DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION
Bhairav Village
Surat District

PREPARED BY

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PACIFIC SCHOOL OF ENGINEERING

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MAYUR VEKARIYA
(Head & Assistant Professor)

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmadabad – 382424 Gujarat

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CERTIFICATE

This is to certify that the following students of degree engineering successfully submitted

Detail Project Report for,

VILLAGE: BHAIRAV
DISTRICT: SURAT

Under

Vishwakarma Yojana: Phase-VIII

In partial fulfillment of the project of fared by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

During the academic year 2020-21.

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

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College Name:	**Pacific school of engineering**
College Stamp:	

ABSTRACT

Vishwakarma Yojana is one of the initiatives of the Government of Gujarat with the aid of GTU for the purpose of Rurbanisation and village development. The Vishwakarma Yojana is in its fifth phase. In this scheme, the students visit the allotted village and conduct techno-economical survey. Based on this, various suggestions for the improvement of infrastructure and living standards of people are made. These are incorporated in the form of a "Detailed Project Report" made by the students for the welfare of village. The other purpose of this scheme is to provide all the basic infrastructural facilities in the village itself so as to keep a check on migration of people from rural to urban areas. Through this Yojana, the students are getting real work experience and are able to apply their technical knowledge and practices to a real problem which the people are facing.

Bhairav village is situated in the Kamrej taluka of Surat city. The village is located about **21** km From Surat city and about **5** km from the Kamrej. The village has total population of about **961** as per the **2011** census, out of which the male population is of **491** and female population is about **470**. Total no of households in the village are **203**. The total population of **SCs/ STs** is **423**, out of which **730** are male and **307** are female. The roads of the village are made up of RCC and the internal street are of paver block. The village also has its Gram panchayat office. The village is a small and clean hamlet of around **200** houses. It has all the basic facilities to sustain life. Agriculture is the prime occupation of the residents.

As required by the villagers and reported by the Talati, it is decided to design public toilet, It is one of the most required infrastructure in the village, also fulfilling our Prime Minister Shri Narendra Modi's dream to make India Open Defecation free by the year 2020. The report contains the proposal of waste collection as physical design, lake development as socio-cultural design, benches as social design and Smart village design.

We will further visit village in upcoming time to discover new challenges faced by the residents and try to solve them by appropriate design proposals.

Key Words: Design Proposal, Rurbanisation, Village development, etc.

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ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
Sq mt.	Square meter
PHC	Public health center
SC	Scheduled cast
ST	Scheduled tribute
VY	Vishwakarma yojana
Km	Kilometer
CHC	Community health center
BPL	Below poverty line
PPPS	Public private partnership

GIS	Graphic information system
ITS	Intelligent transport system
PMAGY	Pradhan mantri Adarsh Gram yojana
SGDs	Sustainable Development Goals
UNDP	United nations development programme

Chapter 1
Ideal village visit from District of Gujarat state

1.1 Background & Study Area Location

India is a democratic country which mean by the people, of the people and for the people. Villages are our core part of India, Agriculture played major role in rural economy. At some point our villages need to be improved by developing various components such as roads, health facilities, drinking water, electricity, bus stand etc which increasing living standard of villagers.

Kanav village is nearest to the Kamrej taluka, district of Surat near the bank of Tapi River. Kanav is 25 km away from the Surat. 1 km from Palsana . There are many temples which is of Ramji mandir, Hindu temple, Bhimnath mahadev temple. Primary is granted which has all facilities like clean drinking water, girls and boys toilet, and electricity. Villager's main income source is cultivation of sugarcane, dairy industries. As per census of India 2011 data, population of Kanav is 1609 and total household residing in village are 375. Basic facilities available here are electric, potable water, RCC and WBM roads as well as bus stop and drainage facilities there is one anganwadis front side of the water tank.

Kanav Population Facts:

Number of Households	378
Population	1609
Male Population	796
Female Population	813
Children (0-6)	188
Sex ratio	1021
Literacy	83.81%
Male literacy	87.32%
Female literacy	80.39%
Schedule cast (SC) %	3.73
Schedule Tribe (ST)%	57.80%

Table 1: Kanav Population Data

Kanav Village

Gram Panchayat	**Kanav**
Block / Tehsil	**Palsana**
District	**Surat**
State	**Gujarat**
Pin code	**394315**
Area	**511.81 hectares**
Population	**1609**
Household	**375**
Assembly Constituency	**Olpad**
Parliament Constituency	**Surat**
Nearest Town	**Surat (25km)**

Figure 1: Kanav Map

Figure 2: Kanav Satellite Map

Table 2: Kanav Data

1.2 Concept: Ideal Village, Normal Village

1.2.1 Example / Live Case studies of ideal village of India/ Gujarat:

Kanav is a Census Town city in district of Surat, Gujarat. The Kanav Census Town has population of 1609 of which 796 are males while 813 are females as per report

released by Census India 2011.Population of Children with age of 0-6 is 188. In Kanav Census Town, Female Sex Ratio is of 1021 against state average of 919.

Moreover Child Sex Ratio in Kanav is around 1000 compared to Gujarat state average of 890. Literacy rate of Kanav city is 83.81% higher than state average of 78.03 %. In Kanav, Male literacy is around 87.32 % while female literacy rate is 80.39 %.Kanav Census Town has total administration over 250 houses to which it supplies basic amenities like water and sewerage. It is also authorize to build roads within Census Town limits and impose taxes on properties coming under its jurisdiction.

KANAV:

Locality Name: Kanav, Taluka Name: Palsana, District: Surat, State: Gujarat

Language: Gujarati and Hindi, Marathi, English

Time zone: IST (UTC+5:30), Elevation / Altitude: 22 meters. Above Sea level

Std Code: 02622, Pin Code: 394315, Post Office Name: Palsana

Assembly constituency: Bardoli assembly constituency

Figure 3: Welcome Kanav

Figure 4: Gram Panchayat office

1.2.2 The Idea of a model/smart village

As per the census of India 2011, 68.9% of population lives in rural area in India. The idea of Pradhanmantri Adarsh Gram Yojana has introduced by state government in the year of 2009-2010. The scheme is applied on 100 villages of India at pilot mode. In this scheme there is a allotment of INR 10,00,000 per village. Most of the population of village is belonging to scheduled castes. Mukhyta Mantri Adarsh Gram Yojana also introduce in the year of 2011. Rural development scheme has been not gat success due to lake of holistic focus such as mental and social factors as unit which has overcome by these schemes.

Saansad Adarsh Gram Yojana introduced the central government. Central government has aim to include MPs directly in the development of model village.

1.2.3 Objectives

- To provide physical and social infrastructure for the socio economic development of village.
- Different between scheduled castes / scheduled tribes and non SCs / STs population can be eliminate by providing elementary education;
- Cases of unhealthy diet particularly among children and women are eliminated;
- various tradition such as untouchability, segregation, atrocities against SCs are eliminated;
- 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;
- Create and sustain a culture of cooperative living for inclusive and rapid development;
- To substantially improve the standard of living and quality of life of all section of the population through -
  - Improved basic amenities; Higher productivity; Enhanced human development; Better livelihood opportunity; Reduced disparities; Access to rights and entitlements;

Such Yojana provides dignity and equality to every person and can live in harmony with others.

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

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

The administrator of ten villages was called dashi; of 20 villages, vinshati; of 100 villages, shati, and of over 1,000 villages, sahasra gramadhipati. This is a clear indication of the interlink-ages between the villages. Kautilya's Arthashastra suggests that river, hill,

forests, ditches, tanks, bunds or trees demarcated village boundaries. He prescribed that villages should be situated at distances of one or two krosha (in Rajasthan, it is spelt as Koss, which is the equivalent of two miles or 3.219 km) from each other so that in times of need, one village could go to the help of the other.

Village Today:

There were 580,781 villages in India, according to the 1991 Census. Of these; the largest number (390,093) consisted of small-sized villages with a population of less than 1,000. In the category of 1,000-2,000 population are another 114,395 villages. Taken together, they represent 86 per cent of the villages of India. At the time of the 2001 Census, the number of villages had gone up to 638,691. Like the 1991 Census, Uttar Pradesh (UP) continues to have the largest number of villages, although the state has become somewhat smaller with the state of Uttaranchal carved out of it.

UP has 107,452 villages and Uttaranchal, 16,823, making a combined total of 124,275. While data exist for the average size of the village in each state in 2001, the, distribution of villages in different sizes is not yet available. On that basis, however, it can be said that the average size of villages in different states of India range between 17,281 (in Kerala) and 214 (in Arunachal Pradesh). In Uttar Pradesh, the average size of the village is 1,224 people, while in Uttaranchal, it is 375.

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

Physical and demographical growth:

The village has total area of **5118100 Sq.mt.** Out of the total area, the area covered under the agriculture is 2456.5 Sq.mt. The area covered under the net irrigation is 51156435.5 Sq.mt. The village is located on the bank of river Tapi. So the major occupations in the village are farming of sugarcane, dairy industries and fishing.

Economies profile:

Out of total population 1609 people are engaged in work activities. In the village there are two types of economic activities in which the majority of the people living in village are engaged. Out of 810 people 98.40% of workers are associated with Major activity of employment (they earn for more than 6 months), while 1.60% are involved in Marginal

activity (which gives employment to people for less than 6 months). About 77 people are cultivators having their own farm or they are co-owner of the cultivable land, while 581 are labor in agricultural activities.

Social scenario:

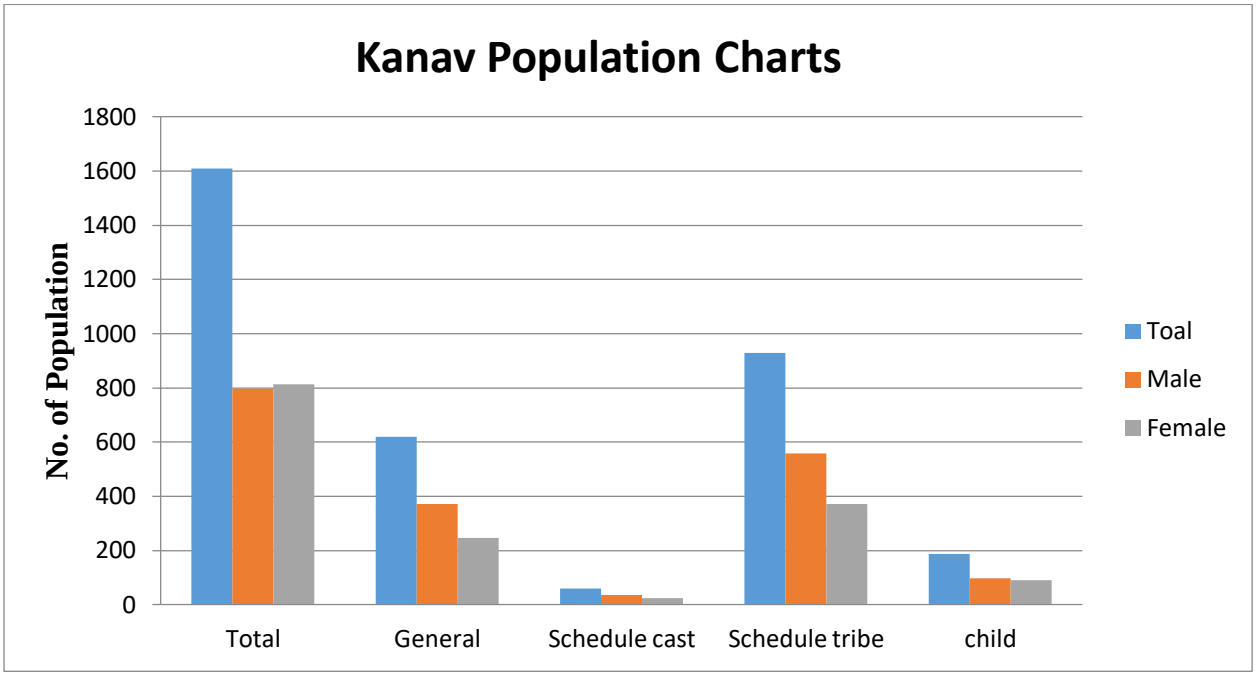

Figure 5: Cast wise Kanav Population

Total population of the village is 1609 as per the Census of India 2011. Out of which the male population is 796 and the female population is 813. In the village the population of the children between the ages 0-6 is 185 which is the 11.68% of the total population. The average sex ratio of the village is 1021 which is higher than Gujarat state average of 919. Kanav village has higher education rate compare to Gujarat state. The literacy rate of the village is 83.81% and from which the male literacy is 87.32% and female literacy is 80.39%. The population of the Schedule Caste in the village is 208, and the population of schedule tribes is 930 from which the males are 459 and females are 471. The total numbers of workers are 810, out of which 496 and 314 are male and female workers respectively.

Kanav Literacy:

Kanav village has higher literacy rate compared to Gujarat. In 2011, literacy rate of Kanav village was 83.81 % compared to 78.03 % of Gujarat. In Kanav Male literacy stands at 87.32 % while female literacy rate was 80.39 %.

Infrastructure facilities:

Main source of drinking water: For drinking water is varigruh installed in village with overhead water tanks and for distribution of water to the houses. The treated tap water is there is three in each house. Water is also stored in overhead tanks and sumps which are available in the village and from these sources water is distributed to households for their useful purpose.

Drainage Facility: The Village has underground drainage facilities and is in good condition.

Solid waste Disposal facilities: To collect solid waste from each household door to door collection by three tricycle and one tempo trailer.

Road Network: The village is having very good road network facility. There are three different types of road cement concrete road and paver bock road. Main roads are well equipped with footpath, road signage like pavement marking, other informatory signs. All the societies are having C.C. roads and Paver block road with street light facility. All the internal roads have 3 to 7 m width and the main road is about 12 m wide.

Electricity Distribution: There are electric poles with street light in village. 24 hours electricity is supplied. The village is having GEB main power station for the 24x7 power supply in village.

Housing Facility: There are total 375 families from which 20-30 are living in pucca house. Facilities like toilet, drinking water, power supply, drainage system are provided with 100% structural facilities.

Education facility: 1 Anganwadi 1 primary school available. All necessary facilities of school are provided like separate toilets for boys and girls, playing facilities and standard education.

Socio Cultural Facility in Kanav Village: There is a one hall for sociocultural activities. But there is no adequacy for any cultural activity of village people because of less space. Thus it requires maintenance.

Gram panchayat: The village is having health care facilities also. For the various health related issues village is having public health facilities. In the PHC there are 1-2 beds for patients.

Figure 6: Gram Panchayat

Figure 7: Varigruh

Figure 8: Dustbin facilities

Figure 9: Road connectivity

Figure 10: Primary school

Figure 11: Shop at Kanav

1.4 SWOT Analysis of Ideal Village

Strength	Weakness	Opportunity	Threats
Door to door solid waste collection	Library	Use modern technology	Migration from rural to urban
Health facilities	Open drainage system	All places Wi-Fi connection	Epidemic breakout
Education facilities	No PHC center	Advance Hospitals	Water crises
Water supply		Use of solar panel	Open drainage
Road connectivity		Make PHC center	

Table 3: SWOT Analysis

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

In case we need any more information from the ideal village Kanav, we will visit the place. We will look upon the village Kanav to develop our assigned village. We will consider the Kanav village as ideal and we will take reference of Kanav to identify the technology gap between our assigned village (Bhairav) for the future development of our village.

1.6 Benefits of the visits:

The following benefits are obtained from our Ideal Village visit:

We get to know the standards and working procedure that are adopted in the ideal village. Thus we can use them as a guiding parameter to develop our allotted village;

1. The role of basic infrastructural facilities in the life of rural people is understood by the visit;
2. The basic needs are understood by surveying and discussing with the talati and Sarpanch; and,
3. Importance of cleanliness and hygiene are known by observing the village areas, they have an impact on health of the resident.

We got to know about the working patterns of the villagers their needs and the aspects of their daily life.

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Chapter 2

Bhairav Village Literature Review – (Civil Concept)

2.1 Introduction: Urban & Rural village concept:

As said by Mahatma Gandhi -

"India lives in its village".

This quote suggests that the India is the country of the village and around **70%** of the total population lives in the villages. The total numbers of villages in India are **640,867**, out of which **593,731** are villages in which people are living and **44,865** are the villages which are uninhabited (in which people are not living). The village can be defined as:

The community which is usually larger then hamlet and smaller then town, and which has the population density of about **400- 500** per square kilometer. The population of village varies from **1,000** to **5,000**. The houses of the village are close to each other they dispersed in nature. In the village the main occupation in agriculture and some small scale industries such as Papad making, small scale dairy industry, cottage industries, and such.

Now on the other hand **urban area** can be defined as:

The areas where the population density is more than **1,000** per square kilometer, and the areas where **75%** of male are engaged with the nonagricultural activities.

Urban areas are very developed, which means there is a density of human structures such as houses, commercial buildings, roads, bridges, and railways. The total population of the urban area is more than **10,000**. In urban areas the primary facilities such as drinking water facility, schools, electricity, health facilities are easily available where as these in rural areas these facilities are not available or they are not in adequate quantity. The level of urbanization increased from **27.81%** in the 2001 Census of India to **31.16%** in the 2011 Census of India, while the proportion of rural population declined from **72.19%** to **68.84%.**

2.2 Importance of the rural development

Rural development is the process of improving the quality of life and economic well-being of people living in rural areas, often relatively isolated and sparsely populated areas. Rural development has traditionally centered on the exploitation of land-intensive natural resources such as agriculture and forestry. However, changes in global production networks and increased urbanization have changed the character of rural areas. Increasingly tourism,

niche manufacturers, and recreation have replaced resource extraction and agriculture as dominant economic drivers. The need for rural communities to approach development from a wider perspective has created more focus on a broad range of development goals rather than merely creating incentive for agricultural or resource based businesses. Education, entrepreneurship, physical infrastructure, and social infrastructure all play an important role in developing rural regions. Rural development is also characterized by its emphasis on locally produced economic development strategies. In contrast to urban regions, which have many similarities, rural areas are highly distinctive from one another. For this reason there are a large variety of rural development approaches used globally. Rural development is a comprehensive term. It essentially focuses on action for the development of areas outside the mainstream urban economic system. We should think of what type of rural development is needed because modernization of village leads to urbanization and village environment disappears.

2.3 ANCIENT VILLAGES / DIFFERENT DEFINITION OF: RURAL AREA / VILLAGES:

As the major population of the country like India lives in the village hence various definitions of village are as follows:

- The village is an area of human settlement or communities, which is larger than hamlet and small in size than town.
- As per the Canada statics the village or rural areas can be defined as: The population outside settlements with less than **1,000** residences and population density less than **400** people per square kilometer is called rural area.
- As per United States the rural areas can be defined as: The rural areas are made up of open country and scattered housings, with population not more than 2,500 residences, and the population density may vary from I person per sq mi to 999 per sq mi.
- As per Planning Commission of India the rural area is:
- A town with a maximum population of 15,000 is considered as rural in nature. Panchayat makes all the decisions in these areas. In rural areas, agriculture is the predominant source of income, the various small-scale industries usually seen in villages are fishing, cottage industry, pottery, and so on.

2.4 Scenario: Rural / Urban village of India population Growth

Gujarat Urban Population 2011

Out of total population of Gujarat, 42.60% people live in urban regions. The total figure of population living in urban areas is 25,745,083 of which 13,692,101 are males and while remaining 12,052,982 are females. The urban population in the last 10 years has increased by 42.60 percent.

Sex Ratio in urban regions of Gujarat was 880 females per 1000 males. For child (0-6) sex ratio the figure for urban region stood at 852 girls per 1000 boys. Total children (0-6 age) living in urban areas of Gujarat were 2,952,359. Of total population in urban region, 11.47 % were children (0-6).

Average Literacy rate in Gujarat for Urban regions was 86.31 percent in which males were 90.98% literate while female literacy stood at 70.26%. Total literates in urban region of Gujarat were 19,672,516.

Gujarat Rural Population 2011

Of the total population of Gujarat state, around 57.40 percent live in the villages of rural areas. In actual numbers, males and females were 17,799,159 and 16,895,450 respectively. Total population of rural areas of Gujarat state was 34,694,609. The population growth rate recorded for this decade (2001-2011) was 57.40%.

In rural regions of Gujarat state, female sex ratio per 1000 males was 949 while same for the child (0-6 age) was 914 girls per 1000 boys. In Gujarat, 4,824,903 children (0-6) live in rural areas. Child population forms 13.91 percent of total rural population.

In rural areas of Gujarat, literacy rate for males and female stood at 81.61 % and 57.78 %. Average literacy rate in Gujarat for rural areas was 71.71 percent. Total literates in rural areas were 21,420,842.

Description	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 %

Sex Ratio	949	880
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 4: Gujarat Urban/Rural Population 2011

2.5 Scenario: Rural / Urban India & Gujarat as per Census 2011:

Description	2011	2001
Approximate Population	6.04 Crores	5.07 Crore
Actual Population	60,439,692	50,671,017
Male	31,491,260	26,385,577
Female	28,948,432	24,285,440
Population Growth	19.28%	22.48%
Percentage of total Population	4.99%	4.93%
Sex Ratio	919	920
Child Sex Ratio	890	883
Density/km2	308	258
Density/mi2	798	669
Area(Km^2)	196,244	196,024
Area m^2	75,770	75,685
Total Child Population (0-6 Age)	7,777,262	7,532,404
Male Population (0-6 Age)	4,115,384	4,000,148
Female Population (0-6 Age)	3,661,878	3,532,256
Literacy	78.03 %	69.14 %
Male Literacy	85.75 %	79.66 %

Female Literacy	69.68 %	57.80 %
Total Literate	41,093,358	29,827,750
Male Literate	23,474,873	17,833,273
Female Literate	17,618,485	11,994,477

Table 5: Gujarat Population as per census 2011

2.6 Rural Development Issues - Concerns - Measures

As per the Census of India, 2011 estimates that the 70% of the total population of India lives in the village, where the villagers do not have adequate land holding and opportunities for economic growth of the village which ultimately affect the growth of Indian economy. Various issues related to rural areas are as inadequate employment opportunities, Population, Natural resources, Pollution, Education, Health, Infrastructure, Globalization, Problems of livelihood.

1. **Inadequate employment opportunities:** Adequate wages to sustain their livelihood. As a result 40 to 45% families, who earn less than INR 11,000 per annum, are classified as below the poverty line. Apart from this the rural people also suffers from shortage of pure drinking water, poor health care and lower literacy rate.
2. **Natural resources:** The natural resources are decreasing day by day this results in the insecurity of food and employment, compelling about 40% of the rural population to live in poverty.
3. **Pollution:** Increasing pollution results in the depletion of clean drinking water, which creates the adverse impact on agricultural production.
4. **Education:** The poor education facilities, results in the low literacy and unemployment among the youth of the village. The average literacy rate in the village is about 50-65%, it is as low as 20- 25% for the female literacy. The less literacy rate affects the development of the village and ultimately affects the growth of country.
5. **Health:** People's health in the villages are affected by the improper facilities of the sanitation and drainage disposal, poor drinking water quality, due to unhygienic conditions, inadequate health care facilities, and many other causes. Not only due to the improper facility of the health care but the ratio of mortality is also increased because about 40%a of the health-care staff remains absent for most of the time.

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

Various measures and schemes for the rural development in India are as follows:

Various schemes are as follows:

Intensive Agricultural Area Programme (LAAP), Intensive Agricultural District Programme (IADP), High Yielding Varieties Programme (HYVP), Rural Industries Projects and Rural Artisans Programmes (RIP and RAP), Integrated Rural Development Programme (IRDP)

Various other measures are:

Welfare of rural masses; Increase in rural employment and literacy rate; Minimum fare to the landless labors; Growth of housing facilities for the villagers; Primary health care facilities; Development of education facilities; and,

Various other facilities:

Such as drinking water facilities (RO plant), proper sanitation facilities, and electricity generation plants and so on

Projects / Schemes by Government Sector:

Various government and private sector schemes for the development of the rural arca are as follows:

National Rurban Mission Deen Dayal Antyodaya Yojana, Pradhan Mantri Awaas Yojana, Sansad Adarsh Gram Yojana, Mukhya Mantri Adarsh Gram Yojana, E-Gram Yojana, Guideline for village health sanitation & nutrition committee, Mukhya Mantri Adarsh Gram Yojana

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

Access to electricity facilitates sustainable economic and social growth. First, through an increase in educational achievement. Students who were previously forced to study when the sun was shining are now able to study by the light of LEDs early in the morning or late into the night. In Kenya for example, interviews with school teachers revealed that access to light has allowed for extra hours of teaching earlier and later in the day to cover material not adequately reviewed during normal hours. Additionally, schools with access to electricity are able to recruit higher quality teachers and have seen improvements on test scores and graduation rates, raising the human capital entering the labor force in the future

Additional benefits

Reduce isolation and marginalization through telephone lines and Television, Improve safety with the implementation of street lighting, lit road signs, Reduce expenses on expensive fossil fuel lamps i.e. kerosene.

2.9 Other projects / Schemes Various other projects like:

Pradhan Mantri Gram Sadak Yojana by Ministry of Rural Development; Sampoorna Grameen Rozgaar Yojana; Swarnajayanti Gram Swarozgar Yojana;Swatch Bharat Abhiyan; and, Nirmal Bharat Abhiyan.

Chapter 3

Smart Cities/ Village Concept as per your idea and its visit

3.1 Introduction: Concepts, Definitions and Practices

According to Mahatma Gandhi's philosophy and thoughts Smart village project provides,

"Global mean to local needs."

The meaning of the word SMART in terms of village is as follows:

S: Social, skilled and simple.

M: Moral and modern

A: Aware, adaptive and adjusting.

R: Responsive and ready

T: Techno savvy and transparent

Concept:

Collection of the strength and efforts of people and community respectively from the different streams and merged it with the information technology for providing henefit to the rural development.

Definitions:

"Smart Villages access to sustainable energy services acts as a catalyst for development - enabling the provision of good education and healthcare, access to clean water, sanitation and nutrition, the growth of productive enterprises to hoost incomes, and enhanced security. gender equality and democratic engagement."

In the smart village the villagers have an excess to the sustainable way of living and to the new technologies. They have the excess to the usage to the solar energy, biogas treatment plants, and such.

We have selected the smart village as Orna It is located in Kamrej taluka of district Surat. We have visited the Orna Village.

Study Area of Orna Village

Orna is 13.5 km from the Kamrej. The village has total population of about **2366** as per the **2011** Census of India, out of which the male Population is of **1223** and female population is about **1143**. Total no of household in the village are **549**. The roads are made up of RCC and the internal streets area of paver block. The Village also has its gram panchayat office.

The main crops grown in village are Sugarcane , bajra, and wheat. along with this there is fishing done in the river tapi situated near the village. There are water tanks, stationary, shops, bus stand , school, hand pumps, Anganvadi, temple, banks , ATMs, primary health centre , higher secondary school and animal health care etc.

Drainage facility is there in village from which **80%** drainage area is covered. The village is also having bus stand where there **10** buses stops. Electricity is available for than 6 hours. The waste is collected by door to door collection. Canal , well and boring are the source of irrigation.

There is provision of primary health centre and there is also the provision of animal hospital on the road about 1 km from gram panchayat.

The village has one primary school . one secondary school and two anganvadis with very good condition.

Geographical Details of Orna:

Sr no.	Description	Details
1	Area of Villages (Approx) (In Hector)	668 hectares
2	Forest Area	NA
3	Agricultural Land (In Hector)	593
4	Residental Area -	5 hectares
5	Other Area (In Hector)	66 hectares
6	Nearest Railway Station (In Km)	NA
7	Nearest Town With Distance	Bardoli 13 km
8	Nearest Bus Station	Kamrej 18 km
9	Road Connectivity Yes Village Connected to all Road	Yes

Table 6: Geographical Details

Demographical Details of Orna:

Sr no.	Census	Population	Mal	Female	Total house holds
1	2001	2960	1537	1423	4681
2	2011	1609	796	813	375

Table 7: Demographical Details

Infrastructural facilities:

A) Water tank facilities: In Orna village , there is two elevated water tank. It has capacity of 50,000 liters and 1,00,000 liters which distribute the water throughout the village by gravity force. The village has also its own R.O. treatment plant.

B) Drainage facilities: Drainage facilities are there in village from which 80% drainage area is covered. No proper treatment is given to drain water.

C) Transportation: The nearest railway station is bardoli which is 14 kms away from the Orna. The village is also having bus stand where there 10 buses stops. the village has 3 bus stands.

D) Road network: Roads are the main aspect of the any infrastructure facilities in the town or villages. It connects several important places such as work place, markets, important institutes, educational institutes, panchayat office etc.

E) Electricity: Electricity is available for the more than 6 hours. The power supply is also used for domestic, agricultural, commercial purpose.

F) Health facilities: There is provision of primary health centre and there is also provision of animal hospital on the road about 1 km from gram panchayat. In the primary health centre there are 15-16 beds, one major operation theatre and one minor operation theatre, one medical store and it has a separate post mortem room also.

G) Education facilities: The village has one primary school, one secondary school, one higher secondary school and two anganwadis with very good condition. The Education in the higher secondary school is equivalent to the education given in the city schools.

H) Village pond: The village has its own pond. It is near police station on main road. The pond water is being used for irrigation and for drinking purpose.

I) Meeting with talati mantri: We were met the talati mantri of Orna village. we were gathering more information about the village and we had got the permission for surveying of the village.

Figure 12: Overhead water tank

Figure 13: Underground Drainage

Figure 14: Bus stand

Figure 15: Road connectivity

Figure 16 Electricity facilities

Figure 17: Health and wellness center

Figure 18:Primary school

Figure 19: Pond

Figure 20: Interaction with Talati mantri

3.2 Vision-Goals, Standards and Performance Measurement Indicators

Field	Details
EDUCATION	School enrollment rate
	Rate of literacy in village
	Female literacy
	Education quality improvement number
HEALTH	Percentage of birth registration
	Percentage of death registration
	rate of infant mortality in Percentage

	rate of mother mortality in Percentage
	Percentage of organizational matemity
SANITATION	Work of 100% individual toilets
	Arrangement of pure drinking water
	Sanitation in public places
	Door to door solid waste disposal system
	Any incident of epidemic during competition
PANCHAYAT	Panchayat tax
	Has area based assessment been implemented?
	Percentage of presence in last Gram Sabha
	Percentage of presence of females in last Gram Sabha
	Facilities through E-Gram
	Total number of Gram Panchayat meetings held in last year
SPECIAL ACHIEVEMENT	Samaras
	Samaras Nirmal Gram Puraskar
	100% Bank accounts
	Paavan gaam/Tirth gaam
	Gaurav Gram Sabha Award
	Best Gram panchayat Award

Table 8: Smart cities bench marks and standards

3.3 Technological options for smart cities

(1) Smart energy, (2) Smart mobility, (3) Smart infrastructure, (4) Smart public service and, (5) Smart care

3.4 Road Map and Safe Guards

The initial phase in setting up a guide for a smart city is to know why there is a requirement for a brilliant city activity. This should be possible by concentrate the city's socioeconomics, including the occupants who are the foremost partners in the city. Individuals love to live in urban communities that are advantageous, live able, dynamic, and associated, so they can go anyplace at whatever point they need. Knowing the times of the subjects, their instructive foundation, their leisure activities, the city attractions, the

organizations, and the assets of the group are altogether enter ventures in becoming more acquainted with the group and why there is a need to assemble a savvy city-Geographic Information System (GIS) instruments can be utilized to accomplish this progression.

The second step is to set up a smart city guide by building up a strategy that drives the entire activities. The strategy needs to characterize the parts, obligations. procedures, and goals of the shrewd urban communities.

In the third phase component used for building up a smart city guide is drawing in the natives using e-government and viable administration, which prompts the expansion of proficiency and improving conveyance of administrations.

Smart cities: issues & challenges by smart city council India:

1. Replacing the existing infrastructure;
2. Sewer line, drain line and utensils should providing in timely clearance;
3. Financing of smart city; and,
4. Smart city space which occupied by the vendors.

3.5 Issues & Challenges

Around the world, smart city programmes combine IT with internet-connected devices – from waste management to smart grids – which enhances municipality management.

The most common smart city projects include smart lighting, intelligent transport systems and smart utility metering for electricity and water. These technologies and integrations are based on sensor-centered collection and analysis of data. They offer cost-effective and innovative solutions to the growing number of challenges faced by municipalities.

However, despite the countless benefits of smart city projects, many challenges remain when it comes to deployment, due to unique city requirements and differing interpretations of deployment concepts. These variations can be categorized into the following dimensions:

Technology challenges with coverage and capacity, Digital security, Legislation and policies, Lack of confidence or reluctance shown by citizens (lack of clarity around benefits), Funding and business models, Interoperability, Existing infrastructure for energy, water and transportation systems.

As city populations grow and urban sprawl proliferates, issues with economic and social progress are often magnified. These challenges not only affect a city's quality of life, but also put added stress on traditional infrastructure, increasing the need for energy-efficiency austerity and resource conservation. Smart city technology can provide city governments with a large infrastructure buffer that helps them endure and overcome these issues in the future.

Technology innovation is the enabler that improves the possibilities and efficiencies of each smart city project. Each new technology brings with it an immense pool of new possibilities. Since every city has its own culture and infrastructure and funding policies, technology adoption can vary in diverse ways. However, that means it is not always possible to rely on other proven smart city projects to act as a blueprint for success**.**

3.6 Smart Infrastructure

Smart infrastructure is the interaction between technologies and equipment. Smart information and smart ICT has that strength to transform the way of plan and handle the infrastructure, It is improving the structure and the quality of life of people who tives in urban and town. One of the major parts of design of smart cities is smart infrastructure. Intelligent Transport Systems (ITS) has aim of efficient public transport, smart parking and road safety.

3.7 Cyber security:

Today's era is of technologies, now a day the villages are also adopting the new technologies for their growth. In this modern era the cyber security is an important aspect for the safe and crime free development of smart villages. Cyber security is the concept of hardware to software and software to the interface of human computer with the use of cryptography which means art of solving codes. Different technologies used for the cyber security are:

- Space-time awareness: It includes GPS for locating the real time locations and to take real time data.
- Sustainability: It includes embedded security in the network.
- Scalable networked architecture: It emphasis on the smart architectures which will need to scale in real time data for the macro level solution.
- System integration: The system should be integrated with physical embodies for detecting the cybercrime area.

3.8 Retrofitting- Redevelopment- Greenfield Development District Cooling

Region vitality, both warming and cooling, entwine the vitality producing sources in a city with structures and offices having a need of warming as well as cooling. Rather than each building having its own warming or cooling framework, the vitality is conveyed to a few structures in a bigger territory from a focal plant. The water based dissemination framework ensures that warmth and cooling arrive securely to the end clients.

Region warming is the most boundless of the two sorts of locale vitality; warming and cooling. To transport warm effectively, the region warming conveyance foundation involves a system of protected funnels, conveying heat as high temp water, from the era site to the end client.

Systems can quantify from a couple of hundred meters to covering whole extensive urban areas. End clients extend from private structures to workplaces and mechanical offices. The system's scope can without much of a stretch be reached out by laying more pipes, frequently in mix of including more purposes of area.

3.9 Strategic Options for Fast Smart Development

Smart city is a city furnished with essential foundation to give a better than average personal satisfaction, a spotless and supportable condition through use of some keen arrangements. Making shrewd urban communities would involve improvement of essential foundation like sufficient water supply, power supply, maintainable sanitation and strong waste administration component, proficient urban portability, reasonable lodging and guaranteeing vigorous IT network and e-administration.

Methodology used:

The key segments of zone based advancement (ABD-Area Based Development) in the Smart Cities Mission (SCM) are city change (retrofitting), city recharging (redevelopment) and city augmentation (Greenfield improvement), alongside a dish city activity in which shrewd arrangements are connected covering bigger parts of the city.

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

❖ India's Urban Water and Sanitation Challenges:

Over 90% of the urban populace approaches drinking water, and over 60% of the populace approaches fundamental sanitation. In any case, access to dependable, practical, and

moderate Water Supply and Sanitation (WSS) benefit is falling behind. Water quality has decayed in most getting bodies and in shallow groundwater because of uncontrolled release of crude residential and mechanical waste-water. Most families, compelled to adapt to low quality water supply and sanitation benefit, invest energy and cash on costly and dangerous substitutes, costing substantially higher than their month to month water bills. The wasteful aspects in administrations and expenses are passed on to clients, with the poor enduring the most.

❖ Role of Indigenous Technologies:

These advances can enhance the drinking water nature of littler towns and additionally bigger urban communities. It utilizes the Pressure Driven Membrane Processes. These are reasonable for all limit units e.g. they are versatile from family level unit or group level unit to vast scale unit. Water cleaning advances make utilization of the atomic vitality and sun powered vitality too.

3.11 Initiatives in village development by local self-government

Since the year 1992, neighborhood administration in India happens in two extremely particular structures. Urban territories, shrouded in the 74th Constitution Amendment Act, 1992, have Nagar Palika, however get their forces from the individual state governments, while the forces of rustic areas have been formalized under the Panchayati raj system, under the 73rd Constitution Amendment Act, 1992.

3.12 Smart Initiatives by District Municipal Corporation

❖ **Bhubaneswar smart city initiative:**

There is as of now a wide cluster of activities in presence or in progress, including chip away at online native administrations, transportation, lodging, squander administration and urban wanting to give some examples. The BBSR Smart City Proposal will try to combine existing endeavors with different needs recognized by nationals to make excellent arrangements. The accompanying activities recorded beneath gives a look into the current activities embraced by BMC (Bhubaneswar Municipal Corporation) and BDA (Bhubaneswar Development Authority) in actualizing savvy arrangements.

❖ **Bhubaneswar smart waste management:**

We now experience the ill effects of a developing risk of a consistently expanding volume of waste produced for an expanding population, which is a standout amongst the most difficult errands governments are attempting to oversee. BMC is taking a gander at better dealing with the city's waste administrations from junk gathering, reusing, and sewage to littering, access to open toilets, and disposing of open crap.

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

Digital India Initiative:

The initiative comprises of several projects which will focus on better governance, knowledge and universal phone connectivity across the country.

Digi Locker, MyGov.in, eSign Framework, Swachh Bharat Mission mobile app, National Scholarship Portal, eHospital, Digitize India Platform, Bharat Net, Wi-fi Hotspots,Next Generation Network, Electronics Development Fund, Centre of Excellence on Internet of Things (IoT) etc.

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

It is clear that the situations and challenges in developing urban and rural area are different due to the constraints and opportunities. Many researchers believe that the existing technologies developed for the smart city may be useful for the smart village concept. The components taken in to consideration will vary from region to region for villages, based on the available resources and opportunities. Following are some generalized guidelines for the development of Smart Villages:

1. Economic Component: This component will include local administration and economic factors. It will cover governance models, bandwidth, mobility, cloud computing, entrepreneurship etc.

