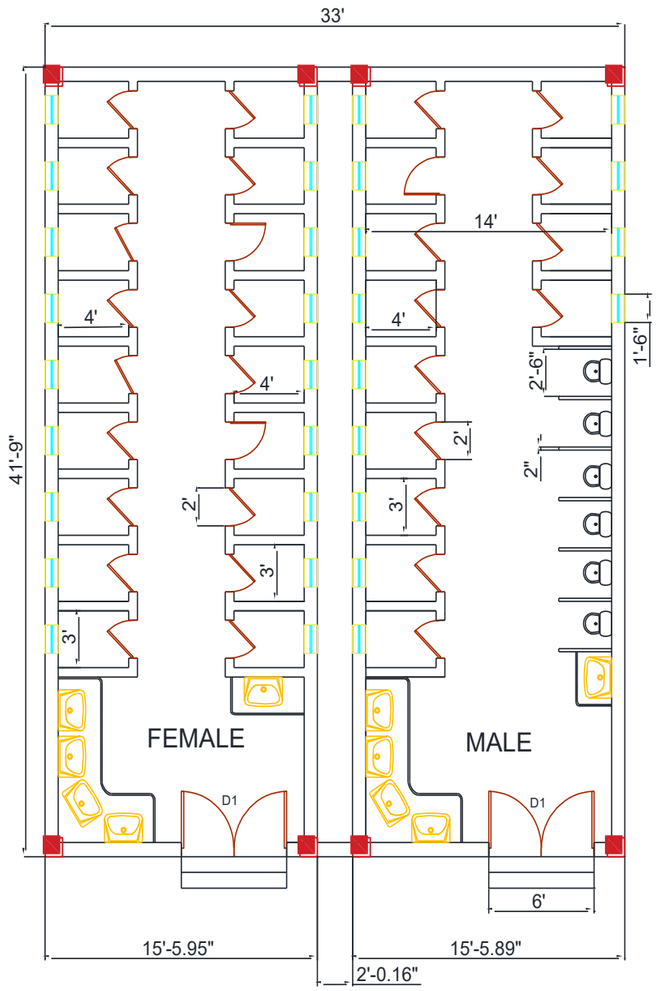
-Design is prepared only for educational purpose and correction of all data must be check before use.

-Design is not responsible for any kind of wrong data.

-minimum grade of concrete is M20 and all steel grade is Fe500.

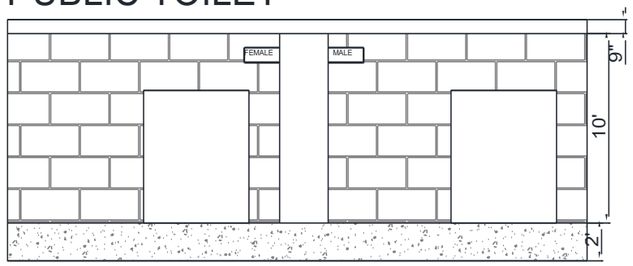
-Check first the plot dimension.

Design by:	Sahil Vaghela sayma pathan
PUBLIC LIBRARY	
Project no:	01
Date	20/02/2021
Guide by	Dixit chauhan



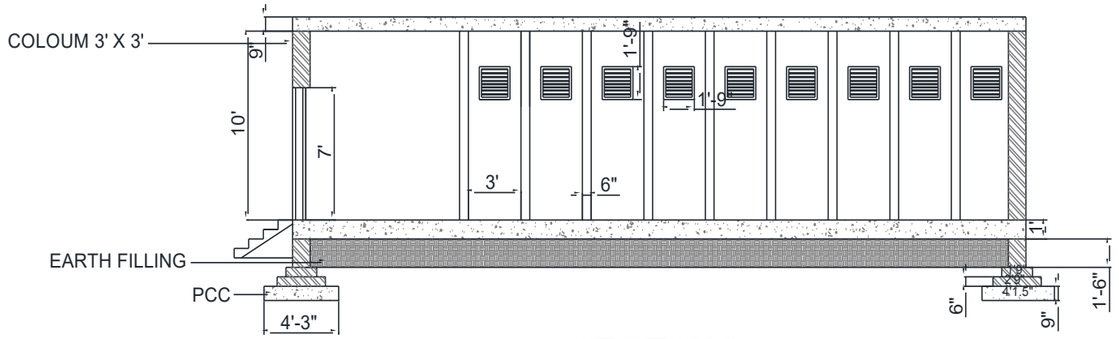
PLAN

PUBLIC TOILET



ELEVATION

SCHEDULE OF OPENING		
NAME	NAME	QUANTITY
D1	6' X 7'	2
V	1.5' X 1'9"	31



SECTION

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-All dimension are in feet unless stated otherwise

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-Design is not responsible for any kind of wrong data.

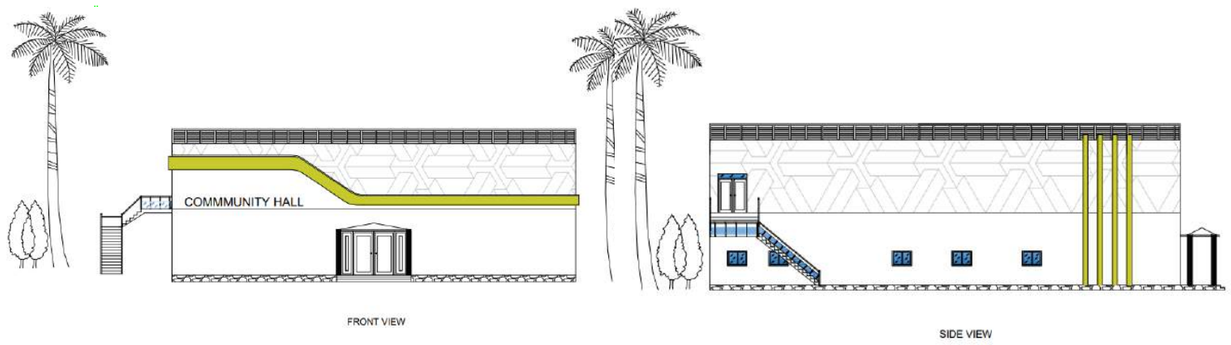
-minimum grade of concrete is M20 and all steel grade is Fe500.

-Check first the plot dimension.

Design by: Sahil Vaghela
sayma pathan

PUBLIC TOILET

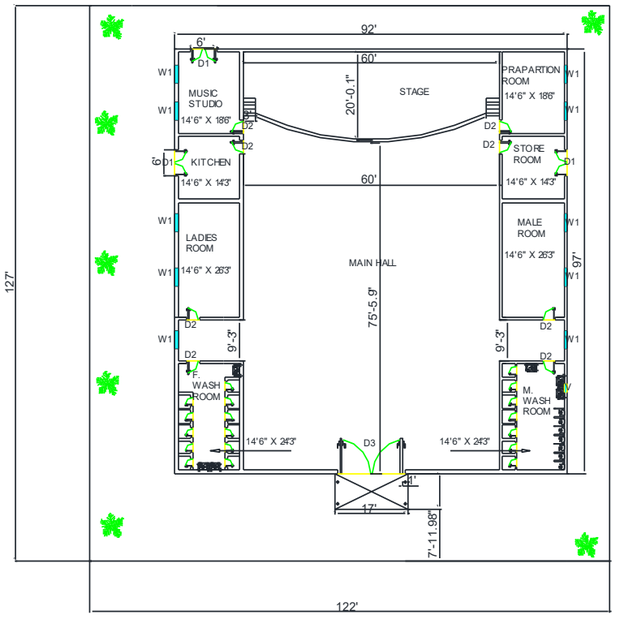
Project no:	02
Date	20/02/2021
Guide by	Dixit chauhan



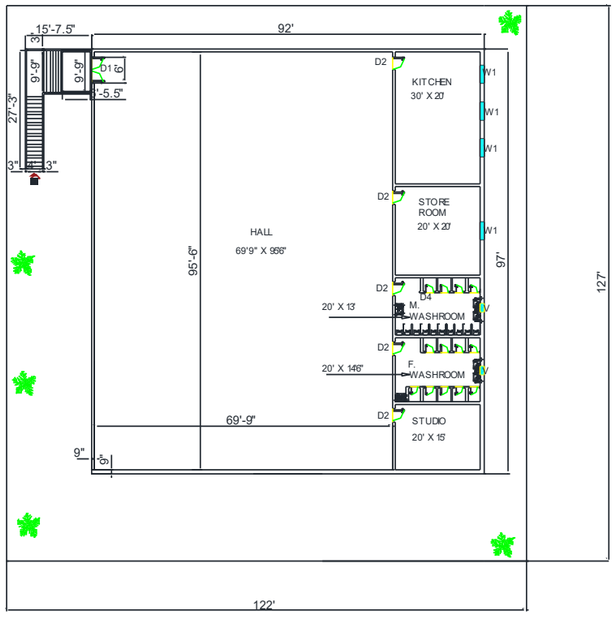
FRONT VIEW

SIDE VIEW

SCHEDULE OF OPENING		
NAME	NAME	QUANTITY
D1	6' X 7'	4
D2	3' X 7'	13
D3	16' X 10'	1
D4	2' X 7'	31
W1	4' X 3'	14
V	2' X 2'	3



FIRST FLOOR



SECOND FLOOR

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-All dimension are in feet unless stated otherwise

-Drawings should be read not for scale

-Design is prepared only for educational purpose and correction of all data must be check before use.

-Design is not responsible for any kind of wrong data.

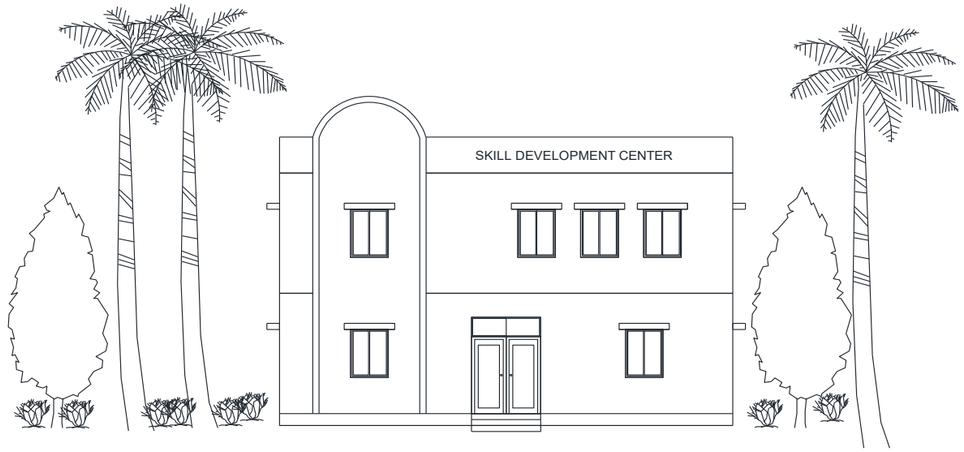
-minimum grade of concrete is M20 and all steel grade is Fe500.

-Check first the plot dimension.

