DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII

AN APPROACH TOWARDS RURBANISATION

KHAROD Village

DAHOD District

PREPARED BY

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
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COLLEGE NAME
Government engineering college Dahod

NODAL OFFICERS NAME

PROF. D. K. OZA

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad – 382424 Gujarat

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Chandkheda, Ahmedabad – 382424 Gujarat

CERTIFICATE

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

Detail Project Report for,

VILLAGE: KHAROD

DISTRICT: DAHOD

Under

Vishwakarma Yojana: Phase-VIII

in partial fulfillment of the project offered by

GUJARATTECHNOLOGICALUNIVERSITY,CHANDKHEDA

During the academic year 2020-21.

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

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
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VY-Nodal Officer Name and Signature:	**Prof. D. K. Oza**
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College Name:	**Government engineering college Dahod**
College Stamp:	

ABSTRACT

Vishwakarma yojana provides the benefits of real work experience to engineering students and students can apply their technical knowledge in the development of infrastructure in rural development. Under this scheme, the villages are surveyed and this project was identified & selected for implementation.

Rurbanisation is the concept of providing villagers the basic amenities required along with keeping the village soul alive. This project gives new ideas for Development of rural villages. As a measure to strengthen the Panchayat Raj Institutions in terms of functions, powers and finance. Gram Sabha, NGOs, Self-Help Groups and PRIs have been accorded adequate role to make participatory democracy meaningful and effective. By this Vishwakarma yojana project government wants technical solution of the problems of villages from the engineering point of view.

Kharod village is located in Dahod district in Gujarat, India. It is situated 9km away from Dahod city. Kharod has population of 6459 as per census of India 2011. Their lives mostly schedule tribe community in this village.

There are many facilities which are lack in Kharod village like, proper roads, closed drainage system, solid waste management plant, dairy, post office, gov. dispensary, and recreational centers use, high school building, library, Tape water, street lights, community toilet.

For development of the village infrastructure facilities like library, secondary school and public facilities like community toilet, bus station, dairy, tape water are required. For sustainable development of the village rain water harvesting system, solar street light may be required. For cleaning purpose Bio-Gas plant required.

Based on the survey we tried to give design of required basic facilities to fulfill their needs. By providing these basic facilities to villagers migration rate will be decreased. This is ultimate aim of the Vishwakarma Yojana.

Key words : Rurbanization, sustainable development, rural soul, reduce migration, agriculture modernizing, Traditional identities.

ACKNOWLEDGEMENT

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

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

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ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
VY	Vishwakarma yojana
GDP	Gross domestic product
SWOT	Strength, Weakness, Opportunity, Threats
D	Door
W	Window
RCC	Reinforced concrete structure

1. Ideal village – Bavka (Civil Concept)

1.1 Background & Study Area Location Kharod village :

Bavka village is located at 15km from Dahod. This village is developed during recent years very efficiently and now this village have all basic amenities like, c.c. road, underground drainage, water supply, solid waste management, gram panchayat, all houses are pucca, transportation services, higher education etc. the education is very good in this village. This village has post office and hospital. Village have bank of Baroda branch. Famous Bavka shiv mandir is located in Bavka village. Village have on going project like overhead tank, underground drainage, R.C.C road, awas yojana, etc.

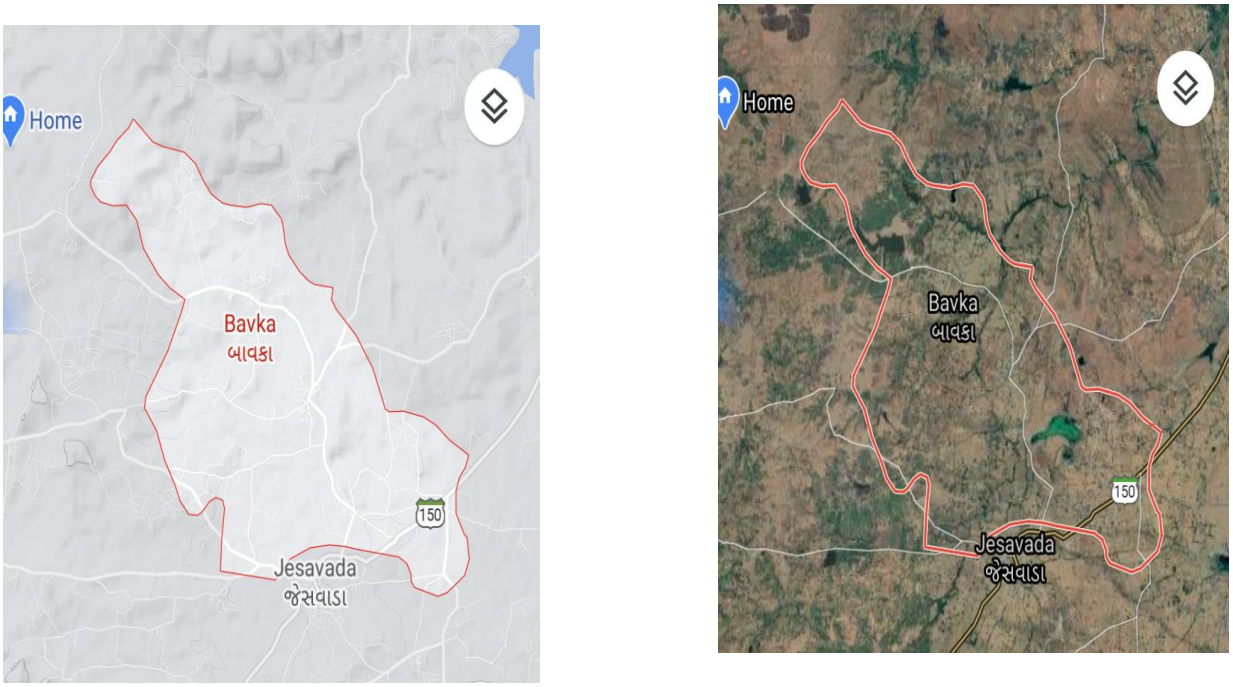


Fig 1.1: Map of Bavka village

Study area location

- Name: Bavka
- District: Dahod
- Taluka: Dahod
- Distance from Vadodara: 15 km
- Pin code: 389152
- Language: Gujarati, Hindi,

- Time zone: IST (UTC+5:30)
- Elevation/Altitude**:** 313 meters. Above-Sea level
- STD code: 02673

1.2 Concept Ideal Village, Normal Village

An ideal village has good system of sanitation and drainage. An ideal village has very good drainage system so that the sewage and dirty water of the village is properly drained away.

House:

The house of an ideal village is very neat and clean. The owners of these houses look to the house sanitation and house-drainage. The houses have sufficient windows to let in air and light.

Educational facilities:

There are Primary schools and High schools, and library in an ideal village. Primary education is free and compulsory.

Agriculture :

People of an ideal village are good farmers. They grow food crops and seasonal crops etc. Now a day, they have improved method of farming for more production of crops.

Other facilities :

Post-office, public library, playground, garden,Skill Development Centre, Banking service, etc.

1.2.1. Objectives

- Provide awareness about government schemes & policies to farmers.
- Provide urban amenities to improve the quality of life in rural areas.
- Provide advanced agricultural equipment& educate farmers about climate smart agriculture practices.
- Provide a help in setting up good roads infrastructure& transportation.
- Empowerment of rural areas with latest digital technology.
- Prevent distress migration from rural to urban areas
- Create and sustain a culture of cooperative living.
- Pride focuced on improving health indicators such as mortality and morbidity rates, reproductive and child health.
- Improving the sanitation and hygiene aspects. To creating models of local development which can be replicated in other villages.

1.2.2. Example/live case studies of ideal village of India/Gujarat

1. **Punsari (Gujarat):**

Punsari is a village located in Sabarkantha district in the state of Gujarat, India. Punsari village is India's first smart village. The village is located at about 80km from the state capital, Gandhinagar. Punsari is 20km from Parvati Hills. Punsari village is literally smart village.

2. **Kolavada (Gandhinagar):**

Kolavada are located in Gandhinagar (Gujarat). The latitude 23.2711934 and longitude 72.6121294 are the geo co-ordinate of the Kolavada. The native language of Kolavada is Gujarati. Kolavada village is first smart village of Gandhinagar.

3. **Chansad (Vadodara):**

Chansad village located in vadodara district (Gujarat). chansad village is first in vadodara to updation of urban elements in rural area. chansad village is located 26 km from vadodara district. chansad village won a prize in fastest growing village in vadodara. population of this village is 2775.

4. **Hiware Bazar (Maharashtra):**

Hiware bazzae village in the Ahmednagar District of Maharashtra, India. It is noted for its irrigation system and water conservation program, with which it has fought the drought and drinking water problems. Village continuously faced a problem of water crisis then villager change an agriculture to holticuture and at present village have 54 millionaires in village.

1.2.3 The idea of model/smart village :

The concept of smartness is popular in respect and honor of human development regardless of rural or urban area, literate or illiterate in all country and India is not omission to it. The ideas of smart village will also attention to multiple challenges such as unplanned urbanization, under development of village and smart villages.

What is smart village

Smart Village refers to a concept developed in rural area that provides solutions to problems occurred and improves the quality of life. The main problems faced by rural areas are cover poverty, low level of education, and limited access to technology. Smart village concept emerged due to some different characteristics between rural and urban areas. In smart village access sustainable energy services acts as a catalyst for development – enabling the provision of good education and

health care, access to clean water, sanitation and nutrition, the growth of productive enterprise to boost income and enhanced security.

1.2.4 Ancient History Civil concept about Indian Village / Foreign Countries Perspective and its Development

It is well acknowledged that we were familiar to science just time is changed and the same thing is in front of us in new form. A book "Vimanashastram" shows the procedures to make an airplane. Rural development is the process of improving the quality of life and economic wellbeing 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.

Some other facts are:

1. The iron pillar of Delhi is famous Indian place it has 99% resistance to corrosion and almost 1600-1700 years old. A study concluded that a corrosion-resistance agent iron hydrogen phosphate was applied on it which shows advanced chemical knowledge of our ancestors.

2. Harappa and Mohenjo-Daro are best examples of this architecture and mature urban civilization. In Harappa civilization the underground drainage system was from small to big sewer then to channel and then channel to river. It has also a remarkable town planning system.

3. Ancient fort and huge bath and bawadiya etc. are very attractive .one of the most beautiful example of patterns in architecture it is Chandbauri well in Rajasthan which is 100 feet below the earth level.

4. Mughals have done changes in architecture, the use of marbles shows that we had good knowledge of geology too.

5. Jagganath temple: the shadow of the main dome is not visible whatever be the time it shows architecture feat. Also the Sudarshan chakra on the top seems always facing you. Irrespective of wherever you stand. When you enter the temple by Singhdwara after first step you cannot here any sound of ocean but when you exit it can be clearly heard.

6. The Narayan pal Vishnu mandir of Chitrkut, Bastar was completely built only in a day. Its structure and arts are also built in a shorter period of time of a day.

7. The Konark sun temple is one of the UNESCO heritage site. The main attraction of the temple is its twelve pairs of wheels located at the base of the temple. These wheels are not ordinary wheels but tell time as well the spokes of the wheels create a sundial.

One can calculate the precise time of the day by just looking at the shadow cast by these spokes.

Rural Development in pre independence period:

In the pre-independence period, a number of rural development programs were started by the Nationalists and Social reformers. Rural development is the process of improving the quality of life and economic wellbeing of people living in rural areas, often relatively isolated and sparsely populated areas. some of these programs gradually disappeared or some were merged with Government sponsored schemes later. 'These is because of various reasons like lack of encouragement of the Government, lack of financial support, inadequate. inexperienced and untrained staff. The other reasons are lopsided approach to different aspects of development, absence of needed supplies and services, inadequate co-ordinates and co-operation from department and agencies. According to the 2011 census of India, 68.84% of Indians live in 640,867 different villages. The size of these villages varies considerably.

But, the most important rural development efforts during the pre-independence era were:

1. Rural reconstruction program by Mahatma Gandhi.
2. The Sriniketan Experiment
3. The Martandam Experiment
4. The Gurgaon Experiment
5. Rural reconstruction programs in Baroda, and
6. The Firka Development scheme.

The nationalist movement and Rural Development:

With the entry of Mahatma Gandhi in to Indian Public life Rural Development received mass popular support. The Rural Development was perceived with the concept of Gram Swaraj, Swadesi, Khadi, Safai, Shram Dan etc. The Non-Cooperation movement, started by Mahatma Gandhi in 1920, was the first political attempt in India to mobilize the villagers. The Non-Cooperation Resolution, moved by Mahatma Gandhi and passed by the Indian National Congress in its Calcutta session of September 1920, articulated the approach to rural development by recommending ‘hand-spinning in every house and hand weaving on the part of millions of weavers who have abandoned their ancient and honorable calling for want of encouragement.

Some major points as follow :

- The British conquest of territories, and takeover of kingdoms.

- Introduction of new laws and administrative institutions.
- Changes in the lives of peasants and tribals.
- Challenges to the caste system.
- Social and religious reform.
- Debates regarding the condition of women.
- Educational changes in the nineteenth century.
- The decline of crafts and growth of industries.
- The poverty and illiteracy of the village people.

1.3 Detail study of Ideal village/Smart Village with photograph

1.3.1 Ideal village: Bavka

Bavka village is located in Dahod tehsil of Dahod district in Gujarat, India. It is situated 15 km away from Dahod, which is both district and sub-district headquarter of Bavka village. As per 2009 stats, Bavka village is also a gram panchayat.

The total geographical area of village is 2321.77 hectares. Bavka has a total population of 9384 peoples. There are about 1587 houses in Bavka village. As per 2019 stats, Bavka village is comes under Garbada assembly and Dahod parliamentary constituency. In this village there are 19 Anganwadi, 11 primary schools, 1 secondary school and 1 higher secondary school.

Socio economic:

Table.1 socio economic profile

Name of Three Major Occupation groups in Village	1.Agriculture	80%
	2.Animal Husbandry	5%
	3.semi industrial/ job	15%

Population of Bavka village

Table.2 Population of Bavka

Sr. NO	Census	Population	Male	Female
1.	2001	7193	3640	3553
2.	2011	9384	4775	4609

Photographs of Bavka village :

Fig 1.2 Gram panchayat Bavka

Fig 1.3 Public toilet

Fig 1.4 Shiv mandir Bavka

Fig 1.5 Primary school of Bavka

Fig 1.6 Secondary school of Bavaka

Fig 1.7 Housing condition of

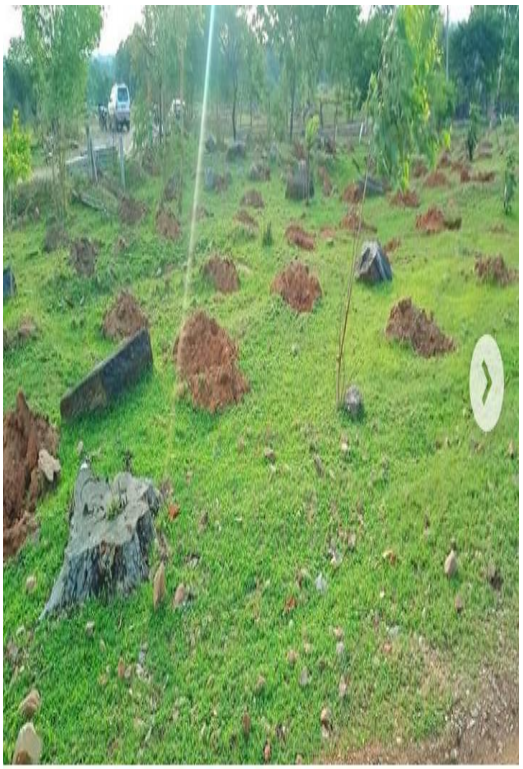


Fig 1.8 Garden

Fig 1.9 Aerial view of Bavka

Fig 1.10 Higher secondary school

Fig 1.11 Corona Warrior van of

Fig 1.12 Dam

Fig 1.13 Aerial view of Bavka village

Photographs of smart village Punsari

Fig 1.14 Village board

Fig 1.15 Entry gate Punsari

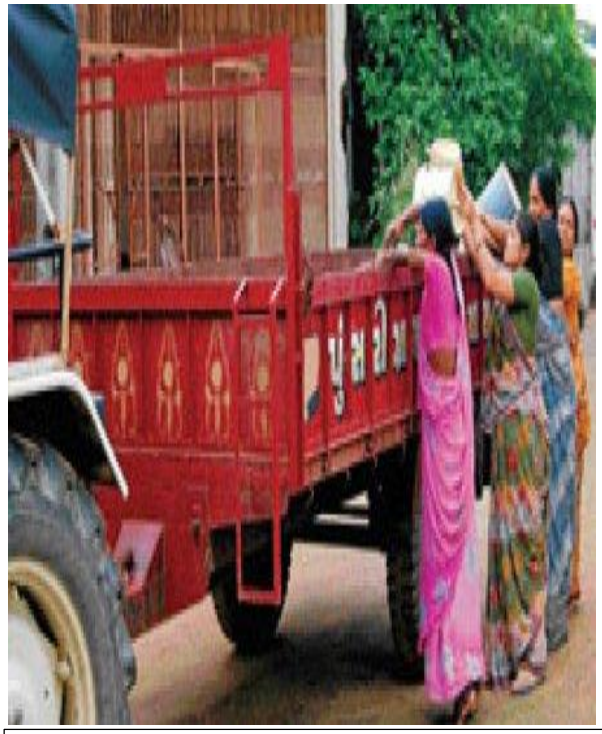


Fig 1.16 Door to Door waste collection

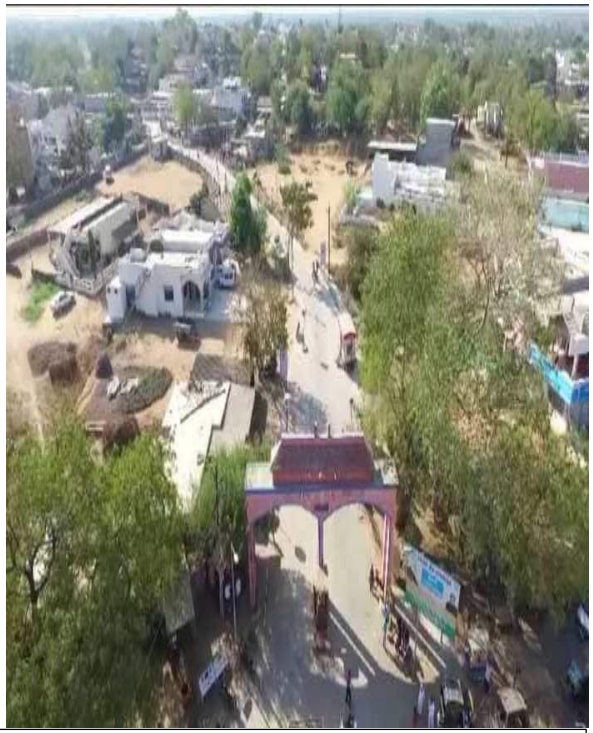


Fig 1.17 Aerial view

Fig.1.18 PHC Punsari

Fig. 1.19 Gram panchayat

Fig. 1.20 RO System

Fig. 1.21 Bus Stand

Fig. 1.22 Computer lab

Fig. 1.23 Waste collection

Fig. 1.24 Primary school

Fig. 1.25 Transportation facilites

Fig. 1.26 Sub station

Fig. 1.27 Bank

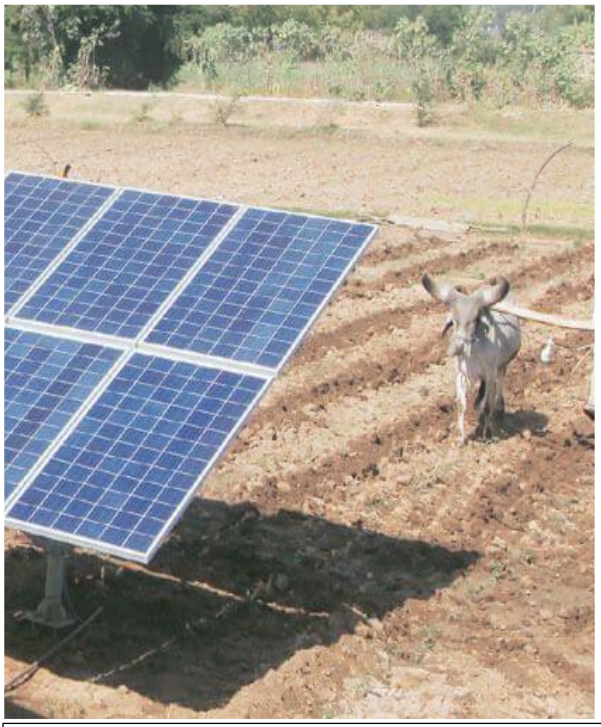


Fig. 1.28 Renewable energy

Fig. 1.29 Solar light & CCTV

1.4 SWOT analysis of Ideal village/ Smart village

Strength	Weakness	Opportunity	Threats
• Road network • Good housing condition • Education • Health	• Streets lights • Bus stand • Waste management • Water supply system	• Bus stand required • Improvement waste management • Solar street lights must provide	• Lack of funds • Increasing pollution • Lack of awareness • Poor maintenance

Fig.1.30 SWOT analysis

SWOT stands for **S**trengths, **W**eaknesses, **O**pportunities, and **T**hreats.