2. Environmental Component: This component will address the issues related to resources and infrastructures available at local level. It may covers cleaner technologies, public and alternative transportation, green spaces, smart growth, climate change etc.

3. Social Component: This component may address issues related to community life, participatory democracy, social innovation, proximity services etc.

Chapter 4

About Bhairav Village

4.1 Introduction

4.1.1 Introduction about Village:

"The future of India lies in its villages"- Mahatma Gandhi

Villages are the real nerve components of our country India. To aim for the overall development of our country we have to aim for the development of our villages. Also a large percent of our population resides in village. The main aim of this project is Rurbanisation that is to provide for basic infrastructural components so that the migration of people from village to cities is reduced.

The motivation behind the VY venture is to give specialized arrangement of the issue of villages at the designing perspective to the Gujarat government. In this task answer for the basic issue of village are given by the designing understudies of GTU. The VY is an essential and well idea undertaking of Government of Gujarat with plan to set up an entire guide of Rurban Development of the villages of Gujarat. With counsel of Local income experts, TDO and DDO the future need of the village keeping to mind the need of days, future focused on populace development, development of encompassing village or taluka places and so on projected improvement design of the village is required to be set up under this venture as focused result at end and propose the answer for the same to the Gujarat government.

4.1.2 Need of the study:

- The VY is an intension structure for college undergraduate student of designing to illuminate their specialized information in the advancement of the village and all the while understudies increase true involvement.
- The VY would give “plan to conveyance” and propose an answer that can be executed for the advancement of village according to need of that village.
- For advancement of a village under the VY study attempts for advantage towards the thoughts of “Rurbanisation” and “sustainability”.

4.1.3 Study Area: BHAIRAV, KAMREJ, SURAT

Bhairav village is situated in the Kamrej taluka of Surat city. The village is located about 19 km from Surat city and about 3 km from the kamrej. The village has total population of about 961 as per the 2011 Census of India, out of which the male population is of 491 and female population is about 407. Total no of households in the village are 203. The total

population of SCs/ STs is 386, out of which 208 are male and 178 are female. The roads of the village are made up of RCC and the internal street are of paver block. The village also has its Gram panchayat office.

4.1.4 Objective of the study:

1. To study the existing components and condition of our village "Bhairav".
2. To identify the issues and problems faced currently by the villagers.
3. To analyze existing physical and social utilities, public and semi-public buildings as well as infrastructure and to design the comprehensive planning for village Bhairav.
4. To design for sustainable planning and for Rurbanisation.
5. To improve social life quality of villager.
6. To reduce migration from rural to urban areas.

4.1.5 Scope of the study:

The scope of this study is to do a meticulous survey of the existing village and its facilities, after this we would work with the suggestions of talati and sarpanch of the village to develop the non-existing and necessary facilities. Some of them are:

- There is no provision of the public toilets in the entire village.
- There is a provision of the public garden but it require the maintenance work so we can give rehabilitation work so we can give rehabilitation plan for the development of the public garden.
- We can also give plan for the beautification plan.
- We can also propose the solid waste management plant.

4.1.6 Methodology Frame Work for development of your village

There is a step by step methodology adopted in this Vishwakarma Yojana Phase V. Under this following steps were done:

1 Literature topics allotted 2. Literature study and summary preparation 3. Ideal village study: Kanav Palsana 4. Techno-Economical survey of Kanav 5. Visit of allotted village: Bhairav 6. Techno-Economical survey of Bhairav 7. Identifying the issues 8. Providing the design proposal

4.1.7 Available Methodology for development of related to Civil

Methodology:

Design objectives, Technical approach, Proposed sustainability features, Identify customer needs, Identify local/state/federal engineering and construction specifications, Project management structure, Budget, Gantt Chart of project schedule, Resumes of team members

4.2 Bhairav Village Study Area Profile

4.2.1 Study area location: Bhairav, Kamrej, Surat

Under the project of Vishwakarma Yojana phase V, Bhairav village of kamrej taluka is been allotted to us for the development. The village is located about 3 km from kamrej and 19 km from Surat city.

Village Name	Bhairav
Latitude	21.2912° N
Longitude	72.9741° E
Sub district	Kamrej
District	Surat
State	Gujarat
Country	India

Table 9: Geographical profile of Bhairav Village

4.2.2 Base Location map, Land Map, Gram Tal Map

Figure 21: Map of Gujarat

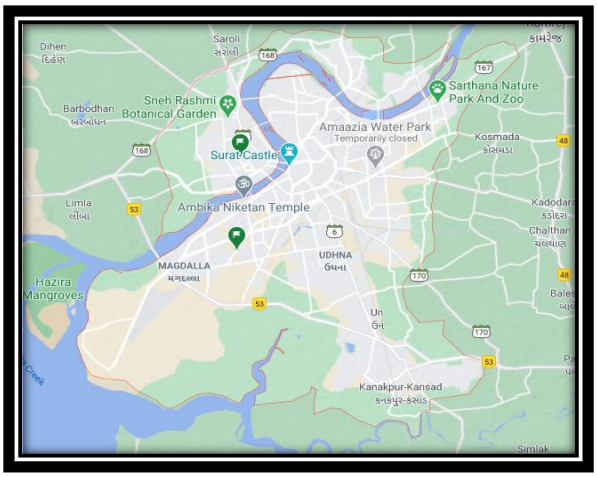

Figure 22: Map of surat

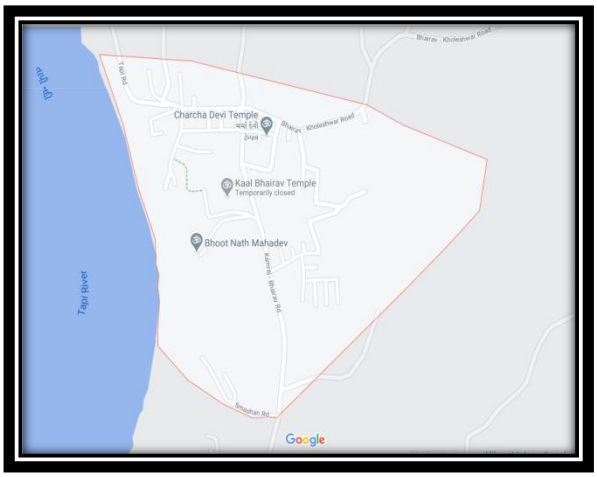

Figure 23: Google map of Bhairav village

4.2.3 Physical and demographical growth:

The Bhairav village has total population of 961 as per the 2011 Census of India, out of which total male population is 491 and female population is 470. The total number of households in the village is 203. The total population of the SCs/STs in the village is 386, out of which total male population is 208 and female population is 178.

Particulars	Total	Male	Female
Total no. of Houses	203	-	-
Population	961	491	470
Child (0-6)	78	48	30
Schedule caste	79	43	36
Schedule tribe	307	165	142
Literacy	82.67%	84.20%	81.14%
Total workers	467	334	133
Main worker	436	-	-
Marginal worker	31	12	19

Table 10: Bhairav Village Data (census-2011)

4.2.4 Economic profile/ banks:

Out of the total population 467 people are engaged in the major economic activities, out of 467, are the farmers and 177 are the farm labors. 124 people are engaged in the small scale

industry (Gruh Udhayog). Major activities of the village are agricultural products, and dairy industries.

4.2.5 Actual Problem faced by Villagers and smart solution

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

There is not available bus stand; Very poor condition of garden, Leakage of overhead water tank, there is not available public toilet

Smart Solution:

Pharmacy Store, ATM, Cybercafe, Supermarket, Rain water harvesting, Public Toilet, Bus stand etcetera.

4.2.6 Social scenario:

The Bhairav village has total population of about 467 out of which 461 are male and 470 are female. The total literacy rate of the village is 82.67%, out of which male literacy percentage is 84.20% and female literacy rate is 81.14%. The average sex ratio of the village 957 which is higher than the sex ratio of the Gujarat, which is 919.

4.2.7 Migration Reasons / Trends

Migration is the movement of people away from their usual place of residence, across either internal (within country) or international (across countries) borders. The latest government data on migration comes from the 2011 Census. As per the Census, India had 45.6 crore migrants in 2011 (38% of the population) compared to 31.5 crore migrants in 2001 (31% of the population). Between 2001 and 2011, while population grew by 18%, the number of migrants increased by 45%. In 2011, 99% of total migration was internal and immigrants (international migrants) comprised 1%.

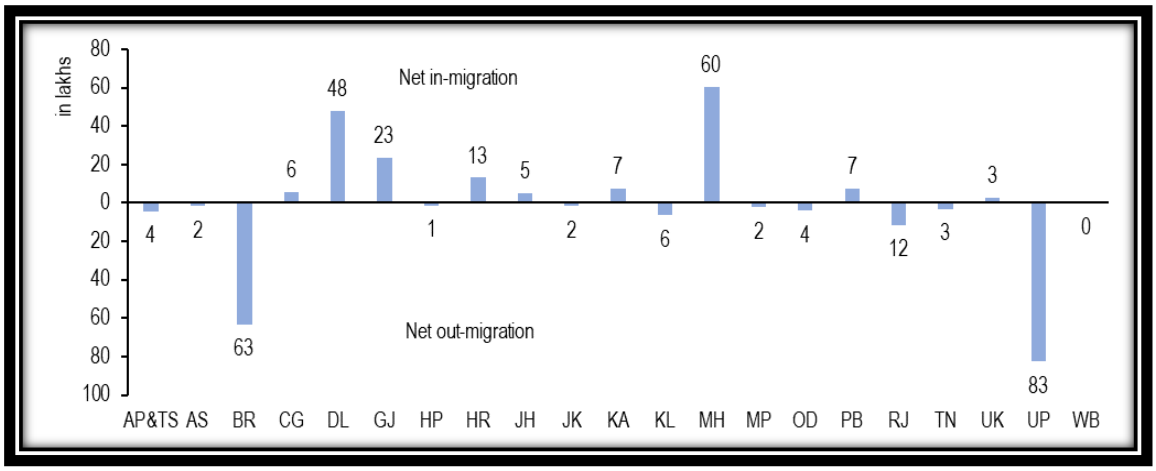

Figure 24: Inter-state Migration (in lakh)

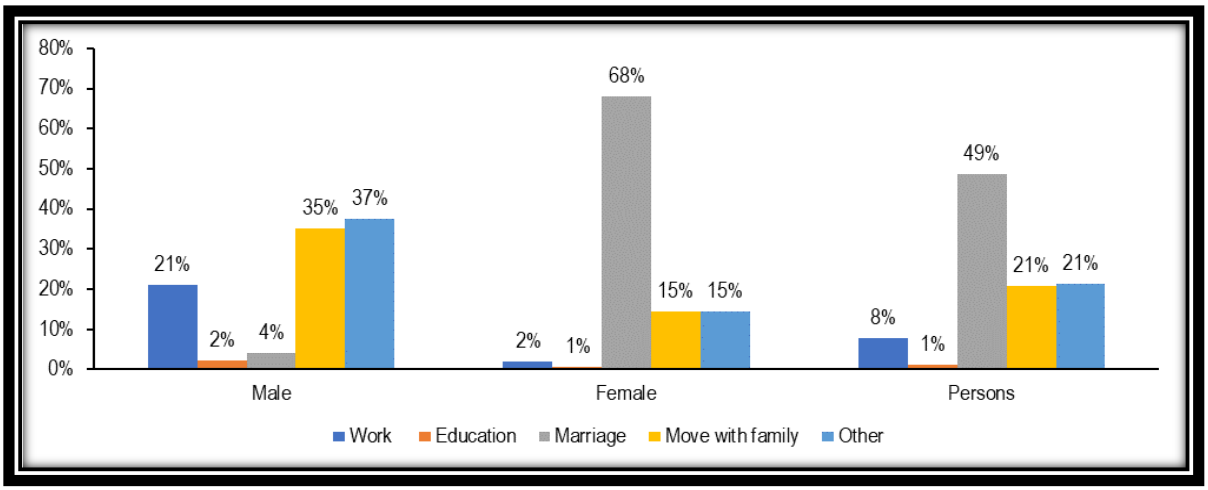

Figure 25: Reasons for intra-state migration

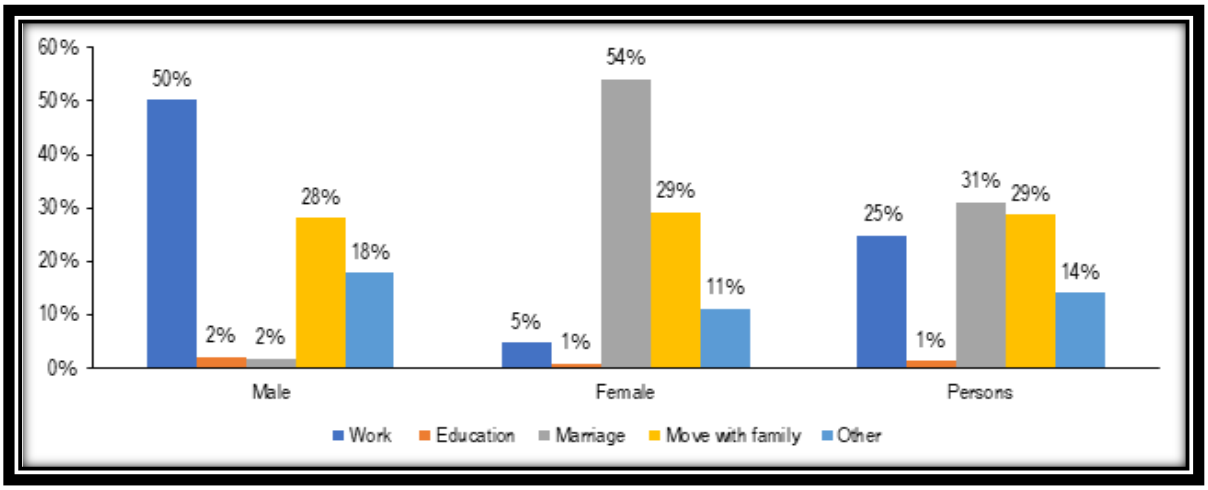

Figure 26: Reasons for inter-state migration

Reason for migrations	Number of migrants			Percentage to migrants		
	Person	Males	Females	Person	Males	Females
Total migrants	98,301,342	32,896,986	65,404,356	100	100	100
Reason for migration: work/ employment	14,446,224	12,373,333	2,072,891	14.7	37.6	3.2
Business	1,136,372	950,245	186,127	1.2	2.9	0.3
Education	2,915,189	2,038,675	876,514	3	6.2	1.3
Marriage	43,100,911	679,852	4,421,059	43.8	2.1	64.9
Moved after birth	6,577,380	3,426,673	3,148,707	6.7	10.4	4.8
Moved with households	20,608,105	8,262,143	12,345,962	21	25.1	18.2
others	9,517,161	5,164,062	4,353,096	9.7	15.7	6.7

Table 11: Reasons for migration of migrants by last residence with duration (0-9 years) India 2001

4.3 Data Collection Bhairav Village Photograph/Graphs/Charts/Table)

4.3.1 Methods for data collection

The methods used for the collection of various data, such as population count, existing facilities, data related to the occupation of the villagers, land area information are as follows:

- ✓ Office record from office department like T.D.O office,
- ✓ school staff and so on: Interaction with talati and villagers:
- ✓ Observing different parts of villages; and,
- ✓ Internet surfing.

We have collected land use data and geographical data of the village from government sites. We have used census data also for the calculation of the population of the village.

4.3.2 Primary survey details:

The primary survey was conducted to know the issues related to rural infrastructural facilities interacting with villagers and to get solutions from general people point of view. Various types of questions asked to the villagers of different age group are as follows:

- ✓ Which types of existing facilities are available in the village?
- ✓ Condition of existing facilities is working or non-working?
- ✓ What is the primary requirement of villagers?
- ✓ Which basic amenity villagers need first?
- ✓ Is repairing feasible or redesign of existing infrastructural facility is required?
- ✓ What is source of income?
- ✓ Are there any expectations from government for economic development of village?
- ✓ Various occupations for the villagers?
- ✓ Water supply facilities and for how many hours?
- ✓ Electricity facilities and for how many hours?
- ✓ Disposing the waste?

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

Under the project of Vishwakarma Yojana Phase V. Bhairav village of Kamrej taluka is been allotted to us for the development. The village k located about 40 km from Surat city and about 13 km from Bardoli taluka The village is having one water body (Talav) which is use

for the irrigation purpose. In the village there is one primary school, one high school, banking facilities also.

4.3.4 Number of Human being in one house

The total number of the household in the village is 549. There are 4 to 6 members per house.

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

Materials uses for the construction of various public buildings, houses are sand, cement, woods, bricks, etc. The sand is locally available material, the production of which is local.
In village concrete house and renovation of old house are done on wider scales.

4.3.6 Geographical Detail

The total geographical area of village is 410.17 hectares, total residential area is 5 hectares and
Total irrigated land area is 398 hectares; Elevation above MSL: 21 meters; Latitude: 21.2912° N; Longitude: 72.9741° E

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

Total No. of houses: 203; Population: 961 (Male: 491; Female: 470) ; SC & ST: 78 & 307
Literacy: 82.67% ; Total Workers: 467; Main Worker: 436; Marginal worker: 31

4.3.8 Occupational Detail - Occupation wise Details / Majority business

In Bhairav village out of total population, 467 were engaged in work activities. 93.36 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 6.64 % were involved in Marginal activity providing livelihood for less than 6 months. Of 467 workers engaged in Main Work, 124 were cultivators (owner or co-owner) while 177 was Agricultural labourer.

4.3.9 Agricultural Details / Organic Farming / Fishery

The main crops grown in village are Sugarcane & Banana. Along with this, there is fishing done in the River Tapi situated near the village.

4.3.10 Physical Infrastructure Facilities - Manufacturing HUB / Ware Houses

There is one cement and fertilizer godown which stores the cement bags and fertilizer respectively.

4.3.11 Tourism development available in the village for attracting the tourist

In Bhairav village is famous temple of Kalbhairav nath mahadev temple, it is situated nearest to the tapi river so it's beautiful place for tourism and favorite picnic spot for the localities in weekend. Along with that river side boating is also done as a recreation activity.

4.4 Infrastructure Details (With Exiting Village Photograph)

4.4.1 Drinking Water / Water Management Facilities

- For drinking water R.O. plant is installed in village with 1 overhead water tanks for distribution of water to the houses.
- The treated tap water is there in each house.
- The village has also its own R.O. treatment plant. It provides clean drinking water to all households by tap.
- As water is a basic need for all, panchayat itself manage the water supply for each household.
- There are 1 water tanks with the varying from 35000 liter within the area.

4.4.2 Drainage Network / Sanitation Facilities

Drainage facility is there in village from which 80% drainage area is covered. No proper treatment is given to drain water; only primary treatment is given before discharge. In whole village there is an underground drainage network.

4.4.3 Transportation & Road Network

The village is having very good network facilities. There are different type of road cement concrete road and paver block road. The Road network of the village (village approach road,

main roads, and internal streets) is made up of the dammar, mortar and black topped pucca materials. On streets paver blocks are placed.

Figure 27: Overhead water tank

Figure 28: R.O. plant

Figure 29: Road connectivity

Figure 30: Drainage facilities

4.4.4 Housing condition

There are total 203 families from 10 to 15 are living in pucca house. Facilities like toilet, drinking water, power supply, drainage system are provided with 100% structural facilities. Two groups of people are living in the village. “Patel Nivas” and “Halpati nivas” (labor housing) which is having 60% Pucca and 40%kuchha house respectively.

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

Health facilities: There is provision of primary health center on the road about 1 km from gram panchayat. In the primary health center there are 15-16 beds, one major operation theatre and one minor operation theatre, one medical store and it has a separate post mortem room also.

Education facilities: The village has one primary school and one anganwadis with very good condition. For higher education study students have to go to nearest Kamrej.

Figure 31: Electricity facilities

Figure 32: Primary schools

Figure 33: Anganwadis

Figure 34: Garden facilities

Figure 35: Kuchha house

Figure 36: Community hall

Community hall: Bhairav village has community hall without television which made from villager's fund. It is having very good condition.

Electricity facilities: There are electric poles with street light in village. 24 hours electricity is supplied. The village is having GEB main power station for the 24*7 power supply in village.

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

In Bhairav village having public garden but it is not in good condition its required maintenance. Water tank is present but is not in good condition and village officials have said that new water tank will be constructed in place of current water tank with higher capacity. Panchayat building, Anganwadis, Public library and primary school are also in good working condition.

4.4.7 Technology Mobile/ WIFI / Internet Usage Details

Telecom and mobile/IT connectivity are criteria for the development of a rural area. The cyber security in the village is very important aspect. The villagers are also using the smart phones.

4.4.8 Sports Activity as Gram Panchayat

The gram panchayat organize the various sport activities every year for the public awareness towards the sport culture.

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

Village has community hall, assembly polling and birth death registration office. Village has no public library. There is public garden in the village. The village has no pond. There is no other recreational facility such as theater, public library or any tourist sport in the village.

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

There are no any kinds of facilities like smart toilet-coin operated entry, footpath development, self cleansing, waterless public building, etc. in the Bhairav village.

4.4.11 Any other details

We have included here what we have done by survey and collecting data from the villagers. There is no any others details available.

4.5 Existing Institution like - Village Administration – Detail Profile

4.5.1 BachatMandali

Village has no bachat mandali. So required a small scale bachat mandali in village.

4.5.2 DudhMandali

Village has dudh mandli but it is not good condition.

4.5.3 Mahila forum

There is no any mahila mandal existing in the Bhairav village.

4.5.4 Plantation for the Air Pollution

In Bhairav village every year arranging plantation for the air pollution

4.5.5 Rain Water Harvesting - Waste Water Recycling

There is such no facility of rain water harvesting in Bhairav village.

4.5.6 Agricultural Development

In Bhairav village agricultural activities are supported by tapi river and boring in own farm .

Chapter 5

Technical Options with Case Studies

5.1 Concept (Civil)

5.1.1 Advance Sustainable construction techniques / Practices and Quantity Surveying

What is sustainable construction?

The goals of sustainable construction are to reduce the industry's impact on the environment. Sustainable construction methods include:

- Using renewable and recyclable resources;
- Reducing energy consumption and waste;
- Creating a healthy, environmentally-friendly environment;
- Protecting the natural environment.

Why is sustainable construction important?

From energy usage to emissions, the construction industry has a huge impact on the environment

Aside from the potential for building over wild habitats, the construction industry energy use is high. The heavy machinery used in construction still leans heavily on fossil fuels, and even inefficient electricity use can result in the unnecessary burning of fossil fuels further down the energy supply line. In fact, the construction industry accounts for an incredible 36% of worldwide energy usage, and 40% of CO2 emissions.

The fabrication and shipping of materials can have a great impact on carbon emissions. Mining for raw materials can result in the pollution of local water tables. The manufacture of concrete has resulted in over 2.8bn tones of CO2; a figure which is only going to keep increasing as 4bn tones of concrete is poured every year.

Construction can also result in hazardous waste, and the improper disposal of such waste can result in pollution that affects not just the environment, but also the health of people living in that area.

The challenges of sustainable construction

Adopting sustainable construction methods is not an overnight process; there are challenges to face, the greatest of which is cost. There will always be pressure on

construction organizations to reduce costs where possible, but there are still concerns that sustainable construction methods will cost an organization more.

The World Green Building Trends 2018 Smart Market Report reveals that almost 40% of UK firms reported that affordability was the greatest challenge presented by adopting sustainable construction practices. Almost 50% of firms stated that they expected green buildings to incur higher first costs.

Couple that with 34% of firms reporting that they face client demand for greener buildings, and you can sees that many construction firms fear that they will be caught in the middle of demand and high costs.

But there is a light at the end of the sustainable tunnel: the perceived value of green buildings. Owners of a green building feel they are worth 7% more than a traditional one, which is likely due to the reduced operating costs that result from building energy-efficient structures. This greater perceived value can be cited in tenders and can help offset any additional costs that might result from a sustainable construction.

The benefits of sustainable construction

Naturally, adopting sustainable construction methods will reduce your organization's impact on the environment. But there are more tangible benefits too which will help you demonstrate the value of sustainable construction beyond environmental concerns.

The truth of the matter is that green buildings do come with lower operating costs. In fact, research suggests that the use of the latest sustainable technologies in construction processes could potentially deliver a remarkable €410bn a year in savings on global energy spending.

There are also direct savings available for your organization; by reducing waste, for instance, you will reduce the fees charged by your waste management company. By adopting more efficient vehicles, you will save on fuel costs.

And there is one more benefit that could have a huge benefit on your company; sustainable construction can help your organization's reputation by demonstrating your sense of corporate social responsibility

5.1.2 Soil Liquefaction

Soil liquefaction occurs when the effective stress (shear strength) of soil is reduced to essentially zero. This may be initiated by either monotonic loading (i.e. a single, sudden

occurrence of a change in stress – examples include an increase in load on an embankment or sudden loss of toe support) or cyclic loading.

Liquefaction is more likely to occur in loose to moderately saturated granular soils with poor drainage, such as silty sands or sands and gravels containing impermeable sediments. During wave loading, usually cyclic undrained loading, e.g. seismic loading, loose sands tend to decrease in volume, which produces an increase in their pore water pressures and consequently a decrease in shear strength, i.e. reduction in effective stress.

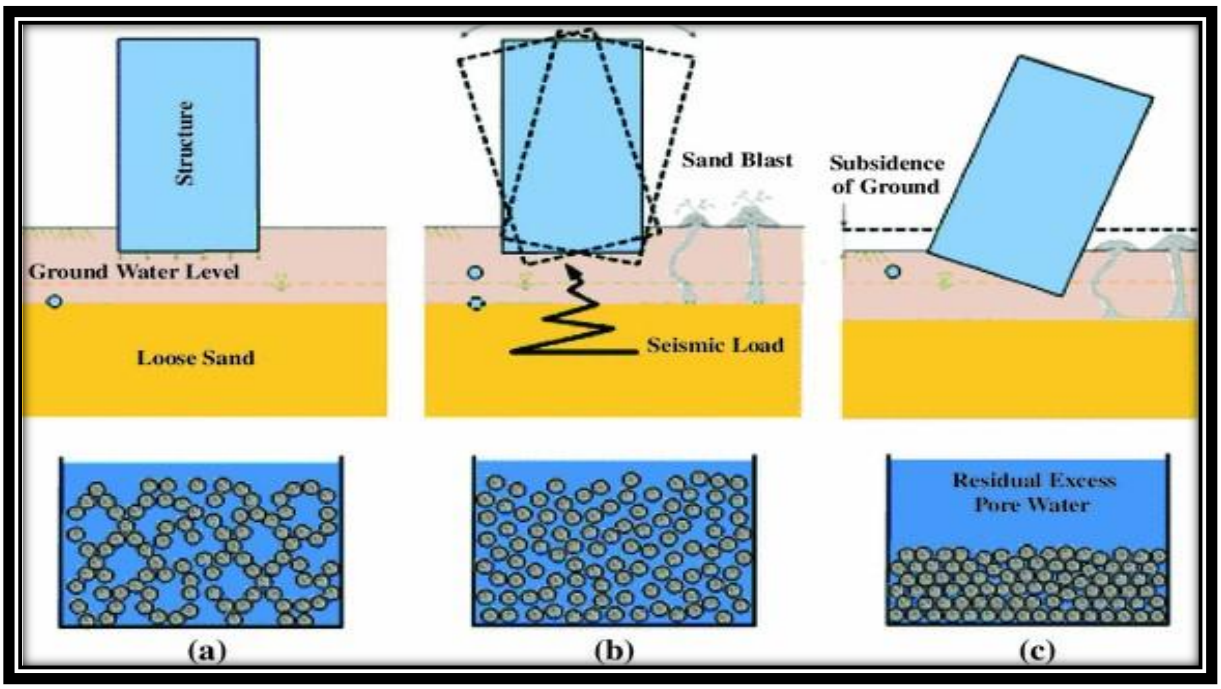

Figure 37: Soil liquefaction

Figure 38: Example of soil liquefaction

5.1.3 Sustainable Sanitation

Sustainable sanitation is a sanitation system designed to meet certain criteria and to work well over the long-term. Sustainable sanitation systems consider the entire "sanitation value chain", from the experience of the user, excreta and wastewater collection methods, transportation or conveyance of waste, treatment, and reuse or disposal. The Sustainable Sanitation Alliance (SuSanA) includes five features (or criteria) in its definition of "sustainable sanitation": Systems need to be economically and socially acceptable, technically and institutionally appropriate and protect the environment and natural resources.

Sustainability criteria: The main objective of a sanitation system is to protect and promote human health by providing a clean environment and breaking the cycle of disease. In order to be sustainable a sanitation system has to be not only economically viable, socially acceptable, and technically and institutionally appropriate, but it should also protect the environment and the natural resources. According to the Sustainable Sanitation Alliance, when improving an existing and/or designing a new sanitation system, sustainability criteria related to the following aspects should be considered: **Health , environmental and natural resources, technology and operation, finance and economics, socio cultural and institutional aspects.**

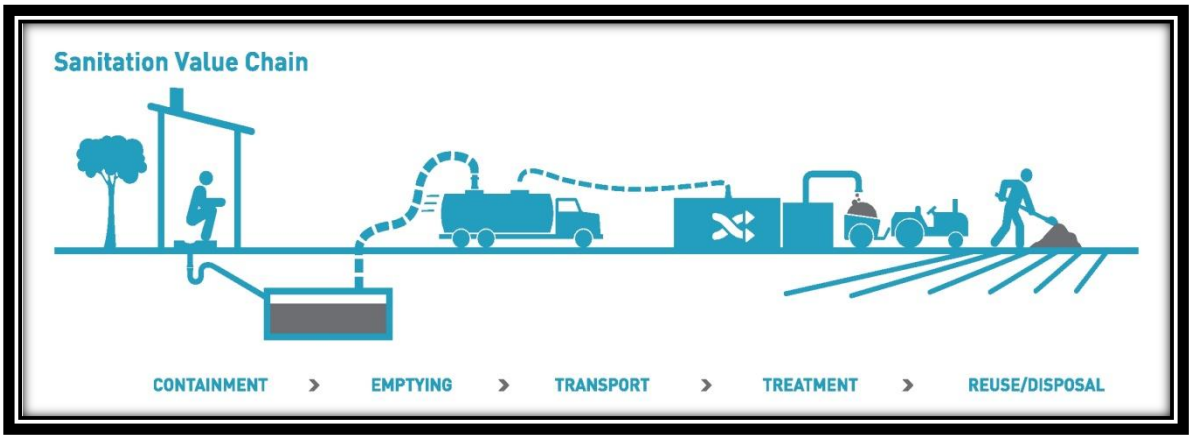

Figure 39: Sustainable sanitation

5.1.4 Transportation infrastructure:

Transport is vital to the well-functioning of economic activities and a key to ensuring social well-being and cohesion of populations. Transport ensures everyday mobility of people and is crucial to the production and distribution of goods. Adequate infrastructure is a

fundamental precondition for transport systems. In their Endeavour to facilitate transport, however, decision-makers in governments and international organizations face difficult challenges. These include the existence of physical barriers or hindrances, such as insufficient or inadequate transport infrastructures, bottlenecks and missing links, as well as lack of funds to remove them. Solving these problems is not an easy task. It requires action on the part of the governments concerned, actions that are coordinated with other governments at international level.

The UNECE Governments have long-standing experience and expertise in the development of coherent international transport networks in Europe. They have created four main transport network agreements aimed at the development of coherent networks for road, rail, inland water and combined transport respectively.

Figure 40: Transportation infrastructure management system

5.1.5 Vertical Farming

What Is Vertical Farming?

Vertical farming is the practice of producing food on vertically inclined surfaces. Instead of farming vegetables and other foods on a single level, such as in a field or a greenhouse, this method produces foods in vertically stacked layers commonly integrated into other structures like a skyscraper, shipping container or repurposed warehouse.

Using Controlled Environment Agriculture (CEA) technology, this modern idea uses indoor farming techniques. The artificial control of temperature, light, humidity, and gases makes producing foods and medicine indoor possible. In many ways, vertical farming is similar to greenhouses where metal reflectors and artificial lighting augment natural sunlight. The primary goal of vertical farming is maximizing crops output in a limited space.

How Vertical Farming Works

There are four critical areas in understanding how vertical farming works: 1**. Physical layout, 2. Lighting, 3. growing medium, and 4. Sustainability features.**

Firstly, the primary goal of vertical farming is producing more foods per square meter. To accomplish this goal, crops are cultivated in stacked layers in a tower life structure. Secondly, a perfect combination of natural and artificial lights is used to maintain the perfect light level in the room. Technologies such as rotating beds are used to improve lighting efficiency.

Thirdly, instead of soil, aeroponic, aquaponic or hydroponic growing mediums are used. Peat moss or coconut husks and similar non-soil mediums are very common in vertical farming. Finally, the vertical farming method uses various sustainability features to offset the energy cost of farming. In fact, vertical farming uses 95% less water.

Advantages of Vertical Farming

Having greater output from a small cultivation area is not the only advantage of vertical farming. Following are some of the major benefits of vertical farming:

- Preparation for Future: By 2050, around 68% of the world population is expected to live in urban areas, and the growing population will lead to an increased demand for food. The efficient use of vertical farming may perhaps play a significant role in preparing for such a challenge.
- Increased and Year-Round Crop Production: Vertical farming allows us to produce more crops from the same square footage of growing area. In fact, 1 acre of an indoor area offers equivalent production to at least 4-6 acres of outdoor capacity. According to an independent estimate, a 30-story building with a basal area of 5 acres can potentially produce an equivalent of 2,400 acres of conventional horizontal farming. Additionally,

year-round crop production is possible in a controlled indoor environment which is completely controlled by vertical farming technologies.

Less Use of Water in Cultivation: Vertical farming allows us to produce crops with 70% to 95% less water than required for normal cultivation.

Not Affected By Unfavorable Weather Conditions: Crops in a field can be adversely affected by natural calamities such as torrential rains, cyclones, flooding or severe droughts—events which are becoming increasingly common as a result of global warming. Indoor vertical farms are less likely to feel the brunt of the unfavorable weather, providing greater certainty of harvest output throughout the year.

Increased Production of Organic Crops: As crops are produced in a well-controlled indoor environment without the use of chemical pesticides, vertical farming allows us to grow pesticide-free and organic crops.

Human and Environmentally Friendly: Indoor vertical farming can significantly lessen the occupational hazards associated with traditional farming. Farmers are not exposed to hazards related to heavy farming equipment, diseases like malaria, poisonous chemicals and so on. As it does not disturb animals and trees inland areas, it is good for biodiversity as well.

Figure 41: Vertical Farming

5.1.6 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure:

Corrosion: There are three essential components necessary for corrosion in reinforced concrete: **steel, water, and oxygen**. Eliminating any one of these will prevent the chemical reaction and damage incurred due to corrosion. This is why there is no corrosion in dry concrete and also why concrete fully submerged in water has limited corrosion.

Overall, concrete is a great host for rebar. Due to the high-alkalinity of concrete, the steel reinforcing bars are passivated by an iron oxide film (Fe2O3) that provides a protective layer to the steel. In this state, concrete normally provides reinforcing steel with corrosion protection. However, while hardening, concrete develops minute pores which become a potential source for the ingress of corrosive agents into the concrete. These corrosive agents, entering into the concrete through the voids, leads to the passive protection layer breaking down around the concrete. Without the passive iron oxide film protecting the steel, corrosion is able to commence at a much higher rate.

The climatic conditions of an area have a great influence on the corrosion rate. In extreme climatic conditions in coastal regions, the rate of corrosion will be high. For example, the Gulf Coast has an extremely aggressive environment, characterized by high ambient temperature and humidity conditions, severe ground salinity with high levels of chlorides, and sulfates in the groundwater. Other factors accelerating the rate of corrosion are the poor quality of construction materials, particularly the aggregates, and the presence of high concentrations of sulfate salts in the service environment.

Figure 42: Corrosion on the reinforcement

Prevention

There are some methods for controlling the corrosion of reinforced concrete. An effective corrosion control system should extend the time to corrosion initiation or, reduce the corrosion rate of embedded steel, or do both.

Some of the traditional measures used to combat the corrosion of reinforced concrete are:

- Cathodic protection;
- Corrosion inhibitor admixtures; and
- Anti-corrosion coating.

Figure 43: Corrosion effect

Unfortunately, these traditional methods meant for tackling concrete corrosion have proven to be less effective than desired considering the current state of deteriorating infrastructure. Thick or dense concrete cover over reinforcing steel will help, but still leaves the concrete vulnerable to cracking and a whole new set of issues. Corrosion inhibitors provide only temporary protection. Cathodic protection is expensive and has its own downsides, and repair procedures often have short service lives and may be continuously reinstalled.

The constant repair of reinforced concrete infrastructure results in high lifecycle costs over the structure's required service life. Overall, the shortfall of traditional corrosion preventative measures is they do not adequately prevent or counteract the development of corrosive conditions in the concrete.

As mentioned, water is one of the three required elements for corrosion to occur. Water also acts as a carrier for chloride ions, which is the leading cause of deterioration of the

passive layer that would otherwise protect the rebar. Hence, the critical factor in the corrosion of steel reinforcement, as well as concrete deterioration all together, is the penetration of water and waterborne chlorides into concrete.