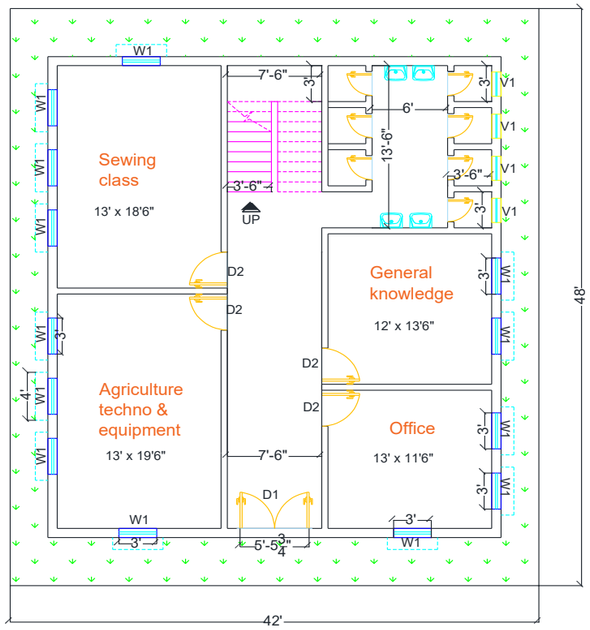
Design by: Sahil Vaghela
sayma pathan

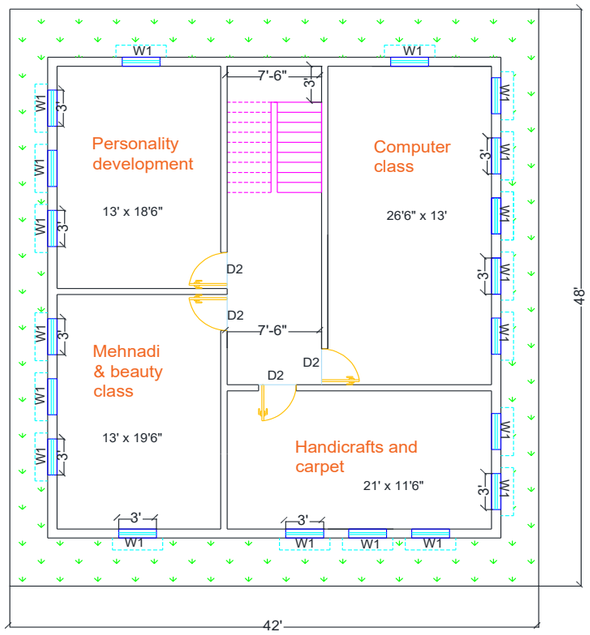
COMMUNITY HALL

Project no:	03
Date	20/02/2021
Guide by	Dixit chauhan



SCHEDULE OF OPENING		
NAME	NAME	QUANTITY
D1	5'6" X 8'	1
D2	3' X 7'	8
D2	2' X 7'	7
W1	3' X 4'	32
V	2' X 2'	4





Gujarat Technical University

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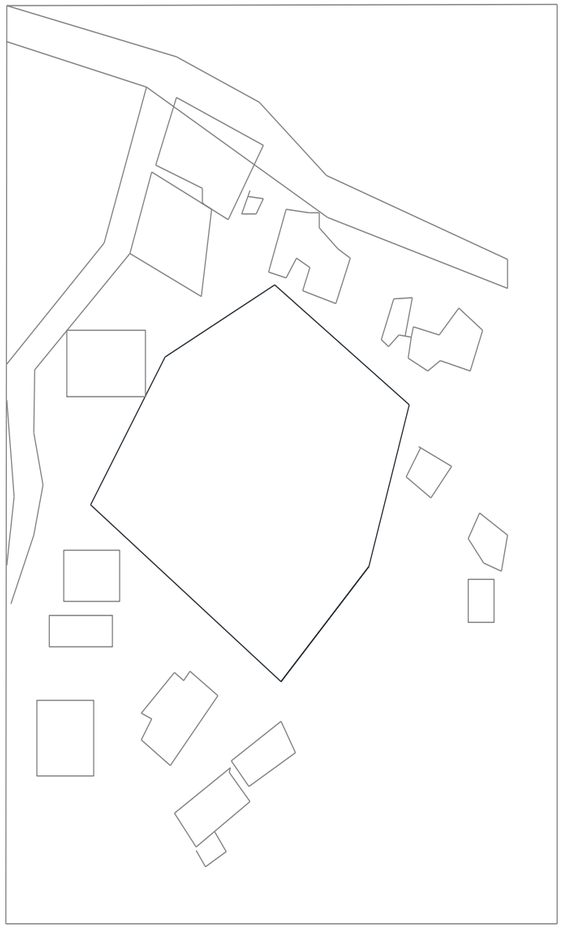
-Check first the plot dimension.

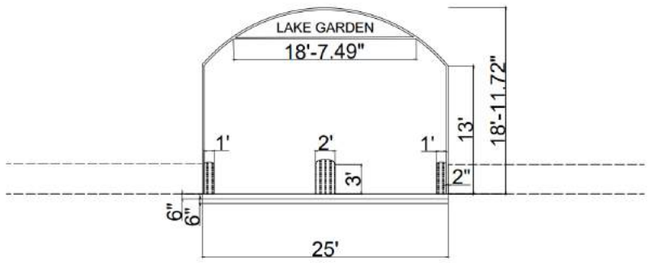
Design by: Sahil Vaghela
sayma pathan

SKILL DEVELOPMENT CENTER

Project no:	04
Date	20/02/2021
Guide by	Dixit chauhan



Existing condition



ELEVATION OF GATE

Gujarat Technical University

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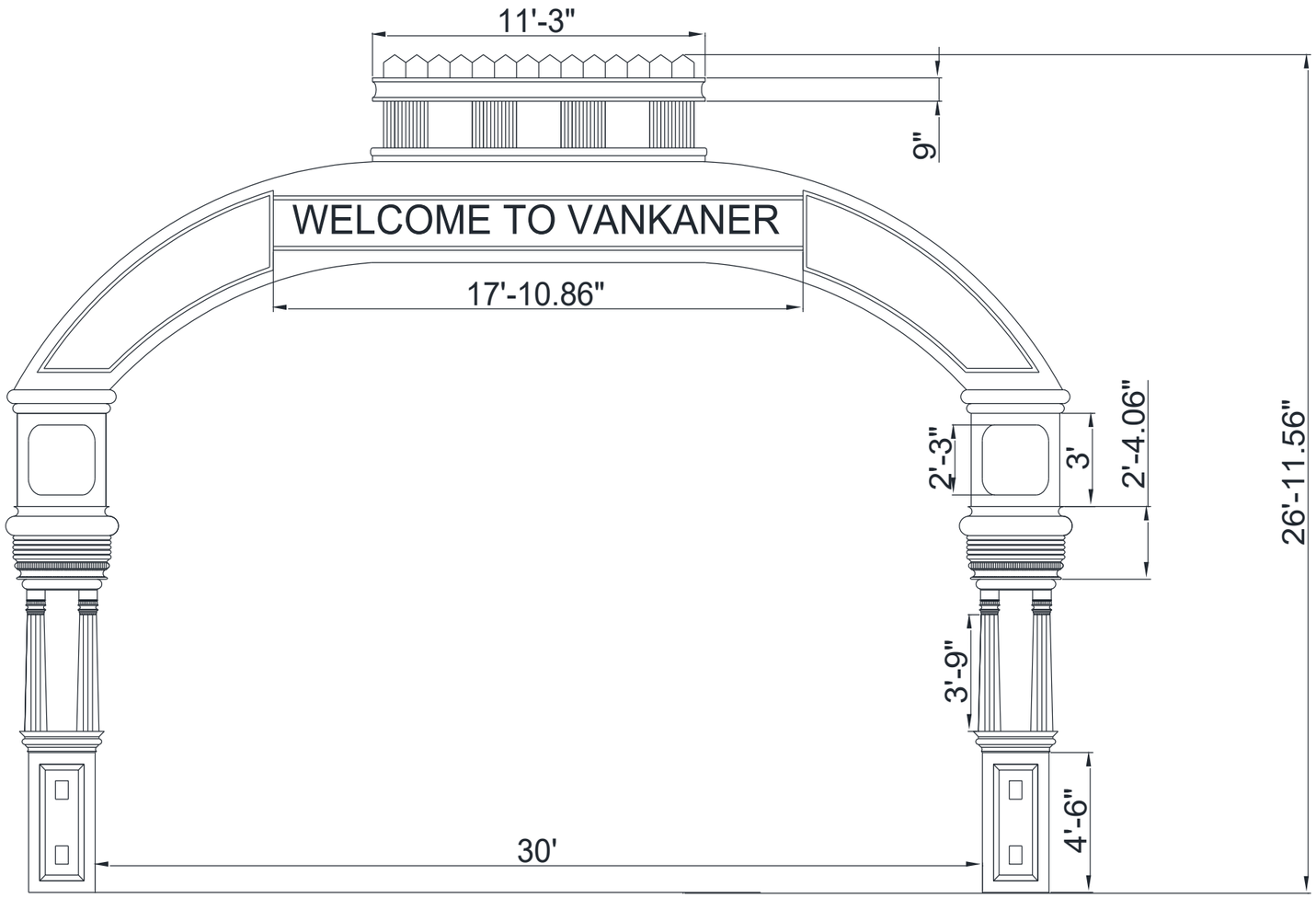
-Check first the plot dimension.

Design by: Sahil Vaghela sayma pathan	
LAKE GARDEN	
Project no:	05
Date	20/02/2021
Guide by	Dixit chauhan



Gujarat Technical University

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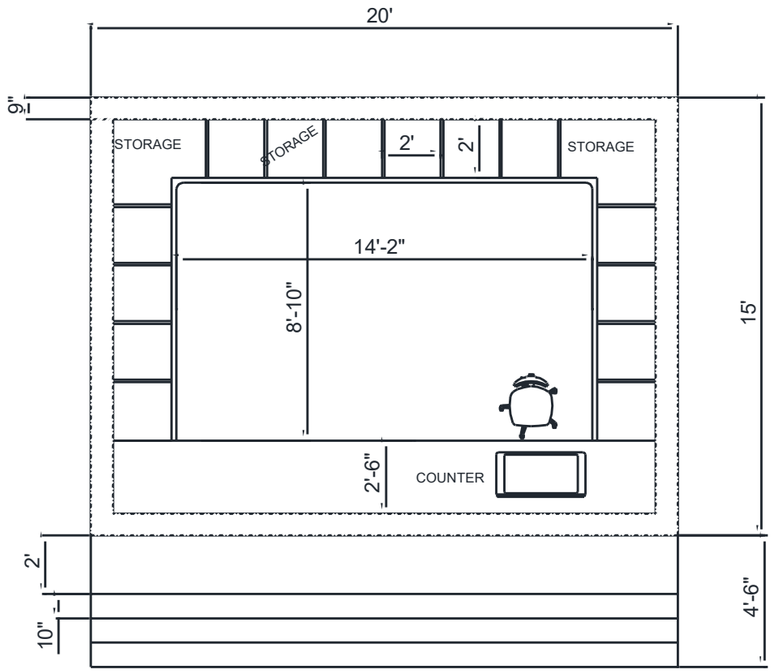
-Check first the plot dimension.

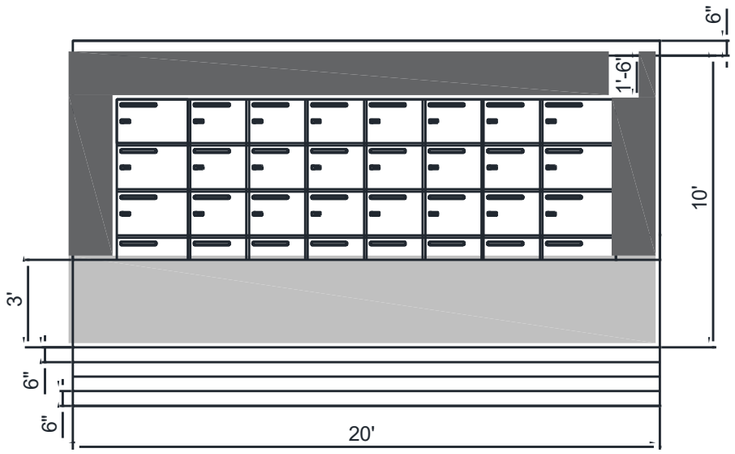
Design by: Sahil Vaghela
sayma pathan

ENTRANCE GATE

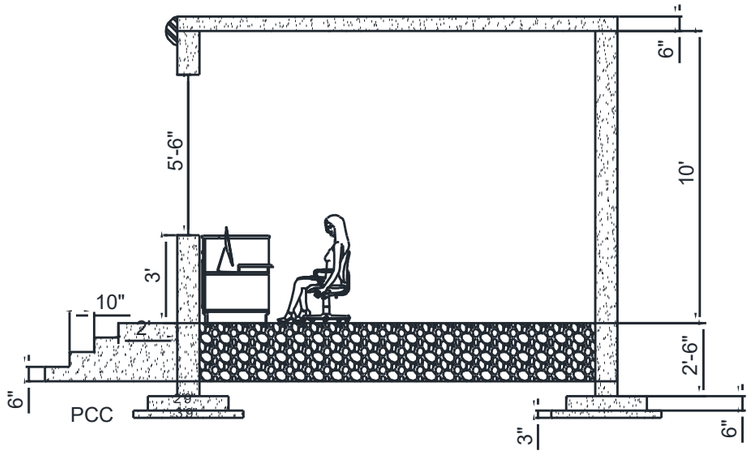
Project no:	06
Date	20/02/2021
Guide by	Dixit chauhan



PLAN



ELEVATION



CROSS SECTION

Gujarat Technical University

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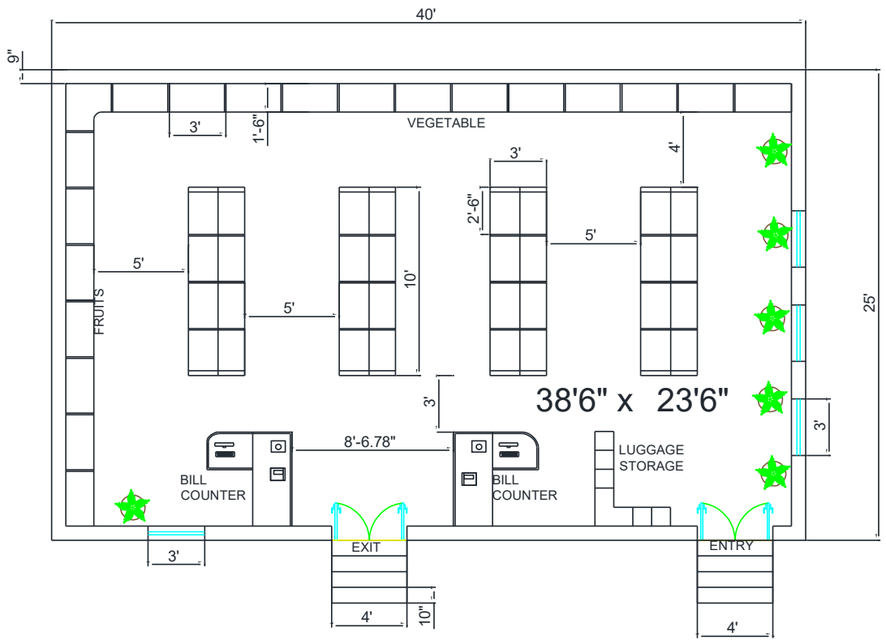
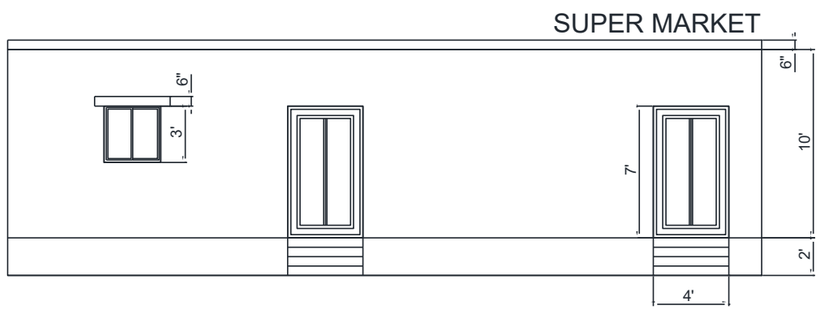
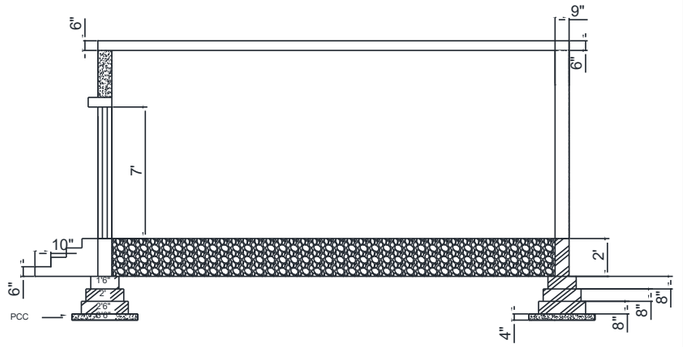
-Check first the plot dimension.