Strengths and weaknesses are internal to your company—things that you have some control over and can change. Examples include who is on your team, your patents and intellectual property, and your location.

Opportunities and threats are external—things that are going on outside your company, in the larger market. You can take advantage of opportunities and protect against threats, but you can't change them. Examples include competitors, prices of raw materials, and customer shopping trends.

A SWOT analysis organizes your top strengths, weaknesses, opportunities, and threats into an organized list and is usually presented in a simple two-by-two grid. Go ahead and download our free template if you just want to dive right in and get started. Users of a SWOT analysis often ask and answer questions to generate meaningful information for each category to make the tool useful and identify their competitive advantage. SWOT has been described as the tried-and-true tool of strategic analysis, but has also been criticized for its limitations.

1.5 Future prospects of village

For future prospect, the Bavaka village can use more advanced technologies for agricultural prospect and other requirements also. They can make the village Wi-Fi zone and can improve the computer labs in the schools. They can provide biogas plant in the village. In future Bavka village are developed like a city, because of near small town Jesawada is spreads so that the ideal village will include in the city area. In this village almost all the facilities are available. Almost all the civil benefits such

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

- Use of renewable energy sources
- Sufficient power supply for domestic and agricultural use
- Good education facility
- Sufficient power supply for domestic and agricultural use
- New technology and new things to improve village growth and development
- People are aware for cleanliness and built pollution free atmosphere.
- Good sanitation facility
- Recycling of drainage water.

1.6 Benefits of the visits of Ideal village/Smart village

We visited Bavka village, Dahod. By visit of this village Bavka, we got an idea about an ideal village. We had seen much kind of new technologies which can be used in village that are being used in the urban area. By this visit of this village, it has improved our communication skills and we know how to interact with the people**.** We also learn which points we need to focus in making our village an ideal one.

- To know the strength and weakness of village.
- We see some different type of little requirements of village.
- We discussed the good and bad thing about village from village people.
- We saw all type of basic and primary amenities available.
- Know about a behaviour of different village people.
- Get a such surveyor experience in illiterate people.
- To know about working of Gram panchayat.
- The culture of a village.
- Lifestyle of village
- Socioeconomic conditions of village
- Working of village governing bodies
- Importance of infrastructure facilities
- Functioning of a village
- Amenities that are need by the village

2.0 Village Literature Review – (Civil Concept)

2.1 Introduction: Urban & Rural

Urban area:

An urban area is a human settlement with high population and infrastructure facilities of built environment. Urban areas are created through urbanization and are categorized as cities, towns, or sub urban settlements are proper, planned settlements built up according to a process called urbanization. According to census 2011, there are 7,935 towns, 4,041 statutory town and 3,894 census towns.

Fig 2.1 Urban area in India

Rural area:

Rural area or countryside is a geographic area that is located outside towns and cities. It has a very low population density. In rural areas, agriculture is the chief source of livelihood along with fishing, cottage industries, pottery etc. As per Planning Commission, a town with a maximum population of 15,000 is considered rural in nature. In India 70 % population lies in village till a date. Rural people have low living standards and they lack of basic physical amenities. The area where more than 75% of male population is associated with agricultural activity is known as rural area. Rural people have low living standards and they lack of basic physical amenities. A rural areas population density is very low.

Fig. 2.2 Rural area of India

2.2 Ancient Village / Different Definition of Rural Urban Villages

Village:

A village is a clustered human settlement or community, larger than a hamlet but smaller than a town, with a population ranging from a few hundred to a few thousand. A village is a small settlement usually found in a rural setting. In most parts of the world, village are settlements of people clustered around a central point.

Urban:

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

1. All places with a municipality, corporation, cantonment board or notified town area committee, etc.
2. All other places which satisfied the following criteria:
   i. A minimum population of 5,000;
   ii. At least 75 per cent of the male main working population engaged in non-agricultural pursuits.

2.3 Scenario: Rural/ Urban India and Gujarat as Per Census 2011 and Least Population

Population growth:

- Total: 1,210,194,422 (100%)
- Rural: 833,087,662 (68.84%)
- Urban: 377,105,760 (31.16%)

TABLE 3. Population of Rural and Urban areas as per census 2001 and 2011

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

(Population in crores)

TABLE 4. Gujarat population (in crores)

	2001	2011	Difference
Gujarat	5.06	6.04	0.98
Rural	3.16	3.47	0.31
Urban	1.90	2.57	0.67

2.4 Rural Issues and Concern

The financial, manpower and managerial resources devoted to the implementation of rural development programs are utterly inadequate. Out of total population of Gujarat, 42.60% people live in urban regions. The total figure of population living in urban areas is 25,745,083 of which 13,692,101 are males and while remaining 12,052,982 are females. The urban population in the last 10 years has increased by 42.60percent.

A. People are directly or indirectly dependent on agriculture and a large number of landowners have small and medium-sized landholdings.
B. The upper caste people still hold large lands while people of the lower castes own either marginal land or work as landless laborers.
C. Lack of physical facilities in rural areas.
D. Less awareness and less income opportunity.

2.5 Various Measures for Rural Development

A rural area is a land outside the densely populated urban areas in a city or town. They have low population density, large open areas, lower standard of facilities etc. The primary industry in such area is agriculture. The rural development is a process of increasing the quality of the life and living standards of the people of the village by providing them various rural facilities.

1. To develop rural youths, children etc.
2. To develop agriculture, animal husbandry and other agricultural related areas.
3. To develop living standard of rural mass.
4. To provide minimum facility to rural mass in terms of drinking water, education, transport, electricity and communication.
5. Promotion of organic farming.
6. To boost India's rural economy and improve rural livelihoods include development of cluster – based specialized farming.
7. To support for farmers organisatons.
8. Extention of farmer's credit to fisheries and animal husbandry farmers.
9. Increasingly tourism, niche manufactures, and recreation have replaced resource extraction and agriculture as dominant economic.
10. It essentially focuses on action for the development of areas outside the mainstream urban economic system.
11. To promote products of made by Gruh udhyog.
12. Implement Government policy effectively.
13. Rain water harvesting facilities.
14. Provision of recreational areas

2.6 Various infrastructure & guidelines/Norms for Villages for the provisions of different infrastructure facilities

Various infrastructure facilities

An ideal should have the following facilities:

1.Physical Facilities:

Road facilities:

An ideal village must have good road facilities that the people can easily move from one place to other. The roads linking with the other nearby village or town or city must be provide. Roadway facilities that connect freeway or other controlled access facilities.

Dwelling houses:

The dwelling-house in an ideal village are very neat and clean. The dwellers of these houses look to the house sanitation and house-drainage. The houses have sufficient windows to let in light and air. All the houses are roofed by good tiles at least.

Electricity:

The electricity should be supplied 24 hours. The village should have good facilities of electricity because most of the work nowadays depend on electricity.

2.Social Facilities:

Sanitation and Drainage:

An ideal village has good system of sanitation and drainage. Because filth and rubbish of the village should be regularly removed away into the compost pits. An ideal village has very good drains so that the dirty water of the village is properly drained away. One of the most important components of sanitation is excreta and waste water disposal.

Food and fodder:

The villagers grow food for themselves and fodder for their cattle. They eat fresh and healthy food. They grow good grass for fodder and also leave sufficient land for pasture. Food crops are those crops that are cultivated with the aim to be consumed by man. Food crops includes rice, wheat, jawar, etc.

Fodder crops on the other hand are cultivated specificall to feed livestock and help livestock owner to control the food intake of animals. Fodder crops are manily grasses as well as cereals like oats and corns.

Drinking Water:

An ideal village should have good supply of drinking water. There are enough tube wells in an ideal village. There are separate ponds for men and cattle.

Agriculture and Industry:

People of an ideal village are good farmers and good artisans. They grow food crops, commercial crops and oil-seeds. They take up improved method of farming. They do all kinds of home industry including spinning and weaving.

Educational Facilities:

There are Primary schools, High schools and craft schools in an ideal village. Primary education is free and compulsory. Clinical Facilities: In an ideal village, there are clinical facilities for men and the domestic animals. Hence, there are dispensaries and veterinary dispensaries.

3.Socio-Cultural Facilities:

These includes facilities like playgrounds, library, gardens, Lake, Community hall, Reacreational center, Etc.

4. Sustainable Facilities:

An ideal village should have facilities like biogas plant, solar systems, use of rain water harvesting system etc.

2.7 Importance in rural context

Between one-quarter and one-fifth of the world's population derive their livelihood from small scale agriculture. Most of these people are members of what we call peasant farm households or are dependent upon the activities of peasant farm households. The large number of rural people and their involvement in peasant agriculture and other activities makes the understanding of rural people, peasants, and their livelihoods important for many reasons.

- Attracting investment in rural areas.
- Spreading development in the region.
- Accomplish better cooperation between different actors in emerging and applying urban-rural initiatives.
- Analyse territorial partnership practices for towns/cities and rural areas.

2.8 Sustainable Village Development concept

The extensive work has been carried out on design of eco-friendly green building in urban area. The urban environmental problems have been addressed under green city

projects. India is an agro based country. About 70% population of India stays in villages. The environment of villages is entirely different than cities and urban centers. Villages have low cost houses with use of local materials. The families are generally associated with animal stock like buffalo, goat, hen etc. Hence rural houses have different planning from those in urban area. The majority of rural area is of middle and low income group and depends on agriculture. The general problems faced by villagers are non-availability of adequate water of good quality, absence of proper sewerage system, solid waste problem due to agro waste and shortage of power. That's why environmental planning strategies need to be focused to safeguard environmental quality of villages.

Green concept:-

Green concept includes use of Eco-friendly materials, energy conservation and preservation of environmental quality. Green concept is used to reduce adverse impact on environment due to manmade sources of pollution.In green building its design, construction or operation, reduces or eliminates negative impacts, and can create positive impacts, on our climate and natural environment. Green buildings preserve precious natural resources and improve our quality of life.

Aspects of green design:

- Sustainability
- Eco-sensitivity
- Energy efficiency
- Climate-responsiveness
- User-friendliness
- Cost-effectiveness.
- No poverty
- Good quality education
- Good health
- Good sanitation
- Eco friendly
- Use of materials that are non – toxic, ethical and sustainable

2.9 Other Projects / Schemes

Following are the projects/schemes by Govt. Sector:

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

2. Pradhan Mantri Gram Sadak Yojana (PMGSY)

3. Indira Awas Yojana (IAY)

1.Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA):

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

The Act offers an opportunity to strengthen our democratic processes by entrusting principle role to Panchayats at all levels in its implementation and promises transparency through involvement of community at planning and monitoring stages.

2. Pradhan Mantri Gram Sadak Yojana (PMGSY):

Pradhan Mantri Gram Sadak Yojana (PMGSY) was launched on 25th December 2000 as a fully funded Centrally Sponsored Scheme to provide all weather road connectivity in rural areas of the country. The program envisages connecting all habitations with a population of 500 persons and above in the plain areas and 250 persons and above in hill States, the tribal and the desert areas.

According to latest figures made available by the State Governments under a survey to identify Core Network as part of the PMGSY program, about 1.67 lakh Unconnected Habitations are eligible for coverage under the program. This involves construction of about 3.71 lakh km. of roads for New Connectivity and 3.68 lakh km. under up gradation.

Fig. 2.3 PM Gram sadak yojana

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

to new connectivity, Bharat Nirman envisages up gradation/renewal of 1, 94,130kms of existing rural roads. This comprises 60% up gradation from Government of India and 40% renewal by the State Governments.

3. Indira Awas Yojana (IAY):

Indira Gandhi Awas yojana relaunched as Pradhan mantri awas yojana in 2016, is an Indian Government sponsored housing program that aims to build affordable housing for all. This social welfare scheme works along with the Pradhan mantri awas yojana to fulfil the commitment of providing housin g for all by 2022. In addition to building pucca houses for those living in kutcha houses. Housing is one of the basic requirements for human survival. For a normal citizen owning a house provides significant economic security and status in society. For a shelter less person, a house brings about a profound social change in his existence, endowing him with an identity, thus integrating him with his immediate social background. Housing is one of the basic requirements for human survival. For a normal citizen owning a house provides significant economic security and status in society. For a shelter less person, a house brings about a profound social change in his existence, endowing him with an identity, thus integrating him with his immediate social background.

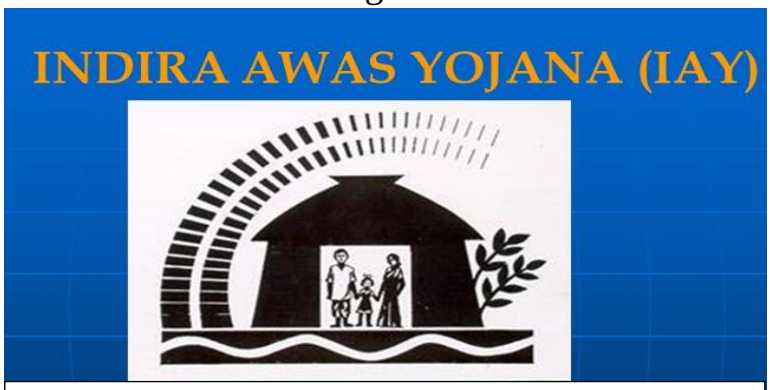


Fig. 2.4 Indira Awas Yojana

Objective:

- The objective of Indira Awaas Yojana is primarily to help construction of dwelling units by members of Scheduled Castes/ Schedule Tribes, freed bonded laborers and also non-SC/ST rural poor below the poverty line by providing them with grant-in-aid.
- To provide support during the construction of houses in rural areas.
- To promote the use of technology and material that is affordable, conductive for generating employment, environment-friendly and sustainable.
- To design the houses based the requirements of the dweller.
- To support the construction of houses with adequate provisions, including workplaces within the houses.
- To empower and encourage Panchayats to take a lead role at the village level for the implementation of this housing scheme.

3. Smart (Cities/Village) Concept Idea and its Visit (civil)

3.1 Concepts, Definitions and Practices

Concept:

In a 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, the growth of productive enterprises to boost Incomes, and enhanced security, gender equality and democratic engagement.

Definition:

The meaning of smart village is all the necessaries facilities is developed in the village and no need to moves in city for any kind of requirement.

Smart village is a concept adopted by national, state and local governments of India, as an initiative focused on holistic rural development, derived from Mahatma Gandhi's vision of Adarsh Gram and Swaraj. Abstract Smart village refers to a concept developed in rural area that provides solutions to problems occurred and improves the quality of life. The main problems faced by rural areas are cover poverty,low level of education,and limited access to technology.

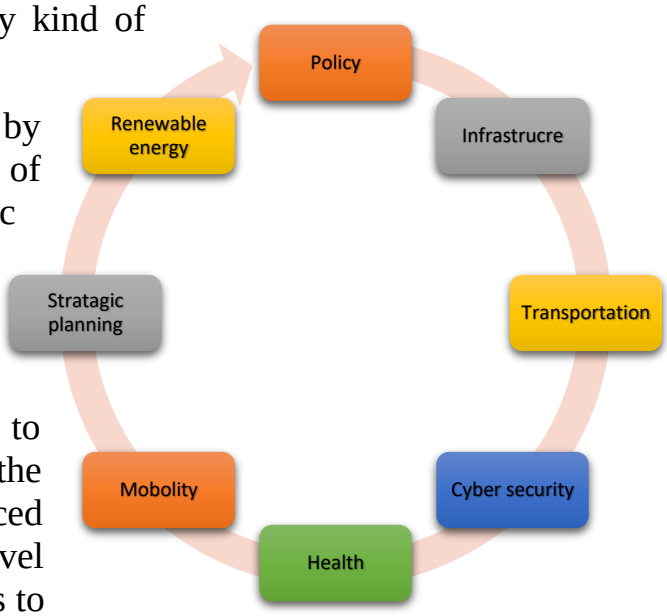


Fig.3.1 Practice of smart village

Smart city is one that uses technologies to improve and transform the lives of its citizens and the environment, while closing the digital divide and allowing businesses to thrive and innovate. It's an idea of inclusion and not division, collaboration between citizens, and the public and private sectors for sustainable transformation and growth

3.2 Vision-Goals, Standards and Performance Measurement Indicators

In order to enhance and improve the quality of "public services", a sound and clear quality management concept is needed. From the process perspective, "high quality" means that a process must deliver satisfaction—the ultimate output variable of any

process. A smart city uses information and communication technologies (ICT) in order to increase the quality of its services—which should result in the high satisfaction of the inhabitants.

CITY keys provide a validated, holistic performance measurement framework for monitoring and comparing the implementation of Smart City solutions, with the objective of speeding up the transition to low carbon, resource-efficient cities. The indicators are arranged in an extended triple bottom line sustainability framework, including the themes people, planet, prosperity, governance and propagation, and completed with specific smart city indicators. Under the main themes, subthemes conforming to major policy ambitions have been identified.

All indicators have been described in detail, with an indication of expected data sources. As such the indicators are ready for use. The first use of the indicator sets was in the testing of the indicators in smart city projects or cases in the CITY keys partner cities.

3.3 Technological Options:

1. Smart energy:

Both residential and commercial buildings in smart cities are more efficient, using less energy, and the energy used is analyzed and data collected. Smart grids are part of a development of a smart city, and smart streetlights are an easy entry point for many cities, since LED lights save money and pay for themselves within a few years. Human society is developing with rapid momentum and achieved various successes for making its livelihood better. The civilization is witness for various changes related to its development through different catalysts like industrial development, green revaluation, science and technology, etc. India has more than 72% of its population living in villages. Near about seven decade had been passed since India got freedom, but the scenario in villages in our country is still unchanged. On one side India has recently selected 100 cities for Smart City project and ready to adapt all the advanced technologies for these smart cities and on other hand villages in our country are still struggling for getting basic amenities like 24 x 7 electricity.

2. Smart infrastructure:

Having a smart infrastructure means that a city can move forward with other technologies and use the data collected to make meaningful changes in future city plans. The indicators for smart cities focus on the monitoring the evolution a city towards an even smart city. The time component “development over the years” is an important feature. The city indicators may be used to show to what extent overall policy goals have been reached or are within reach.

3. Smart transportation:

A smart city supports multi-modal transportation, smart traffic lights and smart parking. By making parking smarter; people spend less time looking for parking spots and circling city blocks. Smart traffic lights have cameras that monitor traffic flow so that it's reflected in the traffic signals. Smart transportation is more efficient, with better management comes more efficient use. Quality data can help to pinpoint areas where efficiency can be improved. Data collection is an important key to responsible public management of infrastructure. Smart transportation not only provides detailed data points for every aspect of the transportation system.

4. Smart mobility:

Mobility refers to both the technology and the data which travels across the technology. The ability to seamlessly move in and out of many different municipal and private systems is essential if we are to realize the promise of smart cities. Building the smart city will never be a project that is "finished." Technology needs to be interoperable and perform to expectations regardless of who made it or when it was made. Smart mobility refers to using modes of transportation alongside or even instead of owning a gas – powered vehicle. This can take on many different forms, including ride – sharing, car – sharing, public transportation, walking, biking, and more. The need for smart mobility arose out of increasing traffic congestion and its related side effects, including pollution, fatalities, and wasted time.

3.4 Road Map and Safe Guards:

Smart Maps capture a broad range of detailed data, such as roads (with details including lanes, speed limits, and turn restrictions), shops, (types, user ratings), and other information (bike and transit routes, building shapes, etc.) Smart Maps are designed so that users can quickly and intuitively interact with them despite having virtually no training, ensuring that information reaches the widest possible audience. Smart Maps are built to update quickly and correctly as cities change and evolve.

For example, Lusail City in Qatar, Masdar City in the UAE, and Songdo in South Korea are all making digital technology, networks, and apps a central part of how they operate and interact with citizens. By contrast, existing or brownfield metropolitan areas face clear challenges in moving up the ICT maturity ladder, as they need to modernize their existing infrastructure with embedded sensors and control systems and retrofit old buildings a complicated and expensive process. transport available to all at affordable rate with minimum time delay and maximum possible comfort. It has an elaborated recommendation to keep track of transport facilities such as high capacity public transport and light passenger transport The

results will be expressed in annual number of public transport trips per capita and ridership of public transport.

3.5 Issues & Challenges:

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.
- Misuse of resources.
- Religion and belief system.
- Existing infrastructure for energy, water and transportation systems.

3.6 Smart Infrastructure:

Smart infrastructure provides the foundation for all the key themes related to a smart city, including smart people, smart mobility, smart economy, smart living, smart governance and smart environment. The central characteristic that underlies most of these components is that they are connected and that they generate data, which may be used intelligently to ensure the optimal use of resources and improve performance. This section introduces some key Components of smart city infrastructure and concludes by highlighting the need for a combined method in dealing with such infrastructure. The system aims at using machine learning algorithms for predicting optimum routes based upon traffic mobilization patterns, vehicle categorization, accident occurrences and levels of precipitation. Finally, the system comes up with the concept of a green corridor, wherein emergency services are allowed to travel without facing any kinds of traffic congestion.