Therefore, the first line of defense against corrosion in reinforced concrete is to prevent the penetration of water. It is important to use concrete with low permeability and to use an appropriate amount of concrete cover for the application

5.1.7 Sewage treatment plant

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

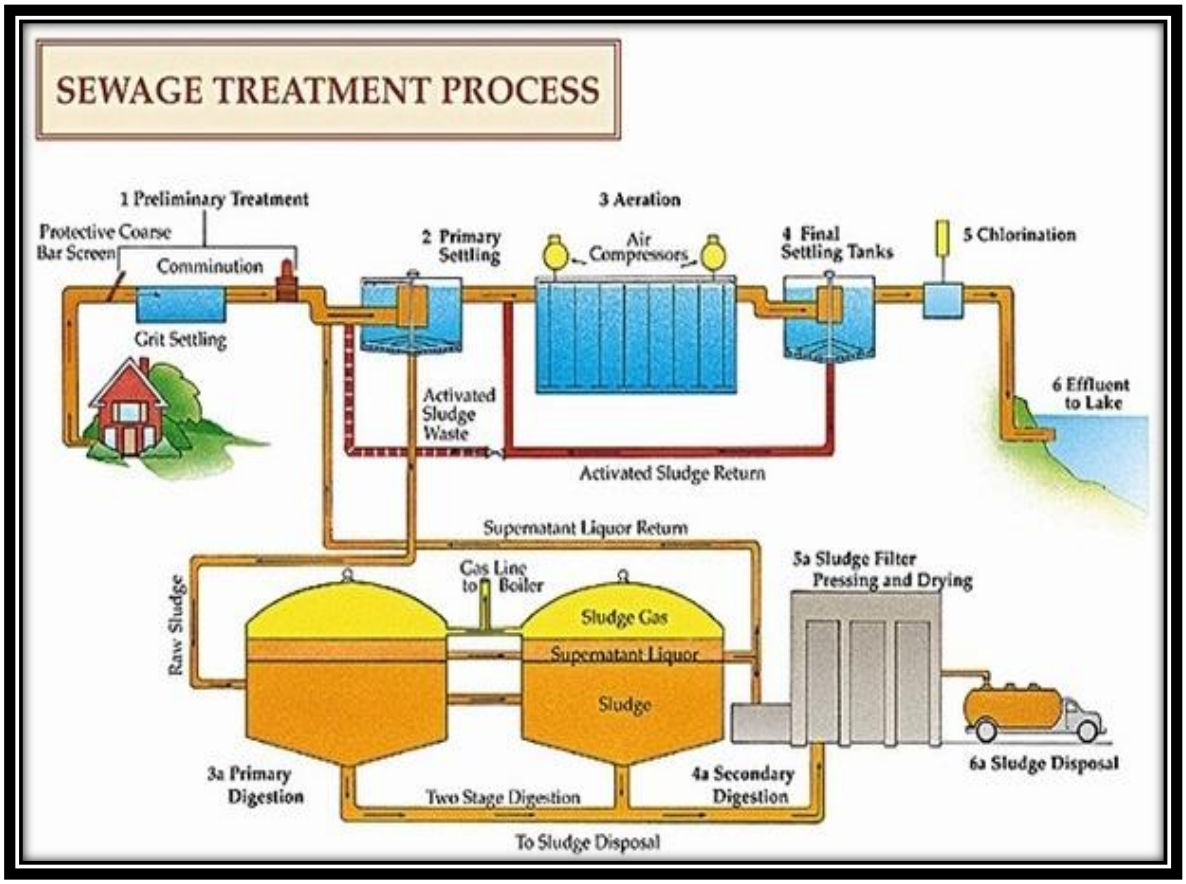

Figure 44: Sewage treatment plant

Sewage is generated by residential, institutional, commercial and industrial establishments. It includes household waste liquid from toilets, baths, showers, kitchens, and

sinks draining into sewers. In many areas, sewage also includes liquid waste from industry and commerce. The separation and draining of household waste into greywater and blackwater is becoming more common in the developed world, with treated greywater being permitted for use for watering plants or recycled for flushing toilets.

5.1.8 Technical case study on "Motera stadium"

Built on the **63-acre** site of the original stadium in the city of Ahmedabad, the new Motera Stadium which will be officially known as Sardar Patel Stadium is now the largest cricket stadium in the world, with a capacity of **110,000**. The new home of the Gujarat Cricket Association includes **76** corporate boxes, four team dressing rooms and facilities, state-of-the-art club facilities with three practice grounds, an indoor cricket academy, and a 55-room clubhouse, which will have an Olympic-size swimming pool.

Motera Stadium - which is also the second largest sports stadium in the world overall was designed and constructed within three years at a cost of **US $100m**. The stadium was also the venue for the '**Namaste Trump**' gala on **24 February 2020**, where Prime Minister of India, Narendra Modi, hosted the President of the United States, Donald Trump, during his recent visit to India. With world-wide cricket stadium expertise including the master plan and new Warner Stand at Lord's, as well as work at the Melbourne Cricket Ground (MCG), **Populous** was invited to join their team, as the designers, in a fully priced Design and Construction competitive bid tender.

Contracted by **Larsen & Toubro (L&T),** Populous delivered the master plan, as well architectural design services up to Schematic Design, including landscaping, interior design and way finding to create an iconic stadium for India. Andrew James, Director at Populous, takes up the story: "Cricket is like a religion in India and the Gujarat Cricket Association had a vision to create an iconic venue a world-class stadium that would bring together the biggest crowd of cricket fans anywhere in the world.

So, we agreed on the target of 110,000 people. "Along with meeting International Cricket Council regulations for Test, Twenty20 and One Day International matches, Motera Stadium was designed to become an iconic sports venue for both aspiring and elite players. When the seating bowl is full, this will be one of the biggest crowds ever assembled in a single space. "The precinct, master planned by Populous, ensures that male and female cricketers of the future have facilities to support their development. Young players can live and breathe the game with an indoor cricket academy housed under the stadium, including a

dormitory for up to 40 athletes, as well as access to six indoor practice pitches and three outdoor practice fields. The Hall of Fame will provide emerging players and fans with an insight into the heritage of cricket in India."

Figure 45: Motera stadium Arial view

- **Additional Information about Motera stadium Ahmadabad :**

Full Name	Narendra Modi Stadium
Former names	❖ Narendra Modi Stadium ❖ Motera Stadium (Former structure)
Location	Motera, Ahmedabad, Gujarat, India
Coordinates	23°5′30″N 72°35′51″E
Owner	Gujarat Cricket Association
Operator	Gujarat Cricket Association
Executive suites	76
Capacity	**132,000 (2020–present)** 54,000 (2006–2015) 49,000 (1982–2006)
Record attendance	51,000 (India v Australia, 2011 Cricket World Cup Quater-Finals) (pre-renovation)

	100,000+ (temporary seating, Namaste Trump event in 2020)
Field size	162 yards x 170 yards
Acreage	63
Surface	Australian Grass (Oval)
Construction	
Broke ground	❖ 2017 (New structure) ❖ 1983 (Former structure)
Built	❖ 24 February 2020 (New structure) ❖ 12 November 1983 (Former structure)
Opened	❖ 24 February 2021 (New structure-officially) ❖ 12 November 1983 (Former structure
Renovated	❖ 24 February 2021 (New structure-officially) ❖ 12 November 1983 (Former structure
Expanded	24
Closed	2015 (Former structure)
Demolished	2015 (Former structure)
Construction cost	₹800 crore (US$110 million) (Reconstruction, 2017–2020)
Architect	❖ Shashi Prabhu (Former structure) ❖ Populous (New structure)
General contractor	Larsen & Toubro

Table 12: Narendra Modi stadium

Conception:

The idea to build the new stadium was allegedly proposed by Narendra Modi, the president of the Gujarat Cricket Association and the Chief Minister of Gujarat at the time. Shortly before Modi moved to Delhi after becoming the Prime Minister of India, there were discussions about minor upgrades to the stadium and development of the structure at the pavilion end. Modi asked the officials to build a new larger stadium instead of minor renovation work when he learned about the Melbourne Cricket Ground.

Bids:

After starting demolition work at the end of 2015, the Gujarat Cricket Association issued a request for tender on 1 January 2016 in The Times of India and The Indian Express. Nine bidders showed interest and purchased the tender documents, out of which three submitted Technical and Financial bids on time; they were the Shapoorji Pallonji Group, Nagarjuna Construction Company, and Larsen & Toubro. A Tender Commercial Committee (TCC) of nine experts was formed to evaluate tenders. Additionally, STUP Consultants was appointed as the Project Management Consultant to evaluate proposals and technical details of each bid working with the TCC.

Each of the three bidders presented their designs, models, and technical details of their concepts & designs. Because of the sheer size and complexity of the project, the bidders were evaluated on multiple parameters like efficiency, resources, the time frame of completion, ease of implementation, etc. The bidders were ranked and weighted on all of the parameters.

ADDITIONAL INFORMATION

Roof Construction Cost	2.45 billion rupee ($35.7 million)
Overall Construction Cost	7 billion rupee ($102 million)
Completion Date	est. 2019
Project Size	110,000 seats, 63 acre site

Table 13: Construction Cost

Figure 46: Construction of Stadium

Major Events:

Namaste Trump

Further information: Namaste Trump

The stadium was the venue of the Namaste Trump event and hosted US President Donald Trump and Indian Prime minister Narendra Modi on 24 February 2020. The event mirrored the "Howdy Modi" event held in Houston, Texas.

Records:

Test match records

- Highest innings total: Sri Lanka 760/7d – India v Sri Lanka, 2nd innings, 16 November 2009
- Lowest innings total: India 76 – India v South Africa, 1 inning, 3 April 2008
- Highest individual score: Mahela Jayawardene 275 (Balls: 435 4x27 6x1) – Sri Lanka v India, 16 November 2009
- Best bowling:
  (in an innings) Kapil Dev 9/83 – India v West Indies, 12 November 1983
  (in a match) Venkatapathy Raju 11/125 – India v Sri Lanka, 8 February 1994
- Most runs: Rahul Dravid (India) 771 Runs (Mat:7 Inn:14 HS:222 Ave:59.30 SR:49.10 100x3 50x1), Sachin Tendulkar – 642 runs, VVS Laxman – 574 runs
- Most wickets: Anil Kumble (India) 36 Wickets (Mat:7 Runs:964 BBI:7/115 BBM:10/233 Ave:26.77 Econ:2.29 SR:70.1 5W/I:3 10W/M:1), Harbhajan Singh- 29 wickets, Kapil Dev – 14 wickets

One Day International match records

- Highest total: South Africa 365/2 – India v South Africa, 1st innings, 27 February 2010
- Lowest total: Zimbabwe 85 – Zimbabwe v West Indies, 1st innings, 8 October 2006
- Highest individual score: Sourav Ganguly 144 (Balls:152 4x8 6x6) – India v Zimbabwe, 5 December 2000
- Best bowling: Mitchell Johnson 4/19 (9.2 overs) – Australia v Zimbabwe, 21 February 2011
- Most runs: Chris Gayle – 316 runs, Sachin Tendulkar – 215 runs
- Most wickets: Kapil Dev (India) 10 Wickets (Mat:6 Runs:156 Best:3/26 Ave:15.60 Econ:3.04), Lasith Malinga – 7 wickets, Chris Gayle- 6 wickets

Figure 47: Narendra Modi stadium

Chapter 6

Swachh Bharat Abhiyan (Clean India)

6.1 Swachhta needed in allocated village Existing Situation with photograph

The village is already very clean no any dusts and other solid wastes in all over Bhairav village. In Bhairav village collect solid waste from each household door to door collection by tempo trailer.

6.2 Guidelines - Implementation in allocated village with Photograph

Figure 48: Swachh survekshan

The various guidelines for the implementation of the Swachh Bharat Abhiyan are as follows: "Unnat Bharat Abhiyan" , "Indira Gandhi Awas Yojana" , "Pradhan Mantri Awash Yojana" , "Guidelines related to the sanitation programme", "Guidelines related to the drinking water"

6.3 Activities Done by Students for allocated village with Photograph

We avoided throwing waste in open and always used dustbin. We interacted with village people and tried to spread awareness regarding Swatch. We also planned to carry out awareness campaign but due to Covid-19 we didn't get permission still we will conduct campaign in future

Figure 49: Covid-19 Awareness activity

Chapter 7

Village condition due to Covid-19

As 2019 ended, news arrived of an epidemic of pneumonia, with a few cases in a seafood wholesale market in Wuhan, China. Initially, a few cases were detected around December 8, and a cluster was revealed on approximately December 31, 2019, when the WHO office in China was given the information. The market was shut down on January 1, 2020, and the Chinese authority announced the viral threat. All active and suspected cases were tested. At that time, 300 cases were positive and 4 people had died. Initially, few reports verified human-to-human transmission, and reports of super-spreading patients included 15 healthcare workers and viral spread to different Chinese cities. Various other countries also confirmed human-to-human transmission. On January 31, 2020, first case of COVID-19 was confirmed in Kerala, India, where a student tested positive as she returned from Wuhan, China. Throughout the world, the death rate is extremely high.

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

During corona situation villagers staid into home and they follows all rules of government. They maintain social distance with people. Use of nose mask and sanitizer. They all are avoided travelling and only go for buying grocery and vegetables at market between 3 to 4 pm.

7.2 Activities Done by Students for allocated village Clean with Photograph

Use of nose mask and sanitizer, we interacted with villagers and told them regarding the danger of corona virus. We also interacted with Sarpanch and distributed nose mask and sanitizer. Corona virus is one of the pandemic which has broken the economic leg of world's leading nation and lots of people have lost lives till date. In such situation it is very necessary to not underestimate the severity of this disease.

7.3 Any other steps taken by the students / villagers

In Bhairav village we met the villagers and talking about the how danger is covid-19 and how to fight against it. There are serious symptoms like difficulty breathing or shortness of breath, chest pain or pressure, loss of speech or movement. Seek immediate medical attention if you have serious symptoms. Always call before visiting your doctor or health facility.

Chapter 8

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

8.1 Design Proposals

Various components are designed for civil engineering. These designs are discussed in the following sections.

8.1.1 Sustainable design: RCC Road

Here we have gives design and costing of Rcc road at Bhairav village.

In Bhairav village has some streets have good rcc road but we have observed that 1 and 2 streets have bad quality of road and its very dangerous for the vehicular and villagers so we have decided to design and quotation of the rcc road.

Place: At Bhairav

Square feet area: 1000 sq. ft.

Figure 50: labour making rcc road

Figure 51: making rcc road

Customer category: Government

Construction cost of 1000 sq ft. rcc road

So weight of Steel bar is require for 1000 square feet Roof slab= 1070kg

If Market rate of steel bar is 60 rupees per kg then,total cost of Steel bar =1070×rs 60,Total cost= Rs 64200

In India 2021 aggregate price depends on availability, location and demand it will vary from Rs 30 Rs 70 per cft, so you should adjust this rate according to your location **Size of Power**

Volume of sand =174.80 cft

If market rate of 80 rupees per CFT then total cost of quantity of sand

Total cost =rs80×174.80

=Rs 13984

Total cost of material:-

Cost of steel=rs 64200

Cost of cement=rs 33250

Cost of sand=rs 13984

Cost of stone=rs 24472

Labour charge and machine cost =rs 50000 (approx)

Total cost=Rs 184906

Figure 52: Example of rcc road

8.1.2 Physical design: Public Toilet

There is no public toilet in Bhairav village. As proper sanitation is the primary need of health care facility. As public toilet serves is important facility for public. It needs to be developing in village. It serves as the better refreshment for the floating population or general public.

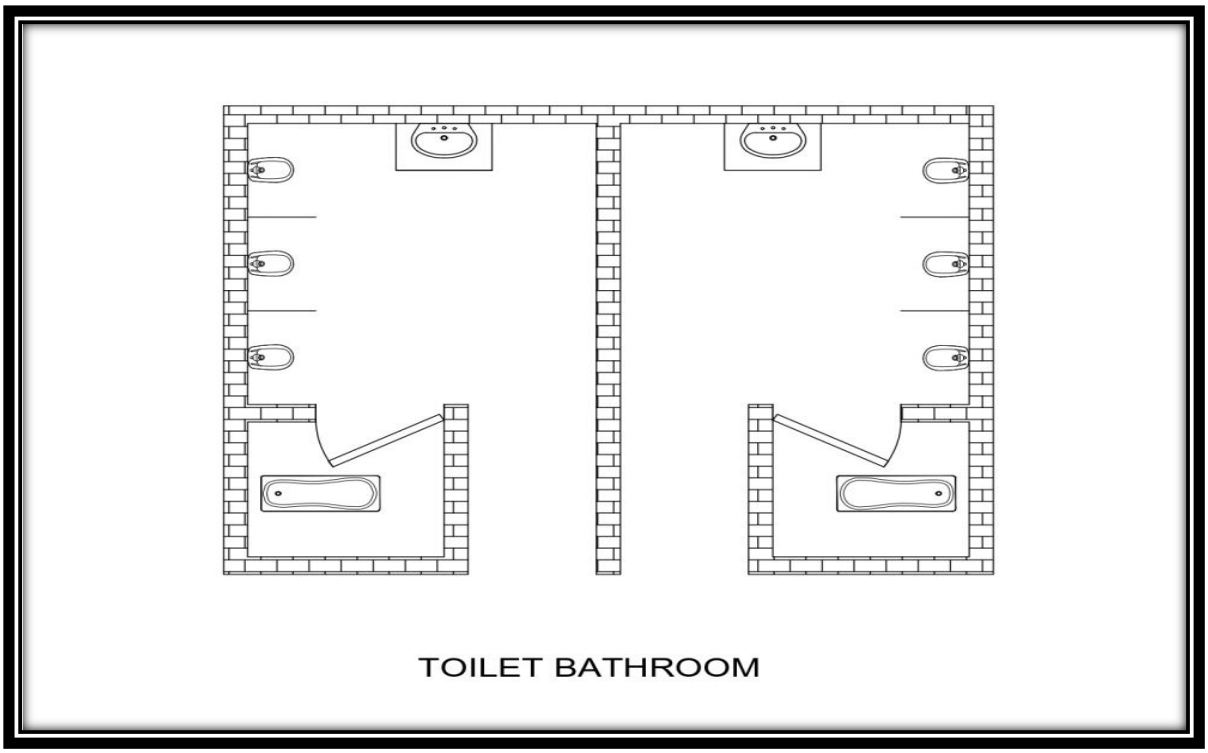

Figure 53: Proposed public toilet

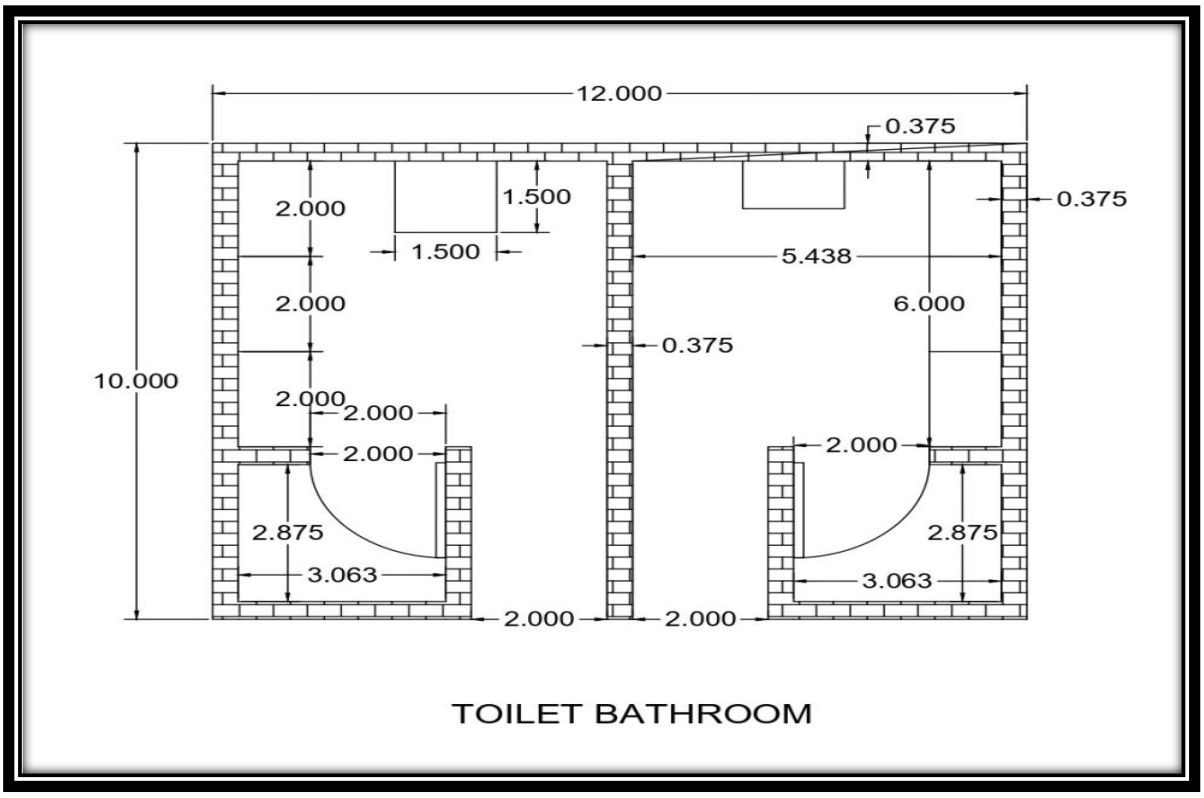

Figure 54: Key plan of proposed public toilet

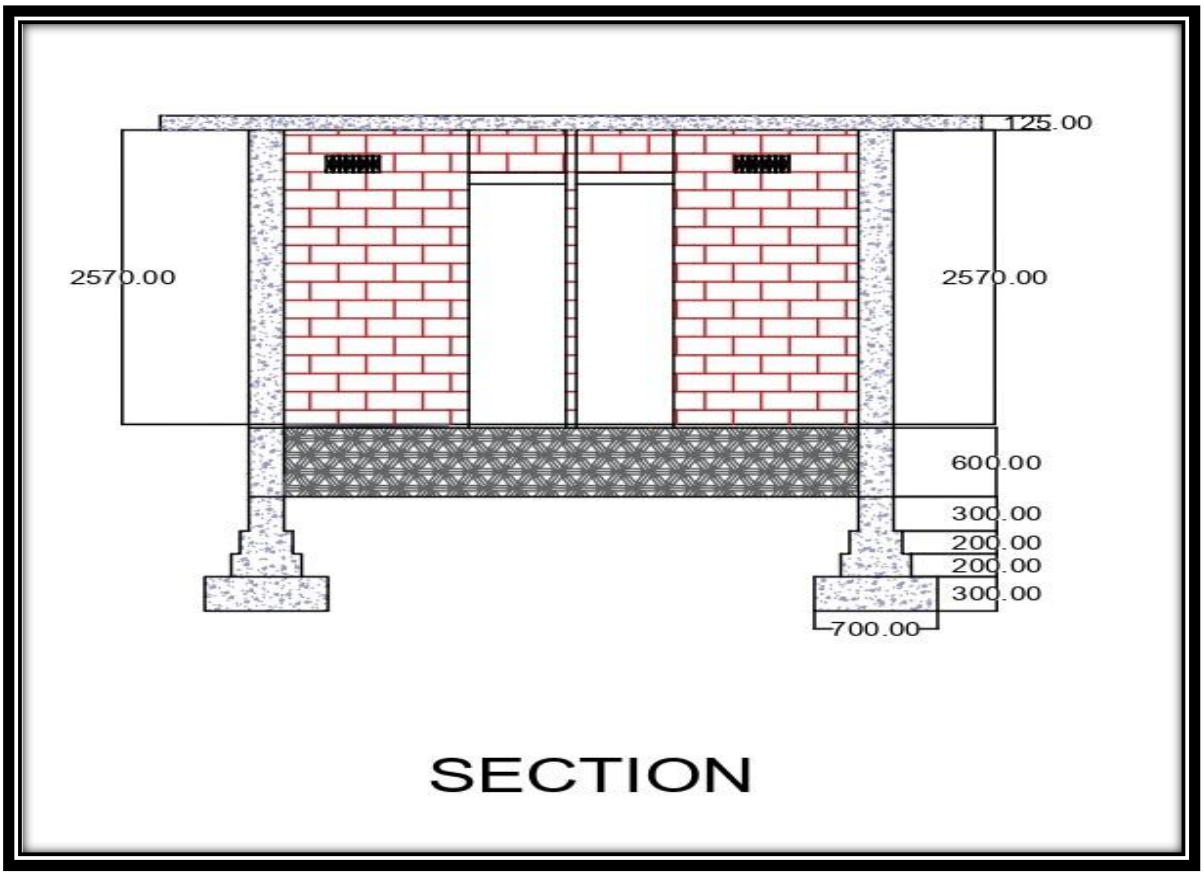

Figure 55: Section plan of proposed public toilet

Public Toilet: Measurement sheet

Sr No.	Description	No.	Length m	Width m	Height m	Quantity	Unit
1	**Excavation**						
	For columns	4	1.100	1.100	1.200	5.808	Cum
	For plinth beams	1	21.31	0.300	0.300	1.918	Cum
	Total quantity					**7.726**	Cum
2	**PCC**						
	Below Foundation	4	1.100	1.100	0.700	3.388	Cum
	Below Plinth Beam	1	21.31	0.300	0.075	0.479	Cum
	Below Flooring	1	3.657	3.048	0.100	1.115	Cum
	Total quantity					**4.982**	Cum
3	**RCC**						
	Column Foundation	4	1.100	1.100	0.300	1.452	Cum
	Column	4	0.230	0.230	2.570	0.543	Cum
	Plinth Beam	1	21.31	0.230	0.300	0.926	Cum

	Slab Beam	1	13.41	0.230	0.300	0.926	Cum
	Slab	1	3.657	3.048	0.125	1.393	Cum
	Total quantity					**5.784**	Cum
4	**Brickwork**						
		1	21.31	0.100	2.570	5.477	Cum
	Deduction						
	D1	-2	0.609	0.100	2.57	0.313	Cum
	D2	-2	0.609	0.100	2.57	0.313	Cum
	W	-2	0.300	0.300	0.100	0.120	Cum
	Total quantity					**4.731**	Cum
5	**Plaster**						
		1	21.31		2.570	54.767	Sqm
	Deduction						
	D1	-2	0.609		2.57	0.313	Sqm
	D2	-2	0.609		2.57	0.313	Sqm
	W	-2	0.300		0.100	0.120	Sqm
	Total quantity					**54.767**	Sqm
6	**External Plaster**						
		1	9.753		2.570	25.065	Sqm
	Deduction						
	D1	-2	0.609		2.57	0.313	Sqm
	D2	-2	0.609		2.57	0.313	Sqm
	W	-2	0.300		0.100	0.120	Sqm
	Total quantity					**24.316**	Sqm
7	**Paint**						
		1	21.31		2.570	54.767	Sqm
	Deduction						
	D1	-2	0.609		2.57	0.313	Sqm
	D2	-2	0.609		2.57	0.313	Sqm
	W	-2	0.300		0.100	0.120	Sqm
	Total quantity					**54.767**	Sqm
8	**External Paint**						
		1	9.753		2.570	25.065	Sqm
	Deduction						
	D1	-2	0.609		2.57	0.313	Sqm
	D2	-2	0.609		2.57	0.313	Sqm
	W	-2	0.300		0.100	0.120	Sqm
	Total quantity					**24.319**	Sqm
9	**door**						

	D1	2	0.609		2.57	0.313	Sqm
	D2	2	0.609		2.57	0.313	Sqm
	Total quantity					**0.626**	Sqm
10	**Windows**						
	W	2	0.300		0.100	0.120	Sqm
	Total quantity					**0.12**	Sqm

Table 14: Measurement sheet of public Toilet

Public toilet: Abstract sheet

Sr No	Description	Quantity	Rate	Per	Amount
1	**EXCAVATION**	7.726	155.20	Cum	1199.08
2	**PCC**	4.982	4000.00	Cum	19928.00
3	**RCC**	5.784	8870.00	Cum	51304.08
4	**Brickwork**	4.731	6450.70	Cum	30991.36
5	**Plaster**	54.767	258.80	Sqm	14173.70
6	**External Plaster**	24.319	258.80	Sqm	6293.75
7	**Paint**	54.767	93	Sqm	5093.33
8	**External Paint**	24.319	93	Sqm	2261.67
9	**Door**	0.626	5100.00	Sqm	3192.60
10	**Windows**	0.12	3700.00	Sqm	445
	Total Amount				137882.57
	Contingencies	3%			4136.48
	Total Cost				**142019.05**

Table 15: Abstract sheet of public toilet

8.1.3 Social design (Civil)

In Bhairav village there is no any clinic or public health center, so here we gives design of clinic.

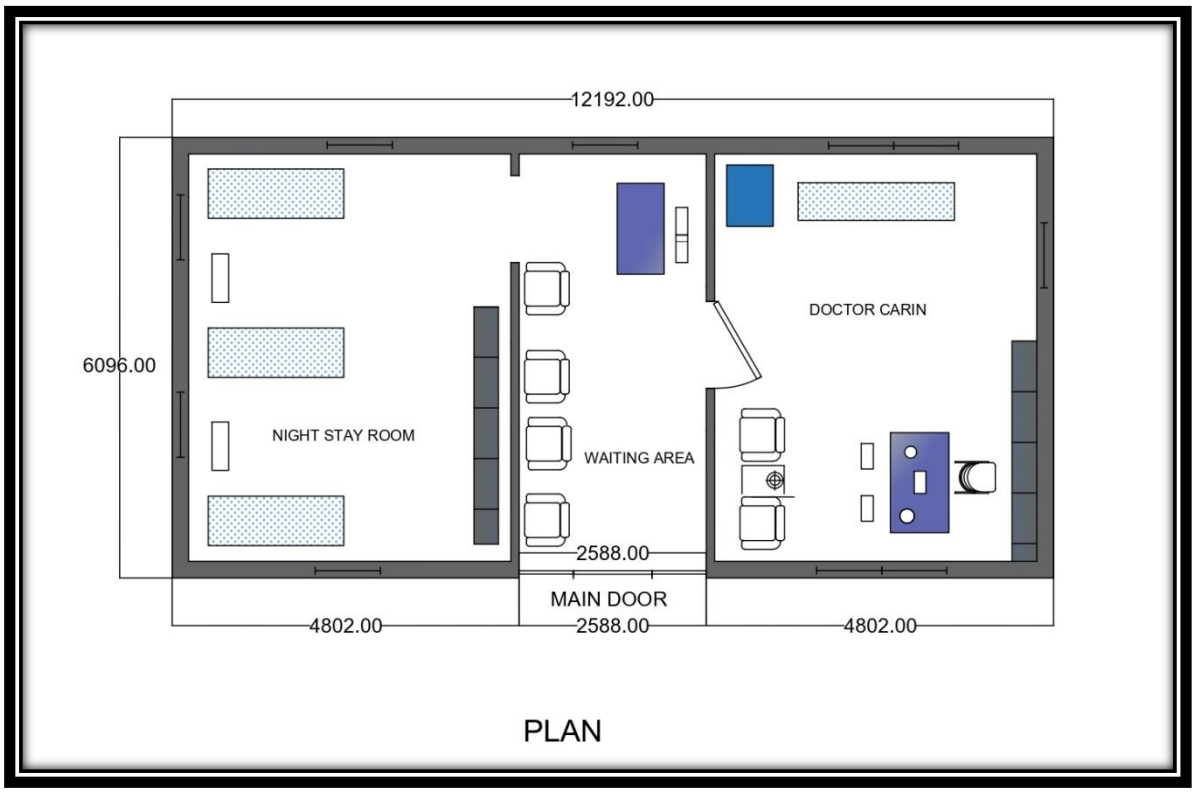

Figure 56: Plan of proposed design of Clinic

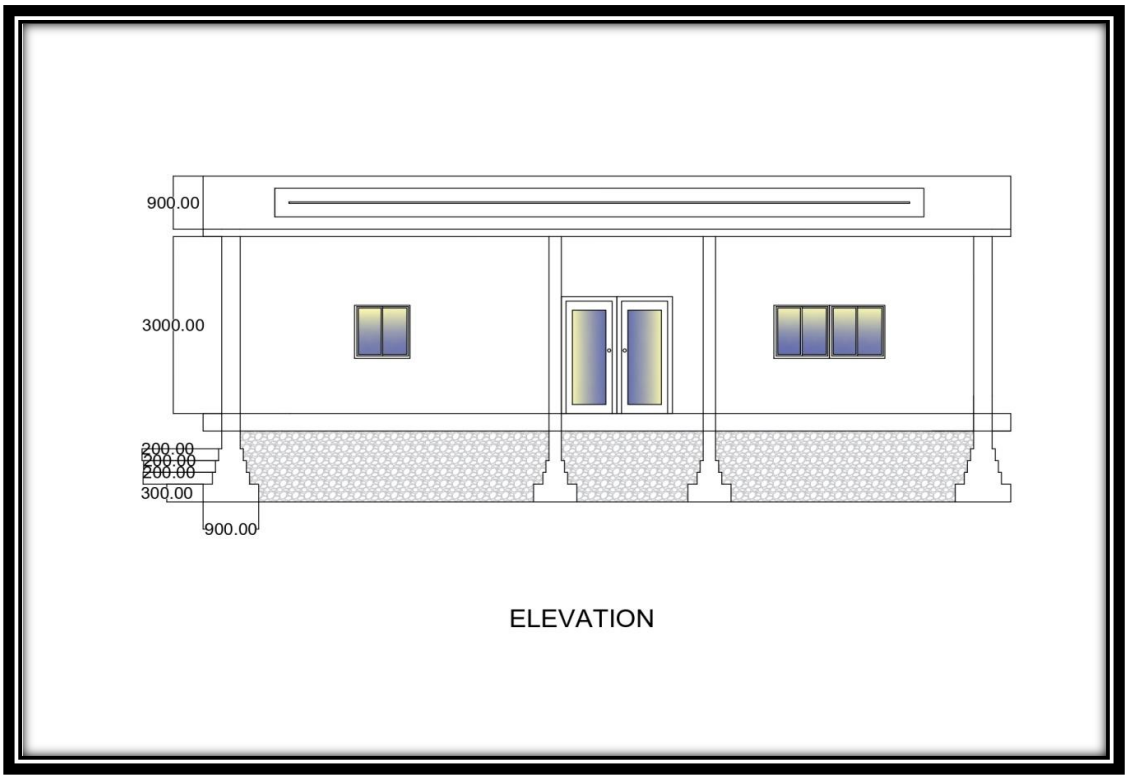

Figure 57: Section plan of proposed design of clinic

Measurement sheet: Clinic

Sr No.	Description	No.	Length m	Width m	Height m	Quantity	Unit
1	Excavation						
	For columns	12	1.100	1.100	1.200	17.424	Cum
	For plinth beams	1	42.672	0.33	0.33	3.840	Cum
	Total					21.264	Cum
2	PCC						
	Below Foundation	12	1.100	1.100	0.300	4.356	Cum
	Below Plinth Beam	1	42.672	0.300	0.075	0.960	Cum
	Below Flooring	1	12.192	6.096	0.100	7.432	Cum
	Total					12.748	Cum
3	RCC						
	Column Foundation	12	1.100	1.100	0.300	4.356	Cum
	Column	12	0.230	0.230	3.000	1.904	Cum
	Plinth Beam	1	42.672	0.230	0.300	2.944	Cum
	Slab Beam	1	42.672	0.230	0.300	2.944	Cum
	Slab	1	12.192	6.096	0.125	9.290	Cum
	Total					21.438	Cum
4	Brickwork						
		1	36.576	0.230	3.000	25.237	Cum
		1	12.192	0.1115	3.000	4.206	Cum
	Deduction						
	D1	-1	2.588	0.230	3.000	2.485	Cum
	D2	-1	0.915	o.115	3.000	0.631	Cum
	W	-8	1.180	0.100	1.200	1.133	Cum
	Total					25.194	Cum
5	Plaster						
		1	60.86		3.000	182.58	Sqm
	Deduction						
	D1	-1	2.588		3.000	2.485	Sqm
	D2	-1	0.915		3.000	0.631	Sqm
	W	-8	1.180		1.200	1.133	Sqm
	Total					178.332	Sqm
6	External Plaster						

		36.576			3.000	109.728	Sqm
	Deduction						
	D1	-1	2.588		3.000	2.485	Sqm
	D2	-1	0.915		3.000	0.631	Sqm
	W	-8	1.180		1.200	1.133	Sqm
	Total					105.479	Sqm
7	**Paint**						
		1	60.86		3.000	182.58	Sqm
	Deduction						
	D1	-1	2.588		3.000	2.485	Sqm
	D2	-1	0.915		3.000	0.631	Sqm
	W	-8	1.180		1.200	1.133	Sqm
	Total					178.332	Sqm
8	**External Paint**						
		36.576			3.000	109.728	Sqm
	Deduction						
	D1	-1	2.588		3.000	2.485	Sqm
	D2	-1	0.915		3.000	0.631	Sqm
	W	-8	1.180		1.200	1.133	Sqm
	Total					105.479	Sqm
9	**door**						
	D1	1	2.588		2.10	5.435	Sqm
	D2	2	0.915		2.10	3.843	Sqm
	Total					9.278	Sqm
10	**Windows**						
	W	8	1.180		1.2	11.328	Sqm
	Total					11.328	Sqm

Table 16: Measurement sheet of proposed clinic

Abstract sheet: Clinic

Sr No	Description	Quantity	Rate	Per	Amount (INR)
1	**EXCAVATION**	21.264	155.20	Cum	3300.17
2	**PCC**	12.748	4000.00	Cum	50992.00

3	**RCC**	21.438	8870.00	Cum	190155.06
4	**Brickwork**	25.194	6450.70	Cum	162518.94
5	**Plaster**	178.332	258.80	Sqm	46152.32
6	**External Plaster**	105.479	258.80	Sqm	27297.97
7	**Paint**	178.332	93	Sqm	16584.88
8	**External Paint**	105.479	93	Sqm	9493.11
9	**Door**	9.278	5100.00	Sqm	47317.8
10	**Windows**	11.328	3700.00	Sqm	41913.6
	Total Amount				595724.95
	Contingencies	3%			17871.75
	Total Cost				**613596.70**

Table 17: Abstract sheet of proposed Clinic

8.1.4 Smart Village Design (Civil)

In Bhairav village there is no any type of digital education or not providing any government news of new schemes. So here we have provided the E-center design, and it does through villagers can know about new technique about agriculture products and new agricultural videos that provide many help into farm.