Design by: Sahil Vaghela sayma pathan	
MEDICAL STORE	
Project no:	07
Date	5/06/2021
Guide by	Dixit chauhan



SCHEDULE OF OPENING		
NAME	SIZE	QUANTITY
D	4' X 7'	2
W	3' X 3'	4





Gujarat Technical University

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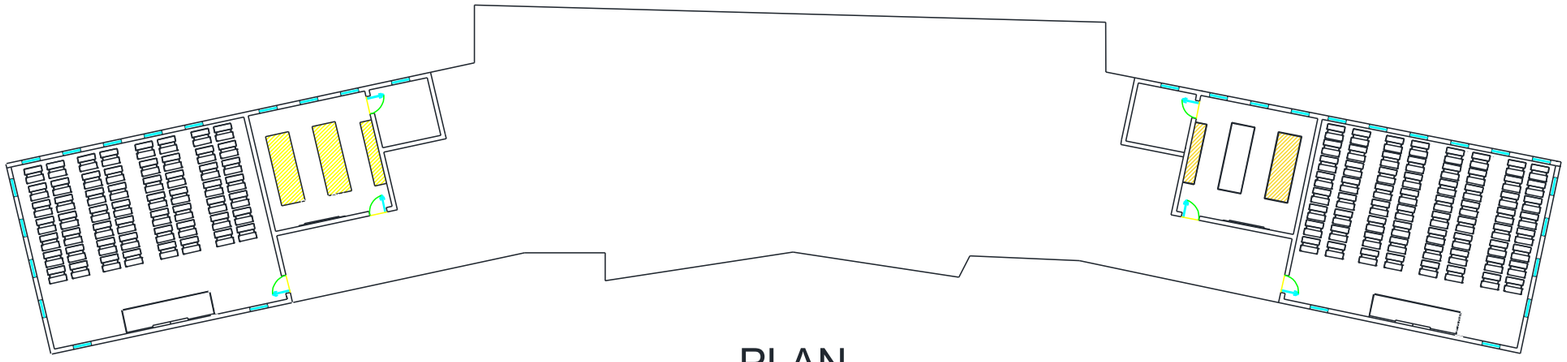
-Check first the plot dimension.

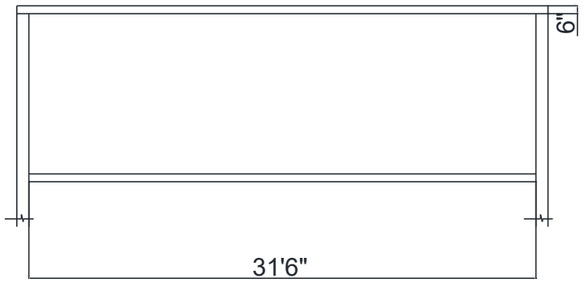
Design by: Sahil Vaghela
sayma pathan

SUPER MARKET

Project no:	8
Date	5/06/2021
Guide by	Dixit chauhan

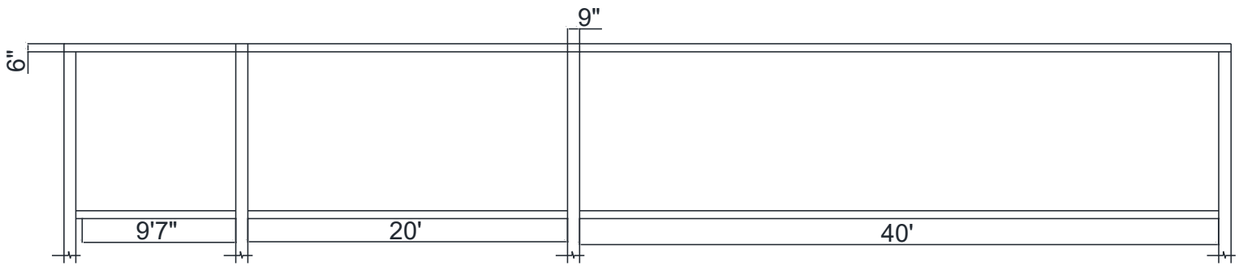


PLAN



C/S -1

SCHEDULE OF OPENING		
NAME	SIZE	QUANTITY
D	3' X 7'	6
W	3' X 3'	31



C/S-2

Gujarat Technical University

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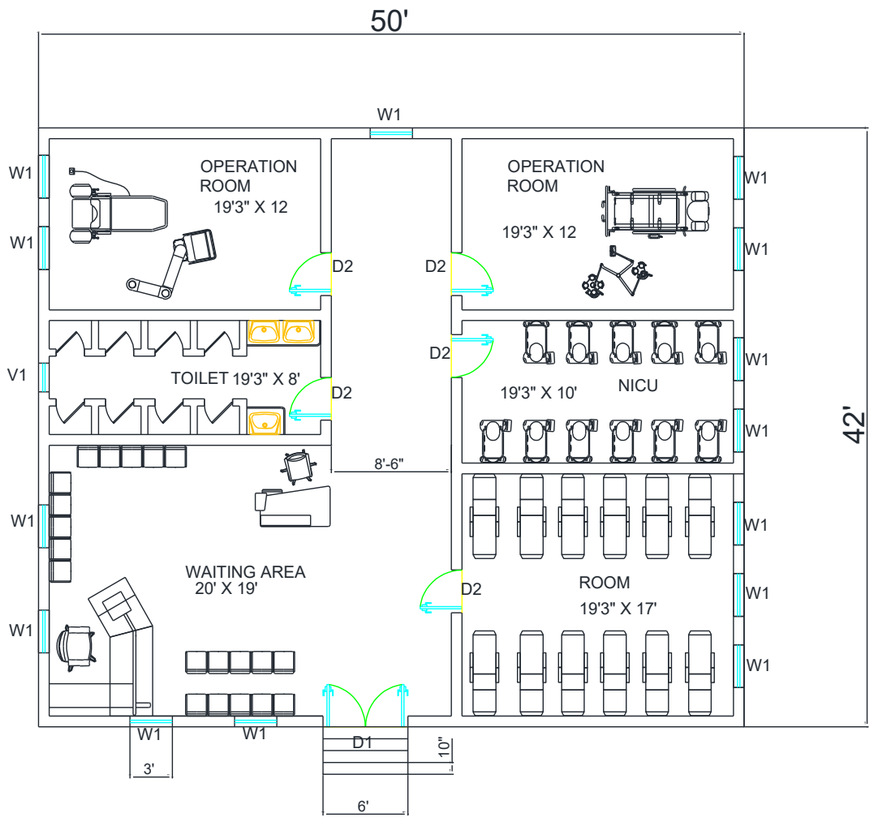
-Check first the plot dimension.

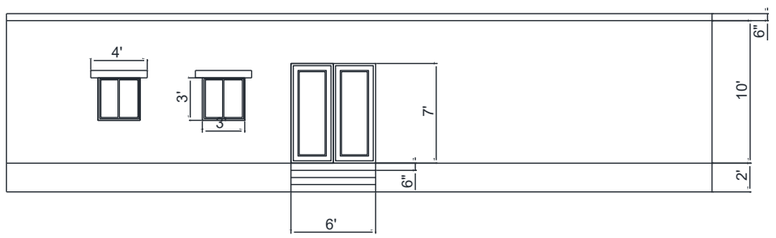
Design by: Sahil Vaghela
sayma pathan

SCIENCE DEPARTMENT

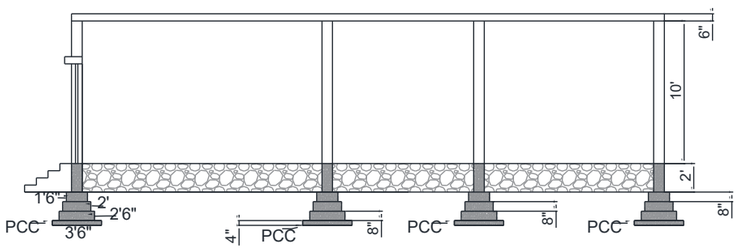
Project no:	09
Date	05/06/2021
Guide by	Dixit chauhan



PLAN



ELEVATION



CROSS SECTION

SCHEDULE OF OPENING		
NAME	SIZE	QUANTITY
D1	6' X 7'	1
D2	3' X 7'	5
W1	3' X 3'	15
V1	2' X 2'	1

Gujarat Technical University

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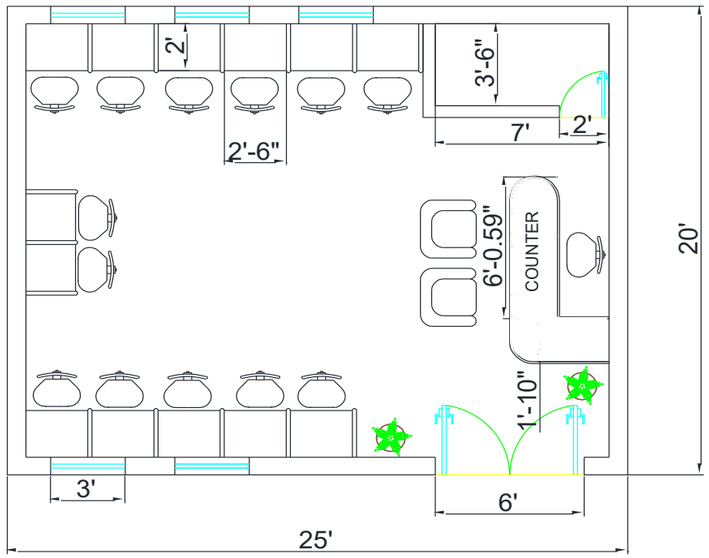
-Check first the plot dimension.