Smart infrastructure includes following:

- Smart building
- Smart mobility
- Smart energy
- Smart waste management
- Smart health
- Smart security

Fig.3.2 Smart infrastructure

3.7 Cyber Security:

Cyber security is the practice of defending computers, servers, mobile devices, electronic systems, networks, and data from malicious attacks. It's also known as information technology security. The term applies in a variety of contexts, from business to mobile computing. Cyber security in the context of Smart Cities is a hot topic. The objective of Smart Cities is to optimize the city in a dynamic way to offer a better quality of life to the citizens through the application of information and communication technology (ICT). The range of areas where cities can become smarter is extensive: it is an evolution of "Connected Cities" with the prevalence of data exchange at a larger scale.

Over the past few years, Technology has begun to play an important role in our daily lives. Internet enabled gadgets have changed the way in which we work or do our daily chores. Digitization has an impact on personal lives, education, health, government and national security. Due to increase in complexity of smart city systems and globally connected social, economic, political systems, etc. has increased vulnerability of security of a city. Humans are already interconnected via gadgets.

The benefits of Information and Computing Technologies (ICT) in a Smart City and of the Internet of Things are tremendous. Smart energy meters, security devices, smart appliances for health and domestic life: these and more offer unprecedented conveniences and improved quality of life. City infrastructures and services are changing with new interconnected systems for monitoring, control and automation. These may include water and sanitation to emergency responders and disaster recovery.

Methodology:

Fig. 3.3 Methodology

Several paradigms and categorical structures may be applied in analyzing the benefits and detriments of this data environment. An applicable paradigm used for this analysis is that of IBM that the Smart City. Helps cities respond to the needs of their citizens. Supports the transition to low-carbon, resource-efficient cities and creates trust in smart city solutions.

3.8 Retrofitting- Redevelopment- Greenfield Development District Cooling

Air condition from Hammond services, In the Southeast, air conditioners are almost crucial pieces of equipment for home comfort. However, it can be difficult to find the right air conditioner for your home, one that will provide enough cool air in the summer to cool your home without driving your energy costs through the roof. We can help! At Hammond Services, we can help you choose the perfect air conditioner for your home, install it professionally, and even maintain/repair it in the years ahead.

Energy Efficient and Affordable Air Conditioners, when it comes down to selecting a new air conditioner for your home, there are a few things you should consider. First of all is efficiency. By choosing an energy efficient model, you can be sure your money is being well spent and isn‘t being thrown away with inefficiencies. Get the most bang for your buck with an air conditioner that won‘t cost a fortune to run. Reliability You Can Count On.

Since existing structures are largely to remain intact in this model, it is expected that more intensive infrastructure service levels and a large number of smart applications will be packed into the retrofitted smart city. The whole process of retrofitting must be completed in a shorter time frame, as it will lead to help and assistance in other part of city or another city of similar condition. SMART-RETROFITS are projects to mitigate major issues affecting urban resilience; are catalytic in nature, effective, requires policy initiatives & some investments for pre-take-off.

As a Carrier Factory Authorized Dealer, our commitment to quality products you can count on is clear. We‘re confident when we say that with the proper maintenance, you can count on our air conditioners to operate efficiently for years to come. If you‘re having trouble choosing an air conditioner for your home, contact us today – we can help you weigh your options!

Green building:

Green building refers to both a structure and the application of processes that are environmentally responsible and resource-efficient throughout a building's life cycle. Green buildings preserve precious natural resources and improve our quality of life.

- Green buildings may incorporate sustainable materials in their construction (e.g., reused, recycled content, or made from renewable resources).
- Create healthy indoor environments with minimal pollutants (e.g., reduced product emissions).
- And feature landscaping that reduce water usage (e.g., by using native plants that survive without extra watering).

- A green building is a structure that is environmentally responsible and resource-efficient throughout its lifecycle. These objectives expand and complement the classical building design concerns of economy, utility. Durability and comfort.

Features of a Green Building:

- Minimal disturbance to landscapes and site condition.
- Use of non-toxic and recycled / recyclable material.
- Efficient use of water and water recycling.
- Use of energy efficient and eco-friendly equipments.
- Use of renewable energy.
- Quality of indoor air quality for human safety and comfort
- Effective controls and building management systems
- Reducing waste, pollution and environmental degradation.
- The enabling of re-use and recycling.

Fig. 3.4 Green building

3.9 Strategic Options for Fast Development:

Following strategic option for fast development of smart city:

- It starts with having a realistic plan.
- Smart cities require extensive experimentation.
- A smart city vision should energize the private sector.
- Smart cities demand smart data.
- Get creative when rethinking transportation.
- Don’t downplay digital security.

- Smart city initiatives should complement low-tech initiatives.
- Housing and inclusiveness - expand housing opportunities for all.

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

Urban Water and Sanitation Challenges

More than 90% of the urban population has access to drinking water, and more than 60% of the population has access to basic sanitation. However, access to reliable, sustainable, and affordable water supply and sanitation (WSS) service is lagging behind. Indian city receives piped water 24 hours a day, 7 days a week. Piped water is never distributed for more than a few hours per day, regardless of the quantity available. Raw sewage often overflows into open drains. Less than 50% urban population has access to piped water. The Non-Revenue Water (NRW) means due to leakages, unauthorized connections, billing and collection inefficiencies, etc. is huge, estimated between 40-70% of the water distributed. Operations and maintenance cost recovery through user charges is hardly 30-40%. Most urban operations survive on large operating subsidies and capital grants.

Indigenous Technologies:

1 Indigenous water purification technologies:

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

2 Environment friendly Plasma technologies:

Solid waste dumping sites or landfill sites need more amount of land which is not available in urban areas. Incineration of solid waste pollutes the environment if the incinerators are not designed or operated properly. Thermal Plasma Technology is ideally suited for waste treatment. By plasma technology Hazardous & toxic compounds are broken down to elemental constituents at high temperatures; Inorganic materials are converted to Vitrified Mass; and Organic materials are Pyrolysed or Gasifier, Converted to flue gases (H2 & CO) & Lower hydrocarbon gases when operated at low temperature (500 – 600OC). Disposal of carcass is also being thought of using plasma pyrolysis. It provides effective alternatives to western; it gives local people and development workers extra points when designing projects. They can choose from indigenous knowledge or combination of indigenous and

western technology instead of searching only western technologies for the feasible solution. Indigenous technologies are cheaper than western technologies. They rely on locally available skills, materials and require little or no cash outlay.

Unique Multi Stage Biological Treatment Solution:

Multi Stage Biological Treatment Solution (MSBT)can be implemented on existing STP which are not able to process Sewage to optimum efficiency. MSBT can be implemented as a modular or container on the banks of rivers on Drains/Nalas which discharge waste water to the river. It can also be implanted in small urban societies and housing complex for better water management. Benefits of MSBT are: No Surplus of Organic Sludge, No Odor problem, Drastic reduction of Electrical Power usage which minimizes operating costs, no need for return sludge pumping (minimizing electromechanical component which ultimately reduces operating cost). Vacant land and abandoned structures impose both economic and social costs on cities and the neighborhoods or districts in which they are located. On the economic side, such properties lower neighboring property values and tax revenues even as they create pressure to raise taxes to maintain

3.11 Initiatives in village development by local self-government:

The village Grampanchayat has taken various steps for the betterment of the village through various government schemes and raising the funds from the governments.

With the help of the government the village had developed better and sustainable road networks, proper drainage system, proper water supply with RO facilities, sufficient electric supply, better infrastructure facilities etc. Also they have provided bus facility for the village peoples to help them in travelling in between other villages and also grampanchayat has provided more than 140 cctv camerasin village for the safety purpose.

• Financial Systems Constraints on government budgets and the rigidities of the present system of intergovernmental transfers prevent an adequate response of traditional arrangements to the challenge of urbanization. A new and more decentralized system of public and private financial intermediaries will be required. The establishment of the NHB represents an important step: an apex institution that will stimulate the creation of a network of mortgage financing. The NCU also calls for the creation of Urban Infrastructure Development banks to permit local governments to borrow for infrastructure.

• Non - Governmental Organizations. Given the size of the job and the difficulty governmental agencies have in dealing directly in some aspects of the development of urban areas (eg, stimulating informal sector enterprise and provision of shelter)

there is a recognition of the need for new and expanded NGOs to assist in facilitating the urbanization process. The institutions of Local Government have flourished in India since time immemorial. The Panchayats or Village Governments, as they were called, were ancient institutions and were themselves small republics.

3.12 Smart Initiatives by District Municipal Corporation:

1. Centralized City Command and Control Centre

Development of a centralized city command center on an advanced ICT platform to monitor administrative functions and addressing any issues related to it at the earliest through Realtime monitoring and complain mechanism. It will integrate all administrative functions under one umbrella.

2. Total Sewerage Solution

- All treatment plants and pumping stations will be provided with SCADA system, using various types of sensors and centralized control room.
- This will help the corporation to monitor the sewage flows, leakages and increase the efficiency of operations.
- Power Source from Roof top solar Panels at Each STP location.

3. CCTV Monitoring

City wide CCTV monitoring with the help of optical fibre network, aiming towards safety and security of the citizens, and laso towards efficient traffic management and municipal administration**.** In industrial plants, CCTV equipmen may be used to observe parts of a process from a central control room, for example when the environment is not suitable for humans.

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

Sansad Adarsh Gram Yojana :

Sansad Adarsh Gram Yojana is a rural development program generally focusing upon the development in the villages and rural which includes social-infrastructure development, sociocultural development. The program was launched by the Prime Minister of India, Narendra Modi on the birth anniversary of Jayaprakash Narayan, on 11 October, 2014.

Sansad adarsh gram yojana was initiated to bring the member of parliament of all the political parties under the same umbrella while taking the responsibility of developing physical and institutional infrastructure in villages and turn them into

model villages. Under this yojna, each member of parliament needs to choose one village each from the constituency that they represent, except their own village.

Goal:

The goal is to develop three Adarsh Grams by March 2019, of which one would be achieved by 2016. Thereafter, five such Adarsh Grams (one per year) will be selected and developed by 2024.

Objectives:

- To trigger processes which lead to holistic development of the identified Gram Panchayats.
- To substantially improve the standard of living and quality of life of all sections of the population through
- Improved basic amenities
- Higher productivity
- Enhanced human development
- Better livelihood opportunities
- Reduced disparities
- Wider social
- Implement of the scheme
- Proactive steps for inclusion and integration of socially excluded groups, especially scheduled caste and scheduled tribes.
- Creating models of local development which can be replicated in other villages.
- Enriched social capital

3.14 How to Implement Other Countries Smart Villages Projects in Indian Village Context

1. Making governance citizen

Friendly and cost effective-increasingly rely on online services to bring about accountability and transparency, especially using mobiles to reduce cost of services and providing services without having to go to municipal offices. Forming e-groups to listen to people and obtain feedback and use online monitoring of programs and activities with the aid of cyber tour of worksites.

2. Preserving and developing open spaces

Parks, playgrounds, and recreational spaces in order to enhance the quality of life of citizens, reduce the urban heat effects in areas and generally promote eco-balance.

3. Promoting mixed land use in area-based developments

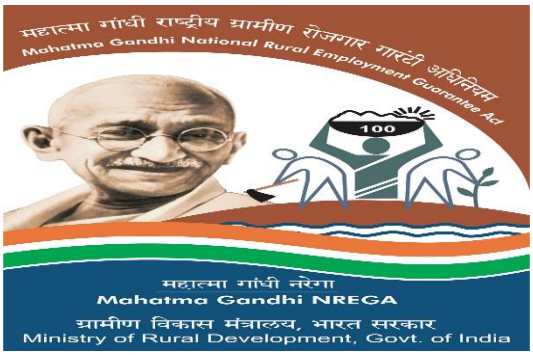
Planning for 'unplanned areas' containing a range of compatible activities and land uses close to one another in order to make land use more efficient. The states will enable some flexibility in land use and building bye-laws to adapt to change.

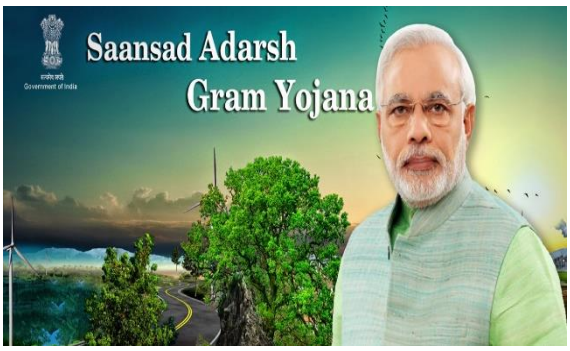
4. Giving an identity to the main locality

Based on its main economic activity, such as local cuisine, health, education, arts and craft, culture, sports goods, furniture, hosiery, textile, dairy, etc.

5. To boost employment in India

Government of India's 'smart cities mission', a flagship initiative, is aimed at developing 100 sustainable and citizen friendly cities across the country. Each of these smart cities will be a key driver of economic growth boosting the GDP of the country and creating multiple new-age employment opportunities. With increased urbanization, urban areas are expected to house 40 per cent of India's population and contribute to over 75 per cent of India's GDP by 2030. This calls for large scale infrastructural development which is not just physical and institutional but also social and economic infrastructure. Only then would these cities will attract investments leading to continuous growth and development.





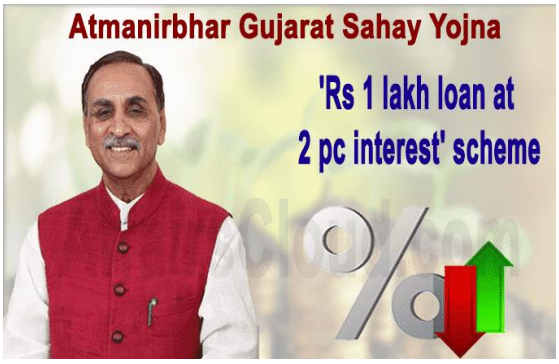


Fig.3.5 Different schemes of Government

4. About Kharod Village

5.1 Introduction:

4.1.1 Introduction about Kharod Village

Kharod village is located in Dahod Tehsil of Dahod district in Gujarat, India. It is situated 8km away from Dahod. As per 2009 stats, Kharod village is also a gram panchayat.

4.1.2 Justification / Need of study

By VishwakarmaYojana project government required technical result of the problem of villages at the engineering point of view. To increase liveliness of village by providing good sanitation facilities, good infrastructure, basic requirements like pucca houses or awaas, water supply etc. are required considering the environmental and need of people.

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

- Socio- Cultural Facilities such as Community Hall, Public Library, Recreation Facilities, Assembly polling and other.
- Sustainable development: Rain water harvesting, Biogas plant, Eco friendly Toilets, Solar Street lights & other for effective development of Villages.
- Physical infrastructure facilities such as Water, Drainage, Road network, transport facility, Electricity, sanitation, Irrigation, Solid waste Management, Storm Water Network, Telecommunication & other,
- Social infrastructural facilities such as Health, education etc.
- To increase liveliness of village by providing good sanitation facilities, good infrastructure, basic requirements like pucca houses or awaas, water supply.

4.1.3 Study area

Fig.4.1 Kharod Map

State	Gujarat
District	Dahod
Tehsil	Dahod
Area(hectares)	1294.04
Population	6459
Time zone	IST (UTC+5:30)
Pin code	389151
Elevation/Altitude	313 meters. above sea level

Table.5 Study area of Kharod village

4.1.4 Objectives of the study:

- To provide basic facilities in the village.
- To Reduce Migration.
- To provide the necessary designs of the public buildings which are not available in the village.
- Repair & maintenance of Existing Public Buildings like Gram Panchayat, Public Library, School Buildings, Health Center, and Public Toilet Block & Other.
- To promote integrated development of Munjka village with provision of required facilities, better connectivity, employment opportunities, etc.
- To develop the village such that it can be called a Smart Village.
- Internal roads within village settlement, Efficient Mass Transportation systems to improve connectivity between urban and rural areas, Public transportation facilities that need to be developed like bus stops, transport depot etc.
- Electricity connections like street lighting that is energy efficient and eco-friendly
- Basic physical infrastructure – Water Supply, Transport, Sewerage and Solid Waste Management should be the priority focus and be provided Health Center, and Public Toilet Block & Other.
- Refurbishing of village lakes, water tanks and wells, construction of rain water harvesting structures for sustainable development
- To create better lifestyle for village without changing its core soul
- To provide sanitation for all
- Economy generation is the key pillars that the concept hinges on which should be introduced to village.

4.1.5 Scope of the Study:

Provide basic amenities in the rural area which are not existing with rural soul remain intact and to increase the livelihood of people. To ensure integrated development of village, people and environment by creating sustainable designs for all to optimum extent as possible. India is agriculture country, about sixty percent of total population lives in village; they migrate to city for job and urban facility. This is useful to find the Actual requirement of village and how to overall development of village is possible in easy and practically way. Economy generation is the key pillars that the concept hinges on which should be introduced to village. Migration occurs mainly due to job opportunities and better facilities like hospitals, educational facilities etc. Only then would these cities will attract investments leading to continuous growth and development. A key way of developing smart cities is by enabling using smart evolved technology for local area development in the cities. It is important for us to understand that the existing workforce and the new workforce entering the labor market need to align their skill sets basis the requirements of smart cities.

4.1.6 Methodology/ Study Frame Work:

- Methodology goes in following order
- Concept
- Literature review
- Meeting with Sarpanch
- Meeting with revenue Talati
- Techno Economic Survey
- Collection of data
- Analysis of data
- Design Proposals
- Future plan
- Acknowledgement

4.1.7 List of Objects Available related to civil:

- Water Tank
- Road
- Gram Panchayat
- Aanganwadi
- Health Centre
- Road
- Community Hall
- Primary school
- Paved block
- Sub station

4.2 Study Area Profile:

4.2.1 Kharod Village study area location with brief history land use details

Kharod is a village in Dahod taluka in Dahod district of Gujarat state, India. It is located 9km from Dahod. The nearest railway station to Dahod is Rajkot which is located in and around 10 Kilometres.

The village follows panchayat raj system since 2009. There is 5 polling booths in the village says Mr. Rasulbhai Bhoha Sarpanch of the village. Total area of the village is 1294.04 hectare. There are four water tanks in the village of which other are elevated water tanks with 1 lakh liter capacity. The drainage facility is not connected with almost 95% household in the village. There is a natural pond which is also used by people.

There 15% area cover by industries. 60% of total land used in agricultural. 15% land used in industries. And remaining land used in residential purpose, water body. The national highway No.56 passed through Kharod village. The migration rate of Kharod village is high.

4.2.2 Base Location Map, Land Map

Fig. 4.2 Land map of kharod village

4.2.3 Physical & Demographical growth

Kharod village is located in Dahod taluka of Dahod district In Gujarat, India. Kharod is located 9km away from Dahod city. The geographical area of village is 1294.04 hectares. Khaod has a total population is 6459. There are about 1294 houses in Kharod village.

4.2.4 Economic generation profiles/Banks

- ❖ The major sources of income are:
- Farming
- Animal Husbandry
- As Shopkeepers
- As workers in mills and factories.
- ❖ Banks: There are no banks currently present in Kharod village. Banks can be found in a nearby village name chhapari.
- ❖ Income: The average income of the village dwellers is about ₹5500 to ₹ 25000 per month.
- ❖ Post Office: There is one Post Office in Kharod village.

4.2.5 Actual Problem faced by villagers and smart solution

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

- There is a waterlogging problem during rainy season,
- There is no community hall available in the village,
- There is no bank existing in the village,
- There is no Library available
- Secondary school building not constructed
- There is no cyber cafe
- Public toilet not available
- Bus stand not available
- There is no available Dudh mandali

Smart solutions:

- Community Hall
- Cybercafe
- Library
- Secondary school
- Public toilet
- Dudh mandali
- Bio gas plant
- Road maintenance
- Anganwadi
- Bus stand
- Rain water harvesting

4.2.6 Social scenario

- The people of this village are technologically sound and are aware of all such things.
- Mostly Schedule tribe community is live there in Kharod village.
- 70% people of village goes out of Dahod district for employment.
- Most of the villagers work in the city area as it is located very near to the city.
- Most of areas of village is covered by agriculture area. Also some area covered by industrial area.

Pachchikam jewelry is one of the traditional jewelry of the people of Gujarat where instead of gold, the metal used in making of this ornament is silver. The Gujarati women as a part of their tradition carry a bunch of keys on their waist and the ring holder is usually made of silver. Some other jewelry which is worn by the ladies as part of their customs includes mangalsutra, earrings, necklace, rings and bangles. The Gujarati have lot of belief in various gods and goddesses. Cow is considered as mother God or "Gau-Mata" and the Gujarati's have lot of faith in them. Some of the ceremonies which are must to be celebrated by the people of Gujarat are birth, thread ceremony, marriage and death. In all these ceremonies the rituals and poojas are performed by the Brahmans. As a part of the Gujarati's custom and tradition they celebrate festivals like Holi and Diwali.

4.2.7 Migration Reasons / Trends

- Lack of Physical facilities.
- Due to unemployment
- Education purpose
- Marriage
- Lack of Security
- Transportation, ect

In Kharod village, employment is not available for all people which are live in Kharod village, because surround industry are available but they are not hire a local people. Marriage of girls are migrant in her husband residence after marriage so this trend is never being stop. In village up to secondary education are available.