E-center

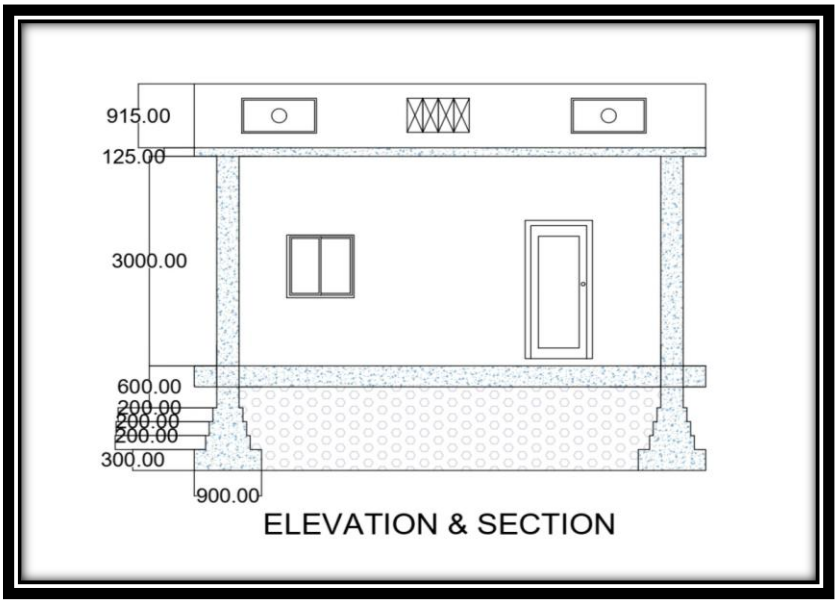

Figure 58: Section of proposed E-center

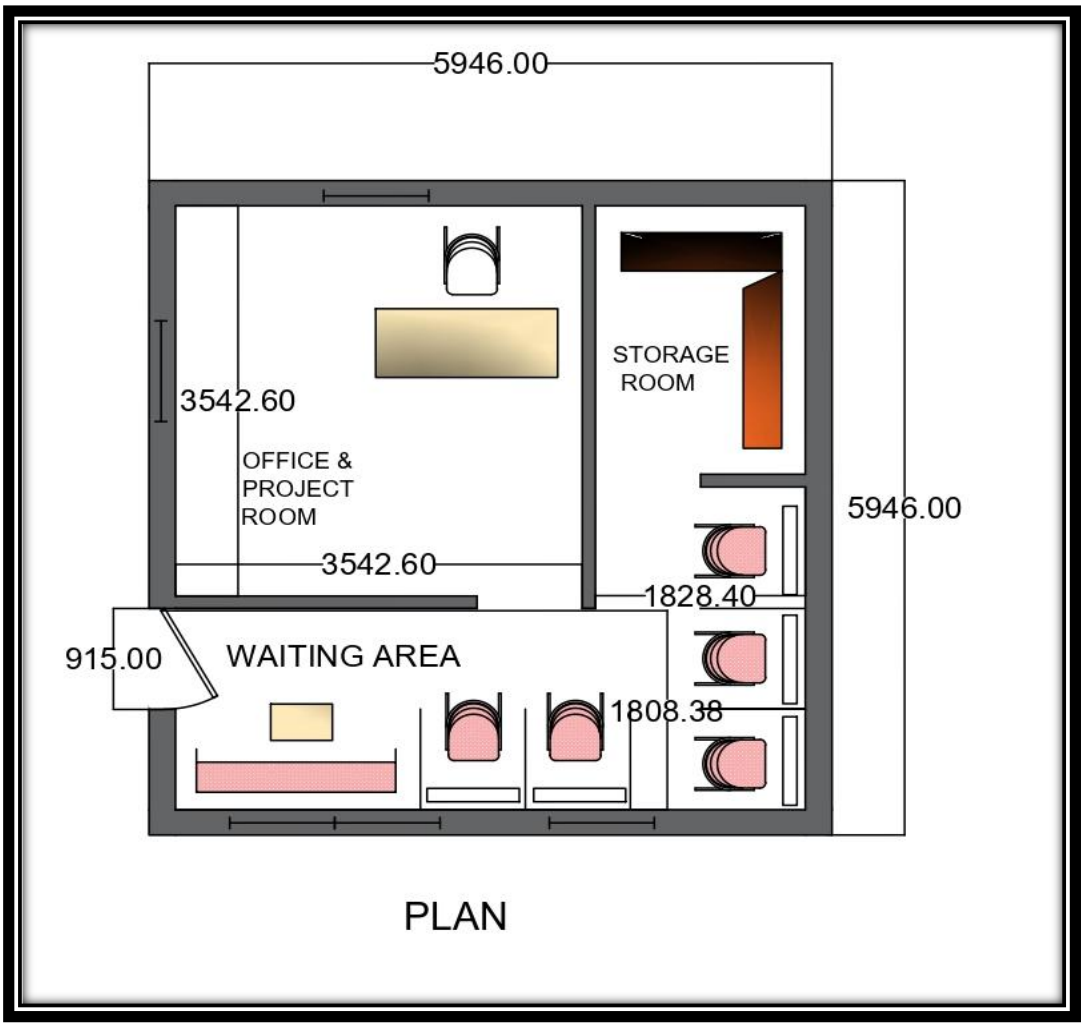

Figure 59: Plan of proposed E-center

Measurement sheet of E-center:

Sr No.	Description	No.	Length m	Width m	Height m	Quantity	Unit
1	**Excavation**						
	For columns	7	1.100	1.100	1.200	10.164	Cum
	For plinth beams	1	30.868	0.33	0.33	3.361	Cum
	Total					**13.525**	Cum
2	**PCC**						
	Below Foundation	7	1.100	1.100	0.300	2.541	Cum
	Below Plinth Beam	1	30.8686	0.300	0.075	0.694	Cum
	Below Flooring	1	5.946	5.946	0.100	3.535	Cum
	Total					**6.77**	Cum
3	**RCC**						

	Column Foundation	7	1.100	1.100	0.300	2.541	Cum
	Column	7	0.230	0.230	3.000	1.111	Cum
	Plinth Beam	1	30.868	0.230	0.300	2.129	Cum
	Slab Beam	1	30.868	0.230	0.300	2.129	Cum
	Slab	1	5.946	5.946	0.125	4.419	Cum
	Total					**12.329**	Cum
4	**Brickwork**						
		1	23.784	0.230	3.000	16.411	Cum
		1	7.084	0.115	3.000	2.444	Cum
	Deduction						
	D1	-2	0.915		3.000	5.49	Sqm
	W1	-3	1.180		1.200	4.248	Sqm
	W2	-1	2.36		1.200	2.832	Sqm
	Total					**6.285**	Sqm
5	**Plaster**						
		1	37.952		3.000	113.856	Sqm
	Deduction						
	D1	-2	0.915		3.000	5.49	Sqm
	W1	-3	1.180		1.200	4.248	Sqm
	W2	-1	2.36		1.200	2.832	Sqm
	Total					**101.129**	Sqm
6	**External Plaster**						
		23.784			3.000	71.352	Sqm
	Deduction						
	D1	-2	0.915		3.000	5.49	Sqm
	W1	-3	1.180		1.200	4.248	Sqm
	W2	-1	2.36		1.200	2.832	Sqm
	Total					**58.782**	Sqm
7	**Paint**						
		1	37.952		3.000	113.856	Sqm
	Deduction						
	D1	-2	0.915		3.000	5.49	Sqm
	W1	-3	1.180		1.200	4.248	Sqm
	W2	-1	2.36		1.200	2.832	Sqm
	Total					**101.129**	Sqm
8	**External Paint**						

		23.784			3.000	71.352	Sqm
	Deduction						
	D1	-2	0.915		3.000	5.49	Sqm
	W1	-3	1.180		1.200	4.248	Cum
	W2	-1	2.36		1.200	2.832	Cum
	Total					**58.782**	Cum
9	**Door**						
	D1	-2	0.915		3.000	5.49	Cum
	Total					**5.49**	Cum
10	**Windows**						
	W1	-3	1.180		1.200	4.248	Cum
	W2	-1	2.36		1.200	2.832	Cum
	Total					**7.08**	Cum

Table 18: Measurement sheet of proposed E-center

Abstract sheet: E-center

Sr No	Description	Quantity m^3	Rate	Per	Amount (INR)
1	**Excavation**	13.525	155.20	Cum	2,099.08
2	**PCC**	6.77	4000.00	Cum	27,080.00
3	**RCC**	12.329	8870.00	Cum	1,09,358.23
4	**Brickwork**	6.285	6450.70	Cum	4,05,42.65
5	**Plaster**	101.129	258.80	Sqm	26,172.19
6	**External Plaster**	58.782	258.80	Sqm	15,212.78
7	**Paint**	101.129	93	Sqm	9,404.99
8	**External Paint**	58.782	93	Sqm	5,466.73
9	**Door**	5.49	5100.00	Sqm	27,999.00
10	**Windows**	7.08	3700.00	Sqm	26,196.00

	Total Amount				2,89,531.65
	Contingencies	3%			8,685.95
	Total Cost				2,98,217.60

Table 19: Abstract sheet proposed design of E-center

8.1.5 Heritage Village Design (Civil)

In Bhairav village there is no any bus stand. So here we have decided to give villagers design of bus stand and to provide bus facilities in the Bhairav village.

Heritage village design: Bus stand

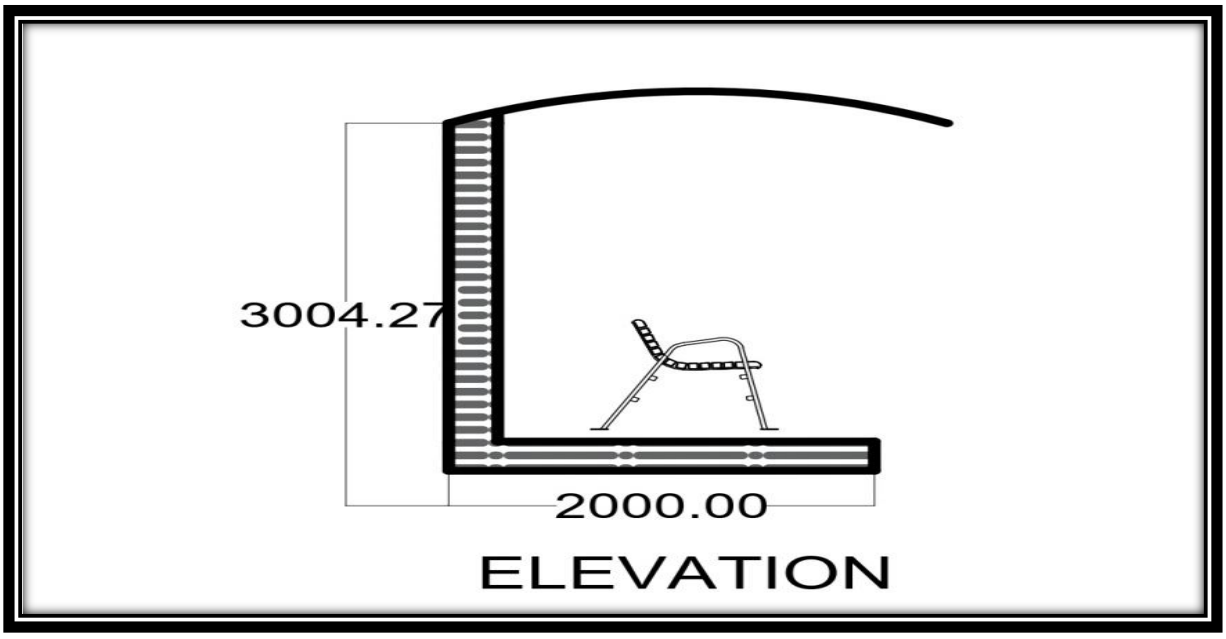

Figure 60: Elevation of bus stand

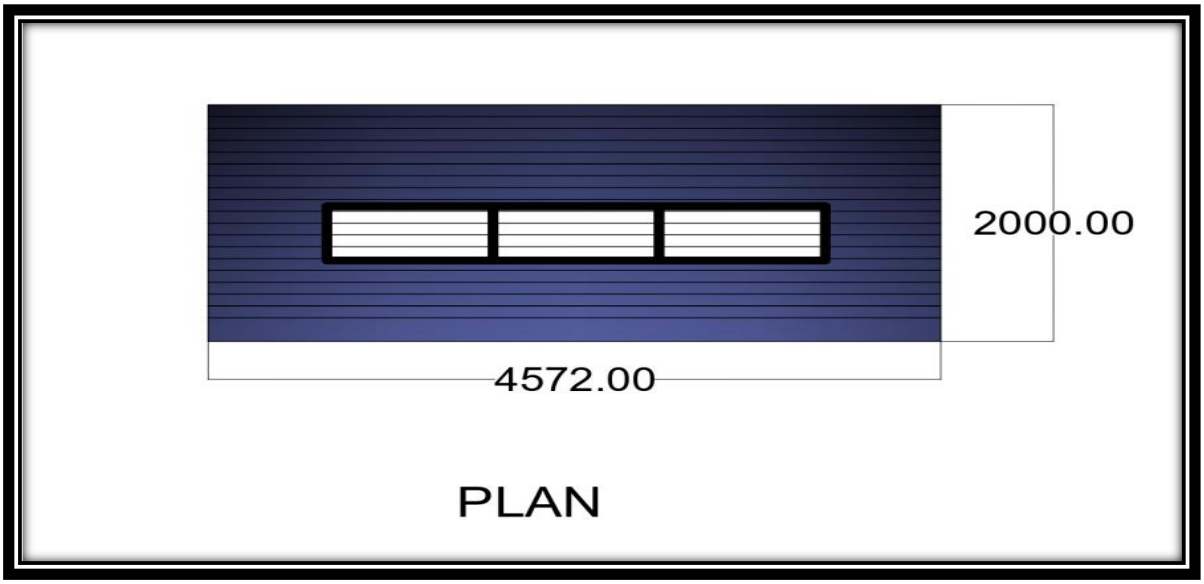

Figure 61: Plan of proposed Bus stand

8.1.6 Socio-cultural design:

In Bhairav village there is no any cultural hall available for annual function or any other activities that enthusiasm to students and parents so here we have design of cultural hall.

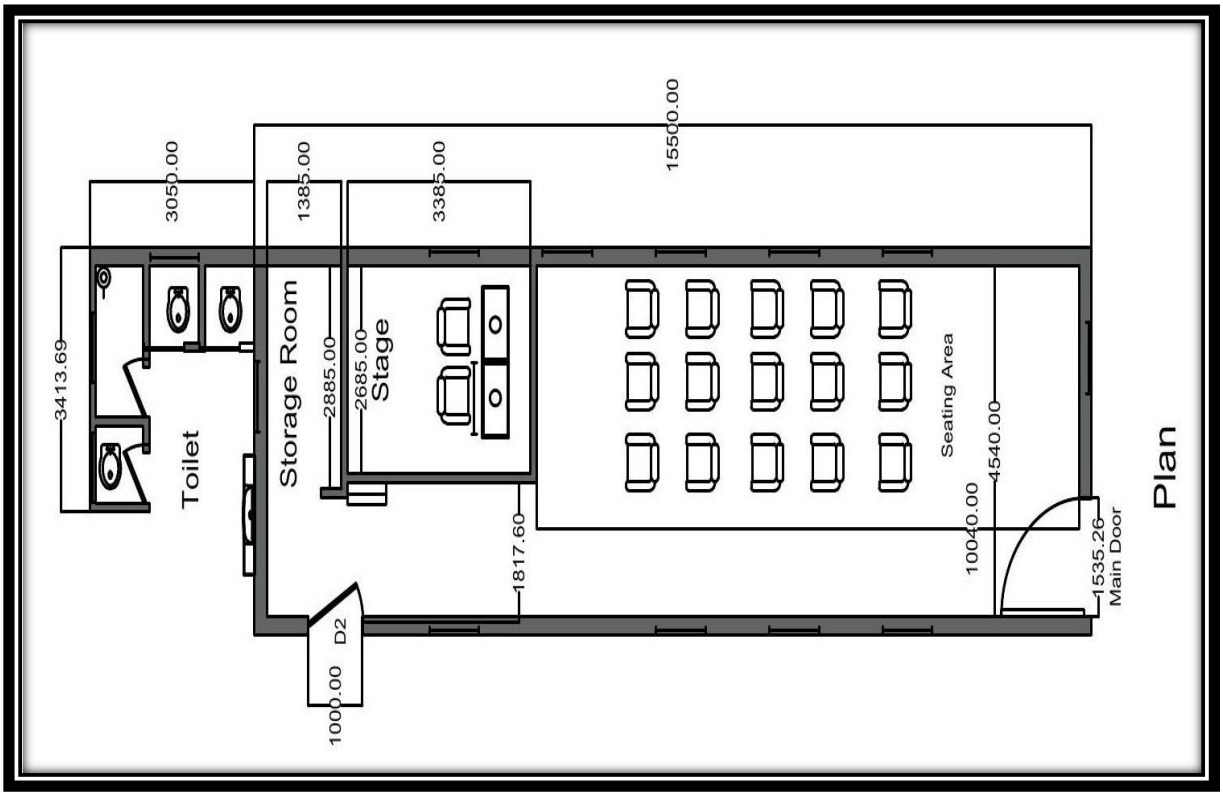

Figure 62: Plan of proposed design of hall

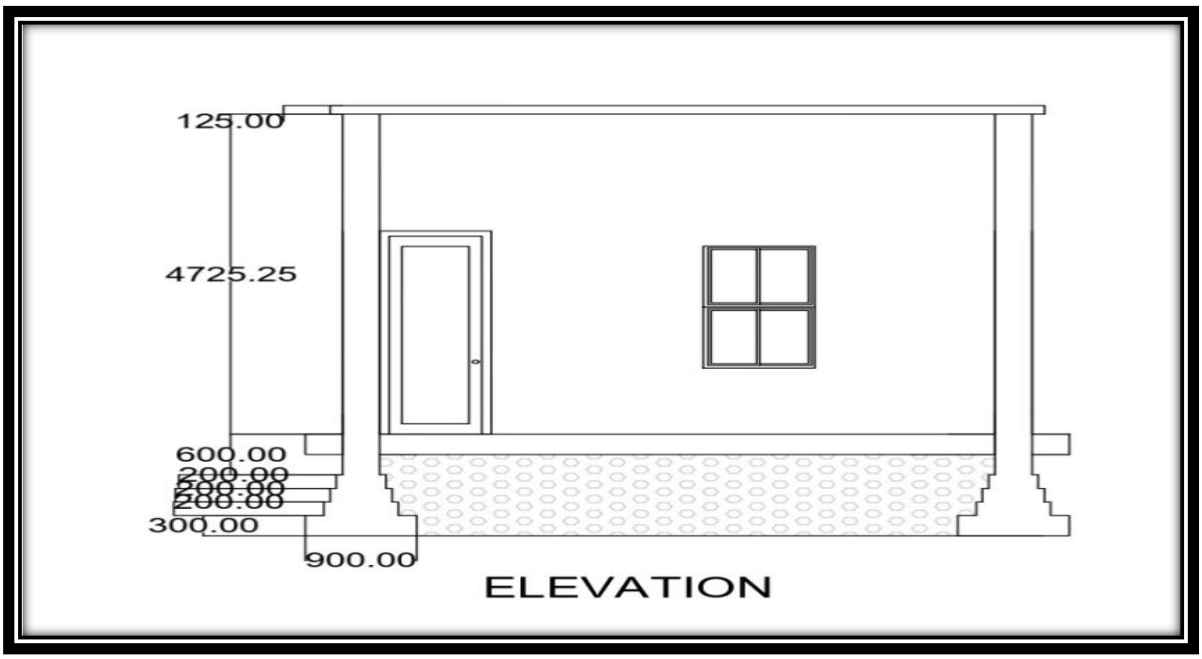

Figure 63: Elevation of the cultural hall

Measurement sheet: Cultural hall

Sr No.	Description	No.	Length m	Width m	Height m	Quantity	Unit
1	**Excavation**						
	For columns	12	1.100	1.100	1.200	17.424	Cum
	For plinth beams	1	51.34	0.33	0.33	5.591	Cum
	Total					**23.015**	Cum
2	**PCC**						
	Below Foundation	12	1.100	1.100	0.300	17.424	Cum
	Below Plinth Beam	1	51.34	0.300	0.075	1.155	Cum
	Below Flooring	1	5.00	15.500	0.100	7.75	Cum
	Total					**32.692**	Cum
3	**RCC**						
	Column Foundation	12	1.100	1.100	0.300	17.424	Cum
	Column	12	0.230	0.230	4.725	2.999	Cum
	Plinth Beam	1	51.34	0.230	0.300	3.542	Cum
	Slab Beam	1	71.34	0.230	0.300	4.922	Cum
	Slab	1	5.000	15.500	0.125	9.687	Cum
	Total					**38.574**	Cum
4	**Brickwork**						
		1	41	0.230	4.725	44.557	Cum
		1	3.996	0.115	4.725	2.171	Cum
		1	9.655	0.230	0.700	1.554	
	Deduction						
	D1	-1	1.535		3.00	4.605	Sqm
	D2	-1	1.000		3.00	3.000	
	W1	-11	1.180		1.800	23.364	Sqm
	Total					**17.313**	Sqm
5	**Plaster**						
		1	45.27		4.725	213.900	Sqm
		1	17.51		0.700	12.257	
	Deduction						
	D1	-1	1.535		3.00	4.605	Sqm
	D2	-1	1.000		3.00	3.000	
	W1	-3	1.180		1.200	4.248	Sqm
	Total					**195.188**	Sqm

6	**External Plaster**						
		1	41		4.725	193.725	Sqm
	Deduction						
	D1	-1	1.535		3.00	4.605	Sqm
	D2	-1	1.000		3.00	3.000	
	W1	-11	1.180		1.800	23.364	Sqm
	Total					**163.296**	Sqm
7	**Paint**						
		1	45.27		4.725	213.900	Sqm
		1	17.51		0.700	12.257	
	Deduction						
	D1	-1	1.535		3.00	4.605	Sqm
	D2	-1	1.000		3.00	3.000	
	W1	-11	1.180		1.800	23.364	Sqm
	Total					**195.188**	Sqm
8	**External Paint**						
		23.784			3.000	71.352	Sqm
	Deduction						
	D1	-1	1.535		3.00	4.605	Sqm
	D2	-1	1.000		3.00	3.000	
	W1	-11	1.180		1.800	23.364	Cum
	Total					**163.296**	Cum
9	**Door**						
	D1	1	1.535		3.00	4.605	Cum
	D2	1	1.000		3.00	3.000	
	Total					**7.605**	Cum
10	**Windows**						
	W1	-11	1.180		1.800	23.364	Cum
	Total					**23.364**	Cum

Table 20: Measurement sheet of cultural hall

Abstract sheet: socio-cultural hall

Sr No	Description	Quantity m^3	Rate	Per	Amount (INR)

1	**Excavation**	23.015	155.20	Cum	3571.93
2	**PCC**	32.692	4000.00	Cum	130768
3	**RCC**	38.572	8870.00	Cum	342133.64
4	**Brickwork**	17.313	6450.70	Cum	111680.97
5	**Plaster**	195.188	258.80	Sqm	50514.65
6	**External Plaster**	163.296	258.80	Sqm	42261.00
7	**Paint**	195.188	93	Sqm	18152.48
8	**External Paint**	163.296	93	Sqm	15186.53
9	**Door**	7.609	5100.00	Sqm	388059
10	**Windows**	23.364	3700.00	Sqm	86446.8
	Total Amount				1188775
	Contingencies	3%			35663.25
	Total Cost				**1224438.25**

Table 21: Abstract sheet of Cultural hall

8.2Reason for Students Recommending this Design

We have recommending all this design because of we have to make smart or ideal village of Bhairav village. So this point of view we have done village survey and get the idea that what we have to make as fulfilled all condition of smart village.

8.3About designs Suggestions / Benefit of the villagers

A smart village knows about its citizens, offered resources, applicable services and schemes. It knows what it needs and when it needs. Smart village initiative focuses on superior resource-use efficiency, empowered local self-governance, access to assured basic amenities and responsible individual and community behavior to build a vibrant and happy society.

Chapter 9

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

For future development of the Bhairav village we are proposing the designs for Part II design in which following points should be considered, as Community hall for cultural and other prize winners program for villagers and students and that is the best for the villagers and schools students.

Second is bank, in Bhairav village there is not available bank so we decide to make it in Bhairav village. When we will make bank in the village, villagers can manage their business easily.

Third is meditation and yoga hall, this is the best ideas comes in our minds that we have to do something for villagers life and we have to change their living life and other perspective and that is the best option is to do some yoga, joggings, meditation and workouts so they can fits and lives healthier life.

Forth is to make library, this is also most interesting ideas comes in ours mind to make library so people can read the all types of books like historical books, adventures books, comics, thrillers, and also biography and people can read all type of news papers in the library in every language.

Fifth is post office, in Bhairav village there is not available post office so we decide to make it. A post office is a public facility that provides mail services, such as accepting letters and parcels, providing post office boxes, and selling postage stamps, packaging, and stationery. Post offices may offer additional services, which vary by country.

The last one and sixth designs are to provide paver block in Bhairav village. In Bhairav village some street there is not available paver block. So we decide to give quotation of the paver blocks.

So these are the design ideas that we will provide in future part-II and make it better village.

Chapter 10

Conclusion of the Entire Village Activities of the Project

VY aims the development of the village with providing urban amenities without changing their soul. Through the development of the villages we contribute to the development of the country. If villages are not developed, then by the Vishwakarma Yojana we young engineers try to reduce the gap between urban and rural by designing proper plans and proposal.

By carrying out the gap analysis we found the gap between the existing facilities and facilities actually required as per norms and will suggest sustainable plans and proposals for filling these gaps and contribute to the development of village. We have designed a public garden and repair of overhead water tank.

In this report we have included all of the details about the ideal village, smart village and allocated village. So in future any student has to work or taking the village this report very helpful them. In this report we also mandates the every information about what facilities are existing and what's not so it's easy to understand which facilities are already existing and which is not.

This report provides all basic information to technical information and also provided some basic charts and images related to the villages and other technical data. We have tried to give full information about the every three villages that we had visited.

Also we have provided some important design that's very helpful to build up in futures. We also provided the measurement sheet and abstract sheet that is gives full information of the plan and elevation design. We have prepared of sustainable design, physical design, smart village design, socio-cultural design, and heritage design of the village.

Following are all design we propose for villages are:

Public toilet, E-center, Bus stand, Waste management, School function hall, Clinic

Chapter 11

Reference referred for this project

- www.onefivenine.com
- http://smartvillages.org
- www.wikipedia.com
- https://en.wikipedia.org/wiki/Mode_of_transport
- https://www.journals.elsevier.com
- http://eeas.europa.eu/archives/delegations/fiji/press_corner/all_news/news/2015/20150420_01_en.pdf
- https://en.wikipedia.org/wiki/Sansad_Adarsh_Gram_Yojana
- https://earth.google.com

Chapter: 12

Annexure attachment

12.1 Survey form of Ideal village Scanned copy attachment in the report for part-1

Survey form of Ideal village Original copy attachment in the report for part-2

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

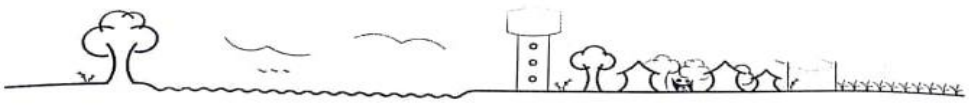
Name of Village:	Kynav
Name of Taluka:	Pulsuru
Name of District:	Surat
Name of Institute:	Pacific School of eng.
Nodal Officer Name & Contact Detail:	Prof. Mayur Veluriya
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Dineshbhai C patel
Date of Survey:	8 sep 2020

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	-	-	-	-
ii)	2011	1609	796	813	375

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	510.92 hector.
	Forest Area (In hect.)	-
	Agricultural Land Area (In hect.)	-
	Residential Area (In hect.)	-
	Other Area (In hect.)	511213 - 1 hector.
	Water bodies	-
	Nearest Town with Distance:	Nansuri - 18 km.



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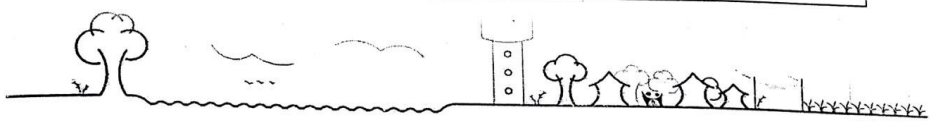
3. Occupational Details:

Name of Three Major Occupation groups in Village	1. Sugarcane. 2. 65% dependent on jobs in ONGC 3. 20% does business.

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	Treated tap water RO water well Hand pump			Zone wise water facilities
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:			
	Underground Sump	Capacity:			
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	Yes			Open drainage system.
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	open	Adequate		
	If Open than Pucca / Kutchcha	Both	Adequate		
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	Yes.			
Suggestions if any:					



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Vishwakarma Yojana: Phase VIII
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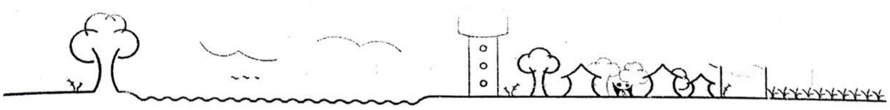
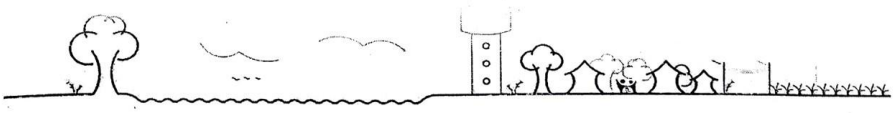
E.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Bitfyminous. CC Road.	yes		no
	Main road	yes			
	Internal streets	yes			
	Nearest NH/SH/MDR/ODR Dist. in kms.	NH 48 4.5 km			
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	yes Gangadhara 9 km.			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	yes Palsana 2.8 km.			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	no			
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	yes			Govt. More than 6hr.
	Power supply for Domestic Use	yes			
	Power supply for Agricultural Use	yes			
	Power supply for Commercial Use	yes			
	Road/ Street Lights	yes			



	Electrification in Government Buildings/ Schools/ Hospitals	yes			
	Renewable Energy Source Facilities (Y/ N)	NO			
	LED Facilities	yes.			
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	yes			
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	NO			
	Solid & liquid waste Disposal system available	yes			
	Any facility for Waste collection from road	yes.			Door to Door collection
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	River Tubewell			
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	pucca 98%.			

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks



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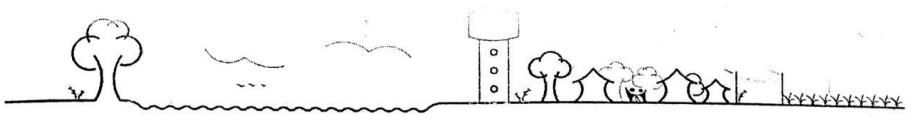
K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	PHC gov. hospi			
	Private Clinic/Private Hospital/ Nursing Home				
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					

L.	**Education Facilities:**				
	Aaganwadi/ Play group	yes			2 nos
	Primary School	yes			1
	Secondary school	NO			
	Higher sec. School	NO			
	ITI college/ vocational Training Center				
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities				
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					

M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:	yes			community hall without TV.



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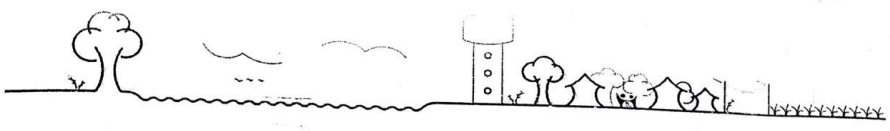
	Condition:	good			
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	NO			
	Public Garden Location: Condition:	yes			
	Village Pond Location: Condition:	yes			
	Recreation Center Location: Condition:	NO.			
	Cinema/ Video Hall Location: Condition:	NO			
	Assembly Polling Station Location: Condition:	NO			
	Birth & Death Registration Office Location: Condition:	yes Gram 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	Telephone			BSNL



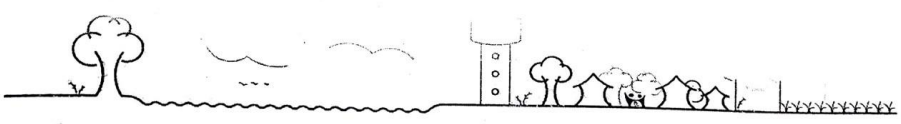
	General Market	yes			
	Shops (Public Distribution System)	yes			
	Panchayat Building	yes			
	Pharmacy/Medical Shop	NO			
	Bank & ATM Facility	NO			
	Agriculture Co-operative Society				
	Milk Co-operative Soc.				
	Small Scale Industries				
	Internet Cafes/ Common Service Center/Wi Fi	NO			
	Other Facility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

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

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

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	yes.



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Vishwakarma Yojana: Phase VI
Techno Economic Survey

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

8. **Additional Information/ Requirement:**

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

9. **Smart Village Proposal Design**

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

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

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

સરપંચશ્રી
કણાવ ગ્રામ પંચાયત
તા. પલસાણા, જી. સુરત.

ગ્રામ પંચાયત કણાવ
તા. પલસાણા, જી. સુરત.

12.2 Survey form of Smart village Scanned copy attachment in the report for part-1

Survey form of Smart village Original copy attachment in the report for part-2

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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:	Surat
Name of Taluka:	Kumrej
Name of Village:	Orma
Name of Institute:	Pacific school of engineering
Nodal Officer Name & Contact Detail:	Prof. Mayur Veluriya
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Gitaben D. Rathod
Date of Survey:	9 Sep 2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	2960	1537	1423	4681
2.	2011	2366	1223	1143	549

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	668 hector.
2.	Forest Area (In hect.)	-
3.	Agricultural Land Area (In hect.)	593 hec.
4.	Residential Area (In hect.)	5 hector
5.	Other Area (In hect.)	66 hector.
6.	Distance to the nearest railway station (in kilometers):	Bardoli - 13 km.

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7.	Name of Nearest Town with Distance:	Kumrej 8 km.
8.	Distance to the nearest bus station (in kilometers):	6.7 km.
9.	Whether village is connected to all road for the any facility or town or City?	Yes

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Agriculture
	2.	dairy.
	3.	

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

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
1.	**PIPED WATER**	Tap water.	Adequate		
	Piped Into Dwelling				
	Piped To Yard/Plot				
	Public Tap/Standpipe				
	Tube Well Or Bore Well				
2.	**DUG WELL**	Yes			
	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	canal,			
	Bottled Water				
	Hand Pump	pond.			
	Other(Specify)**Lake/ Pond**	hand pump			16 Nos.

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	50000	1,00,000 Lit.	2 tanks.
	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	Open & close both	Adequate.		70 to 80% are covered.
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Yes			
	Main road	Yes	CC Road.		
	Internal streets	Yes	Paver blocks are placed.		
	Nearest NH/SH/MDR/ODR Dist. in kms.	MDR - SH - Kamrej. (13 km).			
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No Burden			14 kms.
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes.			In good condition.
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	All facilities Adequate.			
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes.			More than 6 hr.

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	Power supply for Domestic Use	Yes			
	Power supply for Agricultural Use	purtfully.			
	Power supply for Commercial Use	yes			
	Road/ Street Lights	yes			
	Electrification in Government Buildings/ Schools/ Hospitals	yes			
	Renewable Energy Source Facilities (Y/ N)	yes			Solar energy for street lights.
	LED Facilities	Yes.			20 to 22 Led lights.
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	NO			
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	NO			
	Solid & liquid waste Disposal system available	yes.			collected waste is used for the local filling
	Any facility for Waste collection from road	yes.			
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL. OTHER (SPECIFY)	cancel well Boring.			
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	60-40			Pucca - 60%. 40% kutchha.

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	PHC			
	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	2			
	Primary School	1			
	Secondary school	1			
	Higher sec. School	1			
	ITI college/ vocational Training Center	–			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	–			
	If any of the above Facility is not available in village than approx. distance from village: 14.....kms.				

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Suggestions if any:

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

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

Suggestions if any:

M.	Other Facilities	Condition	Location	Available (YES)	Available (NO)
	Post-office	good.	opp. panchayat office	yes.	
	Telecommunication Network/ STD booth				
	General Market	50-60 street.		yes.	
	Shops (Public Distribution System)				
	Panchayat Building	good.		yes.	
	Pharmacy/Medical Shop	.		—	
	Bank & ATM Facility	good		2, 2	
	Agriculture Co-operative Society	–		1	
	Milk Co-operative Soc.	–		1	
	Small Scale Industries			–	
	Internet Cafes/ Common Service Center/Wi Fi	–		–	
	Youth Club	–		–	
	Mahila Mandal	–		–	

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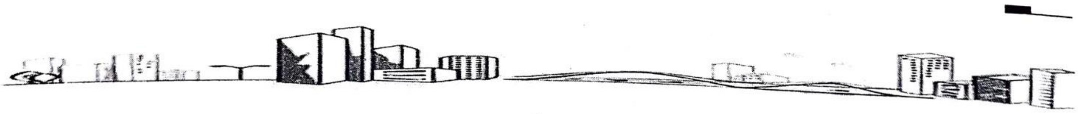

	Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-chaupal / Mills / Small Scale Industries	Milk co-operative society			
	Other Facility				
Suggestions if any:					

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)			{Pradhan Mantri Jivan Jyoti Bima Yojna} {Pradhan Mantri Suraksha Bima Yojna}	

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VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

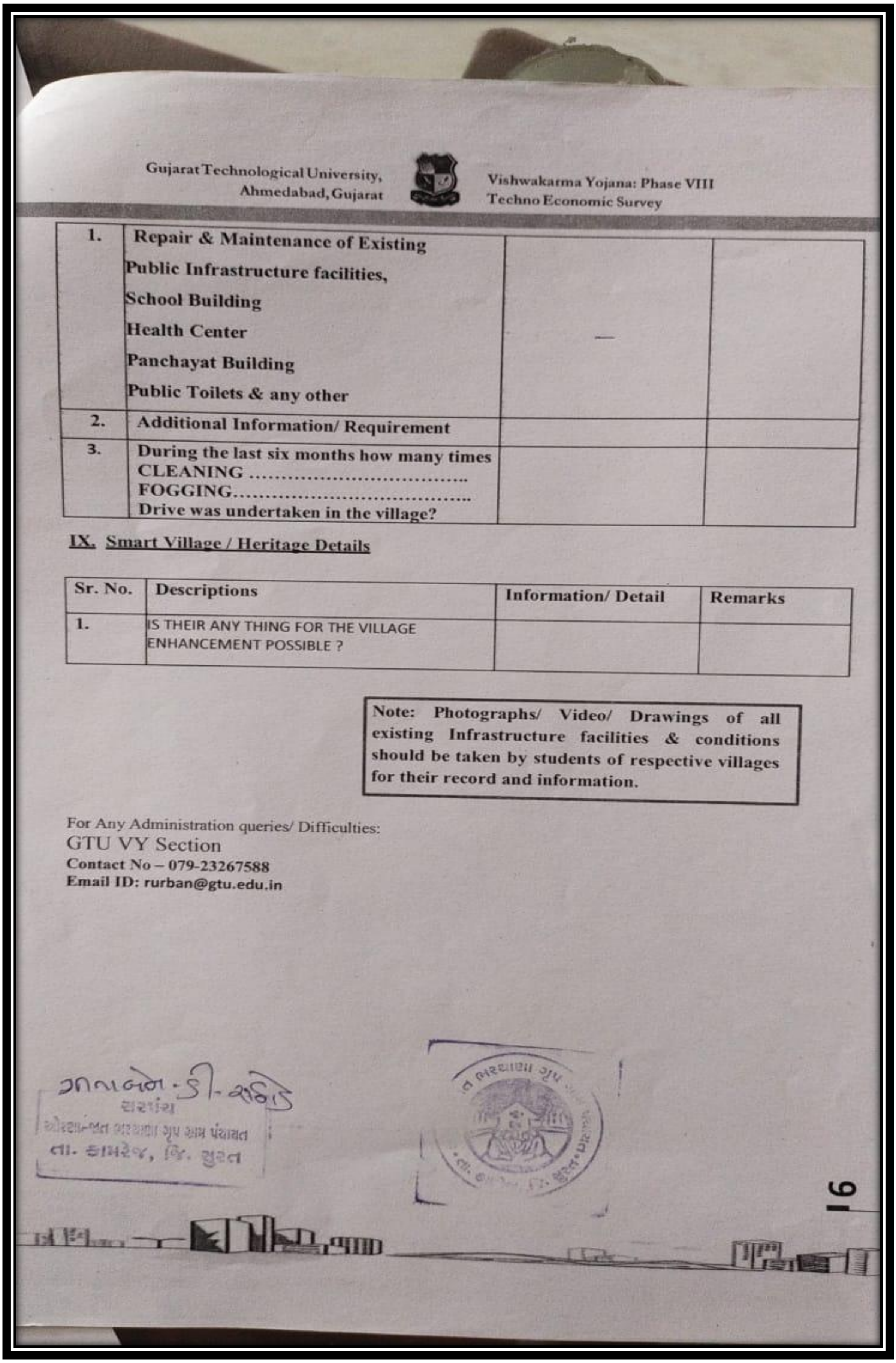
VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

8



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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

સરપંચ
તા. કામરેજ, જિ. સુરત

12.3 Survey form of Allocated village Scanned copy attachment in the report for part-1

Survey form of Allocated village Original copy attachment in the report for part-2

Gujarat Technological University, Ahmedabad, Gujarat

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:	Kamrej
Name of Village:	Bhairav.
Name of Institute:	Pacific School of eng.
Nodal Officer Name & Contact Detail:	Mr. Mayur Vekariya.
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Ashwinbhai Javerbhai Patel
Date of Survey:	9 Sep 2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	961	491	470	203

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	410.17 hector
2.	Forest Area (In hect.)	—
3.	Agricultural Land Area (In hect.)	398 hector.
4.	Residential Area (In hect.)	5 hectors.
5.	Other Area (In hect.)	11212 - 1 hectors.
6.	Distance to the nearest railway station (in kilometers):	14MM - 14 km

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7.	Name of Nearest Town with Distance:	Kumrej - 5 km.
8.	Distance to the nearest bus station (in kilometers):	Kumrej - 3.1 km.
9.	Whether village is connected to all road for the any facility or town or City?	yes.