Design by: Sahil Vaghela
sayma pathan

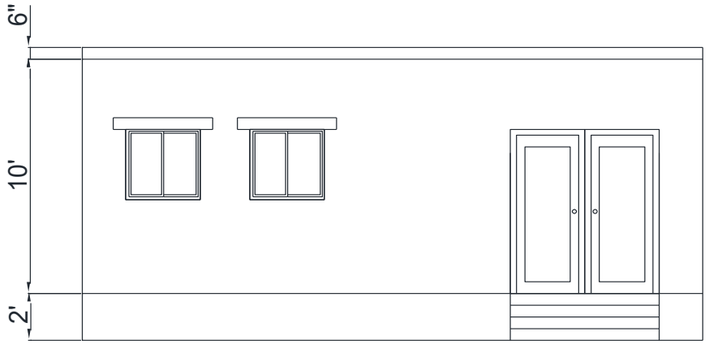
MATERNITY HOME & CHILD WELFARE

Project no:	10
Date	5/06/2021
Guide by	Dixit chauhan

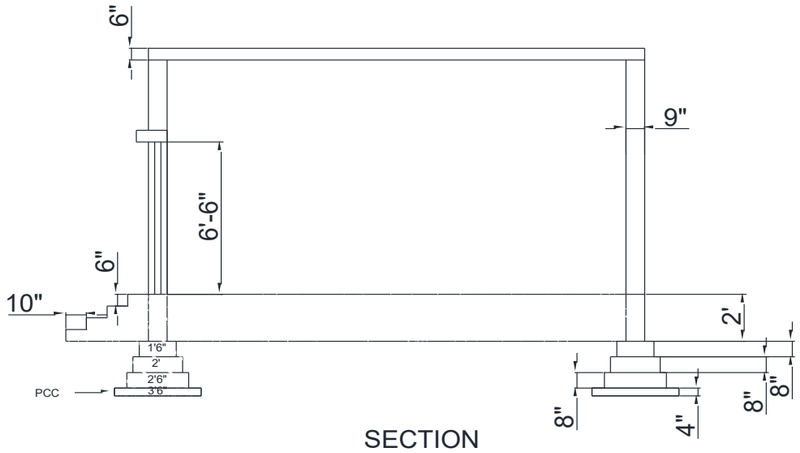


PLAN

SCHEDULE OF OPENING		
NAME	SIZE	QUANTITY
D	6' X 7'	1
W	3' X 3'	5



ELEVATION



SECTION

Gujarat Technical University

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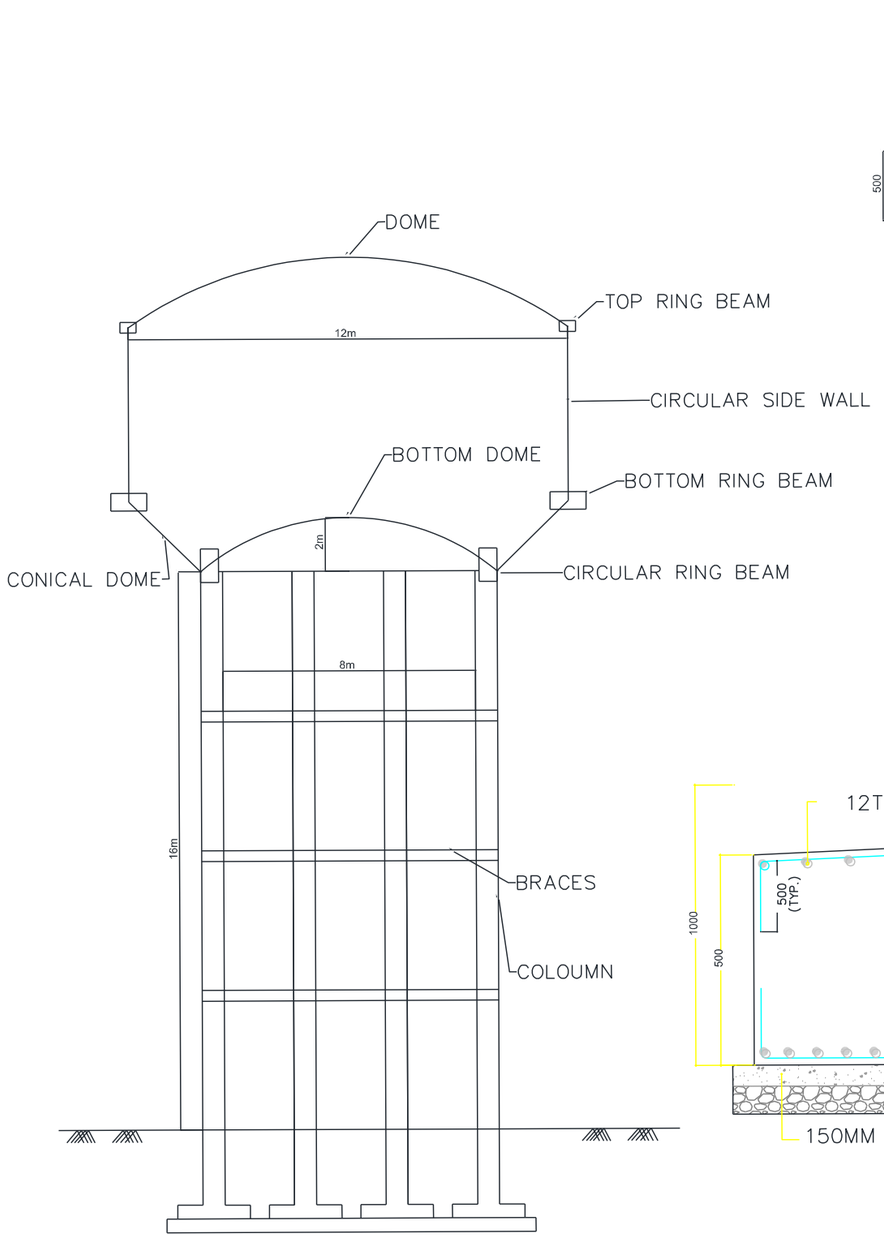
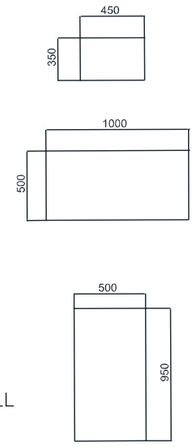
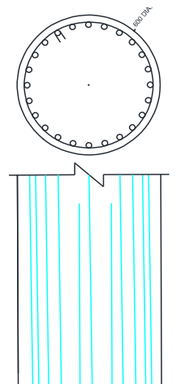
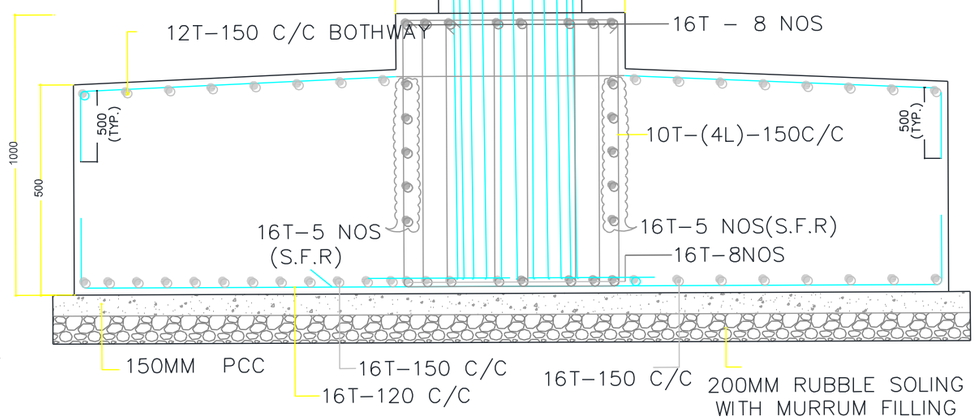
Design by: Sahil Vaghela sayma pathan	
CYBER CAFE	
Project no:	11
Date	5/06/2021
Guide by	Dixit chauhan









SECTION A-A

Gujarat Technical University

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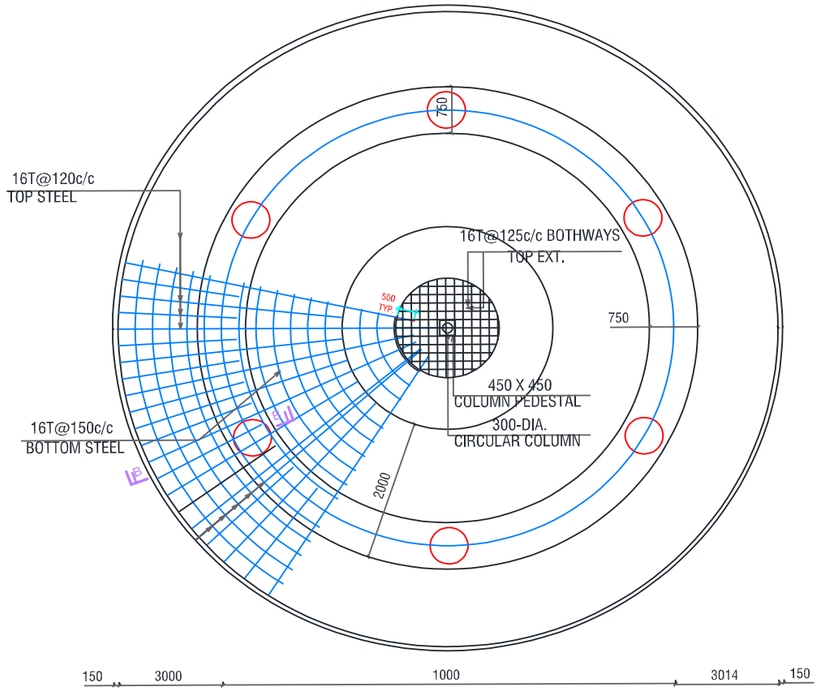
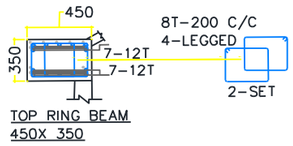
Design by: Sahil Vaghela
sayma pathan

SUPER MARKET

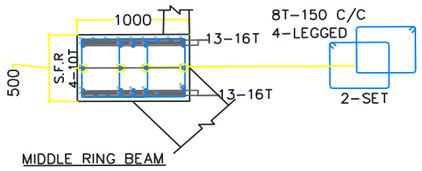
Project no:	12 (i)
Date	05/06/2021
Guide by	Dixit chauhan



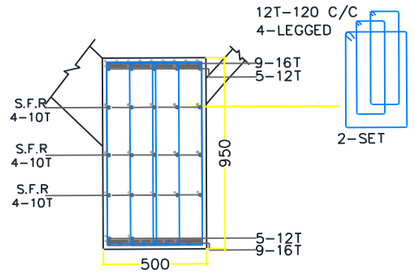
FOUNDATION LAYOUT



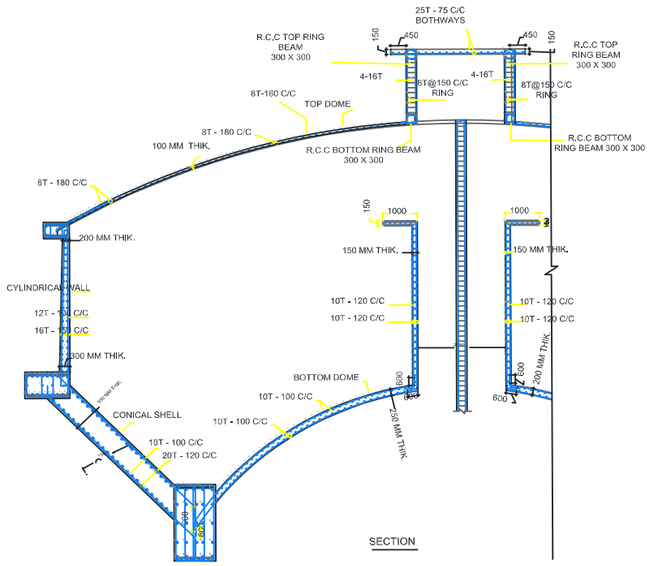
TOP RING BEAM
450X 350



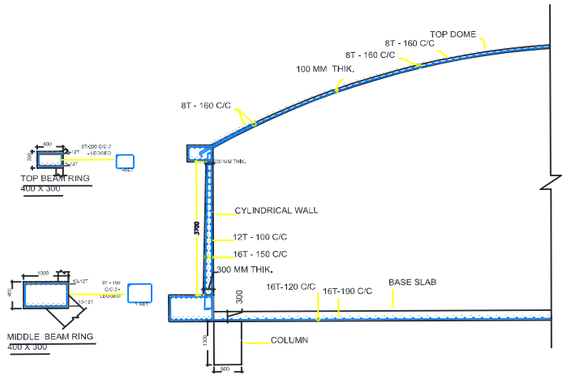
MIDDLE RING BEAM
1000 X 500



BOTTOM RING BEAM
500 X 950



SECTION



SECTION X-X

Gujarat Technical University

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-Check first the plot dimension.