4.3 Data collection

4.3.1 Describe Methods for data collection

- Interviews can be done formally.
- Interviews can be conducted in person or over telephone.
- By feedback form.
- Questionary survey
- Observations - Field trips

4.3.2 Primary details of survey

Kharod is a Village in Dahod Taluka in Dahod District of Gujarat State, India. It is located 9 KM towards North from District headquarters Dahod. Kamrol Pin code is 389151 and postal head office is Dahod (9 KM) , Chhapari (4 KM) , Borvani (6 KM) are the nearby Villages to Kharod.

Main source of income in this village is farming. Farmers use drip irrigation system to do farming. The main agriculture product is Maize, Gram, wheat. 160-hectare area covered in the agriculture activity out of 980 hectare. Many farmers are use organic farming by use of night excreta of cow and buffalo. Fishery is not available because only one lake available and lake are need a maintenance and clarity of water.

4.3.4 No. of Human being in one Houses :

Total number of population in Kharod is 6459 as per 2011 census. There is different number of people in each houses as there nuclear families as well as joint families, but the average no of human beings in one house is 6.

4.3.5 Material available locally in the village

The construction of the houses was made of stone, cement, sand, bricks and concrete. In this village katchha houses are more than the pucca houses. In village old pattern house range is high than modal construction house like haveli.

4.3.6 Material out sourced by the villagers

Major economic option of the village is farming so there are no more locally material available like standard bricks, aggregates, concrete and reinforcements. So, this material is brought from nearest city for construction of the houses. Rooftop steel sheet are out sourced material for more of the village. Medical equipments are also not available.

4.3.7 Geographical Detail

The total area of village is 1294 hectares. In which forest area is 20 hectares. Agricultural land is 765 hectares. Residential area is 311 hectares.

4.3.8 Demographical Details

- Total No. of houses : 928
- Population : 6459

Year	Male	Literacy	Female	Literacy
2011	3281	59.08%	3178	24.6%

Table.6 Male/Female detail

4.3.9 Occupation wise Details / Majority business

Major occupation of Village People is Agriculture.

- Agriculture – 54-65 %
- Milk production- 0.1%
- Daily wages- 72%
- Agriculture and daily wages – 57-65%
- Some peoples goes in industries (data are approx. based on survey data)

4.3.10 Agriculture Details / Organic Farming / Fishery

Majority of Peoples are involed in Agriculture sector. In kharod village peoples are not aware about Organic farming. So, this village awareness needed about Fishery and Organic farming.

4.3.11 Physical Infrastructure Facilities

- Primary school
- Secondary school
- Anganwadi
- Panchayat building
- Post office
- WBM and CC roads
- Library
- Community hall

4.4 Infrastructure Details (With Exiting Photograph)

4.4.1 Transportation & Road Network

Village are connected with NH No.56. Internal streets road is RC road. Nearest railway station is Dahod Railway station which is 10km away from Kharod. Village

Fig. 4.3 Road network

approach roads are bituminous road. Most of people use their private vehicle. Also available rickshaw, jeep or other transportation facility.

4.4.2 Drainage Network / sanitation Facilities

There is no any Drainage facilities provided.

4.4.3 Drinking Water / Water Management Facilities

For drinking Purpose most of people use hand pump. Some people also use tube well bore for water purpose.25000 lit elevated water tank available but in current not working. Some small elevated tank also available, but it also not working.

Fig. 4.4 Water Management Facilities

4.4.4 Housing condition

Village house are made of basic component like brick, cement, sand etc. The ratio of kuccha to pucca house is 1.23 House have basic facility like own toilet, clean house, electricity line etc. Some of the houses which are out of the vasahat area, condition of house is well maintained and properly constructed in line.

Fig. 4.5 Housing condition

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

In village, deficiency of social infrastructure like community hall, library, medical store, recreation infrastructure etc. village have two Sub-health centre which are open everyday. For emergency village people are go for treatment to nearest Zydus hospital Dahod which are 10 km away.

There are 5 primary school and 1 secondary school, but secondary school building is not available.

Fig. 4.6 School-1

Fig. 4.7 School-2

Fig. 4.8 Main primary school

Fig. 4.9 Health center

4.4.7 Technology Mobile/ WIFI / Internet Usage Details.

In village 35 to 40 % use smart phone are 20 to 25% use a normal phone and rest of people are not use phone. 60 % people have knowledge about internet.

4.4.8 Sports Activity as Gram Panchayat

Sports activity is conducted by gram panchayat. But all school are also conducted a sport activity during a sport weak or any function.

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

In village lake of socio-cultural facility like public garden, park, playground, theater, walking area, bicycle race, etc. Village have only pond but the condition of pond is very worst because unshaped and over filling of pond at some place. Village are working on increasing a capacity of village. No available any public garden/park. two pond available.

Fig. 4.10 Ponds of village

4.4.10 Other Facilities

There is one mandir available. Around the village 3 fire station available by Industries, which are usable for village at any emergency time. There is two ponds are available.

Fig. 4.11 Temple of Kharod village

Fig. 4.12 sitting facility

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

In village existing public building are panchayat building, school, anganvadi, etc. All building is newly built in a last 5 year, so no need of repair and maintenance of public building.

Fig. 4.13 Gram Panchayat

4.4.12 Sustainable Infrastructure facilities & repair and maintenance

There are no sustainable facilities available in the village like bio – gas plant, solid waste management plant and rain water harvesting system. Some internal road repairs are required. Solid waste management plant is also needed because they just dumped the waste on the land and it create foul environment.

4.4.13 Any other details

In the village, the road facility needs a maintenance. Village need a bio gas plant so that use of unconventional fuel is reduced. Village needs better and closed drainage system. They flush all the sewage into water bodies. There are street lights not available. So, We can provide Solar street lights.

4.4.14 Any other details

In the village, the road facility needs a maintenance. There is public building in the village like gram panchayat, primary school, Temple. The drainage is open and it needs to redesign. Their is a rough roads so it need a maintenance. Their is no bus stand in village villagers has to use privet transportaion for migration. Their is no water tank for water supply in village. but there is a ro plant in village which provide drinking water to villagers .

4.6 Existing Institution like - Village Administration – Detail Profile

4.6.1 Bachat Mandali

Village have no bachat mandali. A small scale bachat mandli is required because of some area is covered with industrial area.

4.6.2 Dudh Mandali

Village has not Dudh mandali. But dudh mandali required because migration rate of Kharod is high. So, by milk production we can reduce migration.

4.6.3 Mahila forum

There is No any mahila forum in village.

4.6.4 Plantation for the Air Pollution

In a village every year plantation program is arranged by Gram panchayat and industrial group. Also these type of activities are done in the primary school by the students of the Kharod village.

4.6.5 Rain Water Harvesting

No facility of rain water harvesting in a village. so, water harvesting facility required.

4.6.6 Agricultural Development

Tradition agricultural adopted. But most farmer adopt organic farming. The village farmers have agricultural tools and equipment. All the agri-materials are available from Dahod village which is 9 km away from the Kharod village. In Kharod village 765 hect. Land is used for agricultural activities. For agriculture activity water are used from well and near around 2km cannal is passing. Mainly showing a Weet, Vegetables, Gram, etc.

4.6.7 Any Other

Road maintenance required. Biogas, which is produced through anaerobic digestion of cattle dung and organic waste mixed with water in a biogas plant, is an efficient fuel having a calorific value of about 4,800 kcals/m3. It can be used for cooking, heating and lighting, space cooling and refrigeration and in dual-fuel or 100% gas engines for motive power and when attached with alternators for generation of electricity.

There is no any Bus stand available. so, Bus stand facility require.

5. Technical Options with Case Studies

5.1 Concept (Civil)

5.1.1 Advance sustainable construction techniques

As the world turns an eye toward sustainability, construction must follow suit. But what is sustainable construction, and how does one transition into a more sustainable method of development ?

- **What is Sustainable Construction?**

Sustainable construction is the practice of creating a healthy environment that's based on ecological principles. According to Professor Charles J. Kibert, sustainable construction focuses on six principles: "conserve, reuse, recycle/renew, protect nature, create non-toxic and high quality."

The goal is to reduce the industry's impact on the environment by utilizing sustainable development practices, employing energy efficiency, and taking advantage of green technology.

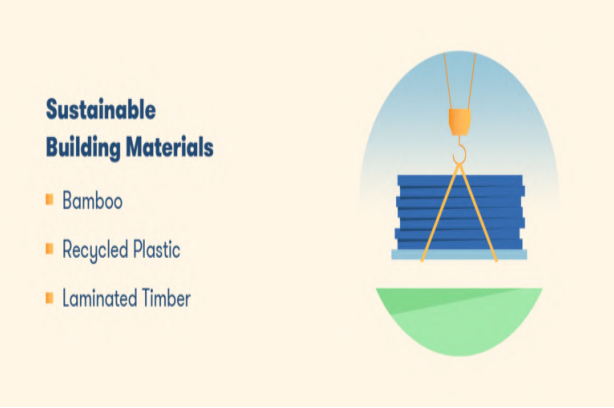
Although many different business sectors are doing what they can to be more sustainable, the construction sector is unique because it has the chance to significantly affect the way these practices are applied. This is because of the large amounts of materials and energy that the industry uses.

- **What Are the Different Types of Sustainable Construction?**

Construction techniques, resources, and building practices have evolved over the years, and with the increased interest in sustainability and energy conservation, new methods of construction that focus on sustainability have been developed. There are two things that go into sustainable construction: the materials that are used and the methods that are utilized.

Materials

One of the best ways to practice sustainability in construction is through the materials that are used. A new generation of stronger, lighter and more sustainable building materials can help solve many problems in the industry as well as push current practices to be more



sustainable. These materials have the added benefit of protecting the environment by reducing the carbon footprint of the buildings that use these materials. They promote a cleaner Earth and a future of sustainability while also being aesthetically appealing and much more efficient.

Methods

Sustainable construction isn't just about using the newest materials; it's also about using building methods that enhance renewable and sustainable efforts. Some of these methods include:

Fig. 5.1 Sustainable construction methods

- Cutting materials precisely in order to reduce waste
- Controlling waste management, such as separating and recycling waste
- Constructing green buildings
- Adaptive reuse projects that transform old buildings
- Managing construction sites to improve the environment
- Energy conservation
- Examples include treating water on-site, no smoking, recycling food containers, etc.
- Selecting sustainable and recycled materials

➢ **What Are the Benefits of Sustainable Construction?**

Sustainable building isn't just good for the environment, although that is a fantastic reason to adopt sustainable practices. There are many benefits to adopting eco-friendly methods in the construction industry, such as:

Promotes Healthier Living

Construction projects that develop green buildings aren't only beneficial to the environment; they also provide many psychological benefits to the people inside them. For example, in an office building, cognitive function scores rose by 61 percent. It was also reported that

employees were 44 percent better at making decisions that achieve workplace goals. In green hospital buildings, 56 percent were satisfied with the cheerfulness of the hospital after the green renovations. Plus, Seasonal Affective Disorder was reduced.

Reduces Waste

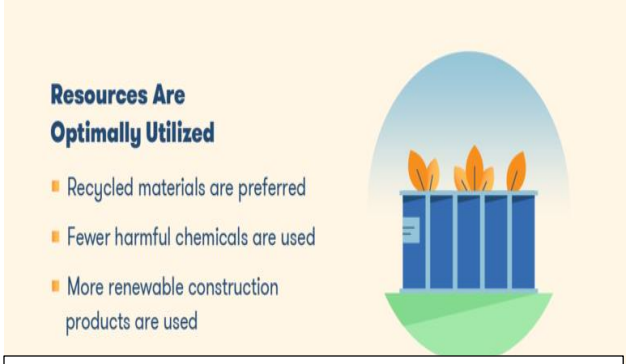


Fig.5.2 Reduce waste

The reduction of construction waste is also a ben eficial side effect in building more green buildings. By their nature, they already use fewer resources, relying on recycled and renewable materials along with more sustainable construction methods. The use of sustainable materials is also beneficial to overall human health as paint, industrial cleaning products and building materials can be dangerous for human health.

Boosts the Economy

Sustainable construction can also provide many jobs and boost the economy. As climate change devastates the world, efforts to combat its effects have increased, resulting in an increased demand for construction workers and a hike in construction jobs. According to the USGBC, the green building industry contributed $134.3 billion of labor income to US workers, making it a major economic driver in the country.

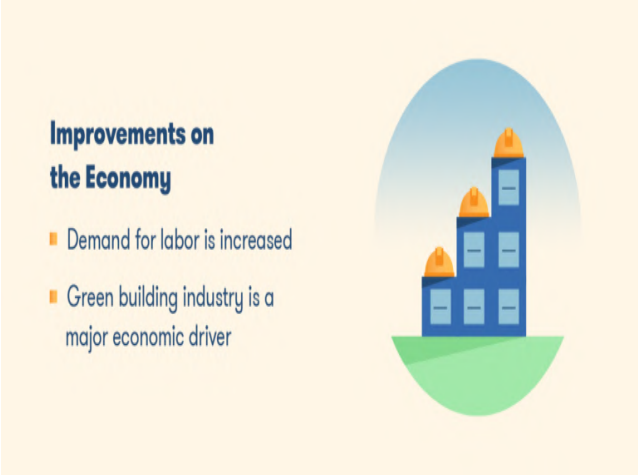


Fig.5.3 Improvement in economy

Promotes Sustainability

Sustainable construction also promotes sustainability and efficient energy use. With renewable energy construction on the rise, coupled with sustainable construction methods, more people are beginning to see the importance and

efficiency of using sustainable methods. It also sends a clear message to the industry and everywhere else: sustainability is viable and important.

- **What are the Challenges of Sustainable Construction?**

Although the benefits to sustainable construction are present and obvious, transitioning isn't an overnight process. It takes time and preparation to utilize the best practices. Training needs to be implemented in order to start practicing sustainable methods, and that takes time and money.

Another obstacle that many companies may come across is the actual principal cost of sustainable construction. The general consensus is that sustainable construction comes at a premium and the cost is higher than what the demand actually is, despite the evidence to the contrary.

Nevertheless, as more interest in sustainability efforts continue to rise, more construction firms are making the switch to sustainable construction, with green building activity on the rise.

- **Conclusion**

Whether it's the price tag for the materials, the training that goes behind it, or resistance to adapting to new methods (why fix if it ain't broke as the old saying goes), there is some pushback on green construction.

Despite that pushback, however, more owners and developers, both public and private, are turning to a greener and more sustainable form of construction. Especially since the effects of climate change can already be felt across the globe.

Fig.5.4 Importance of Sustainble construction

Sustainability is important for a variety of reasons, including a better quality of life and environmental quality. In order to have thriving and healthy communities, we need to have clean air, natural resources, and a non-toxic environment, and the construction industry can lead the way for greener projects.

Sustainable construction is developing each and every day, with more demand for cleaner and greener spaces. As the effects of climate change increase, sustainability becomes even more important. While there are challenges, the benefits involved with sustainable construction can create a pathway to a cleaner future.

5.1.2 Soil Liquefaction :

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

The main factors which affect liquefaction occurrence are the degree of soil compactness, particle size and degree of water saturation. The coarse material have proven to be most susceptible to the liquefaction process, considering all the factors. The reason is usually higher porosity than in fine grain in soil. A seismic wave may cause complete loss of soil shear strength, if such material is almost completely filled with water. The soil particles begin to move freely in the water and the soil behaves like thick liquid.

Fig. 5.5 Soil Liquefaction phenomena

5.1.3 Sustainable Sanitation :

Sustainable sanitation aims at overcoming these drawbacks. It is not a certain technology, but an approach with certain underlying principles. These are a number of technologies that can be used to make sanitation and wastewater management more sustainable. The term

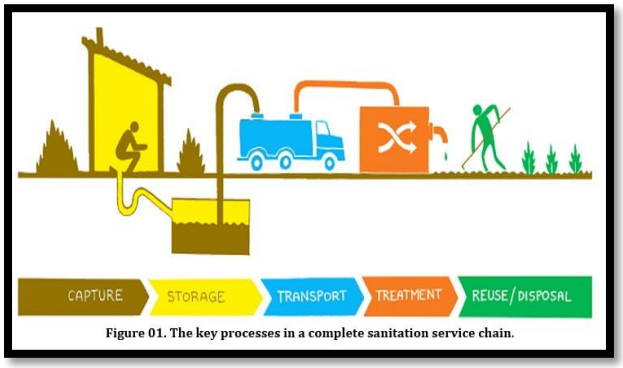


Fig. 5.6 Sustainable Sanitation

"Sustainable sanitation" in principle denominates the same as ecological sanitation, though the latter has a stronger focus on source separation.

5.1.4 Transport Infrastructure /system :

Mode of transport is a term used to distinguish between different ways of transportation or transporting people or goods. The different modes of transport are air, water, and land transport, which includes Rails or railways, road and off-road transport. Other modes also exist, including pipelines, cable transport, and space transport. Human-powered transport and animal-powered transport are sometimes regarded as their own mode, but never fall into the other categories. In general, transportation is used for moving of people, animals, and other goods from one place to another. The means of transport, on the other hand, refers to the vehicles necessary for transport according to the chosen mode (airplane, ship, truck and rail). Each mode of transport has a fundamentally different technological solution, and some require a separate environment. Each mode has its own infrastructure, vehicles, and operations.

Fig. 5.7 Transport Infrastructure

5.1.5 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 a 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.

In **India** one of the largest producers of vegetables, fruits, and many other agricultural commodities. In India, vertical farming has been introduced in 2019. ICAR experts are working on the concept of 'vertical farming' in soil-less conditions,

in which food crops can be grown even on multi-storeyed buildings in metros like New Delhi. Mumbai, Kolkata, and Chennai, without using soil or pesticides.

- **Advantage of Vertical farming**

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

Vertical farming technologies face economic challenges with large start-up costs compared to traditional farms.

Fig.5.8 Vertical Farming

- **Techniques of vertical farming**

Hydroponics technique :- Hydroponics refers to the technique of growing plants without soil.[8] In hydroponic systems, the roots of plants are subm erged in liquid solutions containing macronutrients, such as nitrogen, phosphorus, sulphur, potassium, calcium, and magnesium, as well as trace elements, including iron, chlorine, manganese, boron, zinc,

Fig.5.9 Hydroponics technique

copper, and molybdenum.Additionally, inert (chemically inactive) mediums such as gravel, sand, and sawdust are used as soil substitutes to provide support for the roots.

Fig.5.10 Aquaponics technique

Aquaponics technique :- The term aquaponics is coined by combi ning two words: aquaculture, which refers to fish farming, and hydroponics—the technique of growing plants without soil. Aquaponics takes hydroponics one step further by integrating the production of terrestrial plants with the production of aquatic organisms in a closed-loop system that mimics nature itself. Nutrient-rich wastewater from the fish tanks is filtered by a solid removal unit and then led to a bio-filter, where toxic ammonia is converted to nutritious nitrate. While absorbing nutrients, the plants then purify the wastewater, which is recycled back to the fish tanks. Moreover, the plants consume carbon dioxide produced by the fish, and water in the fish tanks obtains heat and helps the greenhouse maintain temperature at night to save energy.

Problems faces in vertical farming :- Vertical farms must overcome the financial challenge of large startup costs.During the growing season, the sun shines on a vertical surface at an extreme angle such that much less light is available to crops than when they are planted on flat land. Therefore, supplemental light would be required.

5.1.6 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure

The durability of concrete structures is influenced by various factors, for example, ecological presentation, electrochemical responses, mechanical stacking, affect harm and others. Of all of these, consumption of the fortification is likely the primary driver for the disintegration of steel strengthen cement (RC) structures. Consumption administration is ending up progressively important because of the developing number of maturing foundation resources (e.g. spans, burrows and so on.) and the expanded prerequisite for imprompt upkeep with a specific end goal to keep these structures operational all through their outline life (and usually, past).

The primary RC repair, restoration and recovery approaches by and large utilized can be extensively arranged under

- ordinary,
- surface medications,
- electrochemical medicines and

- outline arrangements.

The overall point of this examination was to recognize the key consumption administration strategies and embrace exact examinations concentrated on full-scale RC structures to explore their long haul execution.

To accomplish this, singular research bundles were recognized from the above expansive five approaches for repair, substitution and recovery. These were

1) Patch repairs and nascent anodes,
2) Impressed Current Cathodic Protection,
3) Galvanic Cathodic Protection, what's more,
4) Hydrophobic medications.

The determination of the above research bundles depended on over a wide span of time use by the development industry to repair, renovate and restore RC structures.

❖ **Prevantion**

- Alternative reinforcement and slab design method includes materials that electrically isolate the steel from the concrete and create a barrier for chloride ions, materials that protect steel galvanic-ally, and materials that have significantly higher corrosion thresholds than conventional reinforcing steel. Concrete slabs have been designed without any internal reinforcement.
- Barrier methods protect reinforced concrete from corrosion damage by preventing water, oxygen, and chloride ions from reaching the reinforcement and initiating corrosion.
- Electrochemical methods use current and an external anode to protect the reinforcement, even when the chloride ion concentration is above the corrosion threshold.
- Corrosion inhibitors offer protection by raising the threshold chloride concentration level, by reducing the permeability of the concrete, or by doing both.