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Sugarcane.
	2.	Dairy Business.
	3.	

Major crops grown in the village:	1.	Sugarcane.
	2.	
	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 & Tap water	Adequate		
	Piped To Yard/Plot				
	Public Tap/Standpipe				
	Tube Well Or Bore Well				
2.	**DUG WELL**				
	Protected Well	yes.			
	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	Hand pump.			
	Bottled Water				
	Hand Pump				

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	Other(Specify)**Lake/ Pond**	-			
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	35000		
	Underground Sump	Capacity:			
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1	Underground drainage			
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	yes			
	Main road	yes	C.C Road		
	Internal streets	yes.	paver blocked		cc Placed.
	Nearest NH/SH/MDR/ODR Dist. in kms.	NH-48 3.5 km			
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Yes Railway station. 14 km			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Railway 3.1 km			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	yes.			
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Govt.			More than 6 hr.

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

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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	-			
	If any of the above Facility is not available in village than approx. distance from village: 3-5 ...kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	Anganwadi-1			
	Primary School	1			
	Secondary school	-			
	Higher sec. School	-			
	ITI college/ vocational Training Center	-			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	-			

	If any of the above Facility is not available in village than approx. distance from village: 2.1 ...kms.
Suggestions if any:	

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

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

Suggestions if any:

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

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

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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	NOT available		-	
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	NO			
2.	Recent Projects going on for Development of Village	-			
3.	Any NGO working for village development	-			
4.	Any natural calamity in the village during the last one year: EARTHQUAKES FLOODS CYCLONE DROUGHT LANDSLIDES AVALANCHE OTHER (SPECIFY)	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	Repair of water tank & gurden.	-
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

ભૈરવ ગામ પંચાયત
તા. કામરેજ

તા ૨૫/૧/૨૦૨૧
સરપંચ
ગ્રામ પંચાયત ભૈરવ

12.4 Gap Analysis of the Allocated Village

Village gap analysis					
Village facilities	**Planning commission/UDPFI Norms**	**Village name:**	**Bhairav (Kamrej, surat)**		
		Population: 961			
		Existing	**Required as per norms**	**Smart Village/ Cities/ Heritage failure Projection design**	**Gap**
Social infrastructure facilities					
Education					
Anganwadis	Each or Per 2500 population	1	1	-	0
Primary school	Each Per 2500 population	1	1	-	0
Secondary school	Per 7,500 population	0	0	-	0
Higher Secondary School	Per 15,000 Population	0	0	-	0
College	Per 125,000 Population	0	0	-	0
Tech. Training Institute	Per 100000 Population	0	0	-	0
Agriculture Research Centre	Per 100000 Population	0	0	-	0
Skill Development Center	Per 100000 Population	0	0	-	0
Health Facility					
Govt/Panchayat Dispensary or Sub PHC or Health Centre	Each Village	1	1	-	0
Primary Health & Child Health Center	Per 20,000 population	1	0	-	1
Child Welfare and Maternity Home	Per 10,000 population	0	0	-	0
Multispecialty Hospital	Per 100000 Population	0	0	-	0
Public Latrines	1 for 50 families (if toilet is not there in home, especially for slum pockets	0	1	-	-1
Physical Infrastructure Facilities					
Transportation		Inadequate		-	-

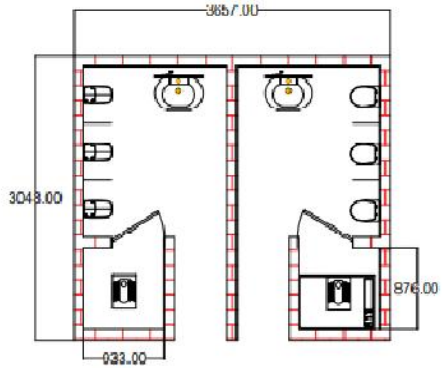
Pucca Village Approach Road	Each village	Adequate	2 km approach road	-	-
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	Inadequate	Pickup stand at man highway of Bhairav village	-	-
Drinking Water (Minimum 70 lpcd)		Adequate	-	-	-
Over Head Tank	1/3 of Total Demand	Adequate	1	1	0
U/G Sump	2/3 of Total Demand	Adequate	1	1	0
Drainage Network - Open		Adequate	30% open	-	-
Drainage Network - cover		Adequate	70% covered	-	-
Waste Management System		Inadequate	-	-	-
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	1	1	-	0
Public Library	Per 15000 Population	0	0	-	0
Cremation Ground	Per 20000 Population	0	1	-	-1
Post Office	Per 10000 Population	0	1	-	-1
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	1	1	-	0
Police post	Per 40,000Population	0	0	-	0
Shopping Mall :	Shops are available in village				
Electrical Design					
Electricity Network		Adequate			
Any Smart Village Facility					
Technology		RO Water Plant	18500 lit total distribution	-	
		ESR cap	-		
		Sump cap	1.85 lac & 7500 gallons		
		Lat	-		

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

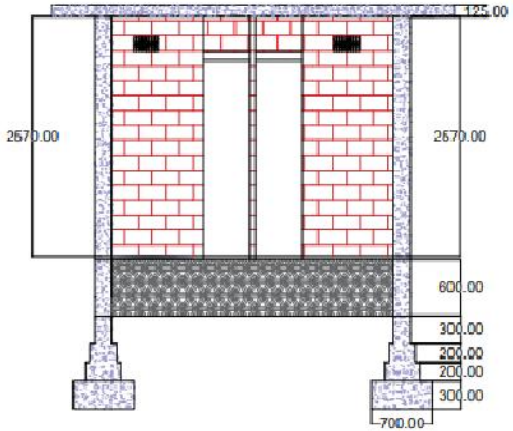
Sr no.	Village name	Discipline	Part-I	Part-II
1	Bhairav	Civil Engineering	Clinic	Community hall
			Cultural hall	Bank
			Public toilet	Meditation and yoga hall
			E-center	Library
			Bus stand	Post office
			Waste management	Paver block
2	Kholeshwar	Civil Engineering	Public toilet	Pharmacy center
			Anganwadi	Community hall
			Public health center	Library
			Entrance gate	E-center
			CCTV Room	Market
			Chabutara	Garden
3	Sanki	Civil Engineering	Anganwadi	Safety wall of pond
			Pond	Community hall renovation
			Primary store	Storage godown
			Entrance gate	Cricket ground
				Ev rickshaw stand

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

All the images and drawings are attached in the chapter along with design.



PLAN



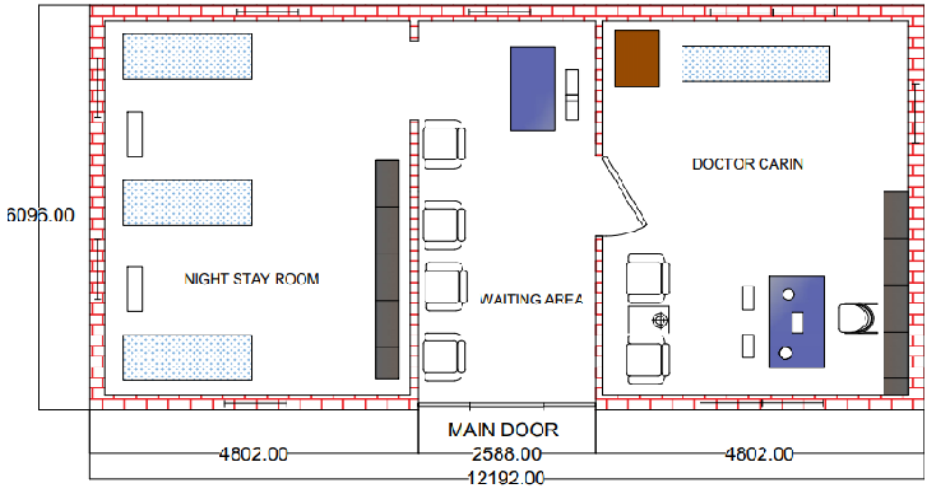
SECTION

Gujarat Technological University

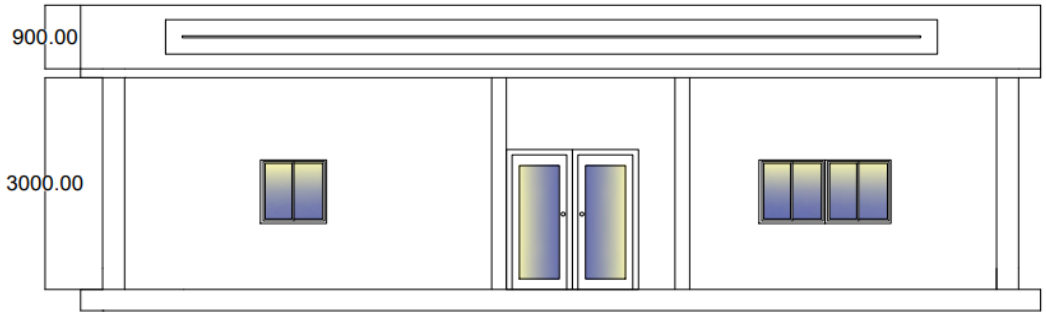
- All dimensions are in Meters unless stated otherwise.
- Drawings should be read not for scale.
- design is prepared only for educational purpose and correction of all data must be check before use.
- Design is not responsible for any kind of wrong data.
- Minimum Grade of concrete is m20 and all Steel grade is fe500.
- Check first the plot dimensions.

Vishwakarma Yojana

Scale As indicated



PLAN



ELEVATION

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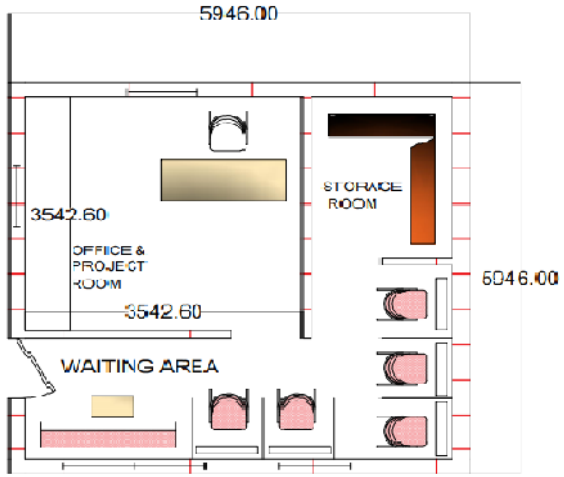
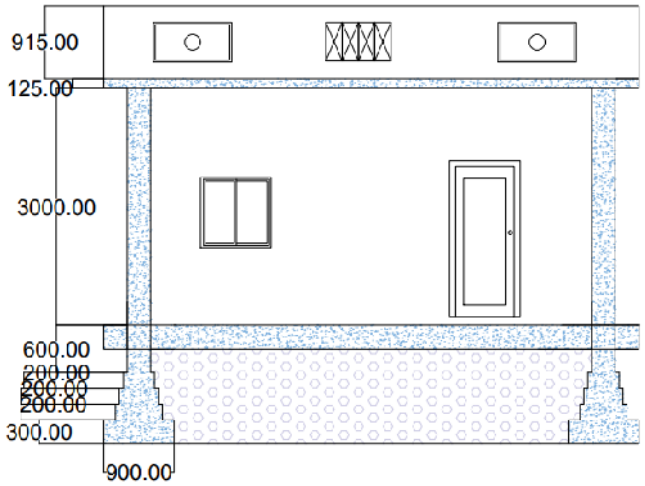
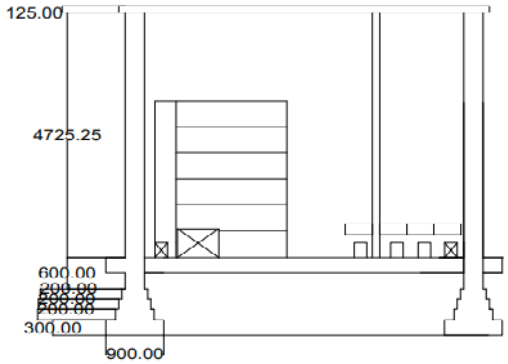
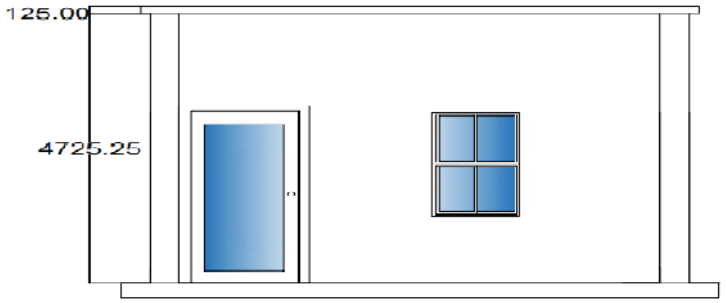


PLAN





SECTION



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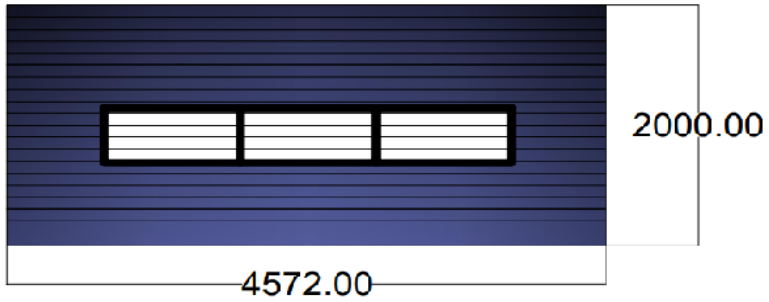
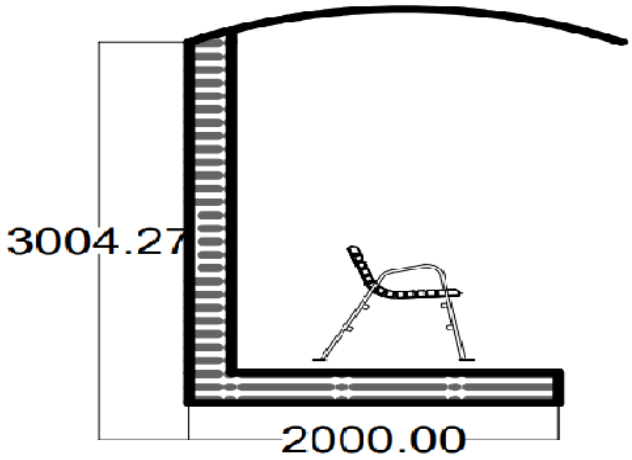


PLAN



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Vishwakarma Yojana

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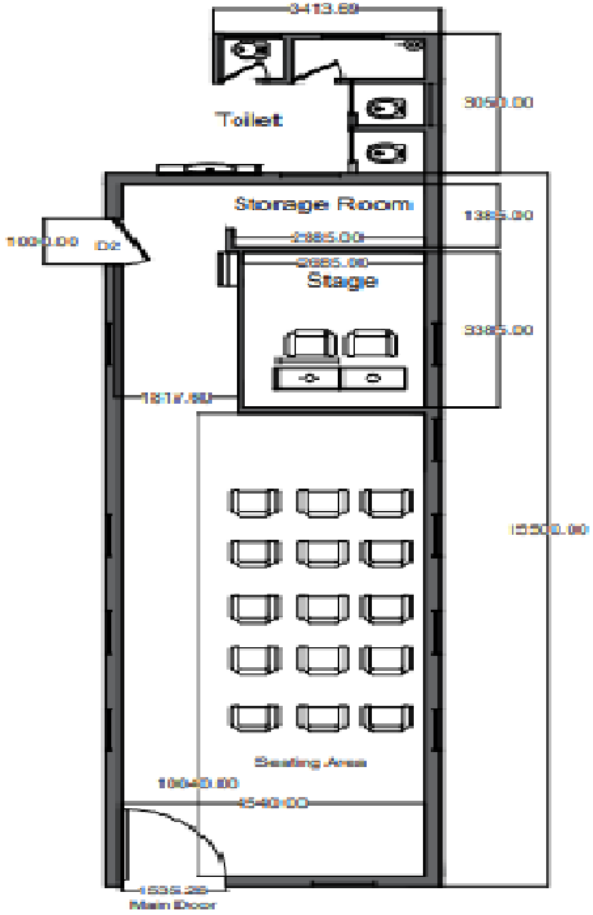
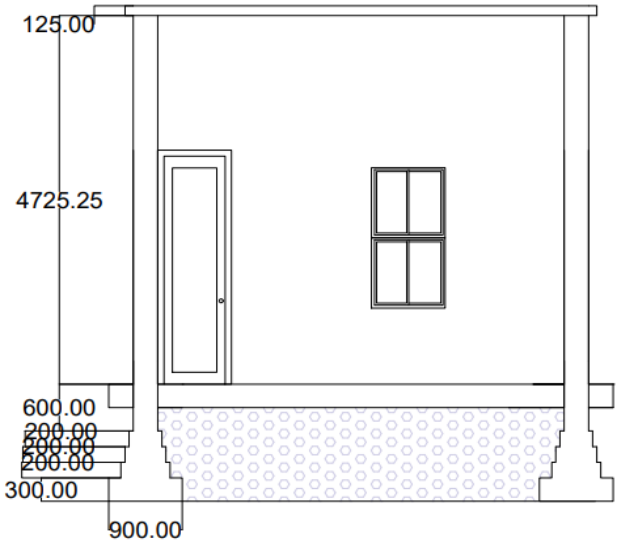


Plan



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- Check first the plot dimensions.

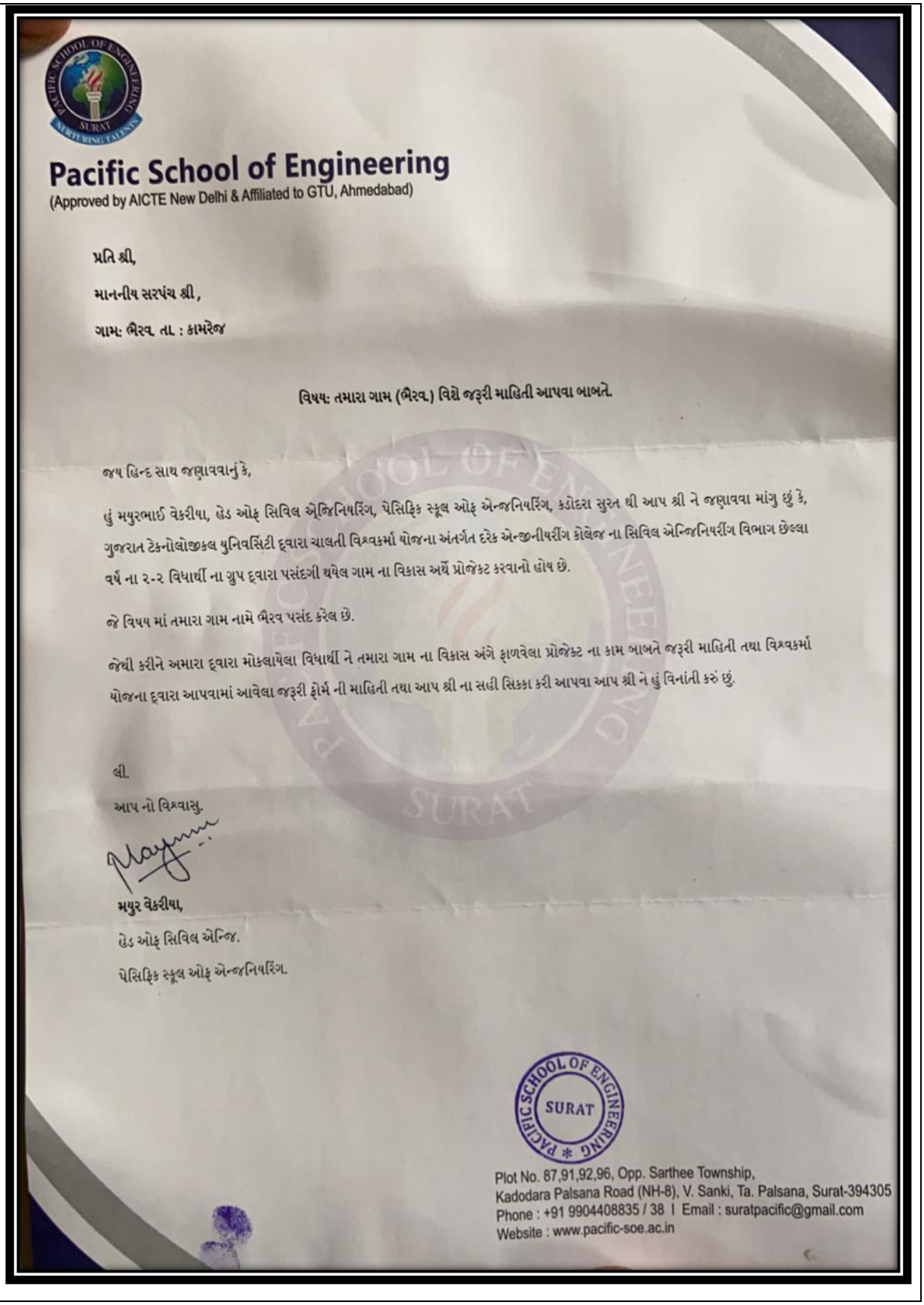
Vishwakarma Yojana

Scale As indicated

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

12.8 Village Interaction with sarpanch Report with the photograph

12.9 Sarpanch Letter giving information about the village development



Pacific School of Engineering

(Approved by AICTE New Delhi & Affiliated to GTU, Ahmedabad)

પ્રતિ શ્રી,

માનનીય સરપંચ શ્રી,

ગામ: ભૈરવ. તા. : કામરેજ

વિષય: તમારા ગામ (ભૈરવ) વિશે જરૂરી માહિતી આપવા બાબતે.

જય હિન્દ સાથ જણાવવાનું કે,

હું મયુરભાઈ વેકરીયા, હેડ ઓફ સિવિલ એન્જિનિયરિંગ, પેસિફિક સ્કૂલ ઓફ એન્જનિયરિંગ, કડોદરા સુરત થી આપ શ્રી ને જણાવવા માંગુ છું કે, ગુજરાત ટેકનોલોજીકલ યુનિવર્સિટી દ્વારા ચાલતી વિશ્વકર્મા યોજના અંતર્ગત દરેક એન્જીનીયરીંગ કોલેજ ના સિવિલ એન્જિનિયરીંગ વિભાગ છેલ્લા વર્ષ ના ૨-૨ વિધાર્થી ના ગ્રુપ દ્વારા પસંદગી થયેલ ગામ ના વિકાસ અર્થે પ્રોજેકટ કરવાનો હોય છે.

જે વિષય માં તમારા ગામ નામે ભૈરવ પસંદ કરેલ છે.

જેથી કરીને અમારા દ્વારા મોકલાયેલા વિધાર્થી ને તમારા ગામ ના વિકાસ અંગે ફાળવેલા પ્રોજેકટ ના કામ બાબતે જરૂરી માહિતી તથા વિશ્વકર્મા યોજના દ્વારા આપવામાં આવેલા જરૂરી ફોર્મ ની માહિતી તથા આપ શ્રી ના સહી સિક્કા કરી આપવા આપ શ્રી ને હું વિનાંતી કરું છું.

લી.

આપ નો વિશ્વાસુ.

મયુર વેકરીયા,

હેડ ઓફ સિવિલ એન્જિ.

પેસિફિક સ્કૂલ ઓફ એન્જનિયરિંગ.

PACIFIC SCHOOL OF ENGINEERING SURAT

Plot No. 87,91,92,96, Opp. Sarthee Township,
Kadodara Palsana Road (NH-8), V. Sanki, Ta. Palsana, Surat-394305
Phone : +91 9904408835 / 38 I Email : suratpacific@gmail.com
Website : www.pacific-soe.ac.in

12.10 Comprehensive report preparation as per format

Bhairav is a Village in Kamrej Taluka in Surat District of Gujarat State, India. It is located 21 KM towards East from District head quarters Surat and 5 Km from Kamrej. Bhairav Local Language is Gujarati. Bhairav Village Total population is 961 and number of houses are 203. Female Population is 48.9%. Village literacy rate is 76.0% and the Female Literacy rate is 37.1%. In kanav total population of the village is 1609 as per the Census of India 2011. Out of which the male population is 796 and the female population is 813. In the village the population of the children between the ages 0-6 is 185 which is the 11.68% of the total population. The average sex ratio of the village is 1021 which is higher than Gujarat state average of 919. Kanav village has higher education rate compare to Gujarat state. The literacy rate of the village is 83.81% and from which the male literacy is 87.32% and female literacy is 80.39%. The population of the Schedule Caste in the village is 208, and the population of schedule tribes is 930 from which the males are 459 and females are 471. The total numbers of workers are 810, out of which 496 and 314 are male and female workers respectively.We have selected the smart village as Orna It is located in Kamrej taluka of district Surat. We have visited the Orna Village. Orna is 13.5 km from the Kamrej. The village has total population of about 2366 as per the 2011 Census of India, out of which the male Population is of 1223 and female population is about 1143. Total no of household in the village are 549. The roads are made up of RCC and the internal streets area of paver block. The Village also has its gram panchayat office. The main crops grown in village are Sugarcane , bajra, and wheat. along with this there is fishing done in the river tapi situated near the village. There are water tanks, stationary, shops, bus stand, school, hand pumps, Anganvadi, temple, banks , ATMs, primary health centre , higher secondary school and animal health care etc. In Vishwakarma Yojana phase I we have done 6 designs for village improvement and making a smart village. We have designed collection, public bus stand, health care, E-center, public toilet and cultural hall.

Chapter 13

From the Chapter- 9 future designs of the aspects

13.1 Design Proposals

13.1.1 Bank Design:-

In Bhairav Village there is no any Bank or Atm available and villagers have to go to the outside of the village. So here we have give the design of the bank with atm.

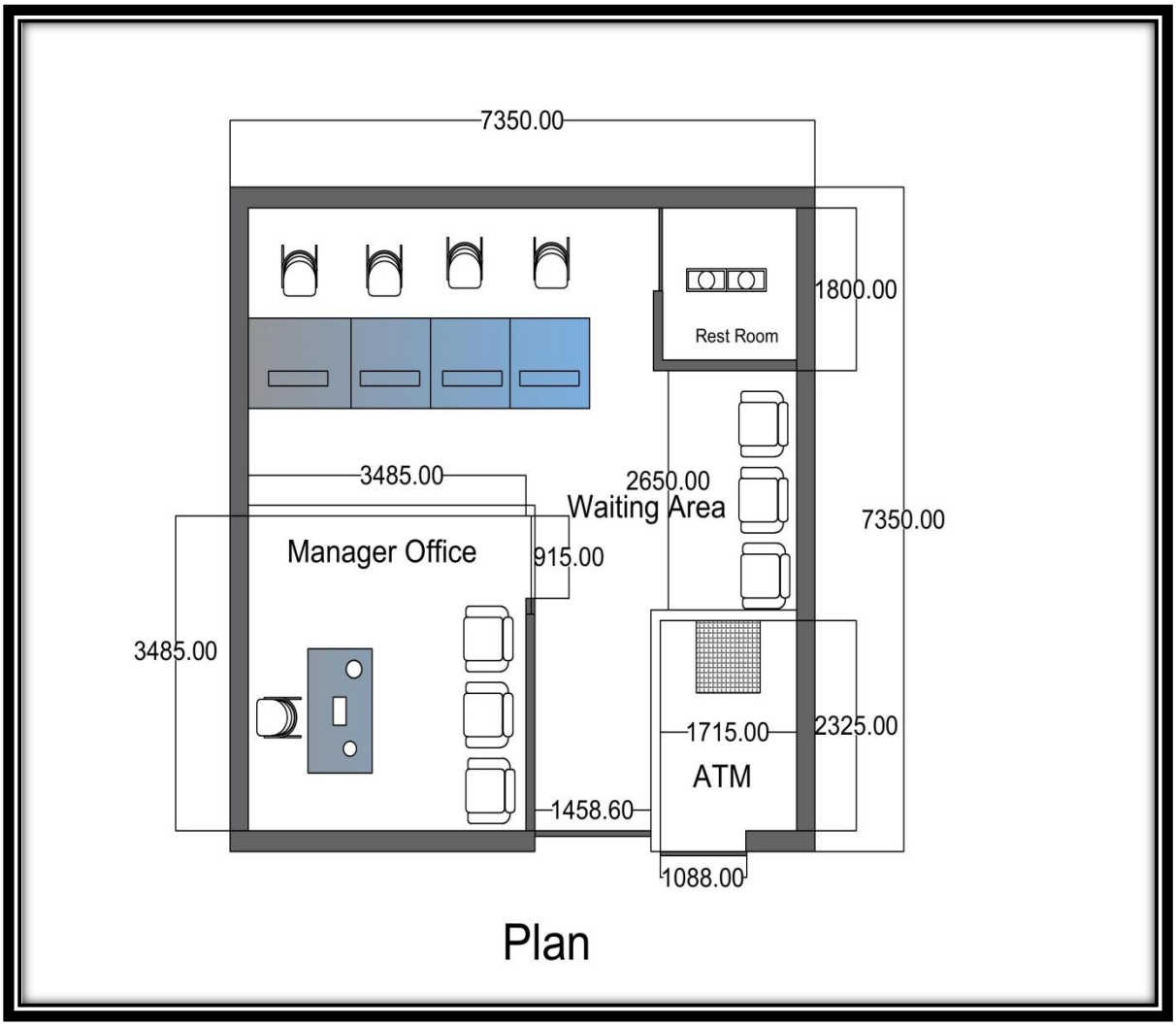


Figure 64: Bank with Atm

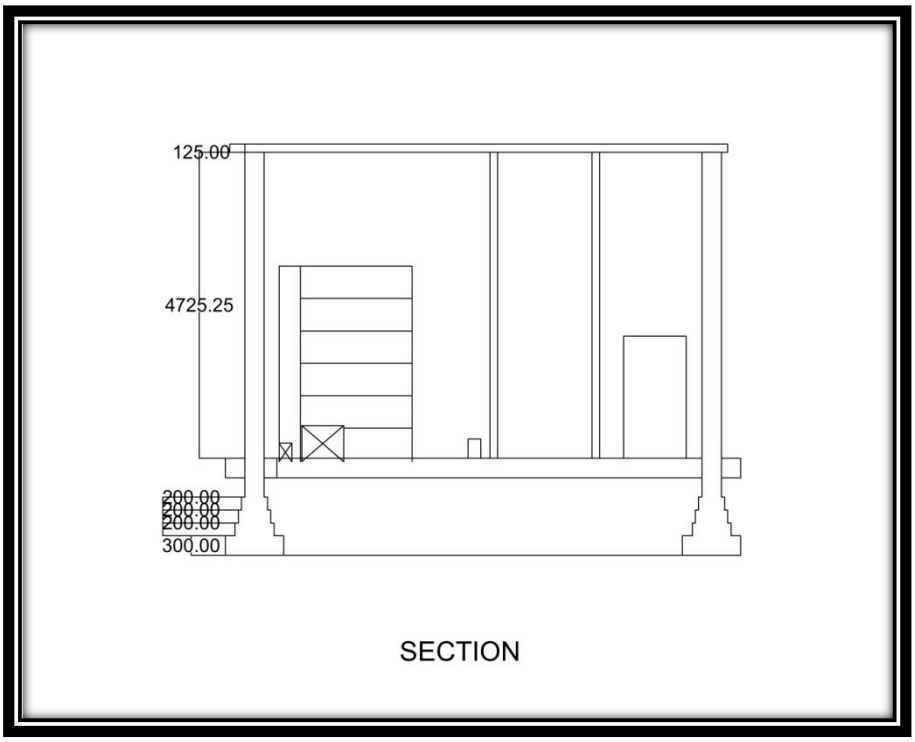


Figure 65:- section design of bank

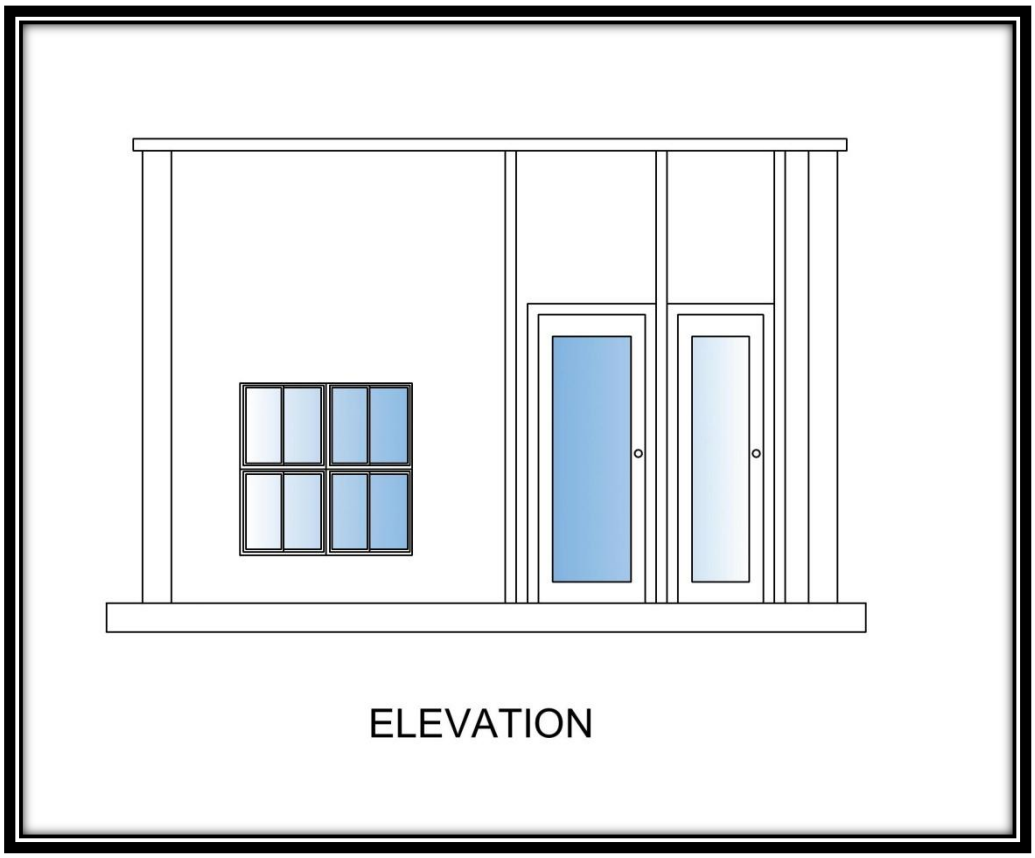


Figure 66:- Elevation of the bank

Bank:- Measurement sheet

Sr No.	Description	NO.	Length m	Width m	Height m	Quantity	Unit
1	**Excavation**						
	For columns	11	1.1	1.1	1.2	15.97	Cum
	For plinth beams	1	1	43.935	0.33	4.783	Cum
	Total quantity					**20.755**	Cum
2	**PCC**						
	Below Foundation	11	1.1	1.1	0.3	3.993	Cum
	Below Plinth Beam	1	43.925	0.3	0.075	0.988	Cum
	Below Flooring	1	7.350	7.350	0.100	5.402	Cum
	Total quantity					**10.383**	Cum
3	**RCC**						
	Column Foundation	11	1.1	1.1	0.300	3.993	Cum
	Column	11	0.230	0.230	4.725	2.749	Cum
	Plinth Beam	1	43.925	0.230	0.300	3.031	Cum
	Slab Beam	1	43.925	0.230	0.300	3.11	Cum
	Slab	1	7.350	7.350	0.125	6.753	Cum
	Total quantity					**19.557**	Cum
4	**Brickwork**						
		1	29.4	0.230	4.725	31.950	Cum
		1	14.525	0.115	4.725	7.892	Cum
						39.842	Cum
	Deduction						
	D1	-1	1.458	0.230	3	1.006	Cum
	D2	-2	0.915	0.115	3	0.631	Cum
	W	-5	1.180	0.100	1.20	0.708	Cum
	Total quantity					**37.497**	Cum
5	**Plaster**						
		1	58.45		4.725	276.176	Sqm
		1	14.525		4.725	7.892	Sqm
						22.345	Sqm
	Deduction						
	D1	-1	1.458		3	1.006	Sqm
	D2	-2	0.915		3	0.631	Sqm
	W	-5	1.180		1.20	0.708	Sqm
	Total quantity					**273.831**	Sqm
6	**External Plaster**						
		1	29.4		6.725	138.915	Sqm
		1	14.525		4.725	7.892	Sqm
						22.345	Sqm
	Deduction						
	D1	-1	1.458		3	1.006	Sqm
	D2	-2	0.915		3	0.631	Sqm
	W	-5	1.180		1.20	0.708	Sqm
	Total quantity					**136.57**	Sqm
7	**Paint**						

		1	58.45		4.725	276.176	Sqm
		1	14.525		4.725	7.892	Sqm
						22.345	Sqm
	Deduction						
	D1	-1	1.458		3	1.006	Sqm
	D2	-2	0.915		3	0.631	Sqm
	W	-5	1.180		1.20	0.708	Sqm
	Total quantity					**273.831**	Sqm
8	**External Paint**						
		1	29.4		6.725	138.915	Sqm
		1	14.525		4.725	7.892	Sqm
						22.345	Sqm
	Deduction						
	D1	-1	1.458		3	1.006	Sqm
	D2	-2	0.915		3	0.631	Sqm
	W	-5	1.180		1.20	0.708	Sqm
	Total quantity					**136.57**	Sqm
9	**door**						
	D1	1	1.458		3.80	4.375	Sqm
	D2	2	0.915		3.80	5.49	Sqm
	Total quantity					**9.884**	Sqm
10	**Windows**						
	W	5	1.180		1.2	0.708	Sqm
	Total quantity					**0.708**	Sqm

Table 22:- Measurement sheet of bank

Abstract sheet: Bank

Sr No	Description	Quantity	Rate	Per	Amount (INR)
1	**EXCAVATION**	20.755	155.20	Cum	3221.176
2	**PCC**	10.383	4000.00	Cum	281532
3	**RCC**	19.557	8870.00	Cum	173470.59
4	**Brickwork**	37.497	6450.70	Cum	241855.65
5	**Plaster**	273.831	258.80	Sqm	70867.4628
6	**External Plaster**	136.57	258.80	Sqm	35344.316
7	**Paint**	273.831	93	Sqm	25466.283
8	**External Paint**	136.57	93	Sqm	12701.01

9	**Door**	9.884	5100.00	Sqm	50408.4
10	**Windows**	7.08	3700.00	Sqm	26196
	Total Amount				**917842**
	Contingencies	**3%**			**27535.25**
	Total Cost				**945377**

Table 23:- Abstract sheet of bank

13.1.2 Meditation and Yoga Hall

In Bhairav village we have decide to make one meditation hall with yoga training center so people can aware about it and do the daily exercise, yoga, meditation etc.