Design by:	Sahil Vaghela sayma pathan
SUPER MARKET	
Project no:	12(ii)
Date	05/06/2021
Guide by	Dixit chauhan

Medical Shop Measurement Sheet

SR NO	DESCRIPTION	LENTH (FT)	WIDTH (FT)	HEIGHT (FT)	COUNT (no)	TOTAL QUANTITY (FT^3)
1	Long wall 9”	20	0.75	10	2	300
2	Short wall 9”	15	0.75	10	2	225
4	Outer stair	20	0.83	0.5	4	33.2
5	Slab	20	15	0.5	1	150
6	Excavation	3.75	3.75	1.25	4	70.312
7	RCC in footing	3	3	1	4	36
8	PCC in footing	3.75	3.75	0.25	4	10.56

Medical shop Abstract Sheet

SR NO	DESCRIPTION	TOTAL QUANTITY	RATE	PER	AMOUNT
1	Long wall 9”	300	130	Ft^2	52,000
2	Short wall 9”	225	130	Ft^2	39,000
4	Outer stair	33.2	500	Ft^3	16,600
5	Slab	150	150	Ft^2	45,000
6	Excavation	70.312	10	Ft^3	703
7	RCC in footing	36	80	Ft^3	2,880
8	PCC in footing	10.56	60	Ft^3	633
9	Flooring with material	500 Ft^2	40	Ft^2	20,000
10	Paint	1000	12	Ft^2	12,000
11	Door material (main)	1	3000	Nos	3,000
12	Door material (internal)	1	1500	Nos	1500
13	Window material	5	1000	Nos	5,000
14	Computer	14	20,000	Nos	280,000
15	Furniture (Table)	1	-	-	50,000
16	Chair	14	900	Nos	12,600

				TOTAL	5,40,916

Super market Measurement Sheet

SR NO	DESCRIPTION	LENTH (FT)	WIDTH (FT)	HEIGHT (FT)	COUNT (no)	TOTAL QUANTITY (FT^3)
1	Long wall 9”	40	0.75	10	2	600
2	Short wall 9”	25	0.75	10	2	375
3	Outer stair 1	4	0.83	0.5	4	6.64
4	Outer stair 2	4	0.83	0.5	4	6.64
5	Slab	20	15	0.5	1	150
6	Excavation	3.5	3.5	2.33	4	114.17
7	RCC in footing	2.5	2.5	2	4	50
8	PCC in footing	3.75	3.75	0.33	4	18.56

Super Market Abstract Sheet

SR NO	DESCRIPTION	TOTAL QUANTITY	RATE	PER	AMOUNT
1	Long wall 9”	600	130	Ft^2	1,04,000
2	Short wall 9”	375	130	Ft^2	35,000
4	Outer stair 1	6.64	500	Ft^3	3320
5	Outer stair 2	6.64	500	Ft^3	3320
6	Slab	150	150	Ft^2	1,50,000
7	Excavation	114.17	10	Ft^3	1141
8	RCC in footing	50	80	Ft^3	4000
9	PCC in footing	18.56	60	Ft^3	1113
	Flooring with material	1000 Ft^2	40	Ft^2	40,000
10	Paint	1000	12	Ft^2	12,000
11	Door material (main)	1	3000	Nos	3,000
12	Door material	2	3000	Nos	6000

	(internal)				
13	Window material	4	1000	Nos	4,000
15	Furniture (Table), counter, stand for storage & billing machine etc..	1	-	-	1,00,000
17	Deduction of wall (window, door)	92	130	Ft^2	11,960
				TOTAL	4,51,934

Science department in school Measurement Sheet

SR NO	DESCRIPTION	LENTH (FT)	WIDTH (FT)	HEIGHT (FT)	COUNT (no)	TOTAL QUANTITY (FT^3)
1	Long wall 9”	73	0.75	10	2	1095
2	Short wall 9”	33	0.75	10	4	990
3	Intermediate wall 9”	104	0.75	10	2	1560
4	Slab	59	59	0.5	1	1740.5

Science department in school Abstract Sheet

SR NO	DESCRIPTION	TOTAL QUANTITY	RATE	PER	AMOUNT
1	Long wall 9”	1095	130	Ft^2	1,89,800
2	Short wall 9”	990	130	Ft^2	1,71,600
3	Intermediate wall 9”	1560	130	Ft^2	2,70,400
4	Slab	1740.5	150	Ft^2	5,22,150
5	Flooring with material	3481 Ft^2	40	Ft^2	1,39,240
6	Paint	5580	12	Ft^2	66,960
7	Door material	6	1800	Nos	10,800
8	Window material	31	1000	Nos	31,000

9	Bench	120	1000	Nos	1,20,000
10	Other cost (stage, table, chemicals for lab etc..)	-	-	-	1,00,000
11	Deduction of wall (window, door)	405	130	Ft^2	52,650
				TOTAL	15,69,300

Maternity home and child welfare Measurement Sheet

SR NO	DESCRIPTION	LENTH (FT)	WIDTH (FT)	HEIGHT (FT)	COUNT (no)	TOTAL QUANTITY (FT^3)
1	Long wall 9”	50	0.75	10	2	750
2	Short wall 9”	42	0.75	10	2	630
3	Partition wall (1) 9”	142	0.75	10	1	1065
4	Partition wall in toilet 6”	17	0.5	10	1	85
5	Outer stair 1	6	0.83	0.5	4	9.96
6	Slab	50	42	0.5	1	1050
7	Excavation	3.5	3.5	2.35	8	230.3
8	RCC in footing	3	3	2	8	144
9	PCC in footing	2	2	0.35	8	

Maternity home and child welfare Abstract Sheet

SR NO	DESCRIPTION	TOTAL QUANTITY	RATE	PER	AMOUNT
1	Long wall 9”	750	130	Ft^2	130,000
2	Short wall 9”	630	130	Ft^2	109,200
3	Partition wall (1) 9”	1065	90	Ft^2	127,800
4	Partition wall in toilet	85	90	Ft^2	15,300

	6”				
5	Outer stair 1	9.96	500	Ft^3	4,980
6	Slab (including steel, shuttering centering etc..	1050	150	Ft^2	315,000
7	Excavation	230.3	10	Ft^3	23,030
8	RCC in footing	144	80	Ft^3	11,520
9	PCC in footing	11.2	60	Ft^3	972
10	Flooring with material	2100	40	Ft^2	84,000
11	Paint	2000	12	Ft^2	24,000
12	Baby incubator	11	25000	Nos	275,000
13	Bed	12	1800	Nos	21,600
14	Door material	5	2000	Nos	10,000
15	Toilet door material	1	900	Nos	900
16	Toilet tub	8	500	Nos	4000
17	Window material	15	1000	Nos	15,000
18	Deduction of wall (window, door)	1015	130	Ft^2	132,210
				TOTAL	10,40,092

Over headwater tank Measurement sheet

Sr. No.	**Item Description**	**No.**	**Length (m)**	**Width/ Breadth (m)**	**Height/ Depth (m)**	**Quantity m^3**
1	Quantity of steel bar (i) 12mm dia. Bar top ring beam					(KG)
	L= 10 m	10	6	0.88	@	52.80
A.	8 mm dia. Stirrups					(KG)
	L= 1.39 m	20	1.39	0.39	@	10.84

				TOTAL	QTY.	63.64
2	Quantity of steel bar (i) 12mm dia. Bar middle ring beam					(KG)
	L= 10 m	20	6	0.88	@	105.60
A.	8 mm dia. Stirrups					(KG)
	L= 2.8 m	20	2.8	0.39	@	21.84
				TOTAL	QTY.	127.44
3	Quantity of steel bar8 mm dia. Bar top dome slab					(KG)
	L=7.5 m	35	7.5	0.39	@	102.38
4	Quantity of steel bar 8 mm dia. Bar CY. wall					(KG)
A.	Horizontal steel					
	L= 14.6 M	25	14.6	0.89	@	324.85
B.	Vertical steel					
	L= 14.6 m	37	14.6	1.58	@	853.52
				TOTAL	QTY.	1178.37
5	Quantity of steel bar on base slab					(KG)
A.	Horizontal steel					
	L= 10 m	52	10	0.39	@	202.80
B.	Vertical steel					
	L= 10 m	83	10	0.39	@	323.70
				TOTAL	QTY.	526.50
6	top dome vol.					(CU.M)
	L= 8 m	1	8	8	0.01	0.64
	CY.wall					(CU.M)
	L= 3.7 m	1	97	11.6	0.03	33.76

	base slab					(CU.M)
	L= 5.8 m	1	26.4	11.6	0.03	9.19
	top ring beam					(CU.M)
	B=0.3 m , H=0.4 m	1	11.6	0.3	0.4	1.39
	Middle ring beam					(CU.M)
	B=1m , H=0.4 m	1	11.6	1	0.4	4.64
				TOTAL QTY.		49.62

Over head water tank abstract sheet

Sr. no	Item Description	QTY	Rate	Per	Amount (Rs.)
1	Quantity of steel bar 12mm dia. Bar top ring beam	63.6 KG	400	TONNE	25456
2	Quantity of steel bar 12mm dia. Bar middle ring beam	127.4 KG	400	TONNE	50976
3	Quantity of steel bar 8 mm dia. Bar top dome slab	1178.4 KG	400	TONNE	471348
4	Quantity of steel bar 8 mm dia. Bar CY. wall	526.5 KG	400	TONNE	210600
5	Quantity of steel bar on base slab	49.6 KG	400	CUM	19848
			Total Rs.		778228
		Add 1.5% Water Charge			11673
		Total Estimate Cost in Rs.			7,89,902

13.2 Reason for Recommending this Design

Medical store:

People in rural areas generally have less access to healthcare than their urben counterparts. Fewer medical practitioners, mental helath programs, and healthcare facilities in these area often mean less preventative care and longer response time in emergencies. And in this pendemic, medicine and for short time some emergencies treatment by medical store will easily provided.

Super market:

Supermarket typically are chain stores, supplied by the distribution centre of their parent companies, thus increasing opportunities forn economies of scale. Supermarket usually offer products at relatively low prices by using their buying power to buy goods of vegitables from farmer at resinable price and from manufactures at lower price than smaller store can. So we think that if super market is avaible in village then villagers are easily get essential goods or vegitable etc.. and avoid to going another village.

Science department in school:

In this village most of students studies up to twelth standard. And for further study for science stream a students have to near city. So in our opinion a science department is need in where there is already a school. We need to just construct the one floor.

Meternity and child welfare:

In specially rural area prengnant women have more problem and they don't get the facility which they need. The ability of mother to provide nutrients and oxygen for her baby is critical factor for fetal health and its survival. Failure in supplying the adequate amount of nutrients to meet fetal demand can lead to fetal malnutrition. So to get fast and emergency treatment and other necessary help, we sugggest the meternity home and child wefare.

Over head water tank:

In the domestic purpose the water is utilized in almost every action we perform like drinking, cooking, bathing, cleaning, washing, and other general uses. Vankaner village has 3 over head water tank And for meet the future water demand village need to some over head tank.

So that all the villager are get clear and sufficent water with assential pressure.

Cyber cafe:

Especially in developing city or village public and shared facilities help to create desperatly needed access and are a main strategy in several internet access programms. In the contex of public access, cybercafe play an important role as the most common internet access model, especially in the urban area of india. So in our opinon a cyber café must required.

13.3 About designs Suggestions / Benefit of the villagers

Medical store:

In this pendemic, to get easily available assential medicine medical store is required in Vankaner village.

Super market:

if super market is avaible in village then villagers are easily get essential goods or vegitable etc.. and avoid to going another village.

Science department in school:

In our opinion a science department is need in where there is already a school. We need to just construct the one floor.

Meternity and child welfare:

To get fast and emergency treatment and other necessary help, we sugggest the meternity home and child wefare.

Over head water tank:

For meet the future water demand village need to some over head tank. So that all the villager are get clear and sufficent water with assential pressure.

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CHAPTER 14

Technical Options with Case Studies

14.1.1 Advanced Earthquake Resistant

Earthquake-resistant structures are structures designed to protect buildings from earthquakes. While no structure can be entirely immune to damage from earthquakes, the goal of earthquake-resistant construction is to erect structures that fare better during seismic activity than their conventional counterparts. According to building codes, earthquake-resistant structures are intended to withstand the largest earthquake of a certain probability that is likely to occur at their location. Currently, there are several design philosophies in earthquake engineering, making use of experimental results, computer simulations and observations from past earthquakes to offer the required performance for the seismic threat at the site of interest.

These range from appropriately sizing the structure to be strong and ductile enough to survive the shaking with an acceptable damage. The conventional approach to earthquake resistant design of buildings depends upon providing the building with strength, stiffness and inelastic deformation capacity which are great enough to withstand a given level of earthquake-generated force. This is generally accomplished through the selection of an appropriate structural configuration and the careful detailing of structural members, such as beams and columns, and the connections between them. But more advanced techniques for earthquake resistance is not to strengthen the building, but to reduce the earthquake-generated forces acting upon it.

Among the most important advanced techniques of earthquake resistant design and construction are:

1.Base Isolation

2.Energy Dissipation Devices

1)Base Isolation Method of Earthquake Resistant Design:

A base isolated structure is supported by a series of bearing pads which are placed between the building and the building's foundation. A variety of different types of base isolation bearing pads have now been developed. The bearing is very stiff and strong in the vertical direction, but flexible in the horizontal direction.

To get a basic idea of how base isolation works, examine Figure. This shows an earthquake

acting on both a base isolated building and a conventional, fixed-base, building. As a result of an earthquake, the ground beneath each building begins to move. In Figure, it is shown moving to the left. Each building responds with movement which tends toward the right. The building undergoes displacement towards the right. The building's displacement in the direction opposite the ground motion is actually due to inertia. The inertial forces acting on a building are the most important of all those generated during an earthquake. It is important to know that the inertial forces which the building undergoes are proportional to the building's acceleration during ground motion. It is also important to realize that buildings don't actually shift in only one direction. Because of the complex nature of earthquake ground motion, the building actually tends to vibrate back and forth in varying directions. By contrast, even though it too displacing, the base-isolated building retains its original, rectangular shape. It is the lead-rubber bearings supporting the building that are deformed.