Fig.5.11 Corrosion of RCC structure

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 that is safe enough for release into the environment. A byproduct of sewage treatment is a semi-solid waste or slurry, called sewage sludge. The sludge has to undergo further treatment before being suitable for disposal or application to land.

Sewage treatment may also referred to as wastewater treatment. However, the latter is a broader term that can also refer to industrial wastewater. For most cities, the sewer system will also carry a proportion of industrial effluent to the sewage treatment plant that has usually received pre-treatment at the factories to reduce the pollutant load. If the sewer system is a combined sewer, then it will also carry urban runoff to the sewage treatment plant. Sewage water can travel towards treatment plants via piping and in a flow aided by gravity and pumps. The first part of the filtration of sewage typically includes a bar screen to filter solids and large objects that are then collected in dumpsters and disposed of in landfills. Fat and grease are also removed before the primary treatment of sewage.

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.

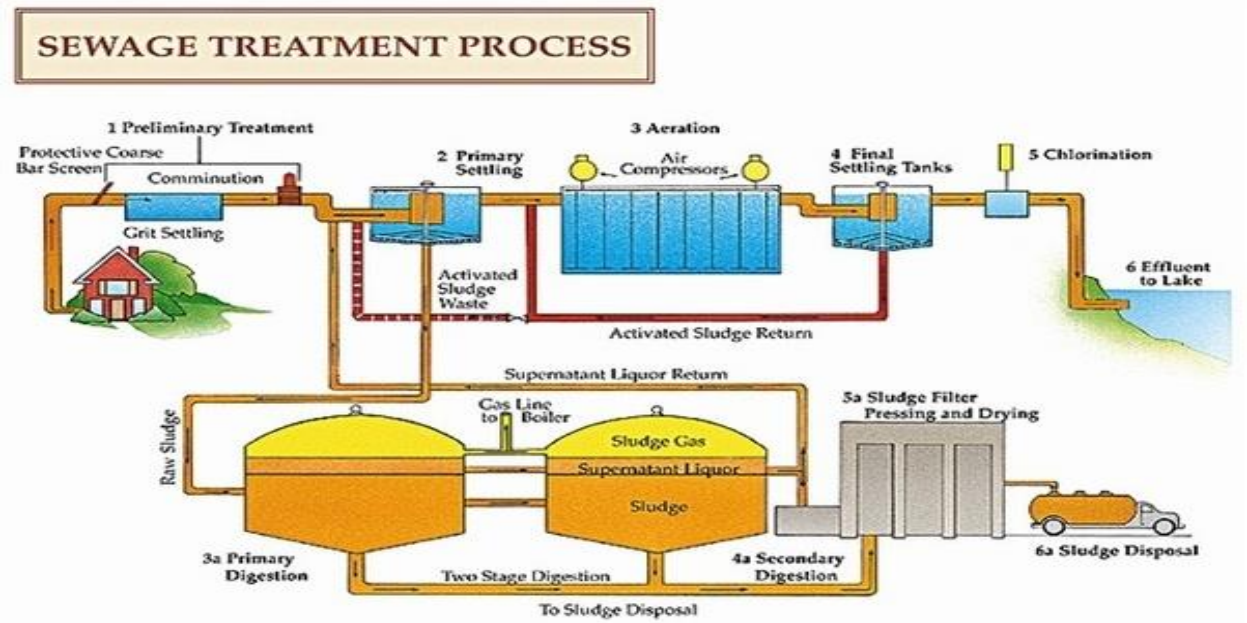


Fig.5.12 Sewage treatment plant

5.1.8 Technical Case study on " Sardar Sarovar Dam "

Introduction

The Dam on river Narmada was meant for the welfare of four states namely-Gujrat, Madhya Pradesh, Rajasthan and Maharashtra.The Sardar Sarovar Dam is a concrete gravity dam built on the Narmada river in Kevadiya near Navagam, Gujarat in India. Four Indian states, Gujarat, Madhya Pradesh, Maharashtra and Rajasthan, receive water and electricity supply from the dam. The foundation stone of the project was laid out by Prime Minister Jawaharlal Nehru on 5th April 1961. The project took form in 1979 as part of a development scheme funded by the World Bank through their International Bank for Reconstruction and Development, to increase irrigation and produce hydroelectricity, using a loan of US$200 million. The construction for dam begun in 1987, but the project was stalled by the Supreme Court of India in 1995 in the backdrop of Narmada Bachao Andolan over concerns of displacement of people. In 2000–01 the project was revived but with a lower height of 110.64 metres under directions from SC, which was later increased in 2006 to 121.92 meters and 138.98 meters in 2017. The dam was inaugurated in 2017 by Prime minister Narendra Modi. The water level in the Sardar Sarovar Dam at Kevadia in Narmada district reached its highest capacity at 138.68 metres on 15 September 2019. One of the 30 dams planned on river Narmada, Sardar Sarovar Dam is the largeset structure to be built. It is the second largest dam in the world.

Fig.5.13 Location of Sardar Sarovar Dam in Gujarat

- **Country :-** India
- **Location :-** Navagam, Kevadia, Gujarat
- **Co-ordinates :-** 21°49'49"N, 73°45'50"S
- **Construction cost :-** Rs. 25 billion
- **Catchment area :-** 88000 km^2

Geographical Location

To south west Malwa plateau, the dissected hill tracts culminate in the Mathwar hills, located in Alirajpur district of M.P. Below these hills Narmada river flows through a long, terrific gorge. This gorge extends into Gujarat where the river is tapped by the Saradar Sarovar dam.

Project Designing

The project preparation and organization took a span of four years from identification in the year 1979 to pre- appraisal in 1983. It was completed by Narmada Planning group with assistance from the United Nation Development Program (UNDP). The Narmada Development Department that was in charge of implementing the project had prepared the detail designs and cost estimates of the project. Later in the year may 1988, responsibility for the implementation of the project was transferred from the Narmada Development Department, a government agency, to the Sardar Sarovar Narmada Nigam Ltd. (SSNNL), a parastatal corporation organized along functional lines.

Fig.5.14 Objective of Sardar Sarovar

The Bank and borrowers reviewed the basic hydrological data used for the project design and gave a satisfactory report. The Narmada Water Dispute tribunal had set the annual 75 percent dependable water availability for the project at 28 million acre feet (MAF) (34,580 Mm^3) with 65.2 percent allocated to Madhya Pradesh, 32.1 percent to Gujarat. 1.8 percent to Rajasthan, and 0.9 percent to Maharashtra project

design. The project vested its first priority to water supply, second to irrigation and the last to power generation. As per the original design of the project, the Sardar Sarovar dam was to irrigate 17.92 lakh ha land in Gujrat and 73,000 ha of land in two districts of Rajasthan. The beneficiary states claimed that in the first phase of command area development, a total of 2.46 lakh ha land of would be irrigated. At the time of raising the height the height of the dam to 121.92 m, it was estimated that 3.5 lakh ha of additional land will be brought under irrigation.

Narmada Main Canal

Fig.5.15 View of Kutch Branch

The Narmada Canal is a contour canal in northwestern India that brings water from the Sardar Sarovar Dam to the state of Gujarat and then into Rajasthan state. The main canal has a length of 458 kilometres (285 mi) in Gujarat and then 74 kilometres (46 mi) in Rajasthan. The main canal is connected with 42 branches resulting in a Culturable Command Area (CCA) of 2,129,000 hectares (5,260,000 acres).[1]Soon after the completion of the construction project, the Narmada canal was inaugurated on 24 April 2008. It has carrying capacity of 40,000 cubic foot per second (cfs or cusec) at its head in Navagam and is decreased to 2,600 cusecs at Sanchore. On the way, Narmada main canal crosses many rivers and water bodies. The main canal itself can hold 220 MCM (Million cubic metre) of water at full supply depth. It is designed not only for the water supply but also the storage of water to improve the response time of the system.

Height increases

- In February 1999, the Supreme Court of India gave the go ahead for the dam's height to be raised to 88 m (289 ft) from the initial 80 m (260 ft).
- In October 2000 again, in a 2-to-1 majority judgment in the Supreme Court, the government was allowed to construct the dam up to 90 m (300 ft). On other hand, has been proceeding apace the ISP is complete and SSP nearing completion.

Fig.5.16 Sardar sarovar dam after height increase

- In May 2002, the Narmada Control Au thority approved increasing the height of the dam to 95 m (312 ft)
- In March 2004, the Authority allowed a 15 m (49 ft) height increase to 110 m (360 ft).
- In March 2006, the Narmada Control Authority gave clearance for the height of the dam to be increased from 110.64 m (363.0 ft) to 121.92 m (400.0 ft). This came after 2003 when the Supreme Court of India refused allow the height of the dam to increase again.
- In August 2013, heavy rains raised the reservoir level to 131.5 m (431 ft), which forced 7,000 villagers upstream along the Narmada River to relocate.
- On June 2014, Narmada Control Authority gave the final clearance to raise the height from 121.92 m (400.0 ft) metres to 138.68 m (455.0 ft)
- The Narmada Control Authority decided on 17 June 2017 to raise the height of the Sardar Sarovar Dam to its fullest height 163-meter by ordering the closure of 30 Gates

Benefits of the project

After examining current status of the project on the delivery of benefits as per official data the argument is always in favour of the Sardar Sarovar Project as the benefits are so large that they substantially preponderate over the costs of the immediate human and environmental disruption. Without the dam, the long term costs for people would be much greater and lack of an income source for future generations would put increasing pressure on the environment. If the waters of the Narmada River continue to flow to the sea unutilized, then there appears to be no alternative to escalating human deprivation, particularly in the dry areas of Gujarat and Rajasthan. The Project has the potential to feed 20 million people, supply domestic and industrial water to 30 million, and provide employment to more than 1 million. Apart from the above benefits it provides valuable peak electricity in areas with high unmet power demand.

Gujarat has received Rs 4,887 crores and Rajasthan has received Rs 6 25 crores under the Accelerated Irrigation Benefit Programme from 1996 to 2008 from the Central Government for the Sardar Sarovar Project (SSP) command area for creation of the canal network which is lagging behind. However the drinking water benefits of the SSP have always been presented as a strong

Fig.5.17 Inauguration by Prime minister

argument in its favor, whenever it was gripped by controversy. The government of Gujarat also planned to generate solar power by placing solar panels over the canal, and making it beneficial for the surrounding villages to get power and to reduce the evaporation of water. The Narmada Basin hydro-meteorological (hydromet) network for forecasting flood and reservoir operation is another important project component. The dam will also irrigate 17,920 km2 (6,920 sq. mi) of land spread over 12 districts, 62 talukas and 3393 villages (75% of which are drought-prone areas) in Gujarat and 730 km2 (280 sq. mi) in the arid areas of Barmer and Jalore districts of Rajasthan. The dam will also provide flood protection to riverine reaches measuring 30,000 ha (74,000 acres) covering 210 villages and Bharuch city and a population of 400,000 in Gujarat.

The Sardar Sarovar Project will provide irrigation facilities to 18.45 lac ha. of land, covering 3112 villages of 73 talukas in 15 districts of Gujarat. It will also irrigate 2,46,000 ha. of land in the strategic desert districts of Barmer and Jallore in Rajasthan and 37,500 ha. in the tribal hilly tract of Maharashtra through lift. About 75% of the command area in Gujarat is drought prone while entire command in Rajasthan is drought prone. Assured water supply will soon make this area drought proof

There are two power houses viz. River Bed Power House and Canal Head Power House with an installed capacity of 1200 MW and 250 MW respectively. The power would be shared by three states - Madhya Pradesh - 57%, Maharashtra - 27% and Gujarat 16%. This will provide a useful peaking power to western grid of the country which has very limited hydel power production at present. A series of micro hydel power stations are also planned on the branch canals where convenient falls are available

Controversy

The dam is one of India's most controversial, and its environmental impact and net costs and benefits are widely debated. The World Bank was initially funding SSD, but withdrew in 1994 at the request of the Government of India when the state governments were unable to comply with the loan's environmental and other requirements. The Narmada Dam has been the centre of controversy and protests since the late 1980. One such protest takes centre stage in the Spanner Films documentary Drowned Out (2002), which follows one tribal family who decide to stay at home and drown rather than make way for the Narmada Dam. An earlier documentary film is called A Narmada Diary (1995) by Anand Patwardhan and Simantini Dhuru. The efforts of Narmada Bachao Andolan ("Save Narmada Movement") to seek "social and environmental justice" for those most directly affected by the Sardar Sarovar Dam construction feature prominently in this film.

The figurehead of much of the protest is Medha Patkar. In an opinion piece in "The Guardian" the campaign led by the NBA activists was accused of holding up the project's completion and of even physically attacking local people who accepted compensation for moving.

Fig.5.18 Controversy of dam

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- World Bank, Project Completion Report - India - Narmada River Development -Gujarat Sardar Sarovar Dam and Power Project
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6. Swatchh Bharat Abhiyan (Clean India)

6.1 Swatchhta needed in allocated village -Existing Situation with photograph

Swachh bharat athiyan is a campaign that was launched on 2 October 2014 and aims to eradicate open defecation by 2019. The national campaign spans 4,041 statutory cities and towns. It is the current of a few prior campaigns, including nirmal bharat abhiyan and the total sanitation campaign, which had similar goals. The mission contains two sub-missions. (i) Swachh bharat abhiyan (Gramin) and (ii) Swachh bharat abhiyan (Rural).

In a village a need of swatchhta is more because unavailability of solid waste management like collection of waste collection dustbin and management of that waste. Due to this village people are throw all waste around the village border. Some industry is also throwing a solid waste in the village border.

Fig 6.1 Waste of Village

6.2 Guidelines - Implementation in allocated village with Photograph

Guidelines for swatch village by government:

ENSURE :

- Identification of households without toilets for corrective action.
- Toilet use and maintenance.
- Facilities for solid and liquid waste management.
- Water-use efficiency by rationalizing water use.
- Inclusion of water and sanitation issues in Gram Panchayat Development Plan (GPDP).
- Compliance with environmental safeguards for all GPDP activities.

PROMOTE :

- Hygiene education.
- Toilets for all households and institutions.
- Modern agriculture and water-use technologies to conserve water.
- Water-use rationalization by selecting appropriate cropping patterns.

ESTABLISH :

- Local environmental safeguard measures.
- Surveillance of water bodies.
- Safeguards for water bodies.

PLAN AND IMPLEMENT :

- Environmental management framework.
- Water supply schemes.

FACILITATE:

- Appropriate irrigation methods
- Regulation of water extraction based on demand yield match.
- Participation of local communities in improving water and sanitation management**.**

Village have following thing are implemented

- Toilet use and maintenance

- Inclusion of water and sanitation issues in Gram Panchayat Development Plan (GPDP).
- Hygiene education.
- Toilets for all households and institutions.
- Modern agriculture and water-use technologies to conserve water. Village have no facility of
- public toilet
- surveillance of water bodies
- Water supply scheme
- Environment management framework

6.3 Activities Done by Students for allocated village with Photograph

- While traveling doesn't throw any wrapper, paper or any dry waste on road. Keep it in your bag or
- Pocket (as it is a dry waste you can keep them in your bag/pocket).
- Keep paper bags with yourself to store wet waste and throw them in dustbin only.
- Spitting on roads (as it can be the reason of viral disease).
- Avoid chewing Pan-Masala, Gutka and Tobacco.
- Avoid use of plastic bag.

7. Village condition due to Covid-19

Ministry of Panchayati Raj, Government of India in close collaboration with State Governments has taken various initiatives. Close consultation and guidance of the State as well as District authorities is being maintained to ensure that lock down conditions are not violated and norms of social distancing are scrupulously followed to contain the spread of the disease.

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

- In village by use of social media whatsapp group has been used to create awareness among tha masses in the villages.
- Information at the grassroots level is being given to the people by putting posters everywhere.
- Regular cleaning operations are being carried out.
- Sodium hypochlorite is being sprayed on the roads.
- Face masks are being distributed to the citizens by Gram panchayat members.
- Maintaine person to person distance
- Distribute sanitizers

Fig.7.1 Activities of Covid-19

7.2 Activities Done by Students for allocated village ~~Clean~~ with Photograph

There is no any activities done by students due to covid-19 guidelines.

7.3 Any other steps taken by the students / villagers

The migrant workers who have been returning to their villages since lockdown was eased at the end of June. The medical response to stop the spread and treat those infected has been inadequate, according to media reports. While two-thirds of India's population lives in rural areas, there are almost four times as many health workers per person in cities. Most rural communities rely on untrained health workers. Over two-thirds of these rural health providers have no formal medical training, but remain the only option of medical support for most of the rural population.

- Wall paintings to create awareness about the disease
- Distribution of masks
- Free distribution of cooked meals and ration
- As migrants return to villages, they will need to be isolated to prevent the spread of the virus. Gram panchayat should take the initiative to set up local quarantine centres.
- Distribution of relief material
- awareness regarding covid 19 in the village
- In the COVID-19 situation cleaning, fogging and sanitization were done in the village.

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

8.1 Design Planning Proposal

There are some design proposals given from the sarpanch and talati:

- Public toilet
- Secondary school
- Solid waste management
- Rain water harvesting

Recommendations of the Design

We have recommended following designs for village:

1. Bus stop
2. Community hall
3. Library
4. Dudha mandali
5. Bio gas plant
6. Public toilet with bath
7. Solid waste management
8. Rain water harvesting
9. Maintenance of road
10. Anganwadi
11. secondary school
12. Water distribution system
13. Solar light

8.1.1 Sustainable design (Civil)

Public toilet

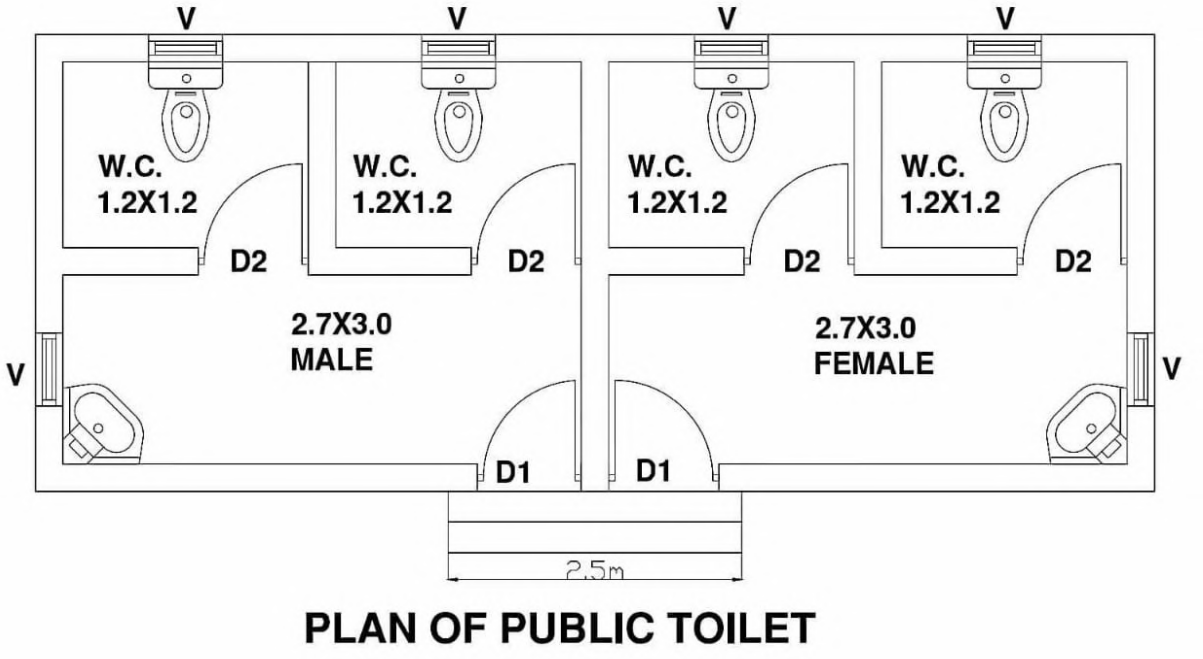
- **Scenario :**

There is No Any public toilet. Some toilets Constructed by the Gram panchayat. But his condition is not good. So, for public toilet must be important.

- **Existinng situation :**

There is no any public toilet exist nor constructed.

- **Proposed :**
- We propose The Public toilet design for villagers.