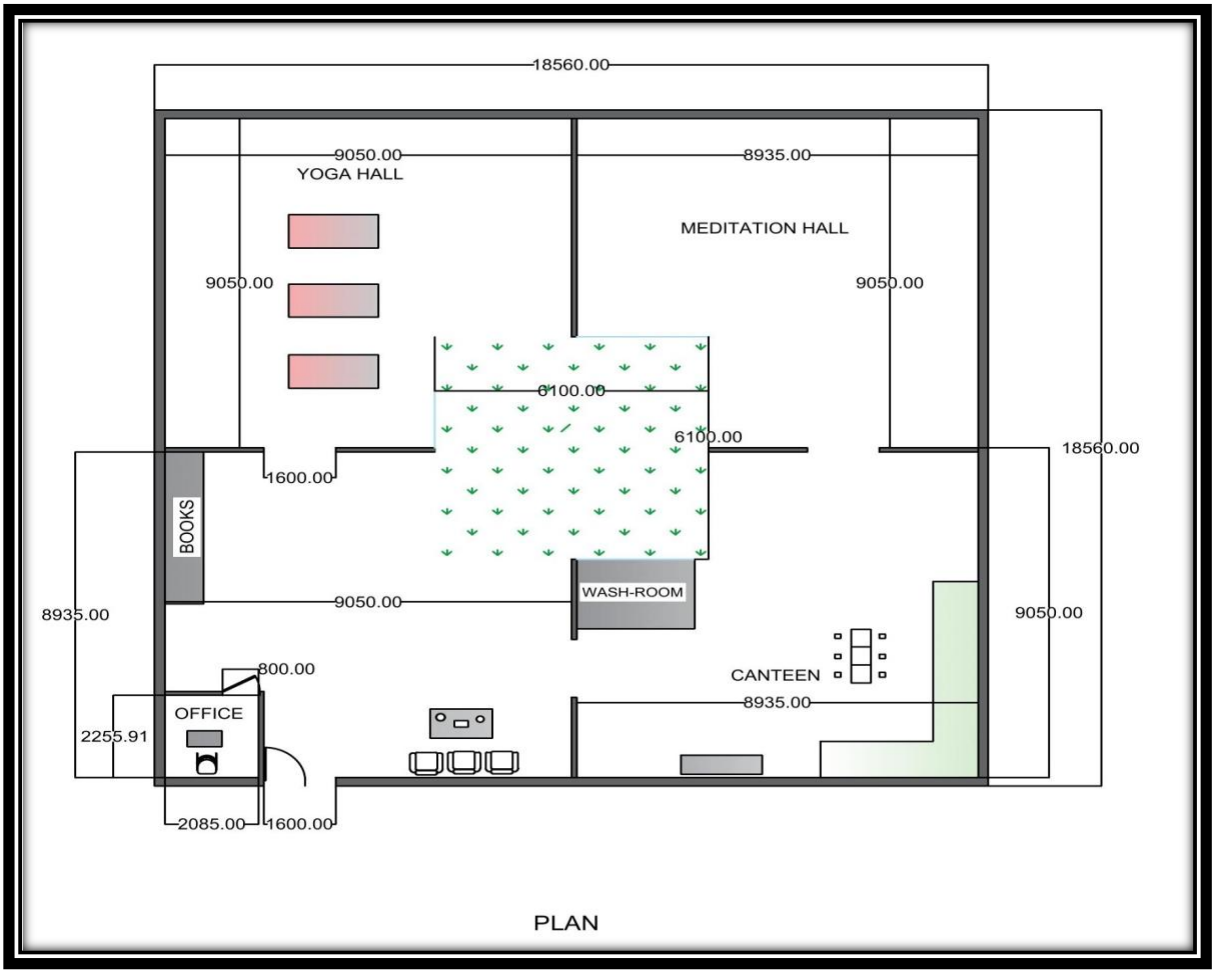


Figure 67:- Plan of meditation and yoga hall

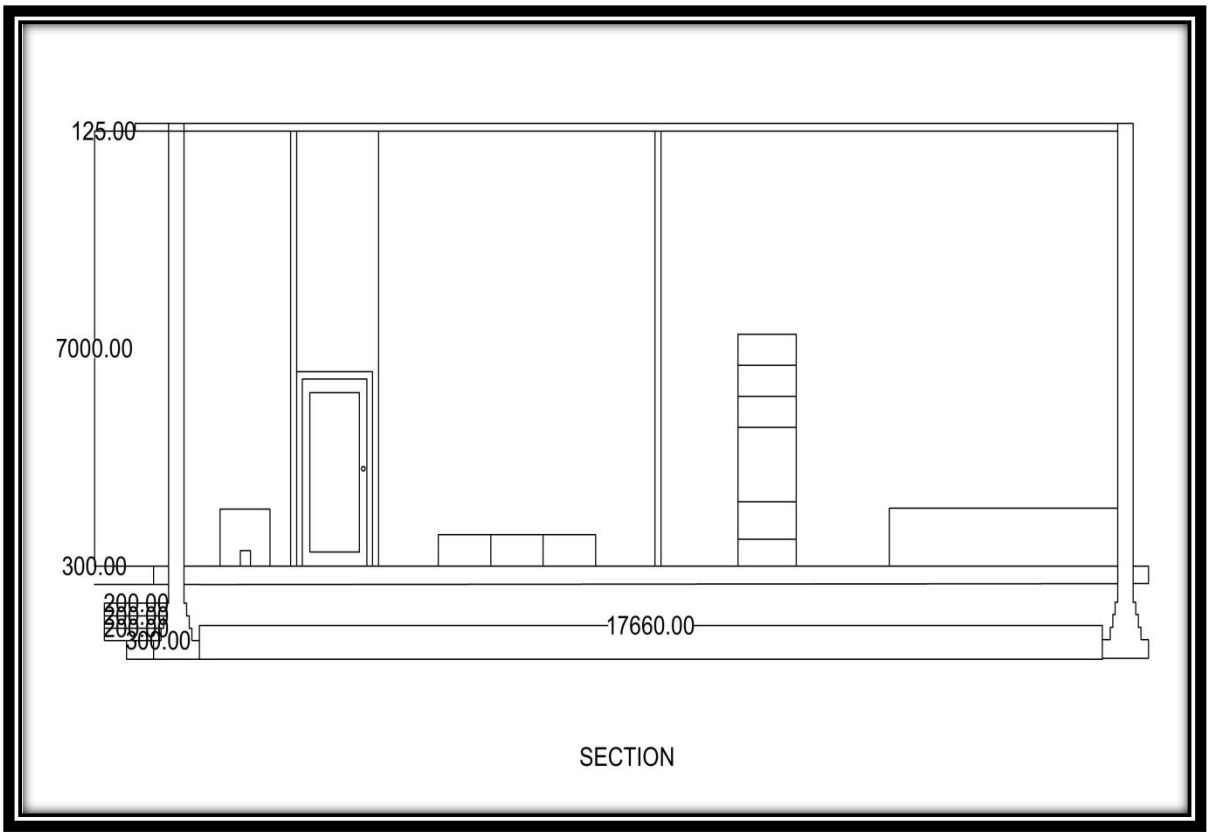


Figure 68:- section of meditation and yoga hall

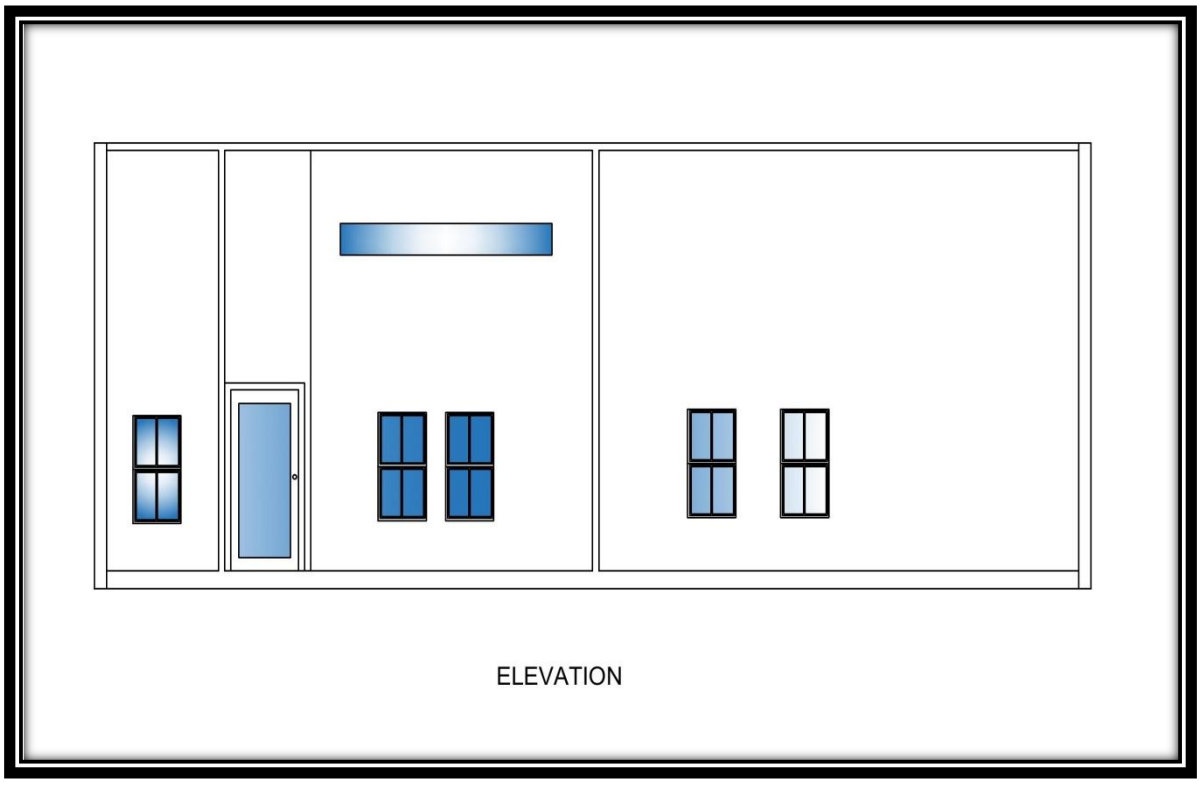


Figure 69:- Elevation of meditation and yoga hall

Measurement sheet:- Meditation and yoga hall

Sr No.	Description	NO.	Length m	Width m	Height m	Quantity	Unit
1	Excavation						
	For columns	12	1.1	1.1	1.22	17.424	Cum
	For plinth beams	1	111.36	0.33	0.33	12.127	Cum
	Total quantity					29.551	Cum
2	PCC						
	Below Foundation	12	1.1	1.1	0.3	4.356	Cum
	Below Plinth Beam	1	111.36	0.3	0.075	2.505	Cum
	Below Flooring	1	18.560	18.660	0.110	34.447	Cum
	Total quantity					41.308	Cum
3	RCC						
	Column Foundation	12	1.1	1.1	0.3	4.356	Cum
	Column	12	0.23	0.23	0.7	4.444	Cum
	Plinth Beam	1	111.36	0.23	0.1	7.684	Cum
	Slab Beam	1	111.36	0.23	0.3	7.684	Cum
	Slab	1	18.56	18.56	0.125	43.059	Cum
	Total quantity					67.227	Cum
4	Brickwork						
		1	76.24	0.230	7	119.5	Cum
		1	74.24	0.115	7	59.763	Cum
	Deduction						
	D1	4	1.5		3	19.2	Cum
	W	10	1.18		1.2	14.16	Cum
	Total quantity					15.931	Cum
5	Plaster						
		1	148.48		7	1039.36	Sqm
	Deduction						
	D1	4	1.5		3	19.2	Sqm
	W	10	1.18		1.2	14.16	Sqm
	Total quantity					1006	Sqm
6	External Plaster						
		1	74.24		7	519.68	Sqm
	Deduction						
	D1	4	1.5		3	19.2	Sqm
	W	10	1.18		1.2	14.16	Sqm
	Total quantity					486.32	Sqm
7	Paint						
		1	148.48		7	1039.36	Sqm
	Deduction						
	D1	4	1.5		3	19.2	Sqm
	W	10	1.18		1.2	14.16	Sqm
	Total quantity					1006	Sqm

8	**External Paint**						
		1	**74.24**		**7**	**519.68**	**Sqm**
	Deduction						
	D1	**4**	**1.5**		**3**	**19.2**	**Sqm**
	W	**10**	**1.18**		**1.2**	**14.16**	**Sqm**
	Total quantity					**486.32**	**Sqm**
9	**door**						
	D1	**4**	**1.6**		**3**	**19.2**	**Sqm**
	Total quantity					**19.2**	**Sqm**
10	**Windows**						
	W	**10**	**1.18**		**1.2**	**14.16**	**Sqm**
	Total quantity					**14.16**	**Sqm**

Table 24: Measurement sheet of meditation and yoga hall

Abstract sheet: Meditation and yoga

Sr No	Description	Quantity	Rate	Per	Amount (INR)
1	**Excavation**	**29.51**	155.20	Cum	**4586.31**
2	**PCC**	**41.308**	4000.00	Cum	**165232**
3	**RCC**	**67.227**	8870.00	Cum	**596303.5**
4	**Brickwork**	**59.763**	6450.70	Cum	**941357.1**
5	**Plaster**	**1006**	258.80	Sqm	**260352.8**
6	**External Plaster**	**468.32**	258.80	Sqm	**125859.661**
7	**Paint**	**1006**	93	Sqm	**93558**
8	**External Paint**	**468.32**	93	Sqm	**43768.8**
9	**Door**	**19.2**	5100.00	Sqm	**97920**
10	**Windows**	**14.16**	3700.00	Sqm	**52392**
	Total Amount				**2381330**
	Contingencies	**3%**			**71439.91**
	Total Cost				**2309890**

Table 25: abstract sheet of meditation and yoga hall

13.1.3 Library

In Bhairav village there is no available any library so we decide to make library for student and people. Our motto behind making library is people read the book and gain the knowledge so people do not have to go to other cities.

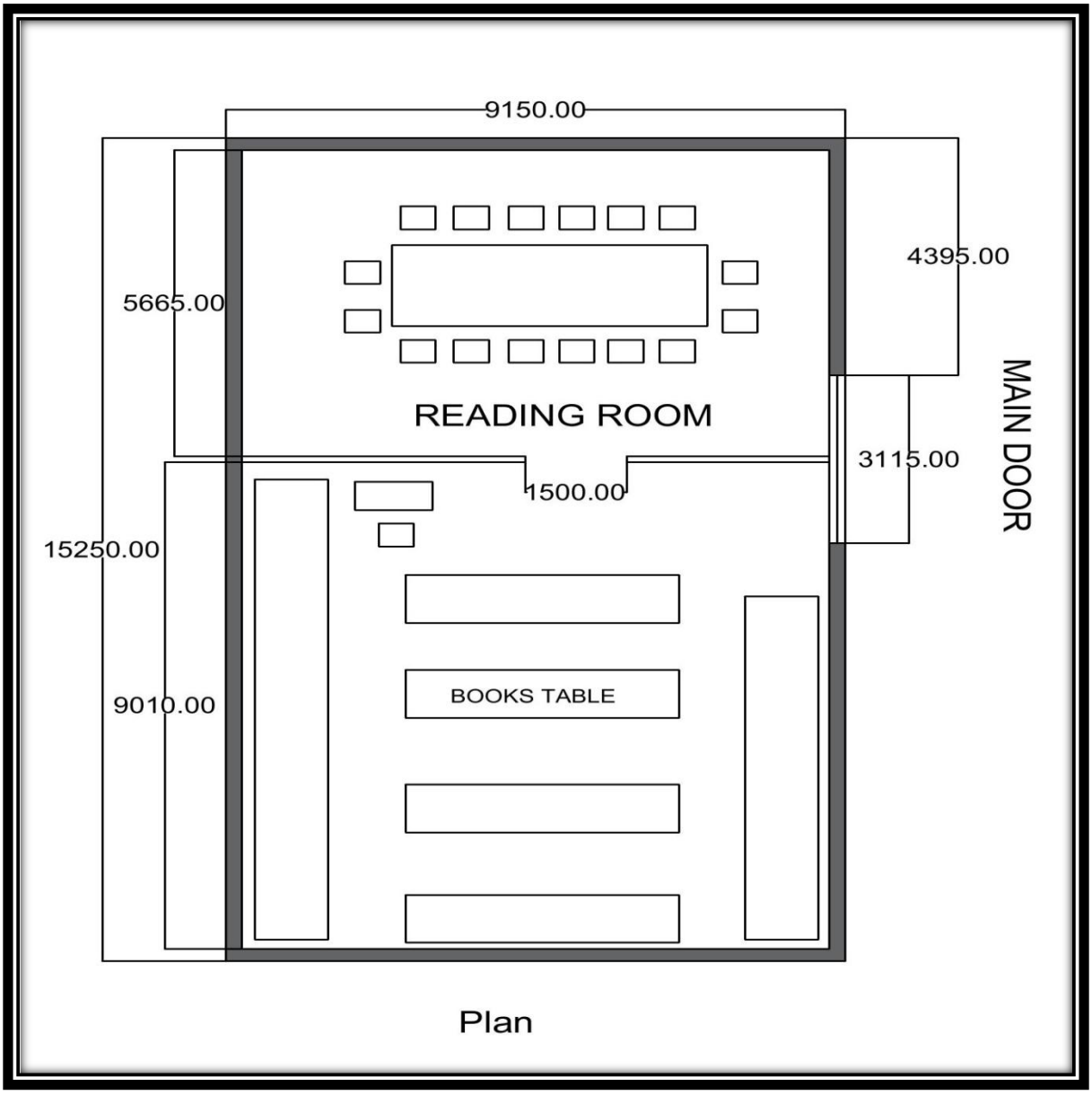


Figure 70: Plan of library

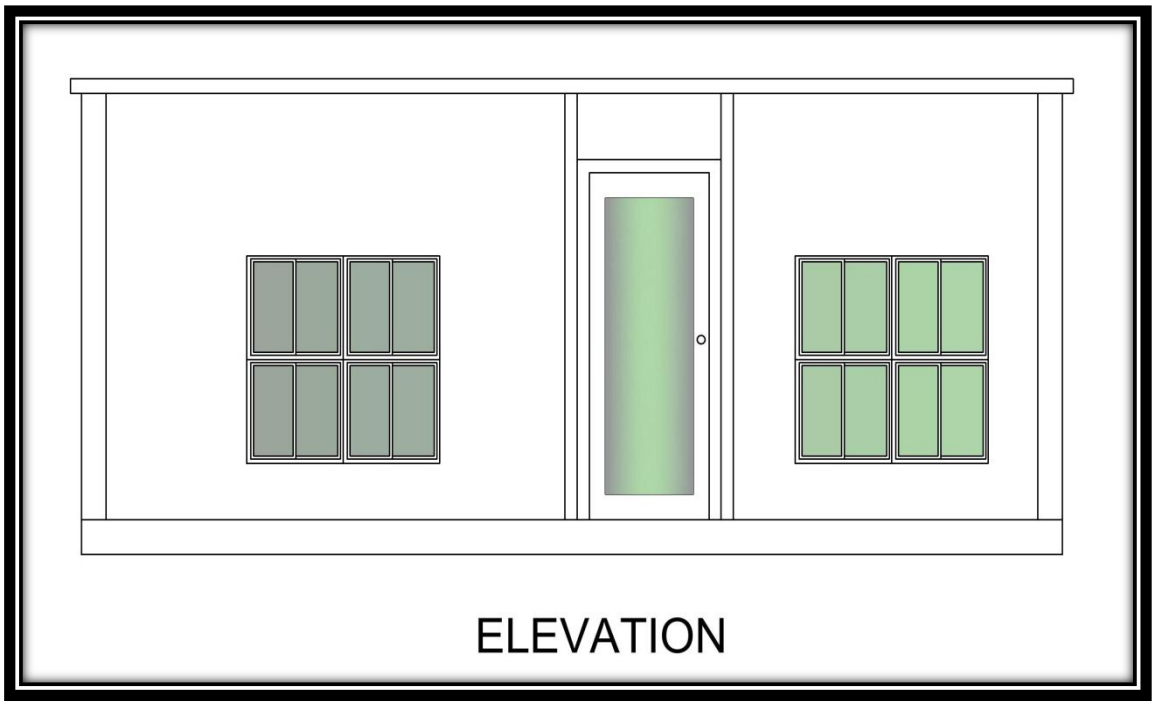


Figure 71: elevation of library

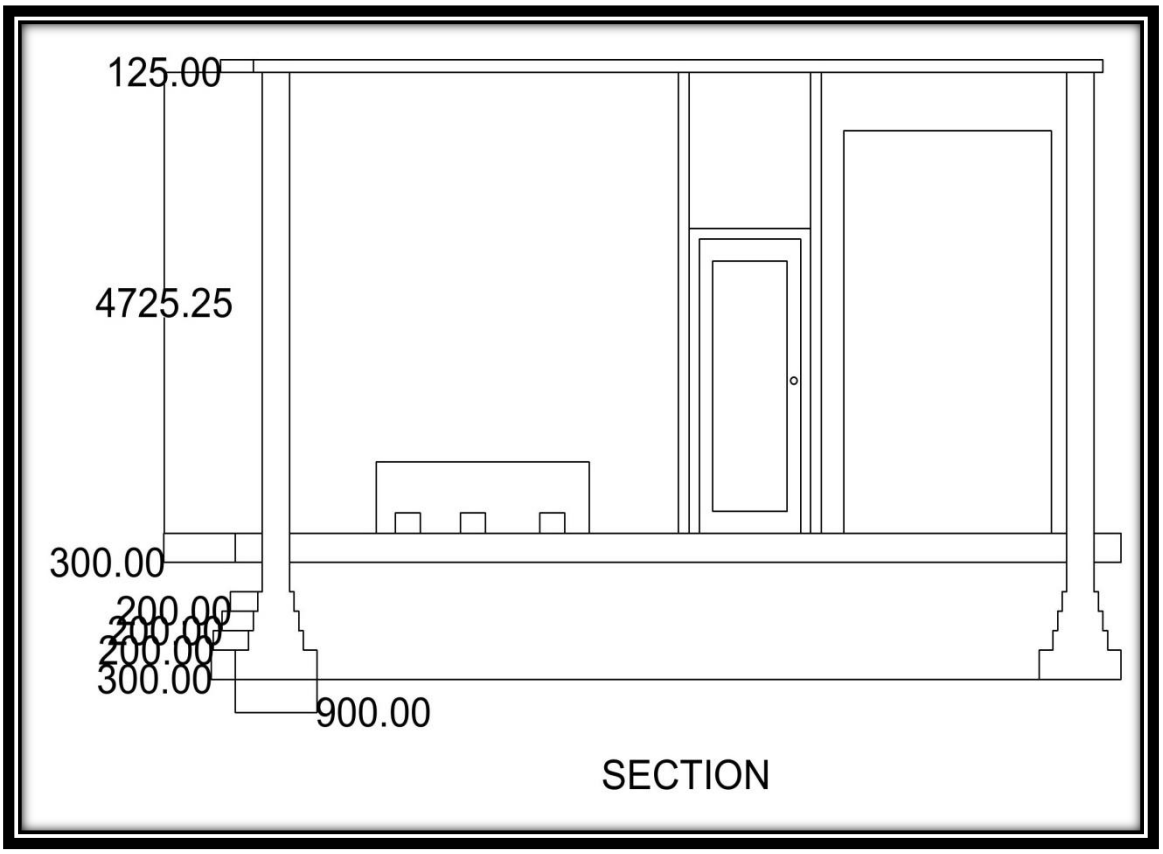


Figure 72: section view of library

Measurement sheet of library:

Sr No.	Description	NO.	Length m	Width m	Height m	Quantity	Unit
1	**Excavation**						
	For columns	**10**	**1.1**	**1.1**	**1.2**	**14.52**	**Cum**
	For plinth beams	**1**	**48.8**	**0.33**	**0.33**	**5.314**	**Cum**
	Total quantity					**19.834**	**Cum**
2	**PCC**						
	Below Foundation	**10**	**1.1**	**1.1**	**0.1**	**3.63**	**Cum**
	Below Plinth Beam	**1**	**48.8**	**0.3**	**0.075**	**1.098**	**Cum**
	Below Flooring	**1**	**9.150**	**15.25**	**0.100**	**13.953**	**Cum**
	Total quantity					**18.681**	**Cum**
3	**RCC**						
	Column Foundation	**10**	**1.1**	**1.1**	**0.3**	**3.63**	**Cum**
	Column	**10**	**0.23**	**0.230**	**4.725**	**2.499**	**Cum**
	Plinth Beam	**1**	**48.8**	**0.230**	**0.100**	**3.367**	**Cum**
	Slab Beam	**1**	**48.8**	**0.230**	**0.300**	**3.367**	**Cum**
	Slab	**1**	**9.150**	**15.250**	**0.125**	**17.442**	**Cum**
	Total quantity					**30.30**	**Cum**
4	**Brickwork**						
		1	**48.8**	**0.230**	**4.725**	**53.033**	**Cum**
	Deduction						
	D1	**1**	**3.115**	**0.230**	**3**	**2.149**	**Cum**
	W	**4**	**1.18**	**0.1**	**1.2**	**0.5664**	**Cum**
	Total quantity					**50.317**	**Cum**
5	**Plaster**						
		1	**48.8**		**4.725**	**53.033**	**Sqm**
	Deduction						
	D1	**1**	**3.115**		**3**	**2.149**	**Sqm**
	W	**4**	**1.18**		**1.2**	**0.5664**	**Sqm**
	Total quantity					**227.86**	**Sqm**
6	**External Plaster**						
		1	**48.8**		**4.725**	**53.033**	**Sqm**
	Deduction						
	D1	**1**	**3.115**		**3**	**2.149**	**Sqm**
	W	**4**	**1.18**		**1.2**	**0.5664**	**Sqm**
	Total quantity					**227.86**	**Sqm**
7	**Paint**						
		1	**48.8**		**4.725**	**53.033**	**Sqm**
	Deduction						
	D1	**1**	**3.115**		**3**	**2.149**	**Sqm**
	W	**4**	**1.18**		**1.2**	**0.5664**	**Sqm**
	Total quantity					**227.86**	**Sqm**

8	**External Paint**						
		1	**48.8**		**4.725**	**53.033**	**Sqm**
	Deduction						
	D1	**1**	**3.115**		**3**	**2.149**	**Sqm**
	W	**4**	**1.18**		**1.2**	**0.5664**	**Sqm**
	Total quantity					**227.86**	**Sqm**
9	**door**						
	D	**1**	**3.115**		**3**	**9.345**	**Sqm**
	Total quantity					**9.345**	**Sqm**
10	**Windows**						
	W	**4**	**1.18**		**1.2**	**5.664**	**Sqm**
	Total quantity					**5.664**	**Sqm**

Table 26: measurement sheet of library

Abstract sheet of library:

Sr No	Description	Quantity	Rate	Per	Amount (INR)
1	**Excavation**	**19.834**	**155.20**	**Cum**	**3078.23**
2	**PCC**	**18.681**	**4000.00**	**Cum**	**74724**
3	**RCC**	**30.30**	**8870.00**	**Cum**	**268761**
4	**Brickwork**	**50.317**	**6450.70**	**Cum**	**324579.87**
5	**Plaster**	**227.86**	**258.80**	**Sqm**	**58970.168**
6	**External Plaster**	**227.86**	**258.80**	**Sqm**	**58970.168**
7	**Paint**	**227.86**	**93**	**Sqm**	**21190.98**
8	**External Paint**	**227.86**	**93**	**Sqm**	**21190.98**
9	**Door**	**9.345**	**5100.00**	**Sqm**	**47659.5**
10	**Windows**	**5.664**	**3700.00**	**Sqm**	**20956.8**
	Total Amount				**900081.69**
	Contingencies	**3%**			**27002.45**
	Total Cost				**927084**

Table 27: abstract sheet of library

13.1.4 RCC Wooden texture Bench: In Bhairav village benches available but there are few of good and more benches are broken so here we have given the quotation of benches, its looks goods, more valuable and good strength.

Figure 73: RCC Wooden benches

Figure 74: Benches location

RCC wooden benches Quotation:

Cost of one Benches: ₹ 3000/-

Total benches required: 26 nos.

Total cost providing benches in Bhairav:

= ₹ 3000 * 26 nos

= ₹ 78000/-

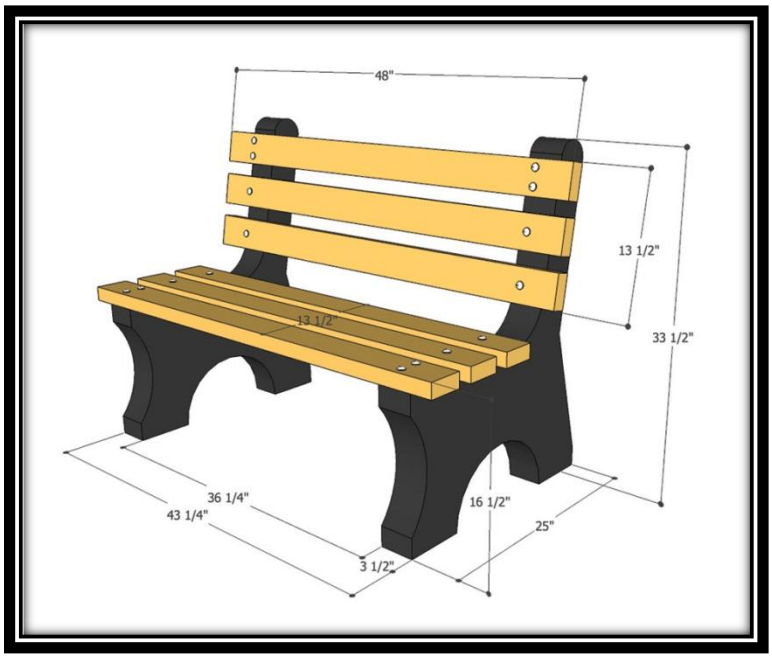


Figure 75: benches picture with size

13.1.5 Post office:

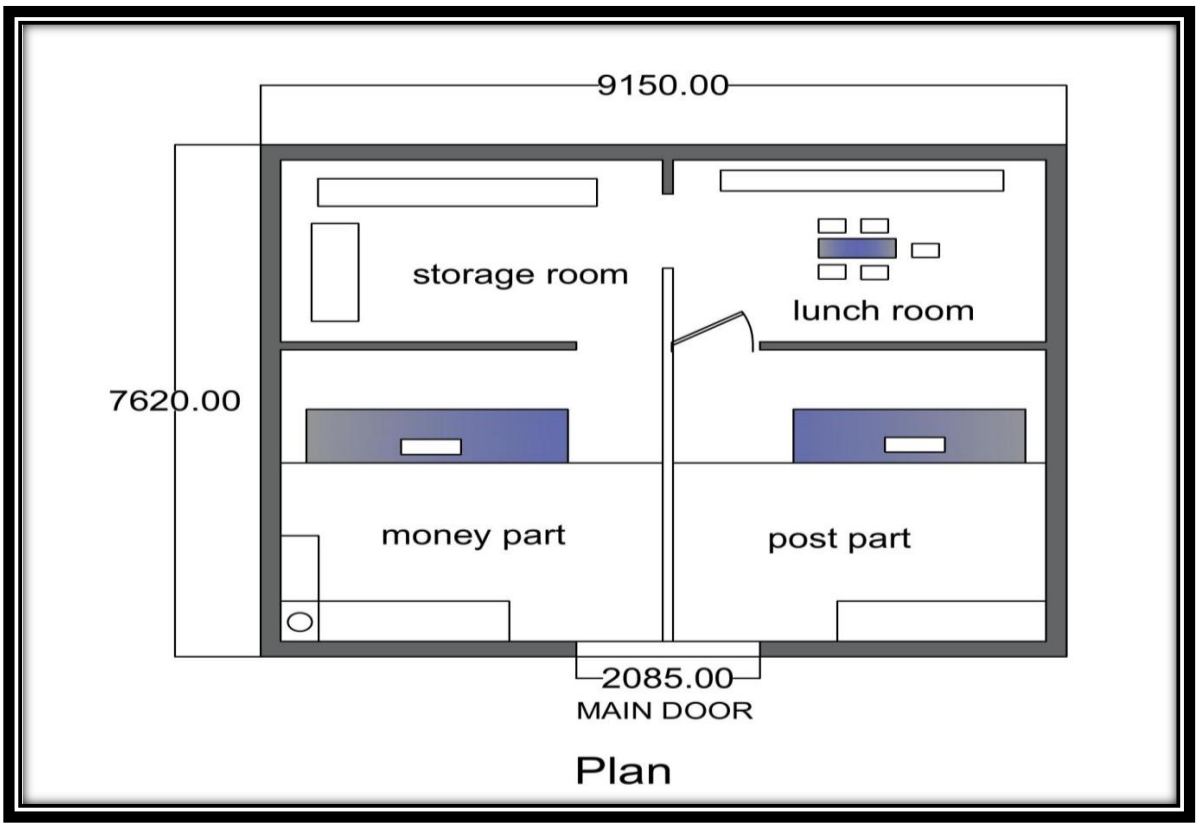


Figure 76: Plan of post office

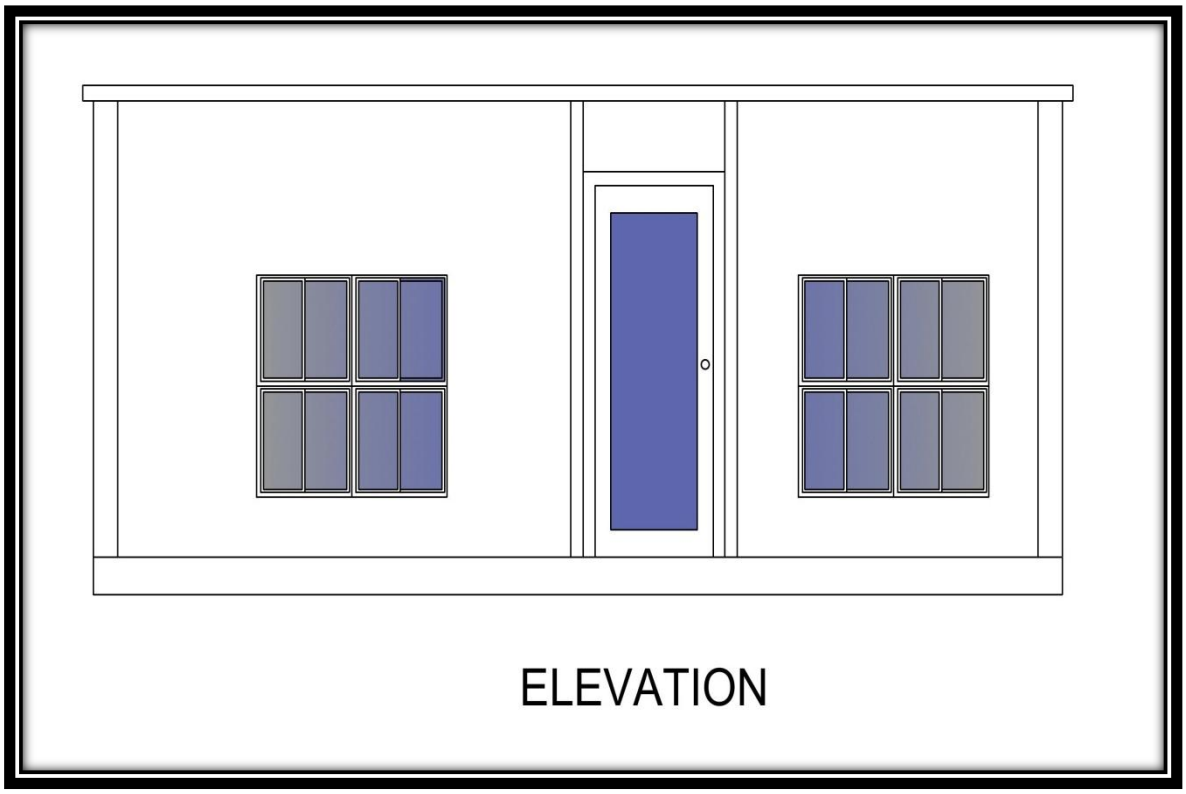


Figure 77: elevation of post offce

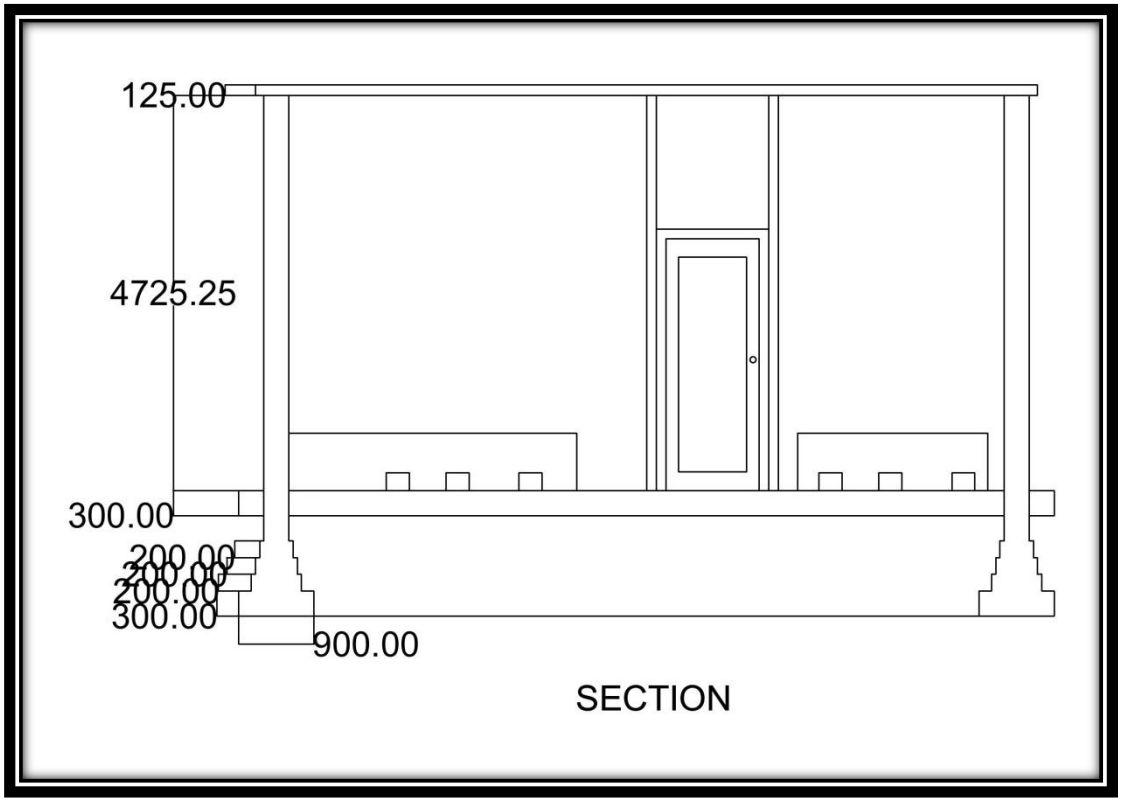


Figure 78: Section view of post office

Measurement sheet of post office:

Sr No.	Description	NO.	Length m	Width m	Height m	Quantity	Unit
1	**Excavation**						
	For columns	**9**	**1.1**	**1.1**	**1.2**	**13.088**	
	For plinth beams	**1**	**50.31**	**0.33**	**0.33**	**5.498**	
	Total quantity					**18.546**	
2	**PCC**						
	Below Foundation	**9**	**1.1**	**1.1**	**0.300**	**3.267**	
	Below Plinth Beam	**1**	**50.31**	**0.3**	**0.075**	**6.792**	
	Below Flooring	**1**	**9.15**	**7.62**	**0.1**	**6.972**	
	Total quantity					**17.0313**	
3	**RCC**						
	Column Foundation	**9**	**1.1**	**1.1**	**0.30**	**3.267**	
	Column	**9**	**0.23**	**0.23**	**4.725**	**2.249**	
	Plinth Beam	**1**	**50.31**	**0.23**	**0300**	**3.471**	
	Slab Beam	**1**	**50.31**	**0.230**	**0.300**	**3.471**	
	Slab	**1**	**91.150**	**9.150**	**7.620**	**0.125**	
	Total quantity					**21.733**	
4	**Brickwork**						
		1	**33.54**	**0.270**	**4.725**	**36.449**	
		1	**16.77**	**0.115**	**4.725**	**9.112**	
	Deduction						
	D1	**1**	**20.85**	**0.23**	**3**	**1.438**	
	W	**7**	**1.180**	**0.1**	**1.2**	**0.991**	
	Total quantity					**43.133**	
5	**Plaster**						
		1	**67.08**		**4.725**	**316.953**	
	Deduction						
	D1	**1**	**20.85**	**0.23**	**3**	**1.438**	
	W	**7**	**1.180**	**0.1**	**1.2**	**0.991**	
	Total quantity					**314.524**	
6	**External Plaster**						
		1	**33.54**		**4.725**	**158.47**	
	Deduction						
	D1	**1**	**20.85**	**0.23**	**3**	**1.438**	
	W	**7**	**1.180**	**0.1**	**1.2**	**0.991**	
	Total quantity					**156.047**	
7	**Paint**						
		1	**67.08**		**4.725**	**316.953**	
	Deduction						
	D1	**1**	**20.85**	**0.23**	**3**	**1.438**	
	W	**7**	**1.180**	**0.1**	**1.2**	**0.991**	

	Total quantity					**314.524**	
8	**External Paint**						
		1	**33.54**		**4.725**	**158.47**	
	Deduction						
	D1	**1**	**20.85**	**0.23**	**3**	**1.438**	
	W	**7**	**1.180**	**0.1**	**1.2**	**0.991**	
	Total quantity					**156.047**	
9	**door**						
	D1	**1**	**2.085**		**3**	**6.255**	
	Total quantity					**6.255**	
10	**Windows**						
	W	**7**	**1.18**		**1.2**	**9.912**	
	Total quantity					**9.912**	

Table 28: measurement sheet of post office

Abstract sheet of post office:

Sr No	Description	Quantity	Rate	Per	Amount (INR)
1	**Excavation**	18.546	155.20	Cum	**2878.33**
2	**PCC**	17.0313	4000.00	Cum	**68125.2**
3	**RCC**	21.733	8870.00	Cum	**192771.71**
4	**Brickwork**	43.133	6450.70	Cum	**278238.04**
5	**Plaster**	314.524	258.80	Sqm	**81398.81**
6	**External Plaster**	156.047	258.80	Sqm	**40384.96**
7	**Paint**	314.524	93	Sqm	**29250.73**
8	**External Paint**	156.047	93	Sqm	**14512.370**
9	**Door**	6.255	5100.00	Sqm	**31900.5**
10	**Windows**	9.912	3700.00	Sqm	**36674.4**
	Total Amount				**816135.05**
	Contingencies	**3%**			**24484.05**
	Total Cost				**840619.1**

Table 29: abstract sheet of post office

13.1.6 Paver block

In Bhairav village we met the Sarpanch and he said our village has two street are not completed with the paver block so we have decide to give them quotation of the paver block.

Figure 79: paver block design

Rate for 80/60 MM Paver block with fitting and powdar and also this rate are for 80000 sq.ft.

Sr no.	Description	Rate
1	80 Paver Block M- 40 Grade (Include 80 MM paver block , Fitting Labour) GST 18 %	49/ SQ.FT
2	60 Paver Block M- 35 Grade (Include 60 MM paver block , Fitting Labour) GST 18 %	40.3/ SQ.FT
3	Pano/powder (GST 5 %)	6.3/ SQ.FT

Table 30: quotation of paver block

13.2 Reason for Students Recommending this Design

We have recommending all this design because of we have to make smart or ideal village of Bhairav village. So this point of view we have done village survey and get the idea that what we have to make as fulfilled all condition of smart village.

13.3 About designs Suggestions / Benefit of the villagers

A smart village knows about its citizens, offered resources, applicable services and schemes. It knows what it needs and when it needs. Smart village initiative focuses on superior resource-use efficiency, empowered local self-governance, access to assured basic amenities and responsible individual and community behavior to build a vibrant and happy society.

The driving motivation behind the concept on "Smart Village" is that the technology should acts as a means for development, enabling education and local business opportunities, improving health and welfare, enhancing democratic engagement and overall enhancement of rural village dwellers. Now it's need of the hour is - strategy, integrated planning and above all monitoring and execution of the activities using appropriate governance models the present era is increased on Information and Communication Technology.

Chapter 14

Technical Options with Case Studies

14.1 Civil Engineering

14.1.1 Advance Earthquake Resistance

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.

Earthquake Resistant Design Techniques for Buildings and Structures

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

- Base Isolation
- Energy Dissipation Devices

Base Isolation Method

A base isolated structure is supported by a series of bearing pads which are placed between the buildings. 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.

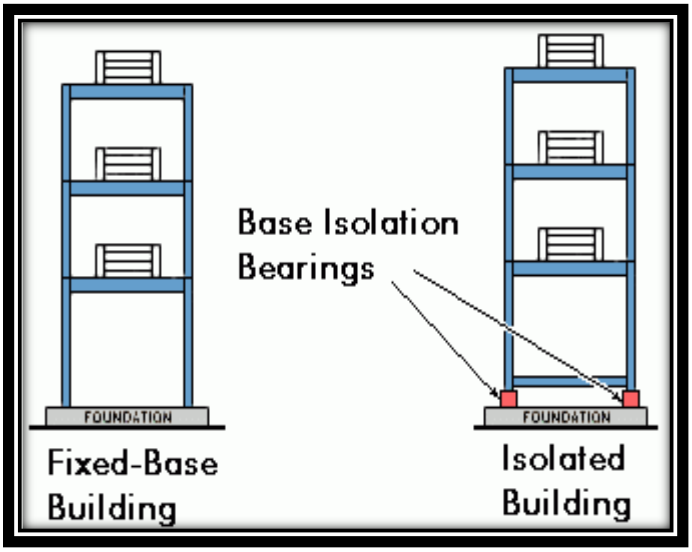
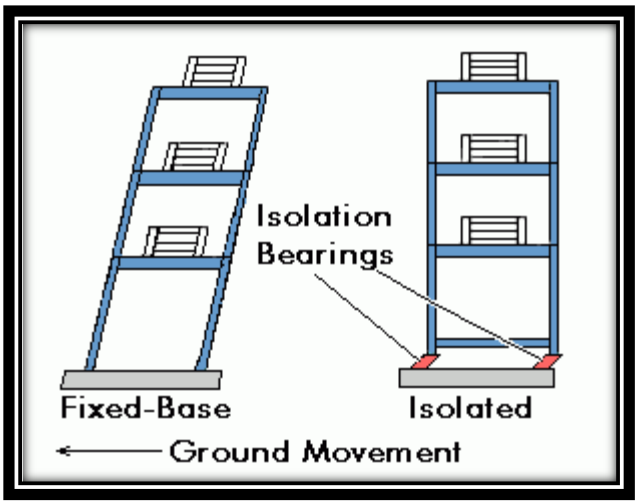


Figure 80: Base-Isolated and Fixed-Base Buildings

Earthquake Generated Forces



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, and 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.

Figure 81: Base-Isolated and Fixed-Base Buildings

Deformation and Damages to Structures

In addition to displacing toward the right, the un-isolated building is also shown to be changing its shape-from a rectangle to a parallelogram. It is deforming. The primary cause of earthquake damage to buildings is the deformation which the building undergoes as a result of the inertial forces acting upon it.

Response of Base Isolated Building

By contrast, even though it too is 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. In other words, the lead plug reduces, or dissipates, the energy of motion, i.e., kinetic energy--by converting that energy into heat. And by reducing the energy entering the building, it helps to slow and eventually stop the building's vibrations sooner than would otherwise be the case, in other words, it damps the building's vibrations.

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. 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:

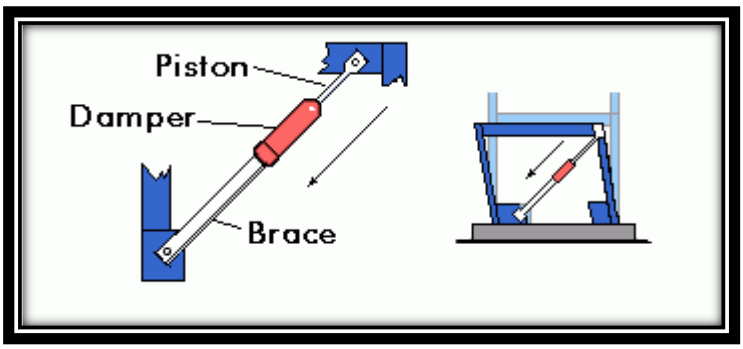
- Friction Dampers: these utilize frictional forces to dissipate energy
- Metallic Dampers : utilize the deformation of metal elements within the damper
- Viscoelastic Dampers : utilize the controlled shearing of solids
- Viscous Dampers: utilized the forced movement (orificing) of fluids within the damper

Fluid Viscous Dampers

General principles of damping devices are illustrated through Fluid Viscous damper. Following section, describes the basic characteristics of fluid viscous dampers, the process of

developing and testing them, and the installation of fluid viscous dampers in an actual building to make it more earthquake resistant.

Damping Devices and Bracing Systems



Damping devices are usually installed as part of bracing systems. Figure 3 shows one type of damper-brace arrangement, with one end attached to a column and one end attached to a floor beam. Primarily, this arrangement provides the column with additional support. Most earthquake ground motion is in a horizontal direction; so, it is a building's columns which normally undergo the most displacement relative to the motion of the ground. Figure 3 also shows the damping device installed as part of the bracing system and gives some idea of its action.

Figure 82: Damping Device Installed with Brace

14.1.2 Seismic Retrofitting of Buildings

Seismic Retrofitting Techniques for Concrete Structures:

Seismic Retrofitting Techniques are required for concrete constructions which are vulnerable to damage and failures by seismic forces. In the past thirty years, moderate to severe earthquakes occurs around the world every year. Such events lead to damage to the concrete structures as well as failures. Thus the aim is to Focus on a few specific procedures which may improve the practice for the evaluation of seismic vulnerability of existing reinforced concrete buildings of more importance and for their seismic retrofitting by means of various innovative techniques such as base isolation and mass reduction. So Seismic Retrofitting is a collection of mitigation technique for Earthquake engineering. It is of utmost importance for historic monuments, areas prone to severe earthquakes and tall or expensive structures. Keywords: Retrofitting, Base Isolation, Retrofitting Techniques, Jacketing, Earthquake Resistance

1. Introduction to Seismic Retrofitting Techniques:

- Earthquake creates great devastation in terms of life, money and failures of structures.
- Upgrading of certain building systems (existing structures) to make them more resistant to seismic activity (earthquake resistance) is really of more importance.

- Structures can be (a) Earthquake damaged, (b) Earthquake vulnerable
- Retrofitting proves to be a better economic consideration and immediate shelter to problems rather than replacement of building.

1.1 Seismic Retrofitting of Concrete Structures:

Definition: It is the modification of existing structures to make them more resistant to seismic activity, ground motion, or soil failure due to earthquakes. The retrofit techniques are also applicable for other natural hazards such as tropical cyclones, tornadoes, and severe winds from thunderstorms.

1.2 Need for Seismic Retrofitting:

- To ensure the safety and security of a building, employees, structure functionality, machinery and inventory
- Essential to reduce hazard and losses from non-structural elements.
- Predominantly concerned with structural improvement to reduce seismic hazard.
- Important buildings must be strengthened whose services are assumed to be essential just after an earthquake like hospitals.

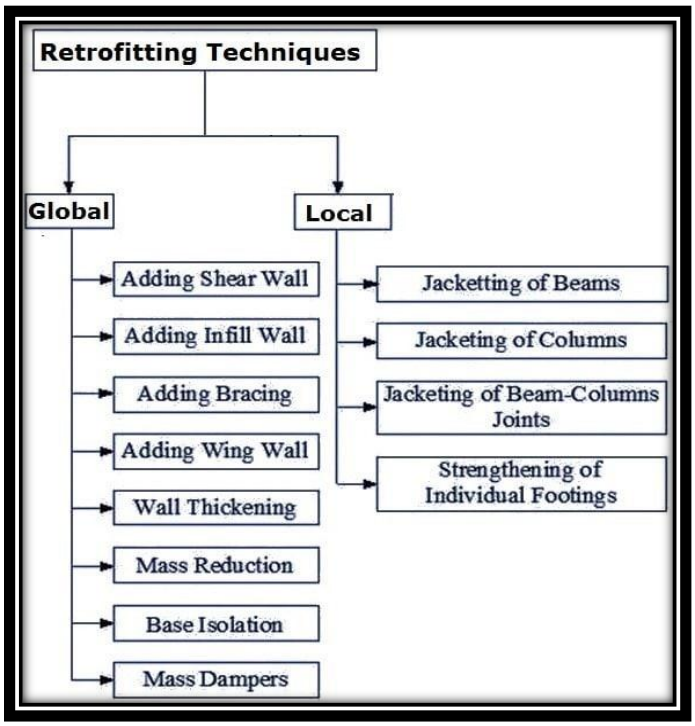
1.3 Problems faced by Structural Engineers are:

Lack of standards for retrofitting methods – Effectiveness of each methods varies a lot depending upon parameters like type of structures, material condition, amount of damage etc.,

1.4 Basic Concept of Retrofitting:

The aim is at:

- Upgradation of lateral strength of the structure
- Increase in the ductility of the structure
- Increase in strength and ductility



2. Classification of Retrofitting Techniques:

2.1 Adding New Shear Walls:

Frequently used for retrofitting of non ductile reinforced concrete frame buildings.

The added elements can be either cast in place or precast concrete elements.

New elements preferably are placed at the exterior of the building.

Not preferred in the interior of the structure to avoid interior mouldings.

Figure 83: Additional Shear Wall

2.2 Adding Steel Bracings

- An effective solution when large openings are required.
- Potential advantages due to higher strength and stiffness, opening for natural light can be provided, amount of work is less since foundation cost may be minimized and adds much less weight to the existing structure.

Adding STEEL Bracings:

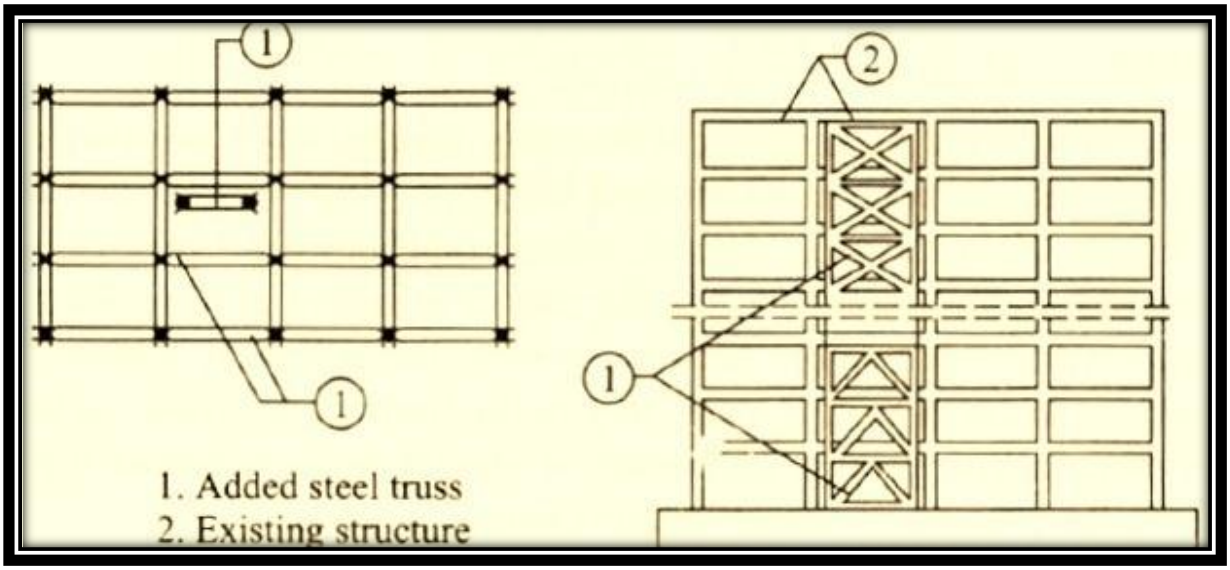


Figure 84: RC Building retrofitted by steel bracing

2.3 Jacketing (Local Retrofitting Technique):

This is the most popular method for strengthening of building columns.

Types of Jacketing:

Steel jacket, Reinforced Concrete jacket, Fibre Reinforced Polymer Composite (FRPC) jacket

Purpose for jacketing:

- To increase concrete confinement
- To increase shear strength
- To increase flexural strength

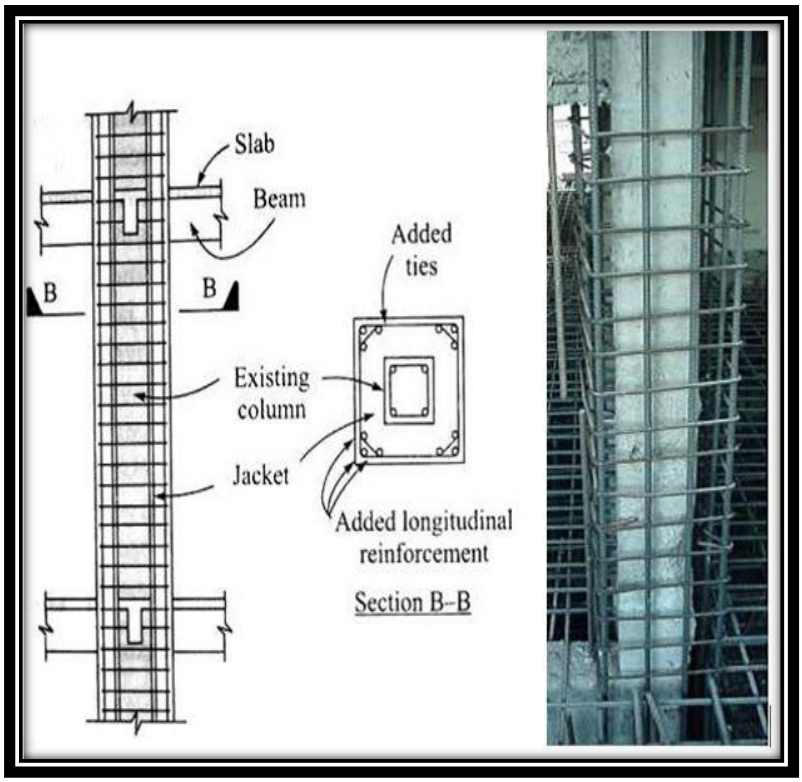


Figure 85: Column jacketing

3. Indian Standard Codes for Earthquake Design of Structures:

- IS: 1893-2002 (part-1) Criteria for Earthquake Resistant Design of Structures (Part 1 : General Provision and Buildings) - Code of Practice
- IS: 4326-1993 Earthquake Resistant Design and Construction of Buildings – Code of Practice
- IS: 13920-1993 Ductile Detailing of Reinforced Concrete Structures subjected to Seismic Forces – Code of Practice
- IS: 13935-1993 Repair and Seismic Strengthening of Buildings – Guidelines
- IS: 13828-1993 Improving Earthquake Resistance of Low Strength Masonry Buildings – Guidelines
- IS: 13827-1993 Improving Earthquake Resistance of Earthen Buildings – Guidelines

4. Conclusion – Seismic Retrofitting Techniques for concrete structures:

- Seismic Retrofitting is a suitable technology for protection of a variety of structures.
- It has matured in the recent years to a highly reliable technology.
- But, the expertise needed is not available in the basic level.

- The main challenge is to achieve a desired performance level at a minimum cost, which can be achieved through a detailed nonlinear analysis.
- Optimization techniques are needed to know the most efficient retrofit for a particular structure.
- Proper Design Codes are needed to be published as code of practice for professionals related to this field.

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

A wide variety of modern methods of construction (MMC) techniques and products have been developed that have completely changed the behavior of construction industry from what it was before. This change is amazing and is in the way to bring more and more developments in this sector.

The different MMC used in construction field includes:

Precast Flat Panel System

Precast Flat Panel System

This method of construction involves the procedure of making floor and wall units off site. For this, separate factory outlets and facilities is required. Once the panel units are made as per the design specification and requirements, they are brought to the site and placed. This method is best suited for repetitive construction project activities.

The panels manufactured have the services of windows, doors and the finishes. This method also brings building envelope panels which are provided with insulation and decorative cladding that is fitted by the factory which can also be used as load – bearing elements.

Figure 86: Precast Flat Panel System

3D Volumetric Construction

This method of construction involves the procedure of making floor and wall units off site. For this, separate factory outlets and facilities is required. Once the panel units are made as per the design specification and requirements, they are brought to the site and placed. This method is best suited for repetitive construction project activities.

The transportation of the modules can be carried out in various forms or methods. This can involve the transportation of the basic structure or a completed unit with all the internal and external finishes, services installed within it, that the only part remaining is the assembly. The factory construction brings different unit of same product maintaining their quality throughout. Hence this method is best suited for repetitive projects so that rapid assembly of the products is possible.

Figure 87: 3D Volumetric Construction

Flat Slab Construction

The flat slabs are structural elements that are highly versatile in nature. This is this versatility that it is used widely in construction. The flat slab provides minimum depth and faster construction. The system also provides column grids that are flexible. Flat Slab Construction

Wherever it is necessary to seal the partitions to the slab soffit as a reason of acoustic and fire concerns, the flat slabs are a desirable solution. When compared with other forms of construction, the flat slabs are faster and more economic in nature. The flat slab construction is also a means of increasing the energy efficiency as this allows the exploitation of building thermal mass in the design of ventilation, heating and the cooling requirements.

Figure 88: Flat Slab Construction

Precast Concrete Foundations

For the rapid construction of foundation, the precast concrete system can be employed. This method is more suited for a bespoke design. Here, the elements required for the construction of foundation are constructed separately in the factory (off site) and brought to the site and assembled. The manufactured product must have the assured quality as specified by the designer. Precast Concrete Foundations

The foundation assembled is mainly supported by concrete piles. During assembling, both the systems are connected together. These foundation systems helps in increasing the productivity, increase quality, decrease the soil excavation quantity. This is best suited for extreme and adverse weather conditions. When the construction is dealt on a highly contaminated ground, this system of construction is a best choice.

Figure 89: Precast Concrete Foundations

A Unique Concrete Removal and Surface Preparation Technique

Hydrodemolition, also known as hydroblasting or hydromilling, is a demolition technique used to remove concrete and other materials using high pressure or ultra high-pressure water jet. Compared to conventional demolition tools, hydrodemolition is an effective method to cut down concrete without affecting the substructure and other parts.

The hydrodemolition process does not involve vibrations, unlike other techniques. Hence, this method is accurate and has less impact on the surrounding materials. It is safe and reduces the risk of workplace injuries.

14.1.4 Engineering Aspects of Soil mechanics - Environmental Impact Assessment

Soil mechanics is a discipline of civil engineering that predicts the soil performance characteristics utilizing the engineering techniques of dynamics, fluid mechanics, and other technologies. Soil mechanics includes the study of soil composition, strength, consolidation, and the use of hydraulic principles to deal with issues concerning sediments and other deposits. Soil mechanics is one of the major sciences for resolving problems related to geology and geophysical engineering. Soil mechanics studies are very important for civil engineers because based on the findings of soil mechanics studies, engineering structures are constructed.

Basic Characteristics of Soils

Soil consists of different phases of solid, liquid, and gas and its characteristics depend on the interacting behavior of these phases, and on the stress applied. The solid phase includes clay, non-clay minerals, and organic matter. These elements are categorized by their size as clay, sand, and gravel. The liquid phase is composed of water that contains organic compounds available from chemical spills, wastes, and ground water, while the gas phase is normally air. The size, form, chemical properties, compressibility, and load carrying capability of the soil particles are determined by soil mineralogy, which is a science related with the chemistry, structure, and physical properties of minerals. The structure of a soil depends upon the arrangement of particles, particle groups, pore spaces, and the composition. These basic characteristics determine the type of structure to be built and what external support measures, if any, has to be taken to make the structure last long and bear the effects of earthquake, water seepage, and other external factors.

Understanding Environmental Impact Assessments

The Need for an Environmental Impact Assessment

An Environmental Impact Assessment is a formal method of judging the impact that any new developmental project would have on the environment and its constituents. This can include changes that the project would create in the physical aspects of existing geography, chemical changes to the atmosphere including air and water, biological changes that affect plant, animal and human life, cultural impact of a project on the society in the area, and other socio-economic effects that the project can have.

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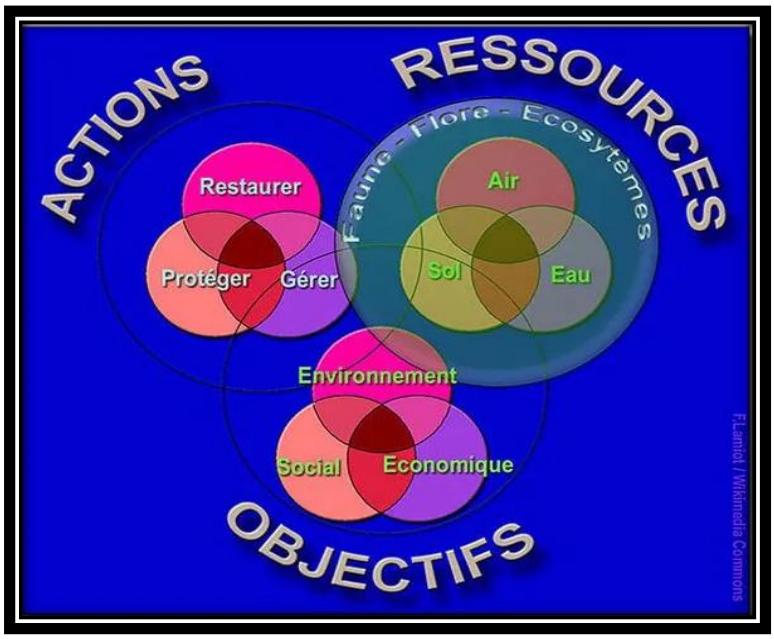
cultural impact of a project on the society in the area, and other socio-economic effects that the project can have.



Such an assessment allows problems to be foreseen, so that the design and planning of the projects is modified to reduce any negative effects. It is now fashionable to build green buildings which have a positive effect on the environment.

There is historical precedent for the now mandatory Environmental Impact Assessments (EIA). Past efforts by governments have resulted in bans on activities that caused noxious odors, garbage dumps were positioned at places far away from habitation, and commercial activities were restricted to town centers.

Objectives of Environmental Impact Assessment

The objective of an EIA is to predict the environmental impact project would have on all aspects of the environment. Once this is done, a study has to be made to see if the impacts can be reduced in any way. The project has then to be modified to suit the local environment and all predictions and likely options presented to decision makers for final decisions.

You can gain a better understanding of EIA by understanding how any typical project can affect the environment of a particular area. Take for example the building of a new road in a city.

The alignment of the road may require that certain lands have to be leveled or new embankments created. Cutting of the land and the new embankments would affect the geography of the area and probably upset its drainage pattern. This would require re-planning existing methods of treating the run-off and could cause existing watercourses to be modified. The new road may require the removal of existing green cover and this could affect the living conditions in that area.

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

Water supply – sewerage system:

Water is the most precious element / commodity available on the earth which is the main life support system of the environment. The water sources are identified and then they are used for various purposes and at various locations. Thus, water supply and distribution facilities are critical infrastructure for the environment. These facilities include wells or water supply intake structures, transmission mains, distribution mains and individual service lines. Regarding water supply source, water determination may not only bring forth technical issues, but political issues may arise as well. Ownership of water sources can be controversial, whether the source is ground water or surface water.

The use of water except for drinking purpose generates the wastewater which when discharged for the domestic use generates sewage. The sewage collection is carried out through sewer collection system. The sewage cannot be directly let loose in to the environment as there are all possibilities of polluting the surface water or the ground water. Even for irrigation also, the sewage requires treatment. The sewer collection and conveyance needs the treatment before its disposal. The treated sewage can be reused for cooling purpose, irrigation purpose or even for recycling in to the toilets and other applications depending on the specific use excluding drinking and bathing. The sewerage is the sewage collection network starting from individual discharge points to centrally collection point, conveyance mains, treatment systems and safe disposal in to the environment.

Many factors must be considered during planning, design and construction of these systems. For new areas, the population density, the available water supply source and its quantity and the topography is taken in to account. In developed areas where there are existing underground utilities including existing water and sewer, telephone, gas, electric, and cable, it is especially important to consider the impact of new water and sewer mains on these systems. Relocating existing utilities is very expensive, so care must be taken to avoid conflicts as much as possible. Excellent communication and coordination with owners of these utilities and governing agencies during planning, design and construction stage is crucial to the success of this infrastructure project.

Sewerage systems

A sewerage system, or wastewater collection system, is a network of pipes, pumping stations, and appurtenances that convey sewage from its points of origin to a point of treatment and disposal.

Combined systems

Systems that carry a mixture of both domestic sewage and storm sewage are called combined sewers. Combined sewers typically consist of large-diameter pipes or tunnels, because of the

large volumes of storm water that must be carried during wet-weather periods. They are very common in older cities but are no longer designed and built as part of new sewerage facilities. Because wastewater treatment plants cannot handle large volumes of storm water, sewage must bypass the treatment plants during wet weather and be discharged directly into the receiving water. These combined sewer overflows, containing untreated domestic sewage, cause recurring water pollution problems and are very troublesome sources of pollution.

In some large cities the combined sewer overflow problem has been reduced by diverting the first flush of combined sewage into a large basin or underground tunnel. After temporary storage, it can be treated by settling and disinfection before being discharged into a receiving body of water, or it can be treated in a nearby wastewater treatment plant at a rate that will not overload the facility. Another method for controlling combined sewage involves the use of swirl concentrators. This direct sewage through cylindrically shaped devices that create a vortex, or whirlpool, effect. The vortex helps concentrate impurities in a much smaller volume of water for treatment.

Separate systems

New wastewater collection facilities are designed as separate systems, carrying either domestic sewage or storm sewage but not both. Storm sewers usually carry surface runoff to a point of disposal in a stream or river. Small detention basins may be built as part of the system, storing storm water temporarily and reducing the magnitude of the peak flow rate. Sanitary sewers, on the other hand, carry domestic wastewater to a sewage treatment plant. Pretreated industrial wastewater may be allowed into municipal sanitary sewerage systems, but storm water is excluded.

Storm sewers are usually built with sections of reinforced concrete pipe. Corrugated metal pipes may be used in some cases. Storm water inlets or catch basins are located at suitable intervals in a street right-of-way or in easements across private property. The pipelines are usually located to allow downhill gravity flow to a nearby stream or to a detention basin. Storm water pumping stations are avoided, if possible, because of the very large pump capacities that would be needed to handle the intermittent flows.

A sanitary sewerage system includes laterals, submains, and interceptors. Except for individual house connections, laterals are the smallest sewers in the network. They usually are not less than 200 mm (8 inches) in diameter and carry sewage by gravity into larger submains, or collector sewers. The collector sewers tie in to a main interceptor, or trunk line, which carries the sewage to a treatment plant. Interceptors are usually built with precast sections of reinforced concrete pipe, up to 5 metres (15 feet) in diameter. Other materials

used for sanitary sewers include vitrified clay, asbestos cement, plastic, steel, or ductile iron. The use of plastic for laterals is increasing because of its lightness and ease of installation. Iron and steel pipes are used for force mains or in pumping stations. Force mains are pipelines that carry sewage under pressure when it must be pumped.

Waste water sustainable development techniques:

The size and capacity of wastewater treatment systems are determined by the estimated volume of sewage generated from residences, businesses, and industries connected to sewer systems as well as the anticipated inflows and infiltration (I&I).

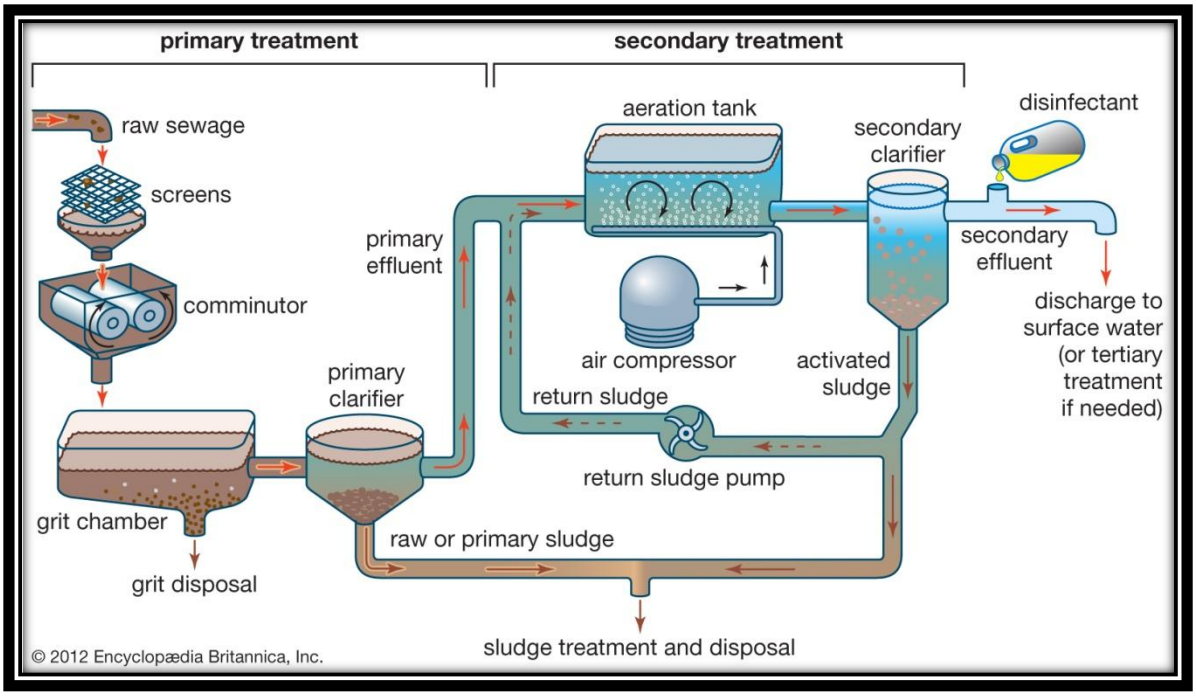


Figure 90: Primary and secondary treatment of sewage, using the activated sludge process.