The base-isolated building itself escapes the deformation and damage, which implies that the inertial forces acting on the base-isolated building have been reduced. Experiments and observations of base-isolated buildings in earthquakes have been shown to reduce building accelerations to as little as 1/4 of the acceleration of comparable fixed-base buildings, which each building undergoes as a percentage of gravity. As we noted above, inertial forces increase, and decrease, proportionally as acceleration increases or decreases. Acceleration is decreased because the base isolation system lengthens a building's period of vibration, the time it takes for the building to rock back and forth and then back again. And in general, structures with longer periods of vibration tend to reduce acceleration, while those with shorter periods tend to increase or amplify acceleration. Finally, since they are highly elastic, the rubber isolation bearings don't suffer any damage. But the lead plug in the middle of our example bearing experiences the same deformation as the rubber. However, it generates heat

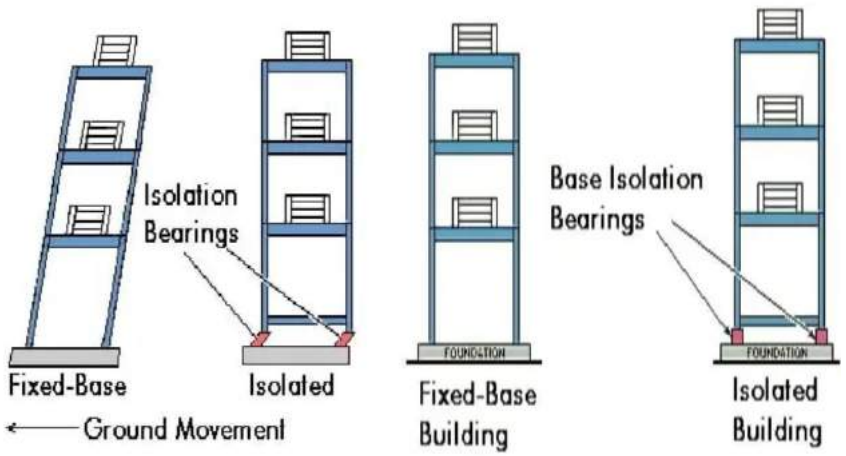


FIG 14.1.1 A BASE ISOLATION METHOD

(2) Energy Dissipation Devices:

The second of the major new techniques for improving the earthquake resistance of buildings also relies upon damping and energy dissipation, but it greatly extends the damping and energy dissipation provided by lead-rubber bearings. As we've said, a certain amount of vibration energy is transferred to the building by earthquake ground motion. Buildings themselves do possess an inherent ability to dissipate, or damp, this energy. However, the capacity of buildings to dissipate energy before they begin to suffer deformation and damage is quite limited. The building will dissipate energy either by undergoing large scale movement or sustaining increased internal strains in elements such as the building's columns and beams.

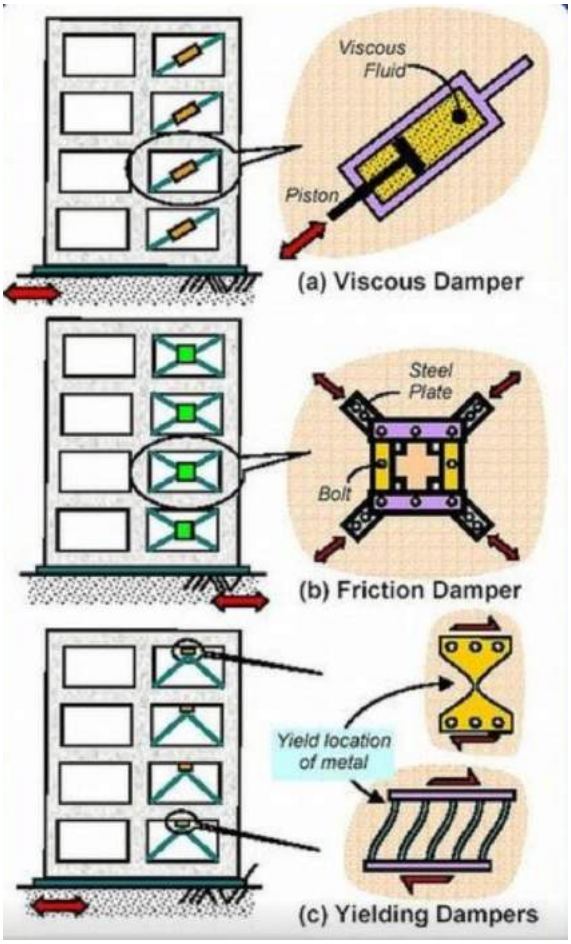


FIG 14.1.1 B ENERGY DESSIPATION

Both of these eventually result in varying degrees of damage. So, by equipping a building with additional devices which have high damping capacity, we can greatly decrease the seismic energy entering the building, and thus decrease building damage. Accordingly, a wide range of energy dissipation devices have been developed and are now being installed in real buildings. Energy dissipation devices are also often called damping devices. The large number of damping devices that have been developed can be grouped into three broad categories: Friction Dampers: these utilize frictional forces to dissipate energy Metallic Dampers: utilize the deformation of metal elements within the damper Viscoelastic Dampers: utilize the controlled shearing of solids Viscous Dampers: utilized the forced movement (orificing) of fluids within the damp.

14.1.2 Seismic Retrofitting of buildings

Seismic retrofitting is the modification of existing structures to make them more resistant to seismic activity, ground motion, or soil failure due to earthquakes. With better understanding of seismic demand on structures and with our recent experiences with large earthquakes near urban centers, the need of seismic retrofitting is well acknowledged. Prior to

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

FIG 14.2.1-A Infill shear trusses -University of California dormitory, Berkeley

The retrofit techniques outlined here are also applicable for other natural hazards such as tropical cyclones, tornadoes, and severe winds from thunderstorms. Whilst current practice of seismic retrofitting is predominantly concerned with structural improvements to reduce the seismic hazard of using the structures, it is similarly essential to reduce the hazards and losses from non-structural elements. It is also important to keep in mind that there is no such thing as an earthquake-proof structure, although seismic performance can be greatly enhanced through proper initial design or subsequent modifications.

FIG 14.2.1-B External bracing of an existing reinforced concrete parking garage (Berkeley)

FIG 14.2.1-C Port Authority Bus Terminal in New York City

Strategies:

Seismic retrofit (or rehabilitation) strategies have been developed in the past few decades following the introduction of new seismic provisions and the availability of advanced materials (e.g., fiber-reinforced polymers (FRP), fiber reinforced concrete and high strength steel).

Increasing the global capacity (strengthening). This is typically done by the addition of cross braces or new structural walls.

Reduction of the seismic demand by means of supplementary damping and/or use of base isolation systems.

Increasing the local capacity of structural elements. This strategy recognizes the inherent capacity within the existing structures, and therefore adopts a more cost-effective approach to selectively upgrade local capacity (deformation/ductility, strength or stiffness) of individual structural components.

Selective weakening retrofit. This is a counter-intuitive strategy to change the inelastic mechanism of the structure, while recognizing the inherent capacity of the structure.

Allowing sliding connections such as passageway bridges to accommodate additional movement between seismically independent structures.

Addition of seismic friction dampers to simultaneously add damping and a selectable amount of additional stiffness.

14.1.3 Advance Practices in Construction field in Modern Material, Techniques and Equipment's

The Indian advanced construction techniques industry is experiencing a period of fast growth. Aim to overcome the housing problem, it also faces the challenge of fulfilling ne of the client and maintain the quality standards.

•Various techniques, equipment and their advantages in bundling construction

Sr no Use of techniques/equipment Work activity Advantages

- Small capacity concrete mixers Concreting Speed, rpm and quality is maintained without extra consumption cement.
- From vibrator Casting of slab Good compaction, less honey combing of concrete. And no air voids.
- Travel bleu conveyer Slab concreting Labour required to transport we converted is reduced, quality increased, time decreased.
- Hoist bucket Transportation materials like a cement, sand, aggregate, etc. Shift the

material vertically with speed

- Admixture and plasticizers Concerting and water proofing Increased workability strength and curing time reduced.
- Dumpers Transportation building material Speed increased; operations easy.
- Bull-dozer Excavating Excavated stuff as and when required
- Excavators Excavations and levelling Excavates and levels the soft strata as desired.
- Sand screening machines Masonry Time saving and less wastage of sand

14.1.4 Engineering Aspect of Soil:

In civil engineering literature, a soil or soil deposit may be defined as all naturally occurring, loose/uncemented/weakly cemented/relatively unconsolidated mineral particles, organic or inorganic in character, lying over the bed rock which is formed by weathering (disintegration) of rocks. If the products of weathering remain at their original location, they constitute residual soil and the products are transported and deposited at different locations due to gravity, wind, water and glaciers, they are known as transported soils. During transportation, the size and shape of particles undergo vast changes and the particles may be sorted out into various soil ranges such as boulders, pebbles, gravels, sands, silts and clays. The basic thing is to identify and classify the soil on the basic of some preliminary tests and then to study its immediate and long-term behavior under application of loads based on some classified insitu and lab tests in order to furnish adequate soil data to the designer to decide the appropriate depth and type of foundation for the proposed structure.

Soil mechanics is the branch of civil engineering that concerns the application of the principles of hydraulics, mechanics and chemistry to engineering problems related to soils. Thus soil mechanics enables a civil engineer to understand engineering properties and behavior of the soils in order to provide satisfactory solution to soil problems when the civil engineering structures such as building, overhead tanks/silos, sunk/semi sunk water reservoirs, bridges, road/railway embankments, tunnels, canals or dams are founded on soils which ultimately supports in such a manner that the structure do not get excessively settled or tilted or damaged due to some kind of failure of the foundation soil.

Field of soil mechanics is very vast and its thorough knowledge and clear understanding is a prerequisite in predicting its behavior as regards to the safety of structures is concerned and

characterization of underground soil conditions is a fundamental step for the successful design. Soil being very complex natural material, is different than other materials of construction known to man and it exhibits wide range of characteristics from peats to gravel. Sometimes even at the same site and from the same stratum, soil samples taken from two locations not too far apart, show widely varying properties. A perfect soil engineer is a practitioner of an art rather than science and in to reach engineering judgment for the solution of a specific problem he incorporated theory, experience and skill.

14.1.5 Water Supply-Sewerage System-Waste Water- Sustainable development techniques

Water was an important factor in the location of the earliest settled communities, and the evolution of public water supply systems is tied directly to the growth of cities. In the development of water resources beyond their natural condition in rivers, lakes, and springs, the digging of shallow wells was probably the earliest innovation. As the need for water increased and tools were developed, wells were made deeper. Brick-lined wells were built by city dwellers in the Indus River basin as early as 2500 BCE, and wells almost 500 meters (more than 1,600 feet) deep are known to have been used in ancient China.

1. Primary system:

Use a single pipe to both wastewater and runoff water for wastewater plant. They are not used anymore because when rains lot of system cannot handle both the surface of wastewater. Above seen the image wastewater and runoff of same pipe supply water. During dry weather the combined wastewater and runoff water flow toward the wastewater treatment plant and not the flow of river.

2. Separate system:

In this system of two sewers provided industrial sewage and sanitary sewage. Sanitary sewage of sewers carried to the treatment plant, and rain water. Industrial sewage of sewers directly discharge into natural river without any other treatment.

The separate system is following conditions:

- Uneven rainfall
- Separate outlets for sewage and rain water
- Requirement of pumping
- Subsoil condition
- Time of laying sewers

- Convert of exist sewers

3. Partially separate system:

In this system industrial sewage and sanitary sewage, and rain water Which is drained from back yards and roofs houses are carried in the same sets of sewers the rain water drained from house as well as from road is collected and separate sets open drains. Partially combined system required careful maintenance and skilled staff. Another portion of rainwater by the sanitary sewage system and wastewater treatment plant.

CHAPTER 15
Smart and/or Sustainable features of Chapter 8 & 13 designs, Impact on society.

(For Allocated village development, villager's happiness, comfortable and for enhancement of the village) (With the Smart village development Concept as Per Your Idea and Village Visit, modern technology with innovation). with doing small changes, Period, Amount Expenditure and Benefit –

c) Immediately b) Within 1 year c) Long term (3-5 years) along with cost estimation.
d) If possible, List the sources of the funding available with the Village gram panchayat

We had seen many facilities for villagers in baben and ena, that idea we will used in our allotted village vankaner by this visit of baben and ena. For better growth of Vankaner village currently they need to focus on some basic things like environmental, personal health, proper education, getting new information, etc... which is help to starting step of development form villager's side.

In village some program needs to be done like Entrepreneurship development and Skill development program This helps the villagers to connect with alternate source of income. This needs to spread in other villages with other products or services.

And some design which given by us is like

library: Libraries give people the opportunity to find jobs, explore medical research, experience new ideas, get lost in wonderful stories, while at the same time providing a sense of place for gathering. The existence of libraries ensures that knowledge and technology are available to everyone. That's why we design library for Vankaner village.

public toilet: toilet is basic infrastructural need by human and form one after construct the public toilet all villagers are used to it from starting day.

community hall: Community hall is a public location where members of a community gather for group activities, events, festivals and social purpose.

skill development center: In today's age of globalization and technological volatility, skill building is an important instrument to increase the efficacy and quality of labour for improved productivity and economic growth. Skill building is a powerful tool to empower individuals and improve their social acceptance.

Lake Garden: Better living standard and entertainment purpose we have proposed one design of Lake garden as recreational area in the village. After developing lake garden children, older are used to it for meditation etc.

Gate: The Vakaner village has no main entrance gate at the village approach road. So that we have designed the village entrance gate as heritage village design.

Medical store: in this pandemic of corona medical facilities are required. After making medic al store people are easily getting medication as per their need

Super market:

if super market is avaible in village then villagers are easily get essential goods or vegitable etc.. and avoid to going another village.