PLAN OF PUBLIC TOILET

Fig 8.1 Plan of Public toilet

SCHEDULE OF OPENING		
TYPE	NO.	SIZE
D1	2	1.2x2.1
D2	4	1.00x2.1
V	6	0.6X0.6
ALL DIMENSIONS ARE IN METER		

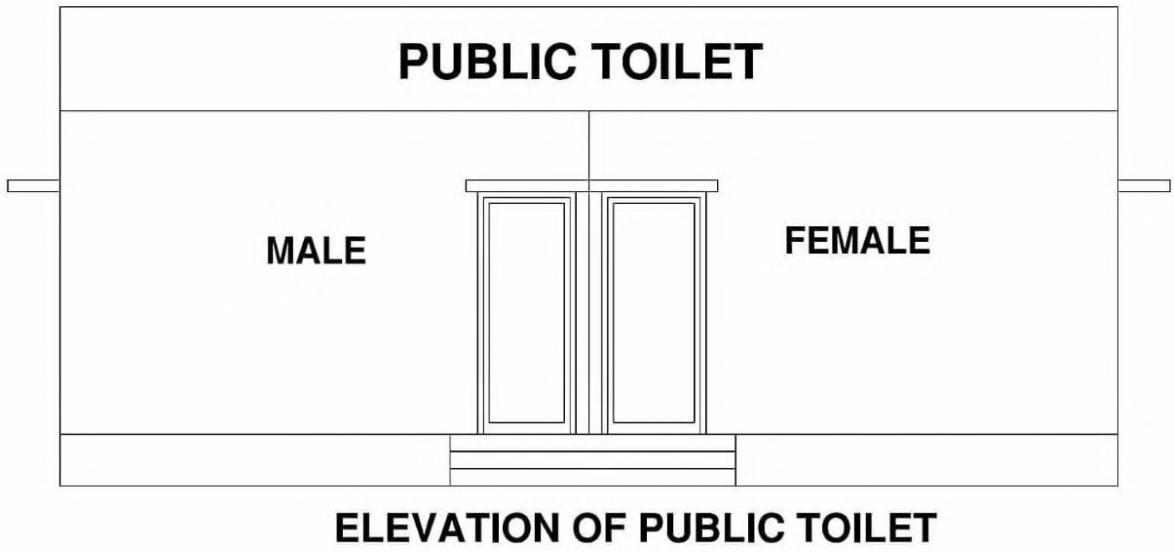


Fig 8.2 Elevation of Public toilet

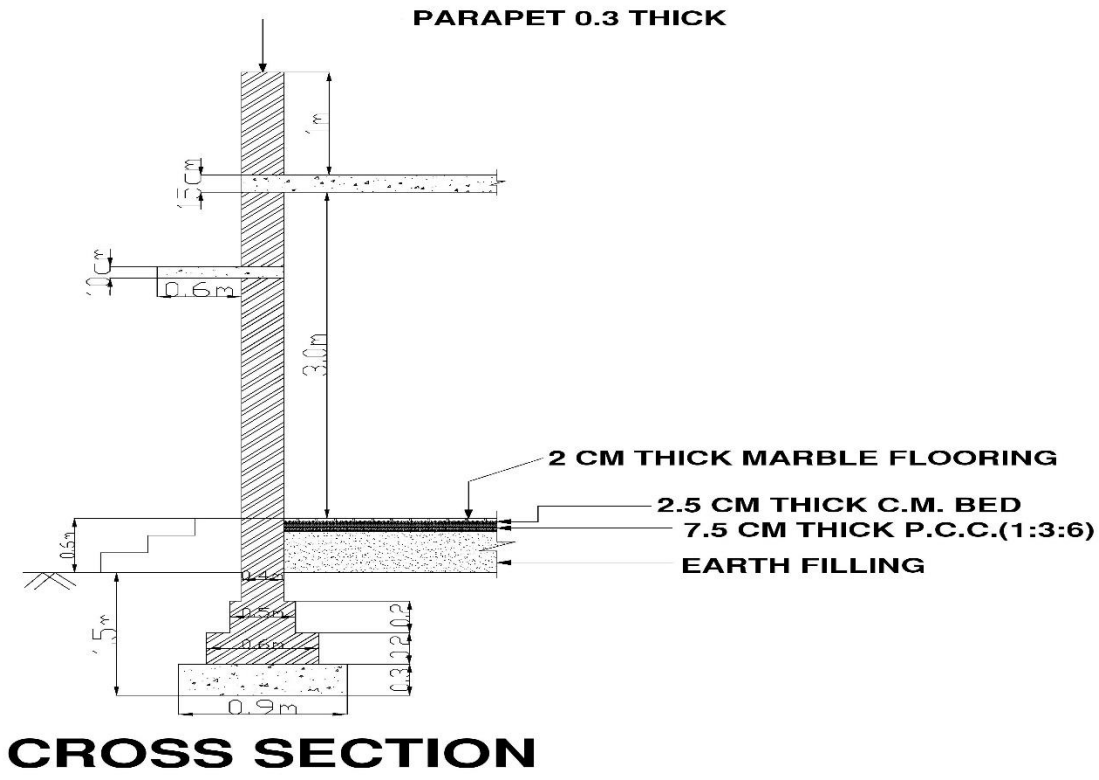


Table- 7 : Measurement sheet of Public toilet

MEASUREMENT SHEET						
PUBLIC TOILET						
Item no.	**Item Description**	**No.**	**Length (m)**	**Breadth (m)**	**Height (m)**	**Quantity**
1	**Excavation for Foundation**	1	28.8	0.9	1.1	**28.51 m^3**
2	**PCC in Foundation**	1	28.8	0.9	0.3	**7.776 m^3**
3	**Brick masonry upto plinth**					
	For 1st Step: L= 30.6m	1	30.6	0.6	0.3	5.5 m^3
	For 2nd Step: L= 31.2m	1	31.2	0.5	0.3	4.68 m^3
	For 3rd Step: L= 31.8m	1	31.8	0.4	0.5	6.36 m^3
					TOTAL = 16.54m^3	
4	**Refilling of Foundation trench**	28.51- 24.24 = 4.27 m^3 **TOTAL = 4.27m^3**				
5	**Earth filling in plinth**					
	W.C.	4	1.2	1.2	0.55	3.17m^3
	Passage	2	2.7	3.0	0.55	8.91m^3
					TOTAL = 12.08m^3	
6	**P.C.C. in 1:3:6 CC for plinth**					
	W.C.	4	1.2	1.2	0.075	0.432m^3
	Passage	2	2.7	3.0	0.075	0.61m^3
					TOTAL = 1.04m^3	
7	**First class brick masonry in 1:6 CM for super structure**	1	32.4	0.3	3	**29.16 m^3**

	Deduction for,					
	Door (D1)	2	1.2	0.3	2.1	**-1.51 m^3**
	Door (D2)	4	1.0	0.3	2.1	**-2.52 m^3**
	Ventilation (V)	6	0.6	0.3	0.6	**-0.65 m^3**
	Deduction for lintel,					
	Door (D1)	2	1.5	0.3	0.15	**-0.135 m^3**
	Door (D2)	4	1.3	0.3	0.15	**-0.234 m^3**
	Ventilation (V)	6	0.9	0.3	0.15	**-0.243 m^3**
	Brick for parapet	1	21.6	0.3	1.0	**6.48 m^3**
					Total = 30.35 m^3	
8	**R.C.C.**					
	(1) Lintel					**0.64 m^3**
	(2) Slab		6.3	4.8	0.12	**3.63 m^3**
	(3) Chhaja	6	0.9	0.6	0.075	**0.243 m^3**
	(4) Column (0.25 X 0.25)	6	0.25	0.25	3.0	**1.125 m^3**
	(5) Beam (0.3 X 0.23)	2	6.3	0.3	0.23	**0.87 m^3**
		3	4.2	0.3	0.23	**0.87m^3**
					TOTAL = 7.38 m^3	
9	**Reinforcement for all R.C.C. members = 1% of R.C.C. = (1 X 7.38)/100 = 0.0738 kg/m^3**		= 0.0738 X 7850 = 580 kg		**TOTAL wt. OF REINFORCEMENT = 580 kg**	
10	**12 mm thick internal plaster in 1:4 CM**					
	For W.C.	4	4.8	-	3.0	47.6 m^2
	For passage	2	11.4	-	3.0	58.4 m^2

					TOTAL = 106 m^2	
11	**15 mm thick External plaster in C.M. 1:3**		22.8	-	4.0	**84 m^2**
12	**CELLING PLASTER**					
	W.C.	4	1.2	1.2	-	5.76 m^2
	PASSAGE	2	2.7	3.0	-	16.2 m^2
					TOTAL = 21.96 m^2	
13	**2CM THICK MARBLE FLORING**					
	For W.C.	4	1.2	1.2		**5.76 m^2**
	For passage	2	2.7	3.0		**16.2 m^2**
					TOTAL = 21.96 m^2	

Table- 8 : Abstract Sheet of Public toilet

ABSTRACT SHEET					
Public toilet					
Item no.	**Description of item**	**Quantity**	**Rate (Rs.)**	**Per**	**Amount (Rs.)**
1	**Excavation for Foundation**	28.51 m^3	135	m^3	**3850**
2	**PCC in Foundation (1:4:8) including compaction and curing**	7.776 m^3	3500	m^3	**27195**
3	**Brick masonry upto plinth including curing, ect.**	16.54 m^3	3800	m^3	**62852**
4	**Refilling of Foundation trench**	4.27 m^3	135	m^3	**580**

5	**Yellow soil filling in plinth with compaction.**	12.08 m^3	1200	m^3	**14496**
6	**P.C.C. in 1:3:6 CC for plinth including compaction and curing.**	1.04 m^3	3500	m^3	**3640**
7	**First class brick masonry in 1:6 CM for super structure including curing, etc.**	29.16 m^3	4200	m^3	**122472**
8	**R.C.C. including centering, finishing, curing, ect.**	7.38 m^3	6000	m^3	**44280**
9	**Reinforcement for all R.C.C. members**	580 kg	45	kg	**26100**
10	**12 mm thick internal plaster in 1:4 CM including scaffolding, racking of masonry joints, curing, ect.**	106 m^2	180	m^2	**19080**
11	**15 mm thick External plaster in C.M. 1:3 including scaffolding, racking of masonry joints, curing, ect.**	84 m^2	210	m^2	**17640**
12	**CELLING PLASTER including scaffolding, curing, ect.**	21.96 m^2	230	m^2	**5050**
13	**2CM THICK MARBLE FLORING**	21.96 m^2	250	m^2	**5490**
14	**Wash basin**	2 Nos.	1100	Nos	**2200**
15	**Toilet seat (Indian)**	4 Nos.	1699	Nos	**6796**
				TOTAL = 3,61,721	

	Add 1.5% water charges				**5425**
	Add 10% Contractor Profit				**36172**
				TOTAL = Rs. 4,03,318	

8.1.2 Physical design (Civil)

Post office

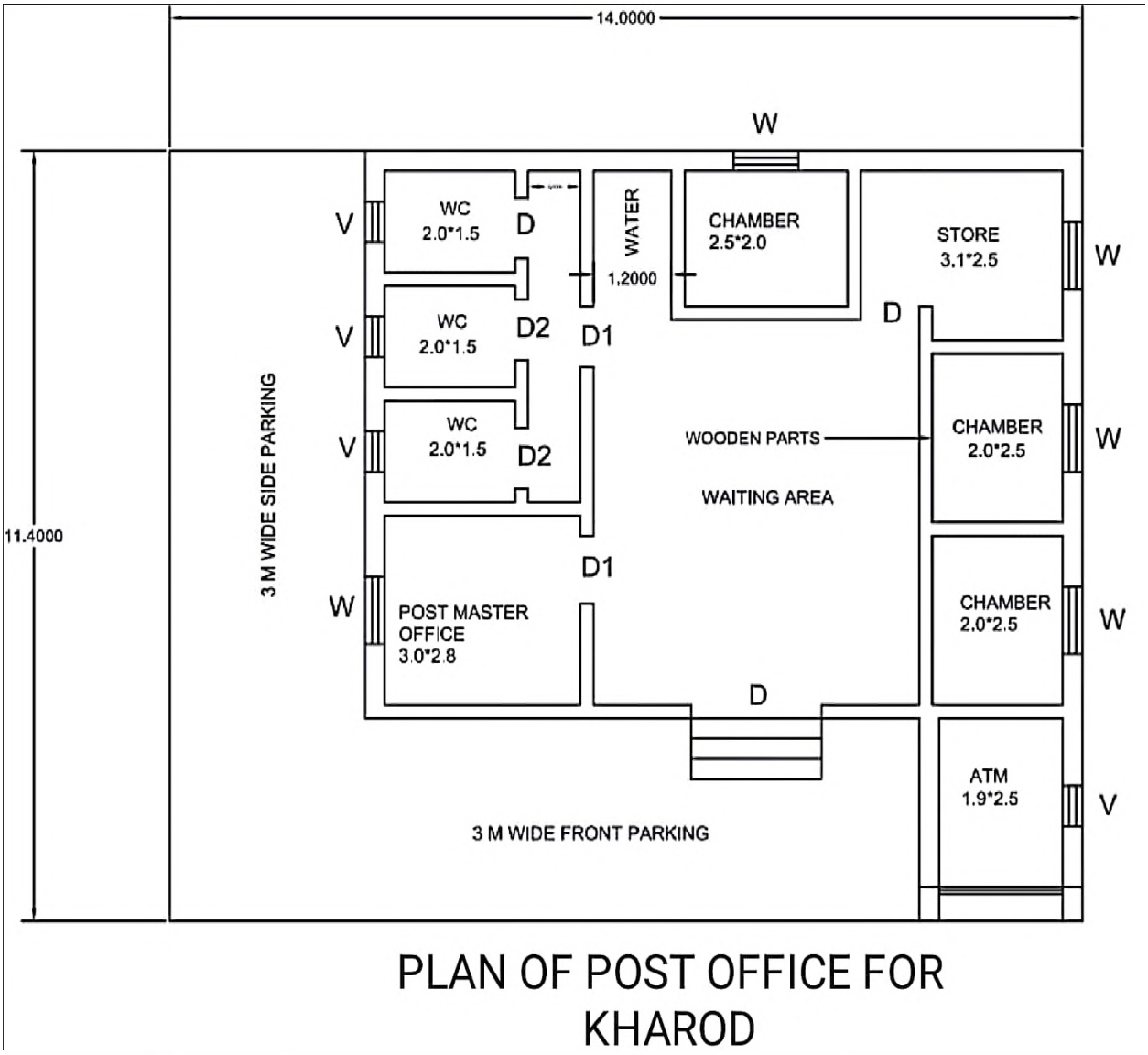
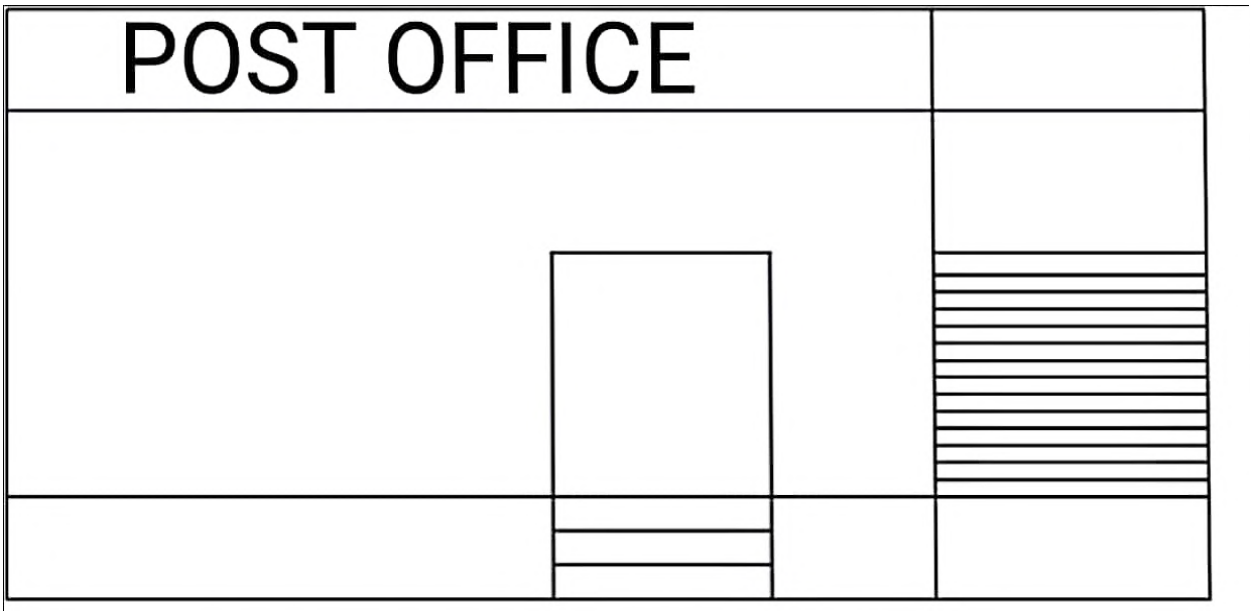
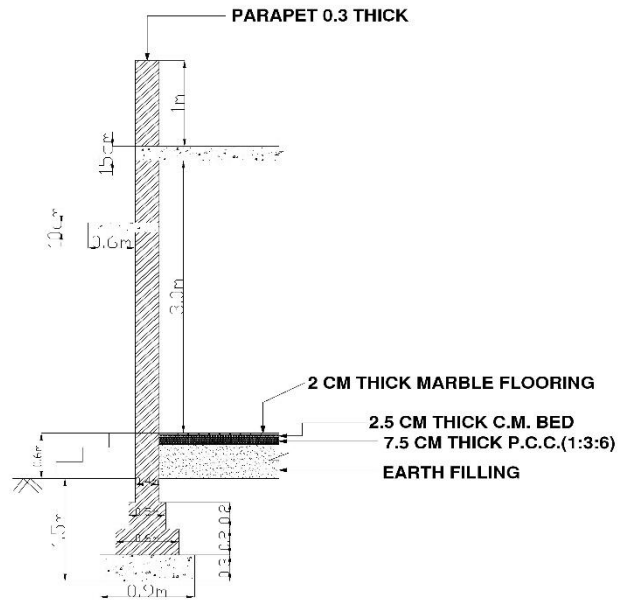


Fig.8.3 Plan of Post office



ELEVATION OF POST OFFICE

Fig.8.4 Elevation of Post office



CROSS SECTION

SCHEDULE OF OPENING		
TYPE	NO.	SIZE
D1	2	1.2x2.1
D2	3	1.00x2.1
V	4	0.6X0.6
W	5	1.2X1.2
ALL DIMENSIONS ARE IN METER		

Table- 9 : Measurement sheet of Post office

MEASUREMENT SHEET						
POST OFFICE						
Item no.	**Item Description**	**No.**	**Length (m)**	**Breadth (m)**	**Height (m)**	**Quantity**
1	**Excavation for Foundation**	1	23.8	0.9	1.1	**23.56 m^3**
2	**PCC in Foundation**	1	23.8	0.9	0.3	**6.43 m^3**
3	**Brick masonry upto plinth**					
	For 1st Step: L= 23.2m	1	23.2	0.6	0.3	4.18 m^3
	For 2nd Step: L= 23.3m	1	23.3	0.5	0.3	3.50 m^3
	For 3rd Step: L= 23.4m	1	23.4	0.4	0.5	4.68 m^3
					TOTAL = 12.36 m^3	
4	**Refilling of Foundation trench**	23.56 – 18.79 = 4.77 m^3 **TOTAL = 4.77m^3**				
5	**Earth filling in plinth**	1	5.4	4.9	0.55	14.55 m^3
6	**P.C.C. in 1:3:6 CC for plinth**	1	5.4	4.9	0.075	1.99 m^3
7	**First class brick masonry in 1:6 CM for super structure**	1	23.8	0.3	3	**21.42 m^3**
	Deduction for,					
	Door (D1)	1	1.2	0.3	2.1	**-0.76 m^3**
	Window(W)	2	1.2	0.3	1.2	**-0.86 m^3**
	Ventilation (V)	1	0.6	0.3	0.6	**-0.11 m^3**

	Deduction for lintel,					
	Door (D1)	1	1.5	0.3	0.15	**-0.0675 m^3**
	Window(W)	2	1.5	0.3	0.15	**-0.135 m^3**
	Ventilation (V)	1	0.9	0.3	0.15	**-0.041 m^3**
	Brick for parapet	1	20.8	0.3	1.0	**6.24 m^3**
					Total = 25.69 m^3	
8	**R.C.C.**					
	(1) Lintel					**0.25 m^3**
	(2) Slab		6.0	5.5	0.12	**3.96 m^3**
	(3) Chhaja	3	0.9	0.6	0.075	**0.1215 m^3**
	(4) Column (0.25 X 0.25)	4	0.25	0.25	3.0	**0.75 m^3**
	(5) Beam (0.3 X 0.23)	2	6.0	0.3	0.23	**0.83 m^3**
		2	5.5	0.3	0.23	**0.76 m^3**
					TOTAL = 6.67 m^3	
9	**Reinforcement for all R.C.C. members = 1% of R.C.C. = (1 X 6.67)/100 = 0.0667 kg/m^3**		= 0.0738 X 7850 = 523 kg		**TOTAL wt. OF REINFORCEMENT = 523 kg**	
10	**12 mm thick internal plaster in 1:4 CM**		-	-	-	**109.88 m^2**
11	**15 mm thick External plaster in C.M. 1:3**		-	-	-	**104.62 m^2**
12	**CELLING PLASTER**		-	-	-	**103.32 m^2**

13	**2CM THICK MARBLE FLORING**		**-**	**-**	**-**	**103.32 m^2**

Table- 10 : Abstract Sheet of Post office

ABSTRACT SHEET					
POST OFFICE					
Item no.	**Description of item**	**Quantity**	**Rate (Rs.)**	**Per**	**Amount (Rs.)**
1	**Excavation for Foundation**	23.56 m^3	135	m^3	**3180**
2	**PCC in Foundation (1:4:8) including compaction and curing**	6.43 m^3	3500	m^3	22505
3	**Brick masonry upto plinth including curing, ect.**	12.36 m^3	3800	m^3	**46968**
4	**Refilling of Foundation trench**	4.77 m^3	135	m^3	**645**
5	**Yellow soil filling in plinth with compaction.**	14.55 m^3	1200	m^3	**17460**
6	**P.C.C. in 1:3:6 CC for plinth including compaction and curing.**	1.99 m^3	3500	m^3	**7000**
7	**First class brick masonry in 1:6 CM for super structure including curing, etc.**	25.69 m^3	4200	m^3	**107898**
8	**R.C.C. including centering, finishing, curing, ect.**	6.67 m^3	6000	m^3	**40020**