There are three levels of wastewater treatment: **primary, secondary, and tertiary (or advanced). Primary treatment** removes about 60 percent of total suspended solids and about 35 percent of BOD; dissolved impurities are not removed. It is usually used as a first step before secondary treatment. **Secondary treatment** removes more than 85 percent of both suspended solids and BOD. A minimum level of secondary treatment is usually required in the United States and other developed countries. When more than 85 percent of total solids and BOD must be removed, or when dissolved nitrate and phosphate levels must be reduced, tertiary treatment methods are used. Tertiary processes can remove more than 99 percent of all the impurities from sewage, producing an effluent of almost

drinking-water quality. **Tertiary treatment** can be very expensive, often doubling the cost of secondary treatment. It is used only under special circumstances.

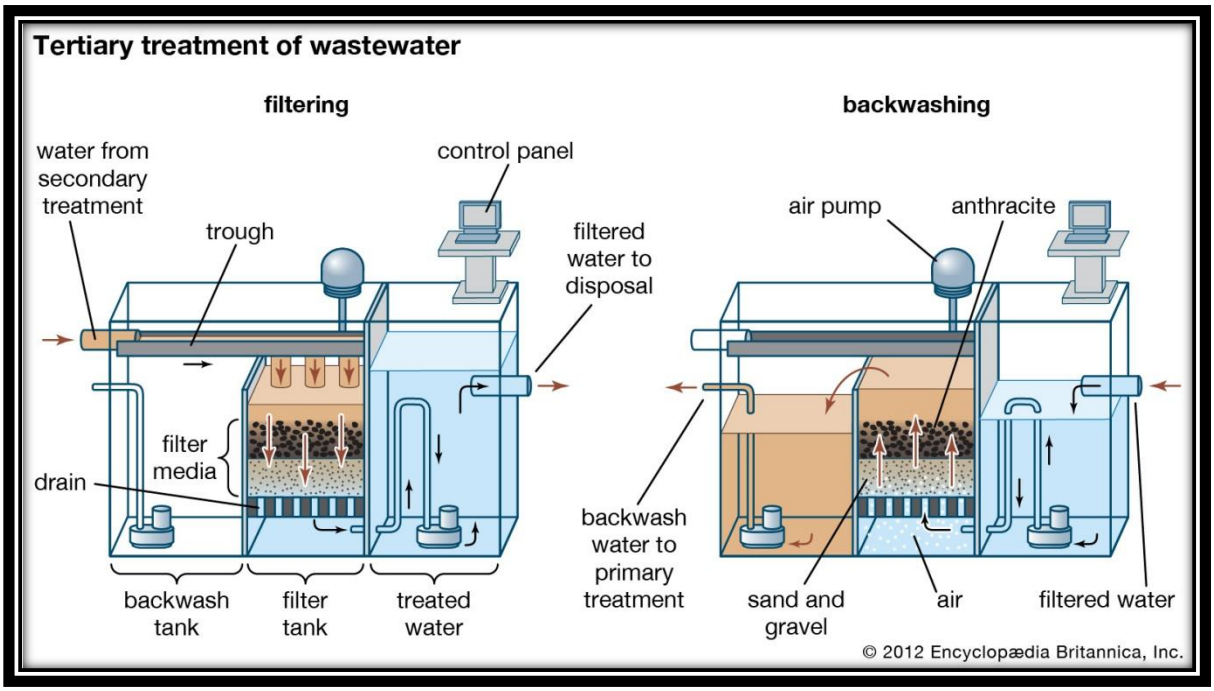


Figure 91: Tertiary treatment of wastewater

For all levels of wastewater treatment, the last step prior to discharge of the sewage effluent into a body of surface water is disinfection, which destroys any remaining pathogens in the effluent and protects public health. Disinfection is usually accomplished by mixing the effluent with chlorine gas or with liquid solutions of hypochlorite chemicals in a contact tank for at least 15 minutes. Because chlorine residuals in the effluent may have adverse effects on aquatic life, an additional chemical may be added to dechlorinate the effluent. Ultraviolet radiation, which can disinfect without leaving any residual in the effluent, is becoming more competitive with chlorine as a wastewater disinfectant.

Chapter 15

Smart and sustainable feature of chapter 8 and 13 designs, Impact on society

In Bhairav village there are not available many facilities like we had discussed above the chapter 8th and 13th. In this chapter we have added in detailed about what facilities are available or not and how can we improve it.

When we discussed with the villagers about the which facilities are available and which is not that review through we got the many ideas and what exactly need and what we have to supply like if there is no available bus stand so we give them design of bus stand and all quotation of the bus stand in detailed. When we talked about this idea they are happy to hear this idea and we are also feeling good to watch smile on their faces.

Then we got the many problems like water tank problem, garden problem, post office problems, medical problems, PHC center problem, etc. Villagers are happy whenever we provide this type of facilities and they all are comfortable with this facility.

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 –

a) Immediately b) Within 1 year c) Long term (3-5 years) along with cost estimation.

b) If possible, List the sources of the funding available with the Village gram panchayat

With the smart village development concept as per our idea and village visit the modern technology we can make socio-cultural design as cultural hall, and its cost up to 12 Lakh.

Benefits of the cultural hall:

- Cultural hall multi-purposes cultural complexes will work as centers of excellence in all forms of art and culture, with facilities and infrastructure for stage performance.
- Stage performances including like dance, drama and music exhibitions, seminars, literary activities, film shows etc.
- Cultural centers often hold classes and cultural events, which bring numerous volunteer opportunities. Volunteering opportunities can bring people closer, make them feel good,

and for younger kids, they can look great on applications. This can also be a great way to help a center out if you can't donate money or goods.

- That is the primary purpose of a cultural center: to teach the community about a culture through the use of events, festivals, and workshops. The entire community is better for it.
- These centers are a great way to understand others within your community. Knowledge is absolutely power, and it will bring community members together in a fun and constructive environment, which not many other things can do. These centers provide a unique experience, and a way to step outside of your comfort zone!

Source of funding with gram panchayat to make Cultural hall:

Scheme name: Tagore cultural complex By Indian ministry of cultural

Background of Tagore cultural complex scheme:

- The scheme was reviewed, taking into consideration the past performance, and the parameters laid down in the scheme were revised in the year 2004. The revised scheme provided for two categories (I & II) of MPCCs. For Category I, project cost was Rs. 5.00 crores and for Category II, it was Rs. 2.00 crores.
- In a related development, the National Committee under the Prime Minister and the National Implementation Committee under the Finance Minister, set up to commemorate the 150th Birth Anniversary of Gurudev Rabindranath Tagore, have felt that there is a need for renovation, upgradation and expansion of the large number of Rabindra 'Bhawans', 'Sadans', 'Rangshalas', 'Manchas' and other Cultural Centres created across the country through Central assistance as part of a nation-wide programme that was launched on the occasion of Centenary Celebrations of Gurudev Rabindranath Tagore in 1961. These Centres have been in operation for over 30 years and have served the community well.
- As part of the Commemoration of Tagore's 150th birth anniversary, it has, therefore, been decided to restore/renovate/upgrade/modernize/expand the existing Rabindra Bhawans and also create new cultural complexes in the State Capitals and other cities where no such complexes exist, within the framework of a revised MPCC scheme. The erstwhile MPCC scheme is therefore sought to be revamped and reintroduced in the name of Tagore, so that besides facilitating the setting up of new cultural complexes of varying scales, it also supports upgradation, modernization and modification of the existing Rabindra Auditoria into state-of-the-art cultural complexes.

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?	Y	Farming, offices
2	What are the chances of employment in village?	Y	
3	What are the special technical facilities in village?	N	
4	Is any debt on village dwellers?	N	
5	Are village people getting agricultural help?	Y	Private
6	Is women health awareness Program organized in village?	Y	
7	Are women having opportunity to work and income?	Y	
8	Child girl education is appreciated in village?	N	
9	Facility of vaccination to child is available in village?	Y	
10	Are village people aware about child vaccination and done to each and every child as per norms?	Y	
11	Women help line number information is provided to village people?	Y	1800-180-1104
12	Is water scarcity in village? How many days per year?	N	
13	Is village under any debt?	N	
14	Is any serious issue due to debt from bank or any person happened in village?	N	
15	Is any suicide like incident observed in village due to government policy, debt or threatening?	N	
16	Is any death of patient occurred due to unavailability of medical facility in village?	N	
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.	N	
18	Is village improvement is observed in comparative scenario from past to present?	Y	
19	Is any unavoidable difficulty village people are facing? Any natural calamity is there?	N	
20	Life Living standard of girls and women is appreciated and uplifted in village?	Y	

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

11

Figure 92: Survey By Interviewing With Sarpanch

Chapter 17

Irrigation / Agriculture Activites And Agro Industry, Altenate Technics And Solution

Irrigation is the artificial process of applying controlled amounts of water to land to assist in production of crops. Irrigation helps to grow agricultural crops, maintain landscapes, and revegetate disturbed soils in dry areas and during periods of less than average rainfall. Irrigation also has other uses in crop production, including frost protection, Suppressing weed growth in grain fields and preventing soil consolidation. In contrast, agriculture that relies only on direct rainfall is referred to as rain-fed.

Irrigation systems are also used for cooling livestock, dust suppression, disposal of sewage, and in mining. Irrigation is often studied together with drainage, which is the removal of surface and sub-surface water from a given location, Irrigation canal in Osmaniye, Turkey

Sprinkler irrigation of blueberries in Plainville, New York, United States

Irrigation has been a central feature of agriculture for over 5,000 years and is the product of many cultures. Historically, it was the basis for economies and societies across the globe, from Asia to the Americas.

In Bhairav Village villagers are using Drip irrigation, sprinkle and flood irrigation etc for irrigation and agricultural activities. There are several methods of irrigation. They vary in how the water is supplied to the plants. The goal is to apply the water to the plants as uniformly as possible, so that each plant has the amount of water it needs, neither too much nor too little. Irrigation can also be understood whether it is supplementary to rainfall as happens in many parts of the world, or whether it is 'full irrigation' whereby crops rarely depend on any contribution from rainfall. Full irrigation is less common and only happens in arid landscapes experiencing very low rainfall or when crops are grown in semi-arid areas outside of any rainy seasons.

Irrigation techniques are Surface irrigation, Micro irrigation, Drip irrigation, Sprinkler irrigation, Center pivot, Subirrigation, Subsurface textile irrigation. Here is the best techniques described and it is Center pivot.

Center Pivot:- Center pivot irrigation is a form of sprinkler irrigation utilizing several segments of pipe (usually galvanized steel or aluminum) joined together and supported by

trusses, mounted on wheeled towers with sprinklers positioned along its length. The system moves in a circular pattern and is fed with water from the pivot point at the center of the arc. These systems are found and used in all parts of the world and allow irrigation of all types of terrain. Newer systems have drop sprinkler heads as shown in the image that follows.

As of 2017 most center pivot systems have drops hanging from a U-shaped pipe attached at the top of the pipe with sprinkler heads that are positioned a few feet (at most) above the crop, thus limiting evaporative losses. Drops can also be used with drag hoses or bubblers that deposit the water directly on the ground between crops. Crops are often planted in a circle to conform to the center pivot. This type of system is known as LEPA (Low Energy Precision Application). Originally, most center pivots were water-powered. These were replaced by hydraulic systems (T-L Irrigation) and electric-motor-driven systems (Reinke, Valley, Zimmatic). Many modern pivots feature GPS devices.[38]

Irrigation by lateral move (side roll, wheel line, wheel move):-

A series of pipes, each with a wheel of about 1.5 m diameter permanently affixed to its midpoint, and sprinklers along its length, are coupled together. Water is supplied at one end using a large hose. After sufficient irrigation has been applied to one strip of the field, the hose is removed, the water drained from the system, and the assembly rolled either by hand or with a purpose-built mechanism, so that the sprinklers are moved to a different position across the field. The hose is reconnected. The process is repeated in a pattern until the whole field has been irrigated.

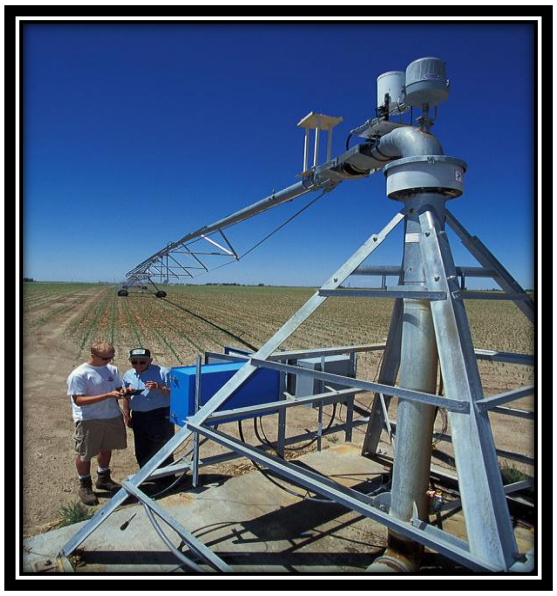


Figure 93:- Center pivot irrigation system

This system is less expensive to install than a center pivot, but much more labor-intensive to operate – it does not travel automatically across the field: it applies water in a stationary strip, must be drained, and then rolled to a new strip. Most systems use 100 or 130 mm (4 or 5 inch) diameter aluminum pipe. The pipe doubles both as water transport and as an axle for rotating all the wheels. A drive system (often found near the centre of the wheel line) rotates the clamped-together pipe sections as a single axle, rolling the whole wheel line. Manual adjustment of individual wheel positions may be necessary if the system becomes misaligned. Wheel line systems are limited in the amount of water they can carry, and limited in the height of crops that can be irrigated. One useful feature of a lateral move system is that it consists of sections that can be easily disconnected, adapting to field shape as the line is moved. They are most often used for small, rectilinear, or oddly-shaped fields, hilly or mountainous regions, or in regions where labor is inexpensive.

Increased groundwater recharge, waterlogging, soil salinity

Increased groundwater recharge stems from the unavoidable deep percolation losses occurring in the irrigation scheme. The lower the irrigation efficiency, the higher the losses. Although fairly high irrigation efficiencies of 70% or more (i.e. losses of 30% or less) can occur with sophisticated techniques like sprinkler irrigation and drip irrigation, or by well managed surface irrigation, in practice the losses are commonly in the order of 40% to 60%. This may cause the following issues:

- Rising water tables

- Increased storage of groundwater that may be used for irrigation, municipal, household and drinking water by pumping from wells
- Waterlogging and drainage problems in villages, agricultural lands, and along roads - with mostly negative consequences. The increased level of the water table can lead to reduced agricultural production.
- Shallow water tables - a sign that the aquifer is unable to cope with the groundwater recharge stemming from the deep percolation losses
- Where water tables are shallow, the irrigation applications are reduced. As a result, the soil is no longer leached and soil salinity problems develop
- Stagnant water tables at the soil surface are known to increase the incidence of water-borne diseases like malaria, filariasis, yellow fever, dengue, and schistosomiasis (bilharzia) in many areas. health costs, appraisals of health impacts and mitigation measures are rarely part of irrigation projects, if at all.
- To mitigate the adverse effects of shallow water tables and soil salinization, some form of watertable control, soil salinity control, drainage and drainage system is needed
- As drainage water moves through the soil profile it may dissolve nutrients (either fertilizer-based or naturally occurring) such as nitrates, leading to a buildup of those nutrients in the ground-water aquifer. High nitrate levels in drinking water can be harmful to humans, particularly infants under 6 months, where it is linked to "blue-baby syndrome" (see methemoglobinemia).

Chapter 18

Social Activities – Any Activates Planned By Students

"Financial independence makes a woman assertive and empowered. Financially empowered women are a bulwark against societal evils."

- PM Narendra Modi

Approximately 45 million rural women across India are mobilized into self-help groups. These groups have empowered them with skills, access to finance, markets, and business development services. Below are few small scale business ideas for rural women who want to become an entrepreneur.

Agarbatti Making: - Agarbatti or Incense Sticks is the popular household goods having a great potential market and is in demand all year round. Apart from India, agarbattis have potential markets in 90 foreign countries. One can initiate agarbatti making business easily on small-scale basis. Owing to the low level of technology involved in this industry, agarbatti making business can be initiated with simple machinery and moderate capital investment.

Figure 94: Agarbatti making business

Bindi Making:- Bindi is a consumable product, required by all women. Women entrepreneurs can start bindi making business with a small start-up capital and as a home-based business. Bindi making is a simple process with good marketing avenues and profitability. The demand of product exists and grows with the increase of the female population.

Figure 95: Bindi

Biscuit Making :- Biscuit making is one of the most profitable small scale business ideas for women entrepreneurs. Despite the advent of modern, large capacity and automatic biscuit making plants, the large section of people still prefers fresh biscuits from the local bakery as they are cheap and offer many varieties. Biscuit making is a conventional activity and an entrepreneur can initiate this business with low startup capital. This makes biscuit making a very lucrative business idea for rural women.

Figure 96: biscuit

Candle Making:- Candle making is one of the most profitable small scale business ideas for rural women entrepreneurs. People lighten candle not only for religious purpose but also as a decor item. Apart from the traditional long white candle, there is also a very potential market for scented and decorative candles. This business can be initiated as a small-scale and part-time basis.

Figure 97: candle ideas

Papad Making:- A thin wafer-like product often served as an appetizer, Papad making is one of the most profitable home based manufacturing business ideas for women entrepreneurs. With comparatively small start-up capital any individual can start this business. The demand is good and the production process is not that complex.

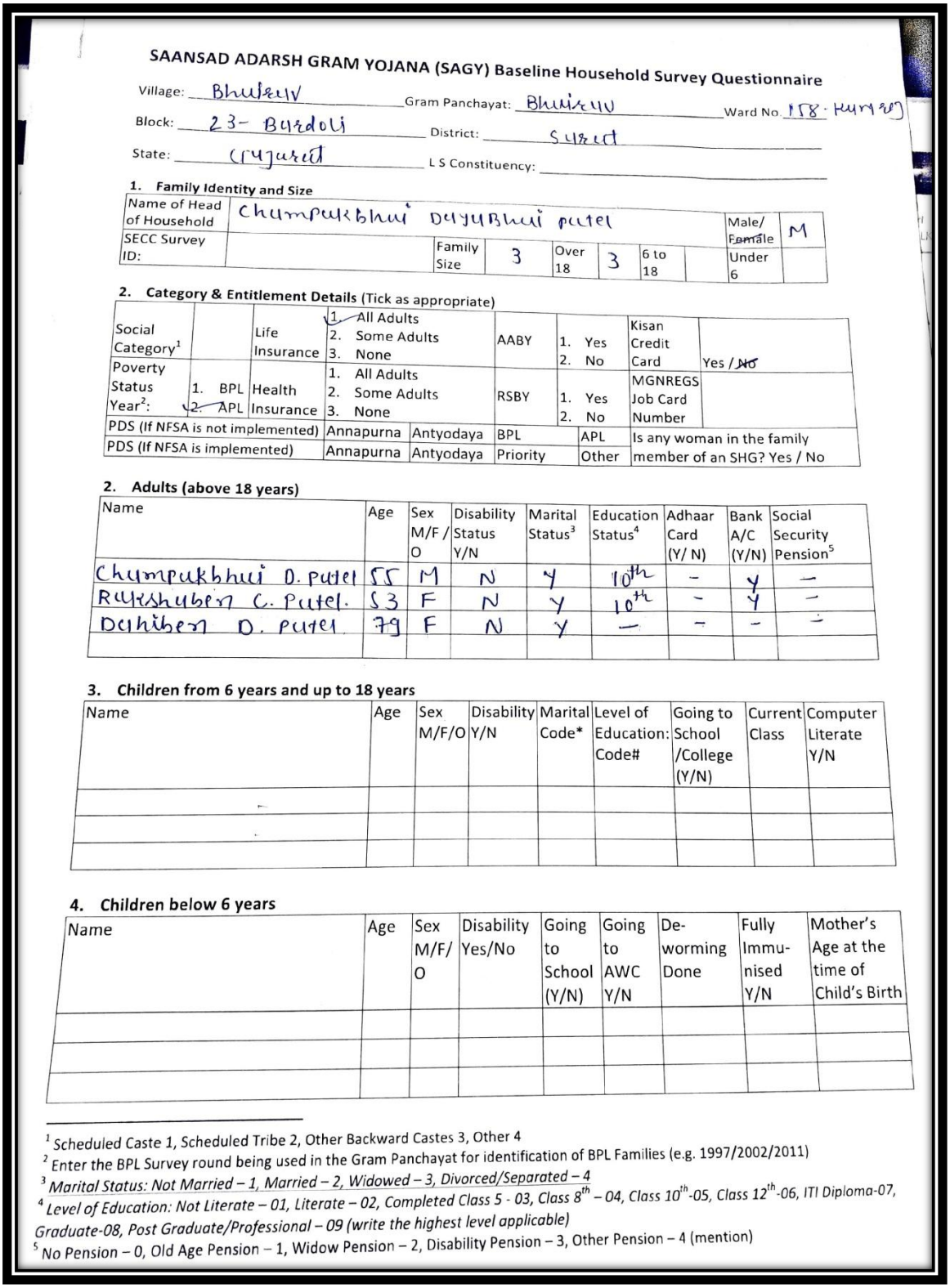
Figure 98: home papad making ideas

Spice Processing:- Spice is an essential item in cooking and food processing. Spice grinding and packaging is one of the most profitable food processing businesses. Apart from individual spice powder like chilly, cumin, turmeric; special quality mixed spice powder processing is more profitable. Some of the most popular items are meat masala, curry powder, chat masala etc.

Figure 99: spice packaging

Chapter 19

Bhairav village SAGY Questionnaire Survey form with the Sarpanch Signature



SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Bhairav Gram Panchayat: Bhairav Ward No. 158- Kumbhar

Block: 23- Bardoli District: Surat

State: Gujarat L S Constituency:

1. Family Identity and Size

Name of Head of Household	Champakbhai Dayabhai patel							Male/ Female	M
SECC Survey ID:		Family Size	3	Over 18	3	6 to 18		Under 6	

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	
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]
Champakbhai D. Patel	55	M	N	Y	10th	-	Y	-
Rukshuben C. Patel.	53	F	N	Y	10th	-	Y	-
Dahiben D. Patel.	79	F	N	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

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

[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	Yes	–
Children	–	–

9. House & Homestead Data

Own House: Yes / ~~No~~	No. of Rooms: 4
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~~	
Community Water Tap	Yes / ~~No~~	
Hand Pump (Public / Private)	Yes / ~~No~~	
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		2. Cultivable Area	
3. Irrigated Area		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	
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
Sugarcane	–	–
Bunch nut	–	–

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

19. Do children play musical instrument (mention)

Schedule Filled By: Sugar Bhudani & Vinay Pughude
Principal Respondent: Champaben Bhai Patel.
Date of Survey:

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: Bhairav

b. Block: 188 - K 23 - Bardoli

c. District: Surat

d. State: Gujarat

e. Lok Sabha Constituency: Kamrej

f. Number of Wards in the Gram Panchayat: _____

g. Number of Villages in the Gram Panchayat: _____

h. Names of Villages:

Demographic Information

Number of Households 203 Total Population 961 Male 491 Female 470

SC HHs 79 ST HHs 307 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	Yes	
b.	Nearest Primary Health Centre (PHC)	Y	1.1 km
c.	Nearest Community Health Centre (CHC)	N	
d.	Nearest Post Office	Y	
e.	Nearest Bank Branch (Any)	Y	3 km
f.	Nearest Bank with CBS Facility	Y	
g.	Nearest ATM	Y	3.1 km
h.	Nearest Primary School	Y	0.6 km
i.	Nearest Middle School	Y	1.2 km
j.	Nearest Secondary School	Y	1.2 km
k.	Nearest Higher Secondary School / +2 College	Y	2.1 km
l.	Nearest Graduate College	Y	1.9 km
m	Nearest ITI / Polytechnic Centre	-	-
n	Kisan Seva Kendra	N	

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	-	
p	Nearest Agro Service Centre	Y	
p	MSP based Government Procurement Centre	-	
q	Milk Cooperative /Collection Centre	Y	
r	Veterinary Care Centre	-	
s	Ayurveda Centre	-	
t	E – Seva Kendra	NO	2 km Kumrej
u	Bus Stop	NO	1.8 km Kumrej
v	Railway Station	NO	14 km Kim
w	Library	NO	3 KM, Kumrej
x	Common Service Centre	NO	3.2 km, Kumrej

IV. Sports Facilities in the Gram Panchayat

a. Number of Play Grounds in the GP: Total 2 Public 2 Private -

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 1

b. Number of villages without Angan Wadi Centres -

Names of such villages: -

c. Schools (Number)

Primary Private: - Primary Govt.: 1

Middle Private: - Middle Govt.: -

Secondary Private: - Secondary Govt.: -

Higher Secondary Private: - Higher Secondary Govt: -

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)			✓				
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 Good Not Covered	Bhairav	-
b.	Hand Pump Coverage in Villages:	Covered Good Not Covered	Bhairav	-
c.	Coverage under Covered Drains:	Covered Good Not Covered	Bhairav.	-
d.	Coverage under Open Drains:	Covered Good Not Covered	Bhairav	-
e.	Villages with Household Electricity Connection (Numbers)	Connected All the Not house Connected	Bhairav	-

VIII. Land and Irrigation

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

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

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)	
b)	Number of Households receiving pension (old age, widow, disability)	
c)	Number of eligible Households who are not receiving pension	
d)	Number of Households eligible for Ration Card	
e)	Number of eligible HHs having ration cards	
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	
i)	Number of Job Card holders who completed 100 days of work during 2013-14	
j)	Number of shops selling alcohol	
k)	Number of BPL families	
l)	Number of landless households	
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	
q)	Number of Households headed by physically handicapped persons	
r)	Total number of Persons with Disability in the village	
s)	Number of SHGs	
t)	Number of active SHGs	
u)	Number of SHG Federations	
v)	Number of Youth Clubs	
w)	Number of Bharat Nirman Volunteers	

Name and Signature of Surveyor and Respondent'

Sagar Bhaduri & Vinay Pagharia	Champak Bhai Patel	ગામના સરપંચ શ્રી સરપંચ ગ્રામ પંચાયત ભૈરવ	31-05-2021
Surveyor	PRI Respondent (Preferably Gram Panchayat Chairperson)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey

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

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: Bhairav

b. Ward Number: 158 - Kumrej

c. Gram Panchayat: Bhairav

d. Block: 23 - Bardoli, 93

e. District: Surat

f. State: Gujarat

g. Lok Sabha Constituency: Kumrej

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

i. Names of Habitations / Hamlets:

Demographic Information

Number of Households 203 Total Population 961 Male 491 Female 470

SC HHs 79 ST HHs 307 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	Y	
b.	Nearest Middle School	N	1.2 km Kumrej
c.	Nearest Secondary School	N	1.2 km Kumrej
d.	Kisan Seva Kendra	N	3 km Kumrej
e.	Milk Cooperative /Collection Centre	N	-
g.	Health Sub Centre	Y	3 km Kumrej
h.	Bank	N	3 km Kumrej
i.	ATM	N	3.1 km Kumrej
j.	Bus Stop	N	1.2 km
k.	Railway Station	N	14 km Jolva

[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	N	3.0 km
m	Common Service Centre	N	3.2 km.
n	Veterinary Care Centre	N	–

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: 203 (*1-All* 2-None 3-Some)

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

b.Hand Pump Coverage in Habitations: 2 (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: 203 (*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): 2

b.Mini Stadium :_____Yes(Y) /No (N)

vii. Education, ICDS

a. Number of Anganwadi Centres: 1

c. Schools (Number)

Primary Private: _____ Primary Govt.: 1

Middle Private: _____ Middle Govt.: _____

Secondary Private: _____ Secondary Govt.: _____

Higher Secondary Private: _____ Higher Secondary Govt: _____

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		d.	Pasture / Grazing Land		g.	Check Dam	–
b.	Irrigated Land		e.	Forests/ Plnatations		h.	Wells/Bore Wells	
c.	Un-irrigated Land		f.	Other Common Land		I	Tanks /Ponds	–

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

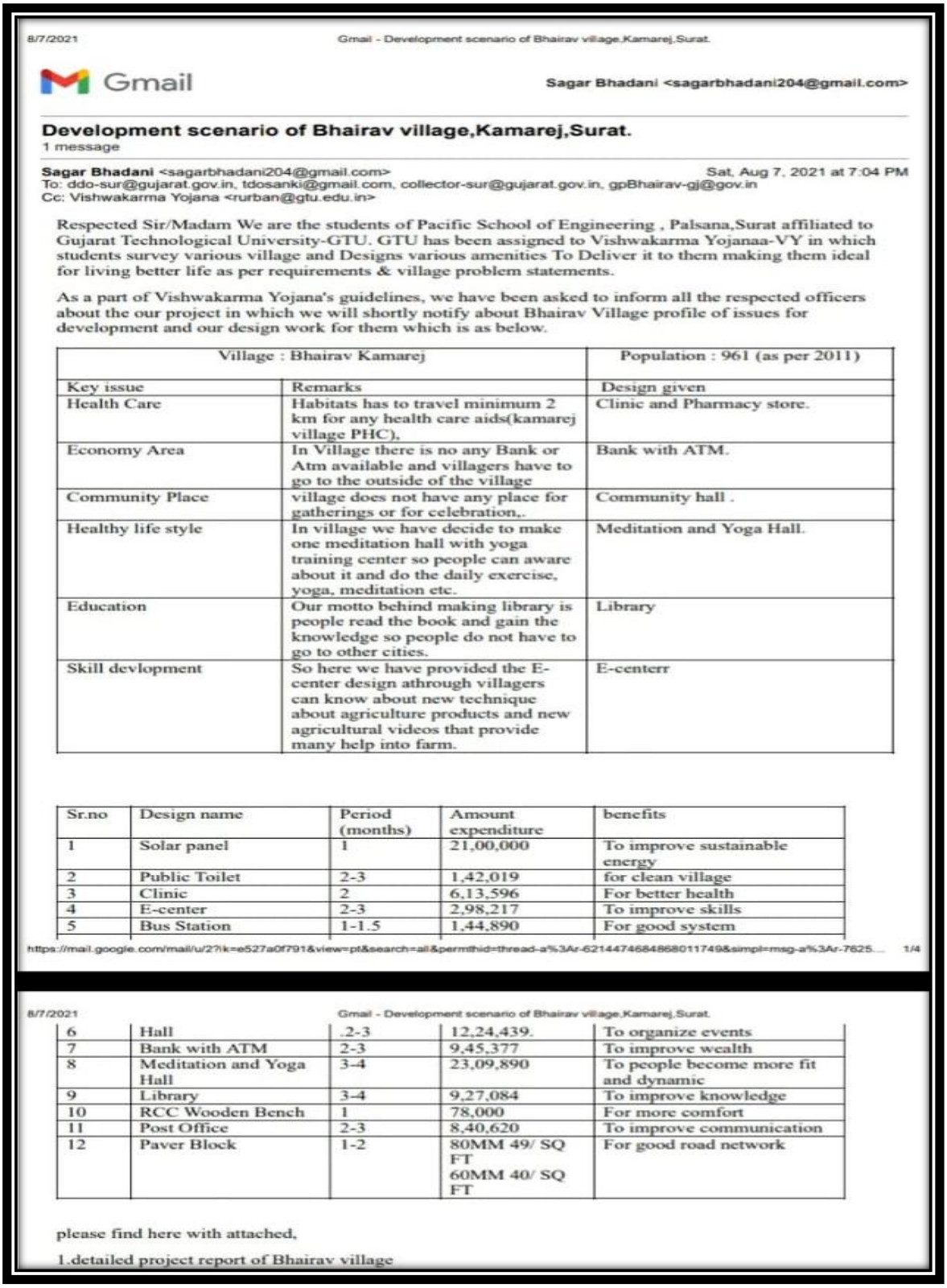
Name and Signature of Surveyor and Respondent'

Sagar Bhuderi & Vinay Pughudal Surveyor	Champak Bhai D. Patel PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	[signature and stamp] Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	31-05-2021 Date of Survey

3

Chapter 20

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



8/7/2021 Gmail - Development scenario of Bhairav village,Kamarej,Surat.

Gmail

Sagar Bhadani <sagarbhadani204@gmail.com>

Development scenario of Bhairav village,Kamarej,Surat.

1 message

Sagar Bhadani <sagarbhadani204@gmail.com> Sat, Aug 7, 2021 at 7:04 PM
To: ddo-sur@gujarat.gov.in, tdosanki@gmail.com, collector-sur@gujarat.gov.in, gpBhairav-gj@gov.in
Cc: Vishwakarma Yojana <rurban@gtu.edu.in>

Respected Sir/Madam We are the students of Pacific School of Engineering , Palsana,Surat affiliated to Gujarat Technological University-GTU. GTU has been assigned to Vishwakarma Yojanaa-VY in which students survey various village and Designs various amenities To Deliver it to them making them ideal for living better life as per requirements & village problem statements.

As a part of Vishwakarma Yojana's guidelines, we have been asked to inform all the respected officers about the our project in which we will shortly notify about Bhairav Village profile of issues for development and our design work for them which is as below.

Village : Bhairav Kamarej		Population : 961 (as per 2011)
Key issue	Remarks	Design given
Health Care	Habitats has to travel minimum 2 km for any health care aids(kamarej village PHC),	Clinic and Pharmacy store.
Economy Area	In Village there is no any Bank or Atm available and villagers have to go to the outside of the village	Bank with ATM.
Community Place	village does not have any place for gatherings or for celebration,.	Community hall .
Healthy life style	In village we have decide to make one meditation hall with yoga training center so people can aware about it and do the daily exercise, yoga, meditation etc.	Meditation and Yoga Hall.
Education	Our motto behind making library is people read the book and gain the knowledge so people do not have to go to other cities.	Library
Skill devlopment	So here we have provided the E-center design athrough villagers can know about new technique about agriculture products and new agricultural videos that provide many help into farm.	E-centerr

Sr.no	Design name	Period (months)	Amount expenditure	benefits
1	Solar panel	1	21,00,000	To improve sustainable energy
2	Public Toilet	2-3	1,42,019	for clean village
3	Clinic	2	6,13,596	For better health
4	E-center	2-3	2,98,217	To improve skills
5	Bus Station	1-1.5	1,44,890	For good system

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8/7/2021 Gmail - Development scenario of Bhairav village,Kamarej,Surat.

6	Hall	.2-3	12,24,439.	To organize events
7	Bank with ATM	2-3	9,45,377	To improve wealth
8	Meditation and Yoga Hall	3-4	23,09,890	To people become more fit and dynamic
9	Library	3-4	9,27,084	To improve knowledge
10	RCC Wooden Bench	1	78,000	For more comfort
11	Post Office	2-3	8,40,620	To improve communication
12	Paver Block	1-2	80MM 49/ SQ FT 60MM 40/ SQ FT	For good road network

please find here with attached,

1.detailed project report of Bhairav village

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best regards,

sagar bhadani & vinay paghadal In Bhairav Village there is no any Bank or Atm available and villagers have to go to the

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To organize events

subject : Development scenario of Bhairav village,Kamarej,Surat.

Bhadani Sagar,<sagaebhadani204@gmail.com>

To: ddo-sur@gujarat.gov.in,tdosanki@gmail.com,collector-sur@gujarat.gov.in, gpBhairav-gj@gov.in

Cc: Vishwakarma Yojana <rurban@gtu.edu.in>

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sagar bhadani & vinay paghadal

u.g. civil engineering

pacific school of engineering,Palsana,surat

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Chapter 21

Comprehensive report for the entire village

In this whole report we have discuss about the Bhairav village. Bhairav is a Village in Kamrej Taluka in Surat District of Gujarat State, India. It is located 21 KM towards East from District head quarters Surat. 5 KM from Kamrej. Bhairav Local Language is Gujarati. Bhairav Village Total population is 961 and number of houses are 203. Female Population is 48.9%. Village literacy rate is 76.0% and the Female Literacy rate is 37.1%. Despite being a small village, more than 30 people live abroad like Canada, Australia and America. Regarding waste management, women Sarpanch Nayanaben said that the village panchayat collects garbage door-to-door every day. Bananas are exported from Bhairav and surrounding village like Kholeshwer. Dungra, Derod and Dhatwa. In Bhairav village built a cultural building from the own funds of the Taluka panchayat. The school will be closed in the coming days due to low number of children in the primary school. Water tank supplying drinking water to the whole village, water tank has been constructed in the village for drinking water or household water to the whole village. Water connection in all the houses is provided by the panchayat R.O. light has also been made by the panchayat. The main livelihood of the people living in the village is agricultural as well as Kamrej char Rasta is connected with different business, employment farming is also done especially sugarcane, banana and vegetables. At the same time people are also involved in animal husbandry. There is a famous ancient temple of Bhairav mahadev in Bhairav village. The temple is also mentioned in tapipuran. In Bhairav village has many facility but as well as there is nothing more than as smart village. So in this report we have added many problems that we have faced during the survey of village. We have designed of Bus stand, E-library, Waste management, Bank with atm, Meditation and yoga hall etc. This all design are sustainable and environmental friendly so villagers have to very helpful to use its.

VY aims the development of the village with providing urban amenities without changing their soul. Through the development of the villages we contribute to the development of the country. If villages are not developed, then by the Vishwakarma Yojana we young engineers try to reduce the gap between urban and rural by designing proper plans and proposal.

By carrying out the gap analysis we found the gap between the existing facilities and facilities actually required as per norms and will suggest sustainable plans and proposals for

filling these gaps and contribute to the development of village. We have designed a public garden and repair of overhead water tank.

In this report we have included all of the details about the ideal village, smart village and allocated village. So in future any student has to work or taking the village this report very helpful them. In this report we also mandates the every information about what facilities are existing and what's not so it's easy to understand which facilities are already existing and which is not.

This report provides all basic information to technical information and also provided some basic charts and images related to the villages and other technical data. We have tried to give full information about the every three villages that we had visited.

Also we have provided some important design that's very helpful to build up in futures. We also provided the measurement sheet and abstract sheet that is gives full information of the plan and elevation design. We have prepared of sustainable design, physical design, smart village design, socio-cultural design, and heritage design of the village.

Following are all design we propose for villages are:

Public toilet, E-center, Bus stand, Rcc road, School function hall, Clinic

In this report we have try to including everything about the Bhairav village and we have mentioned Ideal village as Kanav village and Smart village as Orna village.