Science department in school:

In our opinion a science department is need in where there is already a school. We need to just construct the one floor.

Meternity and child welfare:

To get fast and emergency treatment and other necessary help, we sugggest the meternity home and child wefare.

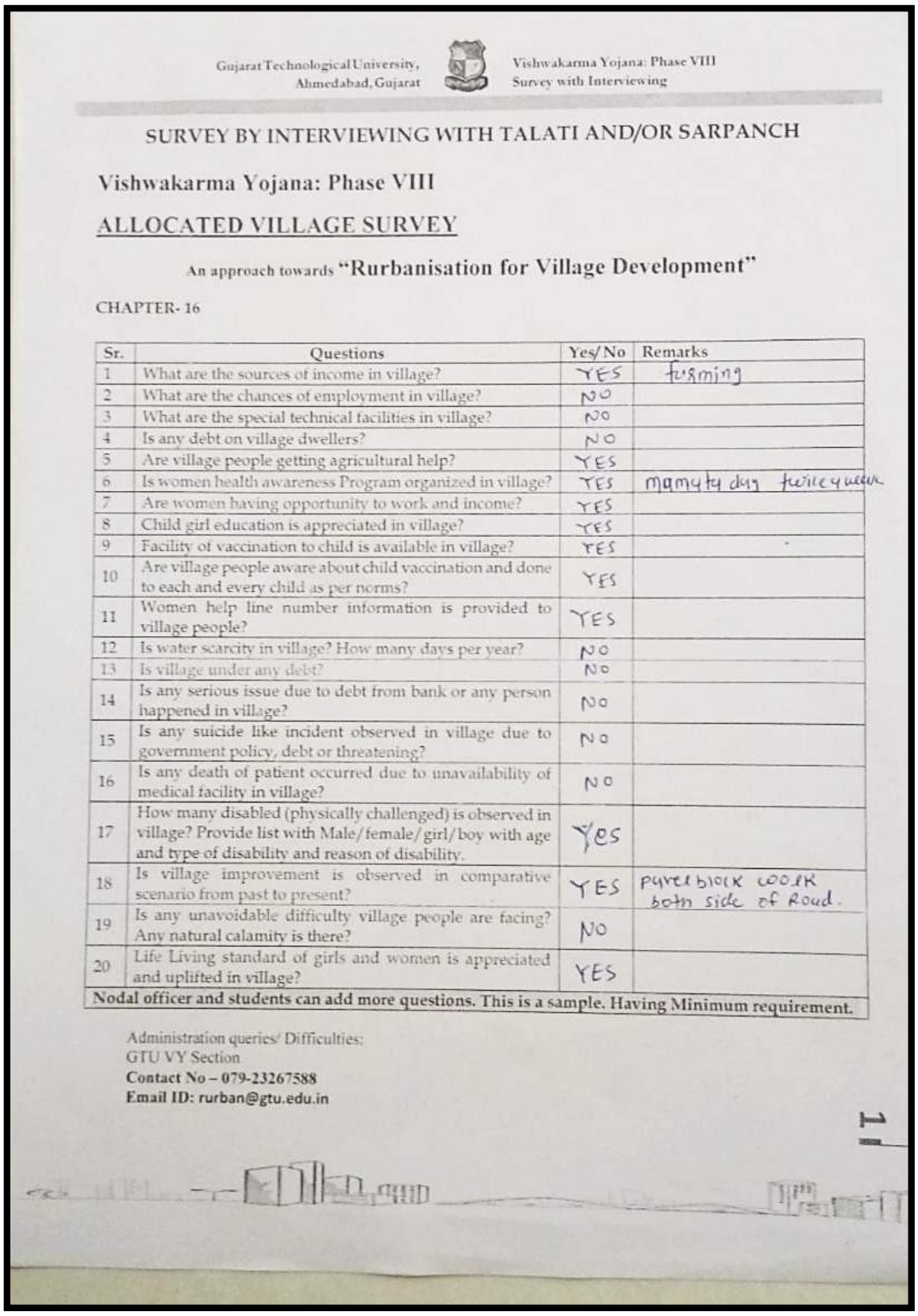
Over head water tank:

For meet the future water demand village need to some over head tank. So that all the villager are get clear and sufficent water with assential pressure.

Cyber cafe:

Cybercafe play an important role as the most common internet access model, especially in the urban area of india. So in our opinon a cyber café must required

Chapter 16
Survey by Interviewing with Talati and/or Sarpanch



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

CHAPTER- 16

Sr.	Questions	Yes/No	Remarks
1	What are the sources of income in village?	YES	farming
2	What are the chances of employment in village?	NO	
3	What are the special technical facilities in village?	NO	
4	Is any debt on village dwellers?	NO	
5	Are village people getting agricultural help?	YES	
6	Is women health awareness Program organized in village?	YES	mamata day twice a week
7	Are women having opportunity to work and income?	YES	
8	Child girl education is appreciated in village?	YES	
9	Facility of vaccination to child is available in village?	YES	
10	Are village people aware about child vaccination and done to each and every child as per norms?	YES	
11	Women help line number information is provided to village people?	YES	
12	Is water scarcity in village? How many days per year?	NO	
13	Is village under any debt?	No	
14	Is any serious issue due to debt from bank or any person happened in village?	No	
15	Is any suicide like incident observed in village due to government policy, debt or threatening?	No	
16	Is any death of patient occurred due to unavailability of medical facility in village?	NO	
17	How many disabled (physically challenged) is observed in village? Provide list with Male/female/girl/boy with age and type of disability and reason of disability.	Yes	
18	Is village improvement is observed in comparative scenario from past to present?	YES	Pavel block work both side of Road.
19	Is any unavoidable difficulty village people are facing? Any natural calamity is there?	No	
20	Life Living standard of girls and women is appreciated and uplifted in village?	YES	

Nodal officer and students can add more questions. This is a sample. Having Minimum requirement.

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

1

CHAPTER 17

Irrigation / Agriculture Activities and Agro Industry, Alternate Technics and Solution

Technology can help farmers in India:

With the increasing digitalization of India, today technology can address most of the challenges that farmers face - from soil issues, climate, irrigation, to supply chain gaps. AI can help farmers predict weather patterns. Big Data helps improve the yield, reduces risk, and increases efficiency. So that villager's need to used technology for irrigation. Farmers analyze data from their machines, from their fields, and even from satellite imagery to help them be more efficient and accurate with their use of natural resources, such as water, soil, and fuel, as well as their use of inputs, such as fertilizer and crop protection products.

Factors affecting agricultural production:

Climatic Factors Affecting Farming. Climatic factors such as light, water, and rainfall, temperature, air, relative humidity and wind also affect farming in various ways. Just like other abiotic elements of environmental factors such as soil and topography, they influence how crops grow and develop.

Technological development in agriculture:

As time passed, more technological advances appeared in agriculture. The tractor was introduced, followed by new tillage and harvesting equipment, irrigation and air seeding technology, all leading to higher yields and improved quality of the food and fiber that was grown.

There are 9 major types of farming methods followed in India:

1. Subsistence Farming / Agriculture.
2. Shifting Agriculture.
3. Plantation Agriculture.
4. Intensive Farming / Agriculture.
5. Dry Farming / Agriculture.
6. Mixed and Multiple Farming / Agriculture.
7. Crop Rotation.
8. Permanent Agriculture or Sedentary Cultivation.
9. Terrace Cultivation / Farming.

Technological drivers which will push forward sustainable and essential high output agriculture. Those priorities include biological pest control, biotechnology, information technology, bioremediation, precision farming, integrated and organic farming systems.

Drones and Agro-robot:

Digital farming is a rapidly growing industry. Drones are becoming more accessible and sophisticated, fitted with high-resolution cameras that provide real-time images of crops and livestock. They could also be designed to deliver precise interactions such as water and nutrients to needy areas or weed killer and pest control to specific plants. Teams of agrobots may be the key to micro-managing vast areas of farmland.

Fig 17.1 analyzing farm by drone

Fig 17.2 spraying pesticide by drone

Smart Sensors and Big Data:

Drones and agrobots will form part of an ever-increasing number of digital sensors, handheld devices, and wearables that will gather detailed information on everything from soil health and crop growth, to weather patterns, to the welfare and productivity of each animal. Future farms are likely to generate enormous volumes of data, using complex Big Data algorithms to gain meaningful insights that drive decision making. Together with a farmer's hard-earned experience, Big Data will advise on what crops grow where, what interventions may be needed, the optimum moment to harvest, and even the best times to store and sell. This constant analysis gives farmers unprecedented control over increasingly large areas of land.

Greenhouses:

As climate change brings more extreme and unpredictable weather, greenhouses will help mitigate the worst effects by regulating the temperature, water, and nutrition of crops in a closed agricultural system. They are already extensively used for growing fruit and vegetables in cooler climates. Here, solar panels could generate electricity to keep greenhouses at optimum

temperatures and to desalinate water for irrigation. Built of specialist materials, greenhouses could absorb the sun's light but reflect its heat, while protecting fragile crops from extremes such as strong winds, torrential rainfall, and disease. Even simple plastic greenhouses can triple crop yields in areas prone to pests and drought.

Soil Fertility and Plant Health:

Healthy crops need healthy soil, and future farms will have to prioritize sustainable practices if they are to maintain productivity, let alone increase it. Simple solutions such as cover crops, mulches, and compost could play a crucial role in conserving water and building up nutrients in the soil, especially in more marginal land. Precision farming will significantly reduce the amount of fertilizer and pesticide required for effective treatment and customized blends can be tailored to meet any soil's needs. Soil mapping could accurately match plants and earth types so that multiple crops can be successfully grown in a single field, making for more balanced demands on its nutrients. The development of perennial cereals that don't need to be replanted each year will promote a healthier and more stable soil structure. Meanwhile, genetic sequencing is identifying microbes that can help plants use nutrients more effectively and speed up the soil's recovery back to fertility.

Villager need to be more educated about plant growth and their water requirement during different season like crop period, duty, delta, intensity of water supply, Kor watering, kor depth, root zone depth and used to crop rotation method etc...

E.g.: rice needs more water requirement trough out base period.

Here some example of delta of various crop.

Delta value: Rice = 120cm, sugar cane = 120cm, cotton = 50cm, Wheat =50cm

Kor depth of crop: rice = 19 cm, wheat = 13.5, sugar cane = 16.5cm

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CHAPTER 18

Social Activities – Any Activates Planned by Students

- We followed the rules and regulation.
- To wear mask
- Made a social distance
- Provide mask by our group
- not gathering in groups and avoid to eat in public places during visit
- We told the villagers how to take care of them in Corona.
- We guided the villagers to drink boiled water and organized it.
- Due to this pandemic most of try stay safe and avoid to meet peoples.

Fig 18.1 ditributing mask

CHAPTER 19

SAGY Questionnaire Survey form with the Sarpanch Signature (Scanned copy attachment in the soft copy report and Original copy in hardbound report)

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Vankaner Gram Panchayat: Vankaner Ward No.

Block: District: Surat

State: Gujarat L S Constituency: Bardoli Parliamentary constituency.

1. Family Identity and Size

Name of Head of Household	Mukeshbhai Amrutbhai Hadpati							Male/ Female	M
SECC Survey ID:		Family Size	8	Over 18	5	6 to 18	2	Under 6	1

2. Category & Entitlement Details (Tick as appropriate)

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

2. Adults (above 18 years)

Name	Age	Sex M/F/O	Disability Status Y/N	Marital Status[3]	Education Status[4]	Adhaar Card (Y/N)	Bank A/C (Y/N)	Social Security Pension[5]
Amrutbhai Chaturbhai	65	M	N		7	Y	Y	-
Manjiben Amrutbhai	55	F	N		3	Y	Y	-
Mukeshbhai Amrutbhai	35	M	N		12	Y	Y	-
Jigneshbhai	31	M	N		6	Y	Y	-
Sushila ben	33	F	N		BA	Y	Y	-

3. Children from 6 years and up to 18 years

Name	Age	Sex M/F/O	Disability Y/N	Marital Code*	Level of Education: Code#	Going to School /College (Y/N)	Current Class	Computer Literate Y/N
Pushti Jigneshbhai	10	F	N		5	Y	✓	X
Ansh Jigneshbhai	6	M	N		3	Y	✓	X

4. Children below 6 years

Name	Age	Sex M/F/O	Disability Yes/No	Going to School (Y/N)	Going to AWC Y/N	De-worming Done	Fully Immu-nised Y/N	Mother's Age at the time of Child's Birth
Shiv Mukeshbhai	2	M	N	N				31

[1] Scheduled Caste 1, Scheduled Tribe 2, Other Backward Castes 3, Other 4
[2] Enter the BPL Survey round being used in the Gram Panchayat for identification of BPL Families (e.g. 1997/2002/2011)
[3] Marital Status: Not Married – 1, Married – 2, Widowed – 3, Divorced/Separated – 4
[4] Level of Education: Not Literate – 01, Literate – 02, Completed Class 5 - 03, Class 8th – 04, Class 10th-05, Class 12th-06, ITI Diploma-07, Graduate-08, Post Graduate/Professional – 09 (write the highest level applicable)
[5] No Pension – 0, Old Age Pension – 1, Widow Pension – 2, Disability Pension – 3, Other Pension – 4 (mention)