9	**Reinforcement for all R.C.C. members**	523 kg	45	kg	**23625**
10	**12 mm thick internal plaster in 1:4 CM including scaffolding, racking of masonry joints, curing, ect.**	109.88 m^2	180	m^2	**19778**
11	**15 mm thick External plaster in C.M. 1:3 including scaffolding, racking of masonry joints, curing, ect.**	104.62 m^2	210	m^2	**21970**
12	**CELLING PLASTER including scaffolding, curing, ect.**	103.32 m^2	230	m^2	**23763**
13	**2CM THICK MARBLE FLORING**	103.32 m^2	250	m^2	**25830**
14	**Wash basin**	2 Nos.	1100	Nos	**1100**
15	**Toilet seat (Indian)**	3 Nos.	1699	Nos	**1699**
				TOTAL = 3,67,939	
	Add 1.5% water charges				**5519**
	Add 10% Contractor Profit				**36793**
				TOTAL = Rs. 4,10,251	

8.1.3 Social design (Civil)

Library

- **Scenario :**

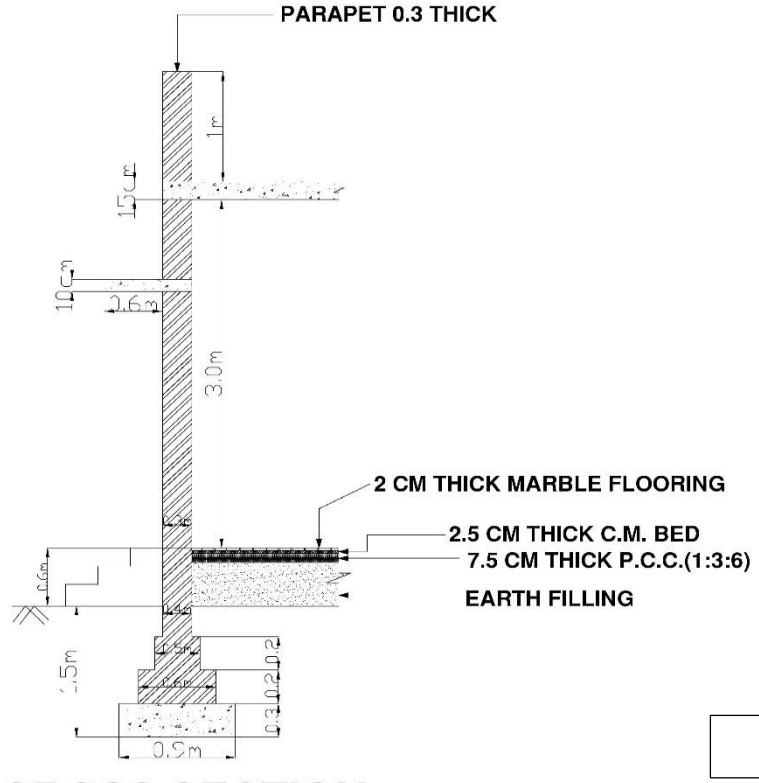
In The Kharod village no library facility available. Many students from this village go out of Kharod village for reading purposes. If the library facility available it can effectively prepare for competitive exams. Some students are not in a good financial position. Therefore, they can not buy expensive books. They can easily read if the library is available.

- **Existing Situation :**

There is no libarary available. Many students from this village go out of Kharod village for reading purposes.

- **Proposed :**

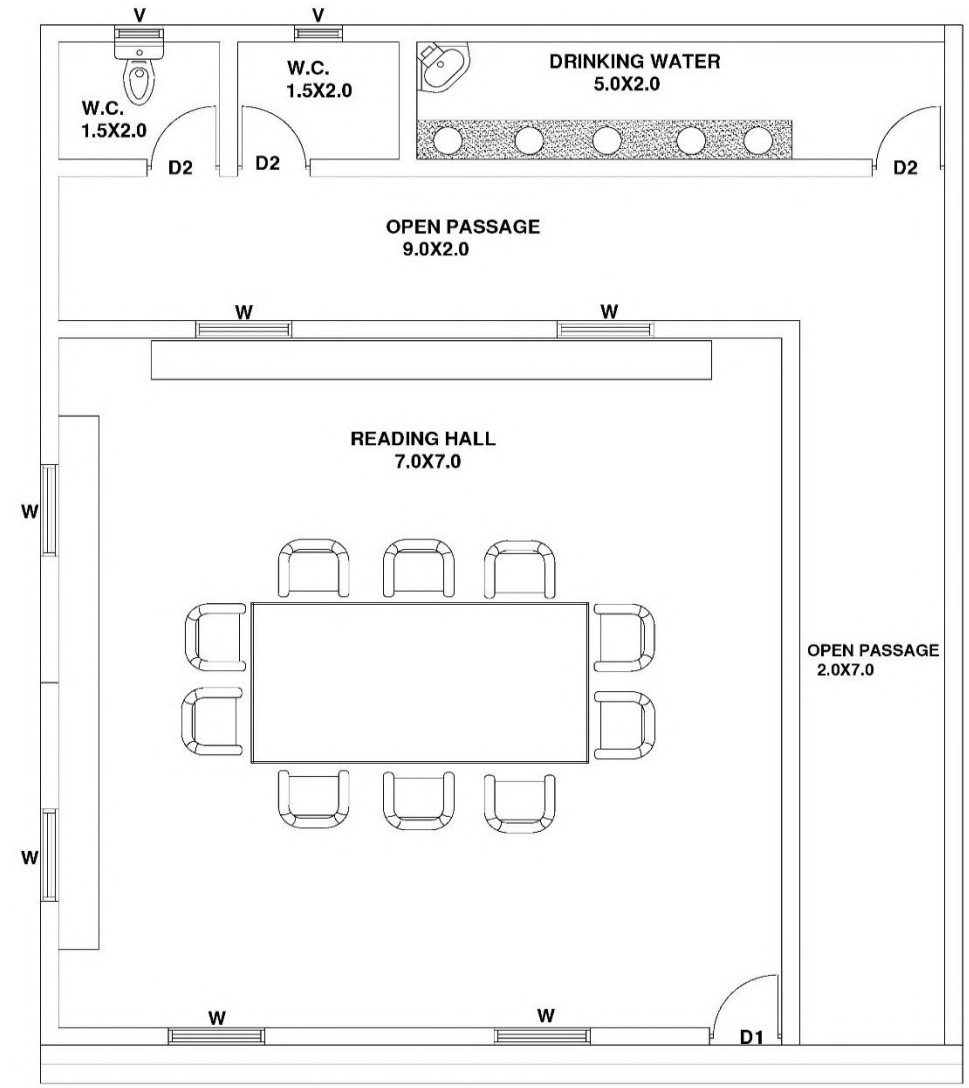
We are proposed a design for the library. so, students and citizens can take benefit of library at local level.



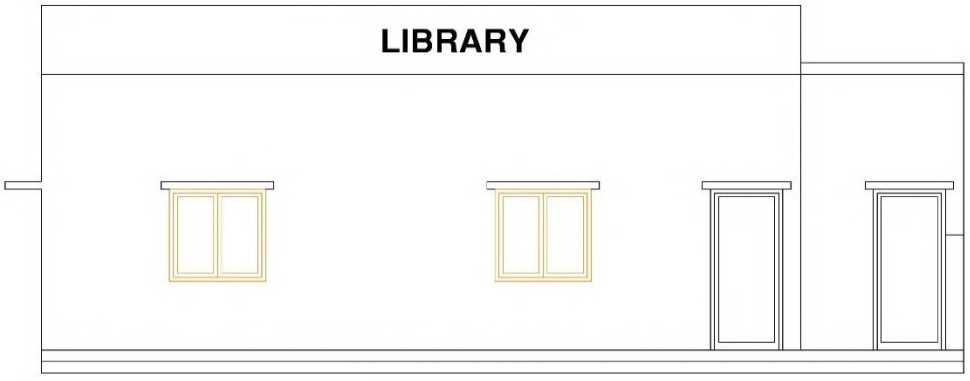
CROSS SECTION

SCHEDULE OF OPENING		
TYPE	NO.	SIZE
D1	1	1.2x2.1
D2	3	1.0x2.1
W	6	1.2x1.2
V	2	1.5x1.2
ALL DIMENSIONS ARE IN METER		

Fig.8.5 Plan of library



PLAN OF LIBRARY



ELEVATION OF LIBRARY

Fig.8.6 Elevation of library

Table- 11 : Measurement sheet of Library

MEASUREMENT SHEET						
LIBRARY						
Item no.	**Item Description**	**No.**	**Length (m)**	**Breadth (m)**	**Height (m)**	**Quantity**
1	**Excavation for Foundation**	1	59.2	0.9	1.5	**79.92 m^3**
2	**PCC in Foundation**	1	59.2	0.9	0.3	**15.98 m^3**
3	**Brick masonry upto plinth**					
	For 1st Step: L= 61m	1	61	0.6	0.3	10.98 m^3
	For 2nd Step: L= 61.6m	1	61.6	0.5	0.3	9.24 m^3
	For 3rd Step: L= 62.2m	1	62.2	0.4	0.5	12.44 m^3
					TOTAL = 32.66 m^3	
4	**Refilling of Foundation trench**	79.92 – 15.98 – 32.66 = 31.28 m^3 **TOTAL = 31.28 m^3**				
5	**Earth filling in plinth**					
	Reading hall	1	7	7	0.55	26.95 m^3
	W.C.	2	1.5	2.0	0.55	3.3 m^3
	Drinking water space	1	5.0	2.0	0.55	5.5 m^3
	Passage-1	1	2.0	7.0	0.55	7.7 m^3
	Passage-2	1	9.0	2.0	0.55	9.9 m^3
					TOTAL = 53.35 m^3	
6	**P.C.C. in 1:3:6 CC for plinth**					
	Reading hall	1	7	7	0.075	3.68 m^3
	W.C.	2	1.5	2.0	0.075	0.45 m^3

	Drinking water space	1	5.0	2.0	0.075	0.75 m^3
	Passage-1	1	2.0	7.0	0.075	1.05 m^3
	Passage-2	1	9.0	2.0	0.075	1.35 m^3
					TOTAL = 7.28 m^3	
7	**First class brick masonry in 1:6 CM for super structure**	1	57.45	0.3	3	**51.70 m^3**
	Deduction for,					
	Door (D1)	1	1.2	0.3	2.1	-0.76 m^3
	Door (D2)	3	1.0	0.3	2.1	-1.89 m^3
	Window (W)	6	1.2	0.3	1.2	-2.59
	Ventilation (V)	2	0.6	0.3	0.6	-0.22 m^3
	Deduction for lintel,					
	Door (D1)	1	1.5	0.3	0.15	-0.068 m^3
	Door (D2)	3	1.3	0.3	0.15	-0.175 m^3
	Window (W)	6	1.5	0.3	0.15	-0.405
	Ventilation (V)	2	0.9	0.3	0.15	-0.081 m^3
	Brick for parapet	1	29.2	0.3	1.0	8.76 m^3
					Total = 54.28 m^3	
8	**R.C.C.**					
	(1) Lintel					0.729 m^3
	(2) Slab		9.3	7.8	0.12	8.38 m^3
	(3) Chhaja	10	0.9	0.6	0.075	0.405 m^3
	(4) Column (0.25 X 0.25)	4	0.25	0.25	3.0	0.75 m^3
	(5) Beam (0.3 X 0.23)	2	7.6	0.3	0.23	1.05 m^3
		3	7.6	0.3	0.23	1.57 m^3
					TOTAL = 12.88 m^3	
9	**Reinforcement for all R.C.C. members = 1% of R.C.C.**		= 0.1288 X 7850 = 1011 kg		**TOTAL wt. OF REINFORCEMENT = 1011 kg**	

	= (1 X 12.88)/100 = 0.1288 kg/m^3					
10	**12 mm thick internal plaster in 1:4 CM**					
	For reading hall	1	28	-	3.0	84 m^2
	For W.C.	2	7	-	3.0	42 m^2
	For drinking water space	1	14	-	3.0	42 m^2
	For passage	2	11	-	1.5	16.5 m^2
					TOTAL = 184.5 m^2	
11	**15 mm thick External plaster in C.M. 1:3**		39.2	-	4.0	**156.8 m^2**
12	**CELLING PLASTER**					
	Reading hall	1	7	7	-	49 m^2
	W.C.	2	1.5	2.0	-	6 m^2
	Drinking water space	1	5.0	2.0	-	10 m^2
					TOTAL = 65 m^2	
13	**2CM THICK MARBLE FLORING**					
	For reading hall	1	7	7	-	49 m^2
	For W.C.	2	1.5	2.0	-	6 m^2
	For drinking water space	1	5.0	2.0	-	10 m^2
					TOTAL = 65 m^2	
14	**For OPEN PASSAGE PAVING BLOCKS**					

	For passage-1	1	9.0	2.0	-	18 m^2
	For passage-2	1	2.0	7.0	-	14 m^2
					TOTAL = 32 m^2	

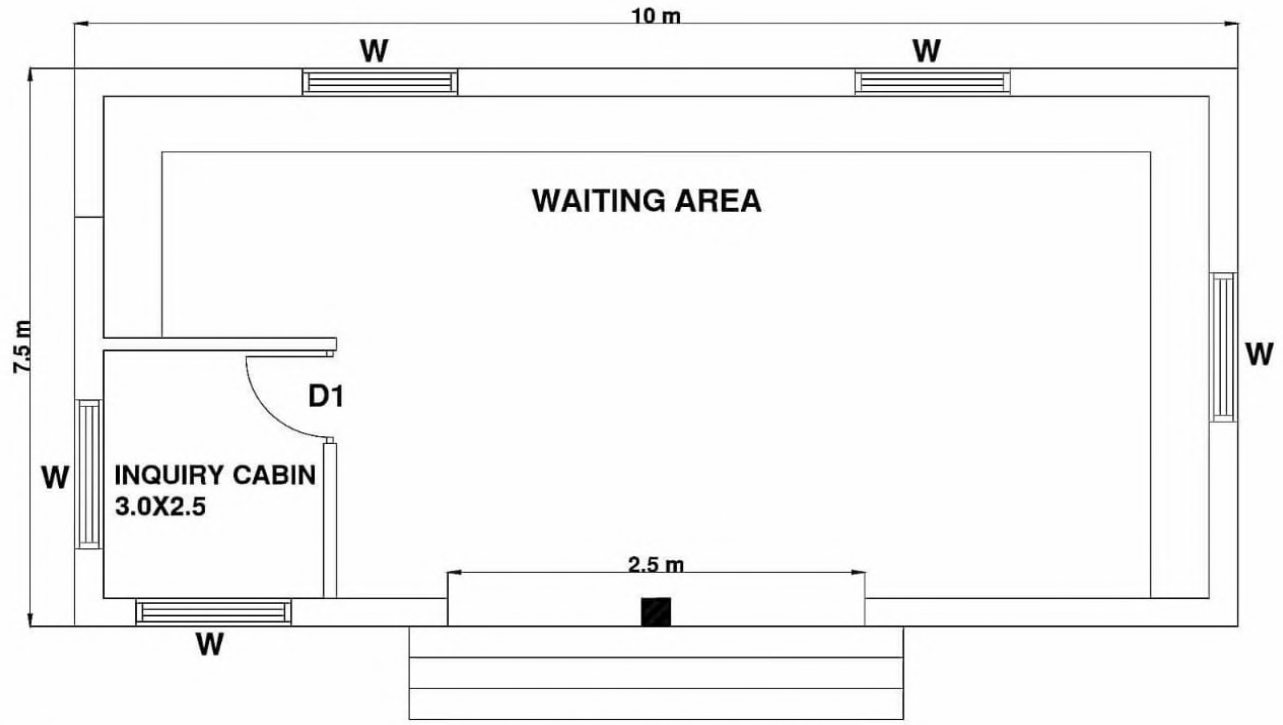
Table- 12 : Abstract Sheet of Library

ABSTRACT SHEET					
Library					
Item no.	**Description of item**	**Quantity**	**Rate (Rs.)**	**Per**	**Amount (Rs.)**
1	**Excavation for Foundation**	79.92 m^3	135	m^3	**10789**
2	**PCC in Foundation (1:4:8) including compaction and curing**	15.98 m^3	3500	m^3	55930
3	**Brick masonry upto plinth including curing, ect.**	32.66 m^3	3800	m^3	**124108**
4	**Refilling of Foundation trench**	31.66 m^3	135	m^3	**4274**
5	**Yellow soil filling in plinth with compaction.**	53.35 m^3	1200	m^3	**64020**
6	**P.C.C. in 1:3:6 CC for plinth including compaction and curing.**	7.28 m^3	3500	m^3	**25480**
7	**First class brick masonry in 1:6 CM for super structure including curing, etc.**	54.28 m^3	4200	m^3	**227976**
8	**R.C.C. including centering, finishing, curing, ect.**	12.88 m^3	6000	m^3	**77280**
9	**Reinforcement for all R.C.C. members**	1011 kg	45	kg	**45495**

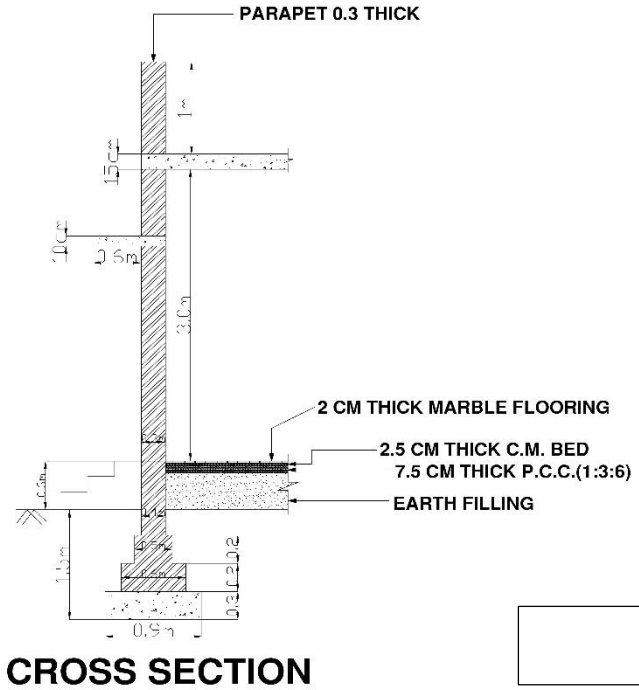
10	**12 mm thick internal plaster in 1:4 CM including scaffolding, racking of masonry joints, curing, ect.**	184.5 m^2	180	m^2	**33210**
11	**15 mm thick External plaster in C.M. 1:3 including scaffolding, racking of masonry joints, curing, ect.**	156.8 m^2	210	m^2	**32928**
12	**CELLING PLASTER including scaffolding, curing, ect.**	65 m^2	230	m^2	**14950**
13	**2CM THICK MARBLE FLORING**	65 m^2	250	m^2	**16250**
14	**Paving blocks**	32 m^2	550	m^2	**17600**
15	**Water tap sink**	5 Nos	1300	Nos	**6500**
16	**Wash basin**	2 Nos.	1100	Nos	**2200**
17	**Toilet seat (Indian)**	2 Nos.	1699	Nos	**3398**
				TOTAL = 7,62,388	
	Add 1.5% water charges				**11,435**
	Add 10% Contractor Profit				**76,238**
				TOTAL = Rs. 8,50,061	

Social design (Civil)