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

5. Hand washing

	Always		Sometimes		Never
After use of Toilet	Soap ✓	Other	Soap	Other	
Before Eating	Soap	Other	Soap ✓	Other	

6. Use of Mosquito Net
Children: Yes / ~~No~~ ✓ Adults: Yes / ~~No~~ ✓

7. Do members take Regular Physical Exercise

	Yoga	Games	Other Exercises
Adults	~~Yes~~ / No	~~Yes~~ / No	Yes / ~~No~~
Children	~~Yes~~ / No	~~Yes~~ / No	~~Yes~~ / No

8. Consumption of Tobacco

	Smoking	Chewing
Adults	N	N
Children	N	N

9. House & Homestead Data

Own House: ~~Yes~~ / No	No. of Rooms: 3
Type: Kutcha / Semi Pucca / ~~Pucca~~	
Toilet: ~~Private~~ / Community / Open Defecation	
Drainage linked to House: ~~Covered~~ / Open / None	
Waste Collection System	Door Step / Common Point / No Collection System
Homestead Land: ~~Yes~~ / No	Kitchen Garden : Yes / ~~No~~
Compost Pit: Individual/ Group/ ~~None~~	Biogas Plant: Individual/ Group/ ~~None~~

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

Source of Water		Distance
Piped Water at Home	~~Yes~~ / No	0
Community Water Tap	~~Yes~~ / No	0
Hand Pump (Public / Private)	~~Yes~~ / No	0
Open Well(Public / Private)	Yes / ~~No~~	-
Other (mention):		

11. Source of Lighting and Power

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

12. Landholding (Acres)

1. Total	1.6	2. Cultivable Area	1.6
3. Irrigated Area	1.6	4. Uncultivable Area	

13. Principal Occupations in the Household

Livelihood	Tick if applicable
Farming on own Land	✓
Sharecropping /Farming Leased Land	
Animal Husbandry	
Pisciculture	
Fishing	
Skilled Wage Worker	
Unskilled Wage Worker	
Salaried Employment in Government	
Salaried Employment - Private Sector	
Weaving	5000/-
Other Artisan(mention)	
Other Trade & Business (mention)	

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

15. Agriculture Inputs

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

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

Name	Unit	Quantity
Sugar cane	-	10 tone
Paddy	-	22 mun

17. Livestock Numbers

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

18. What games do Children Play
School activity, outdoor games

19. Do children play musical instrument (mention)

Schedule Filled By: Vaghela sahib m
Principal Respondent: Mayurbhai Thadpati
Date of Survey: 19-7-21

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

I. Basic Information

a. Gram Panchayat: Vankaner

b. Block: _____

c. District: Surat

d. State: Gujarat

e. Lok Sabha Constituency: Bardoli Parliamentary constituency

f. Number of Wards in the Gram Panchayat: 11

g. Number of Villages in the Gram Panchayat: _____

h. Names of Villages:

Demographic Information

Number of Households 1658 Total Population 7472 Male 3748 Female 3724

SC HHs 40 ST HHs 960 OBC HHs _____ Other HHs _____

I. Access to Infrastructure / Facilities / Services

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
a.	ANM/ Health Sub Centre		
b.	Nearest Primary Health Centre (PHC)	Y	
c.	Nearest Community Health Centre (CHC)	N	10 Km, Bardoli
d.	Nearest Post Office	Y	
e.	Nearest Bank Branch (Any)	Y	
f.	Nearest Bank with CBS Facility	Y	
g.	Nearest ATM	Y	
h.	Nearest Primary School	Y	
i.	Nearest Middle School	Y	
j.	Nearest Secondary School	Y	
k.	Nearest Higher Secondary School / +2 College	No	
l.	Nearest Graduate College	Y	10 Km, Bardoli
m	Nearest ITI / Polytechnic Centre	Y	10 Km. Bardoli
n	Kisan Seva Kendra	No	

1

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
o	Agriculture Credit Cooperative Society	NO	
p	Nearest Agro Service Centre	No	
p	MSP based Government Procurement Centre	NO	
q	Milk Cooperative /Collection Centre	YES	
r	Veterinary Care Centre	NO	
s	Ayurveda Centre	NO	
t	E – Seva Kendra	yes	
u	Bus Stop	yes	
v	Railway Station	NO	10 Km, Bardoli
w	Library	NO	
x	Common Service Centre	NO	

IV. Sports Facilities in the Gram Panchayat

a. Number of Play Grounds in the GP: Total 0 Public - Private -

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 9

b. Number of villages without Angan Wadi Centres -

Names of such villages: -

c. Schools (Number)

Primary Private: 1 Primary Govt.:

Middle Private: Middle Govt.:

Secondary Private: 1 Secondary Govt.: 1

Higher Secondary Private: 1 Higher Secondary Govt: 1

VI. Public Distribution System

	Item	Private Contractor	Women's SHG	Gram Panchayat	Cooperative	Other (Mention)	Location in GP (mention Location)	If outside GP, Location & distance from GP HQrs)
a.	Cereal (Rice/ Wheat/ Millets)	Shop		Ration				
b.	Kerosene							
c.	Other (mention)							

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

VII. Coverage of Villages under different Facilities & Services

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

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	988	d.	Pasture / Grazing Land	-	g.	Check Dam	1
b.	Irrigated Land	900	e.	Forests/ Plantations	-	h.	Wells/Bore Wells	40
c.	Un-irrigated Land	88	f.	Other Common Land	-	i	Tanks /Ponds	2

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

3

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

IX. Parameters relating to Households & Institutions

		Number
a)	Number of eligible Households for pension (old age, widow, disability)	300
b)	Number of Households receiving pension (old age, widow, disability)	200
c)	Number of eligible Households who are not receiving pension	100
d)	Number of Households eligible for Ration Card	1480
e)	Number of eligible HHs having ration cards	1400
f)	Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	-
g)	Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	-
h)	Number of active Job Card holders under MGNREGA	1217
i)	Number of Job Card holders who completed 100 days of work during 2013-14	150
j)	Number of shops selling alcohol	0
k)	Number of BPL families	734
l)	Number of landless households	800
m)	Number of IAY beneficiaries	-
n)	Number of FRA[2] beneficiaries	-
o)	Number of Community Sanitary Complexes	-
p)	Number of Households headed by single women	150
q)	Number of Households headed by physically handicapped persons	10
r)	Total number of Persons with Disability in the village	30
s)	Number of SHGs	0
t)	Number of active SHGs	0
u)	Number of SHG Federations	0
v)	Number of Youth Clubs	0
w)	Number of Bharat Nirman Volunteers	0

Name and Signature of Surveyor and Respondent'

S.M.Vaghela. Surveyor	PRI Respondent (Preferably Gram Panchayat Chairperson)	सरपंच Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	19-7-21 Date of Survey

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

4

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: Vankaner

b. Ward Number: _____

c. Gram Panchayat: Vankaner

d. Block: _____

e. District: Surat

f. State: Gujarat

g. Lok Sabha Constituency: Bardoli

h. Number of Habitations / Hamlets in the Gram Panchayat: _____

i. Names of Habitations / Hamlets:

Demographic Information

Number of Households 1658 Total Population 7472 Male 3748 Female 3724

SC HHs 40 ST HHs 960 OBC HHs _____ Other HHs _____

II. Access to Infrastructure/Amenities etc.

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
a.	Nearest Primary School	Yes	
b.	Nearest Middle School	Yes	
c.	Nearest Secondary School	Yes	
d.	Kisan Seva Kendra	Yes	
e.	Milk Cooperative /Collection Centre	Yes	
g.	Health Sub Centre	Yes	
h.	Bank	Yes	
i.	ATM	Yes	
j.	Bus Stop	Yes	
k.	Railway Station	No	10 Km Bardoli

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

1

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

ii. Road Connectivity

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

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

iii. Drinking Water Facilities

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

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

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

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

iv. Coverage of Habitations under Waste Management System

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

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

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

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

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

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

v. Coverage of Habitations under Electrification

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

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

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

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

vi. Sports Facilities in the Village

a.Number of Play Grounds in the Village (minimum size 200 square meters): NO

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

vii. Education, ICDS

a. Number of Anganwadi Centres: 9

c. Schools (Number)

Primary Private: 1 Primary Govt.: ____

Middle Private: ____ Middle Govt.: ____

Secondary Private: 1 Secondary Govt.: 1

Higher Secondary Private: 1 Higher Secondary Govt: 1

2

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

viii. Land Category		Area in Acres		Land Category	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	988	d.	Pasture / Grazing Land	-	g.	Check Dam	1
b.	Irrigated Land	900	e.	Forests/ Plnatations	-	h.	Wells/Bore Wells	40
c.	Un-irrigated Land	88	f.	Other Common Land	-	I	Tanks /Ponds	2

ix. Entitlement Related Parameters		
1	Number of active Job Card holders under MGNREGA	1217
2	Number of active Job Card holders who have completed 100 days of work	150
3	Number of shops selling alcohol	0
4	Number of BPL families	734
5	Number of landless households	800
6	Number of IAY beneficiaries	-
7	Number of FRA beneficiaries	-
8	Number of common sanitation complexes	-
9	Number of SHGs	0
10	Number of active SHGs	0
11	Existence of SHG Federation in the Village (Yes / No)	NO
12	Number of Youth Clubs	0
13	Number of Bharat Nirman Volunteers	0

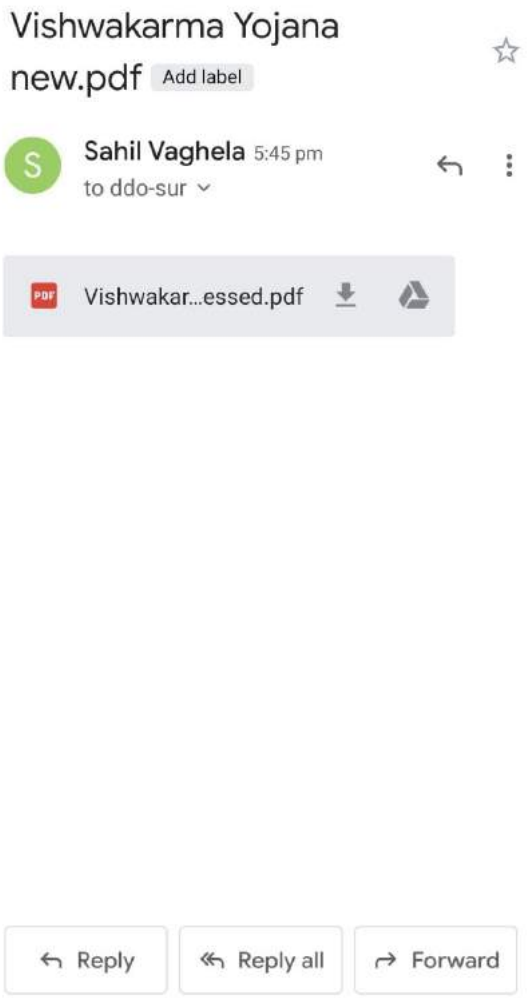
Name and Signature of Surveyor and Respondent'

S.m.vaghela. Surveyor	PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	19-7-21 Date of Survey

3

CHAPTER 20

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



CAHPTER 21

Comprehensive report for the entire village

Villages play a very important role in our countary because most of cultiavable culturable land available in villages or rural areas and in village most of peoples are farmer and totally depended on farming. Peoples of whole country depended on farmer because of daily need of healthy food. So we need to do some enovation on agriculture beacause of in india have suitable sesason, humidity, source of water and assential tempreture for growing best crops. In this type of pandemic situation human need to eat helathy and organic foods so we need to support farmer.

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 village. Madhi, kharach, nani bartoli, vav, ilav,etc.

After visiting ideal village baben and ena, we saw that farmers are grwoing such type of crops and some factory are depended on this crops. Due to this thing empoyment increases and also farmer are sell their crops easily and getting good money from them and all over standard of living of village is growing so that facilities and infrastructral development are increasing. We learned that “simple thing make a huge difference”. As per village visit we realise that growth of village is most of depend on sarpanch of village. Because sarpanch is only person who can increase growth level of village by introducing different relief and some scheme which is provided by government so they need to be ethical and honest for their village. And they need to organize some program so that villager imporve their personal growth and developed their mindset.

This village is a BMCET collage student in project this village. Many factors health within rural communities, including individuals health, behaviours, community, environmental factors, health care services, and the type of service deliverd by governmental agencies or private and not for profit organizations. The issues faced by residence of rural communities are very different than those in urban areas . All of these affect health and wellness in rural communities. 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 village.

In most of village are not grwoing because of some political issue and caste discrimination so the people of village do not have trust on the government scheme and some time on panchayat. So only infrastructural development is not helping to growth of village like baben has still some large area in which people are living below poverty and it becomes difficult for people to live life.

So in our opinion, study and based on village visit , worker and sarpanch of grampanchyat need do their work in an organized manner and ethically. villager need to improve their knowledge, personal growth and mind set. Villager try to do some technology and different enovative work on their perticular work or field and some infrastructrual should be developded, so grwoth of peoples and village will going rapidly.