Bus Stand



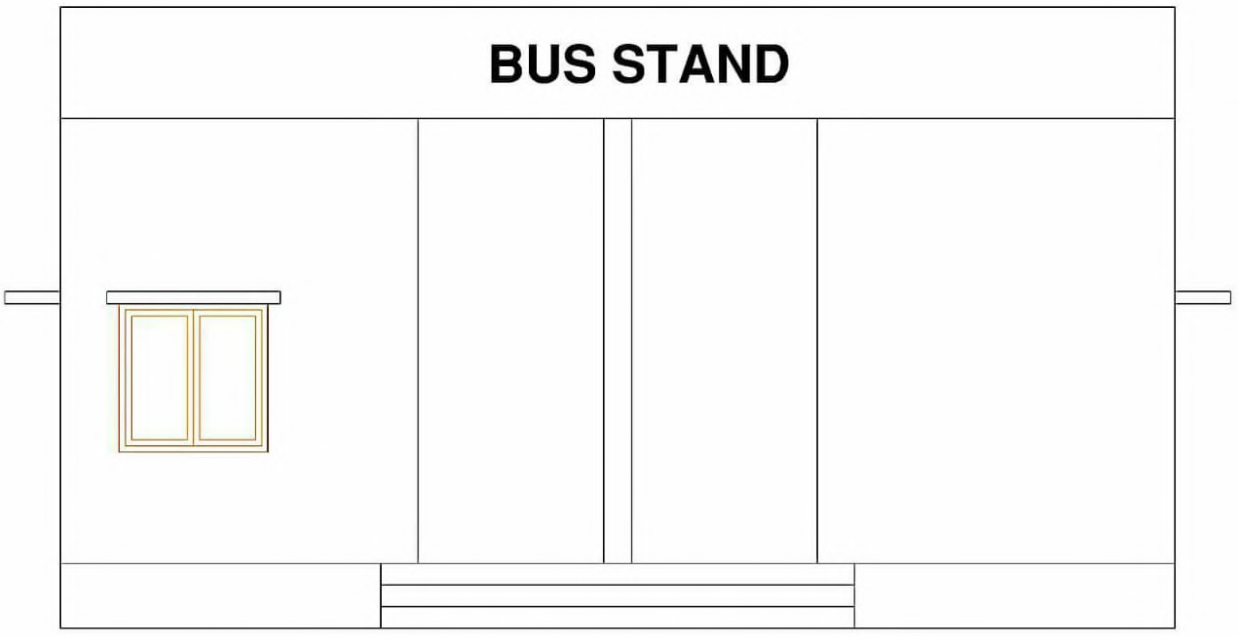
PLAN OF BUS STAND



CROSS SECTION

SCHEDULE OF OPENING		
TYPE	NO.	SIZE
D1	1	1.2x2.1
W	4	1.2x1.2
ALL DIMENSIONS ARE IN METER		

Fig.8.7 Plan of Bus stand



ELEVATION OF BUS STAND

Table- 13 : Measurement sheet of Bus stand

MEASUREMENT SHEET						
BUS STAND						
Item no.	**Item Description**	**No.**	**Length (m)**	**Breadth (m)**	**Height (m)**	**Quantity**
1	**Excavation for Foundation**	1	45.54	0.9	1.5	**61.48 m^3**
2	**PCC in Foundation**	1	45.54	0.9	0.3	**12.30 m^3**
3	**Brick masonry upto plinth**					
	For 1st Step: L= 46.14m	1	46.14	0.6	0.3	5.53 m^3
	For 2nd Step: L= 46.34m	1	46.34	0.5	0.3	4.63 m^3

	For 3rd Step: L= 46.54m	1	46.54	0.4	0.5	3.72 m^3
					TOTAL = 13.88 m^3	
4	**Refilling of Foundation trench**	61.48 – 26.18 = 35.3 m^3			**TOTAL = 35.5m^3**	
5	**Earth filling in plinth**	1	9.4	6.9	0.55	35.67 m^3
6	**P.C.C. in 1:3:6 CC for plinth**	1	9.4	6.9	0.075	4.86 m^3
7	**First class brick masonry in 1:6 CM for super structure**	1	46.74	0.3	3	**42.06 m^3**
8	**R.C.C.**					
	(1) Lintel					**0.3 m^3**
	(2) Slab		10	7.5	0.12	**9 m^3**
	(3) Chhaja	4	0.9	0.6	0.075	**0.165 m^3**
	(4) Column (0.25 X 0.25)	6	0.25	0.25	3.0	**1.25 m^3**
	(5) Beam (0.3 X 0.23)	3	10	0.3	0.23	**2.07 m^3**
		2	7.5	0.3	0.23	**1.03 m^3**
					TOTAL = 13.82 m^3	
9	**Reinforcement for all R.C.C. members = 1% of R.C.C. = (1 X 13.82)/100 = 0.138 kg/m^3**		= 0.138 X 7850 = 1085 kg		**TOTAL wt. OF REINFORCEMENT = 1085 kg**	
10	**12 mm thick internal plaster in 1:4 CM**		-	-	-	**85.44 m^2**

11	**15 mm thick External plaster in C.M. 1:3**		-	-	-	**125.3 m^2**
12	**CELLING PLASTER**		-	-	-	**64.86 m^2**
13	**2CM THICK MARBLE FLORING**		-	-	-	**64.86 m^2**

Table- 14 : Abstract Sheet of Bus stand

ABSTRACT SHEET					
BUS STAND					
Item no.	**Description of item**	**Quantity**	**Rate (Rs.)**	**Per**	**Amount (Rs.)**
1	**Excavation for Foundation**	61.48 m^3	135	m^3	**8299**
2	**PCC in Foundation (1:4:8) including compaction and curing**	12.30 m^3	3500	m^3	**43050**
3	**Brick masonry upto plinth including curing, ect.**	13.88 m^3	3800	m^3	**52744**
4	**Refilling of Foundation trench**	35.5 m^3	135	m^3	**4792**
5	**Yellow soil filling in plinth with compaction.**	35.67 m^3	1200	m^3	**42804**
6	**P.C.C. in 1:3:6 CC for plinth including compaction and curing.**	4.86 m^3	3500	m^3	**17010**

7	**First class brick masonry in 1:6 CM for super structure including curing, etc.**	42.06 m^3	4200	m^3	**176652**
8	**R.C.C. including centering, finishing, curing, ect.**	13.82 m^3	6000	m^3	**82920**
9	**Reinforcement for all R.C.C. members**	1085 kg	45	kg	**48825**
10	**12 mm thick internal plaster in 1:4 CM including scaffolding, racking of masonry joints, curing, ect.**	85.44 m^2	180	m^2	**15379**
11	**15 mm thick External plaster in C.M. 1:3 including scaffolding, racking of masonry joints, curing, ect.**	125.3 m^2	210	m^2	**26313**
12	**CELLING PLASTER including scaffolding, curing, ect.**	64.86 m^2	230	m^2	**14917**
13	**2CM THICK MARBLE FLORING**	64.86 m^2	250	m^2	**16215**
				TOTAL = 5,49,920	
	Add 1.5% water charges				**8248**
	Add 10% Contractor Profit				**54992**
				TOTAL = Rs. 6,13,160	

8.1.4 Socio-Cultural design (Civil)

Community hall

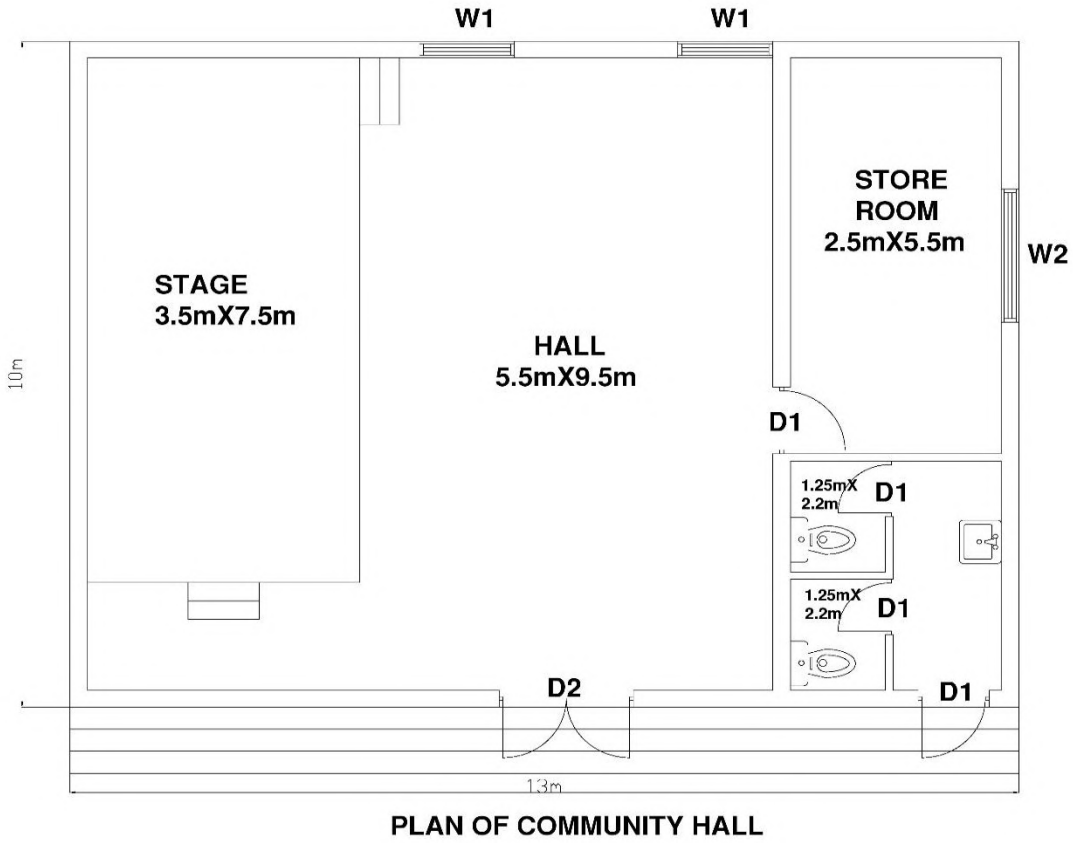
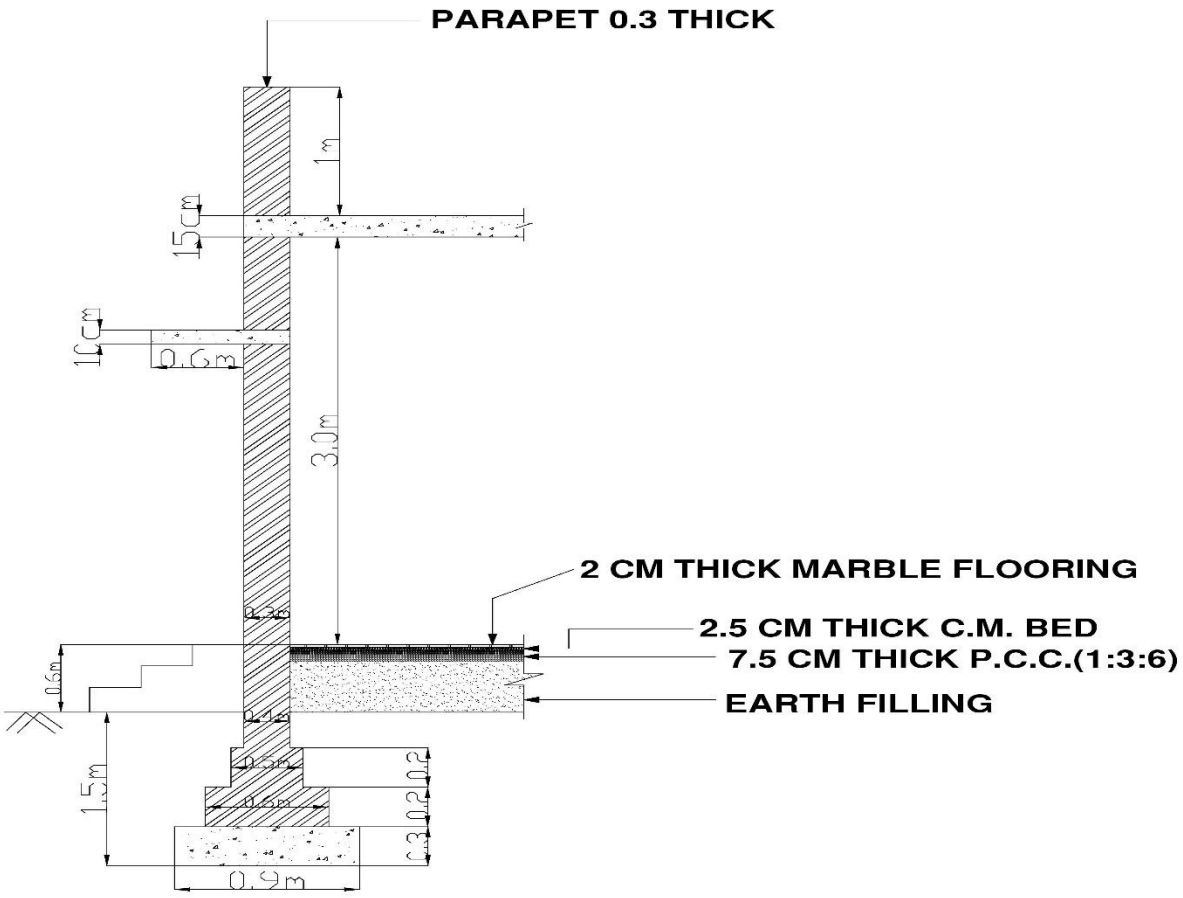


Fig 8.8 Plan of community hall

SCHEDULE OF OPENING		
TYPE	NO.	SIZE
D1	4	1.2x2.1
D2	1	1.00x2.1
W1	2	1.2x1.2
W2	1	1.5x1.2
ALL DIMENSIONS ARE IN METER		

ELEVATION OF COMMUNITY HALL



CROSS SECTION

Fig.8.9 Elevation of Community hall

Table- 15 : Measurement sheet of Community hall

MEASUREMENT SHEET						
COMMUNITY HALL						
Item no.	**Item Description**	**No.**	**Length (m)**	**Breadth (m)**	**Height (m)**	**Quantity**
1	**Excavation for Foundation**	1	62.15	0.9	1.5	**83.9 m^3**
2	**PCC in Foundation**	1	62.1	0.9	0.3	**16.78 m^3**
3	**Brick masonry upto plinth**					
	For 1st Step: L= 30.6m	1	63.35	0.6	0.2	7.60 m^3
	For 2nd Step: L= 31.2m	1	63.75	0.5	0.2	6.37 m^3
	For 3rd Step: L= 31.8m	1	64.15	0.4	1.4	35.92 m^3
					TOTAL = 49.89 m^3	
4	**Refilling of Foundation trench**	83.9 – 16.78 – 49.89 = 17.23 m^3 **TOTAL = 17.23 m^3**				
5	**Earth filling in plinth**					
	Hall	1	9.6	9.4	0.55	49.63 m^3
	Store room	1	2.5	5.5	0.55	7.56 m^3
	W.C.	2	1.25	2.2	0.55	3.02 m^3
	Space	1	1.1	5.05	0.55	3.05 m^3
					TOTAL = 63.26 m^3	
6	**P.C.C. in 1:3:6 CC for plinth**					
	Hall	1	9.6	9.4	0.075	6.77 m^3
	Store room	1	2.5	5.5	0.075	1.031 m^3
	W.C.	2	1.25	2.2	0.075	0.41 m^3
	Space	1	1.1	5.05	0.075	0.41 m^3

					TOTAL = 8.62 m^3	
7	**First class brick masonry in 1:6 CM for super structure**	1	64.55	0.3	3	**58.10 m^3**
	Deduction for,					
	Door (D1)	4	1.2	0.3	2.1	-3.02 m^3
	Door (D2)	1	1.0	0.3	2.1	-0.63 m^3
	Window (W1)	2	1.2	0.3	1.2	-0.86m^3
	Window (W2)	1	1.5	0.3	1.2	-0.54 m^3
	Deduction for lintel,					
	Door (D1)	4	1.5	0.3	0.15	-0.27 m^3
	Door (D2)	1	1.3	0.3	0.15	-0.059 m^3
	Window (W1)	2	1.5	0.3	0.15	-0.135 m^3
	Window (W2)	1	1.8	0.3	0.15	-0.081 m^3
	Brick for parapet	1	44.8	0.3	1.0	13.44 m^3
					Total = 65.95 m^3	
8	**R.C.C.**					
	(1) Lintel					0.55 m^3
	(2) Slab		13	10	0.12	15.6 m^3
	(3) Chhaja	5	0.9	0.6	0.075	0.21 m^3
	(4) Column (0.25 X 0.25)	10	0.25	0.25	3.0	1.88 m^3
	(5) Beam (0.3 X 0.23)	3	13	0.3	0.23	2.69 m^3
		4	10	0.3	0.23	2.76 m^3
					TOTAL = 23.68 m^3	
9	**Reinforcement for all R.C.C. members = 1% of R.C.C. = (1 X 23.68)/100 = 0.2368 kg/m^3**		= 0.2368 X 7850 = 1858 kg		**TOTAL wt. OF REINFORCEMENT = 1858 kg**	

10	**12 mm thick internal plaster in 1:4 CM**					
	For Hall	1	38	-	3.0	144 m^2
	For Store room	1	16	-	3.0	48 m^2
	W.C.	2	6.9	-	3.0	41.4 m^2
	Space	1	11.5	-	3.0	34.4 m^2
					TOTAL = 237.9 m^2	
11	**15 mm thick External plaster in C.M. 1:3**		46	-	4.0	**184 m^2**
12	**CELLING PLASTER**					
	Hall	1	9.6	9.4	-	90.24 m^2
	Store room	1	2.5	5.5	-	13.75 m^2
	W.C.	2	1.25	2.2	-	5.5 m^2
	Space	1	1.25	4.5	-	6.63 m^2
					TOTAL = 116.12 m^2	
13	**2CM THICK MARBLE FLORING**					
	Hall	1	9.6	9.4	-	63.99 m^2
	Store room	1	2.5	5.5	-	13.75 m^2
	For W.C.	2	1.25	2.2	-	5.5 m^2
	For Sapce	1	1.25	4.5	-	6.63 m^2
					TOTAL = 89.87 m^2	

Table – 16 : Abstract Sheet of Community hall

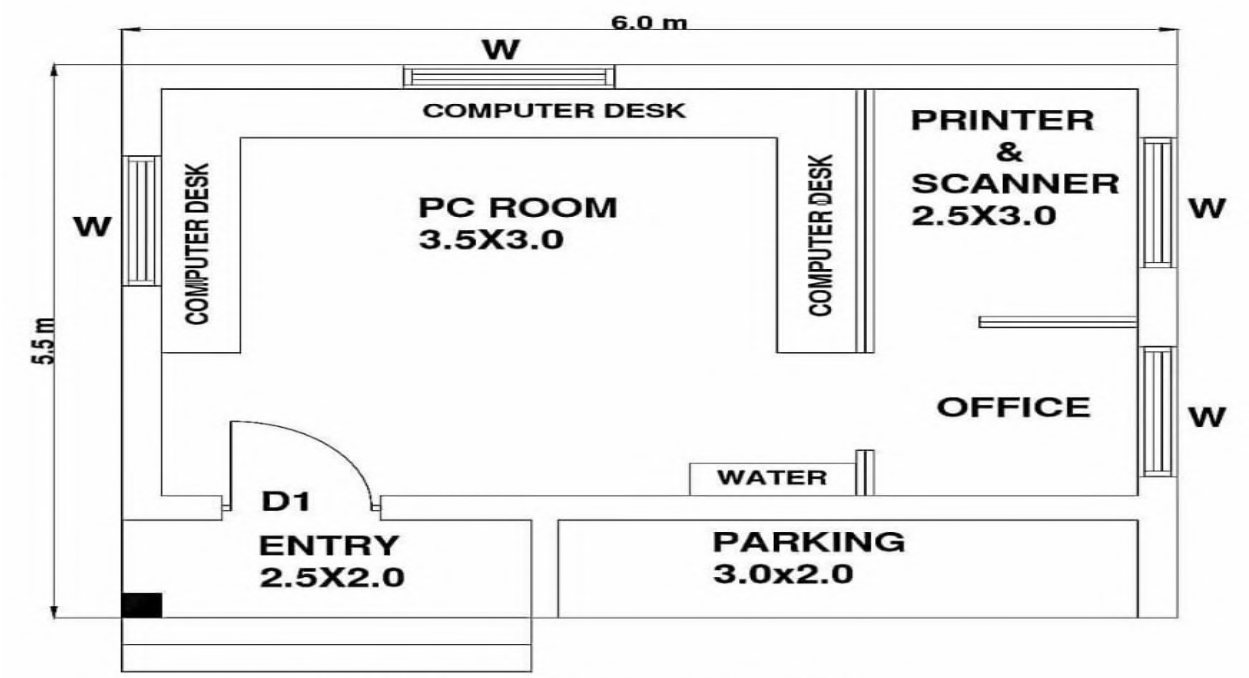
ABSTRACT SHEET					
COMMUNITY HALL					
Item no.	**Description of item**	**Quantity**	**Rate (Rs.)**	**Per**	**Amount (Rs.)**
1	**Excavation for Foundation**	83.9 m^3	135	m^3	**11326**

2	**PCC in Foundation (1:4:8) including compaction and curing**	16.78 m^3	3500	m^3	**58730**
3	**Brick masonry upto plinth including curing, ect.**	49.89 m^3	3800	m^3	**189582**
4	**Refilling of Foundation trench**	17.23 m^3	135	m^3	**2326**
5	**Yellow soil filling in plinth with compaction.**	63.26 m^3	1200	m^3	**75912**
6	**P.C.C. in 1:3:6 CC for plinth including compaction and curing.**	8.62 m^3	3500	m^3	**30170**
7	**First class brick masonry in 1:6 CM for super structure including curing, etc.**	65.95 m^3	4200	m^3	**276990**
8	**R.C.C. including centering, finishing, curing, ect.**	23.68 m^3	6000	m^3	**142080**
9	**Reinforcement for all R.C.C. members**	1858 kg	45	kg	**83610**
10	**12 mm thick internal plaster in 1:4 CM including scaffolding, racking of masonry joints, curing, ect.**	237.9 m^2	180	m^2	**42822**
11	**15 mm thick External plaster in C.M. 1:3 including scaffolding, racking of masonry joints, curing, ect.**	184 m^2	210	m^2	**38640**

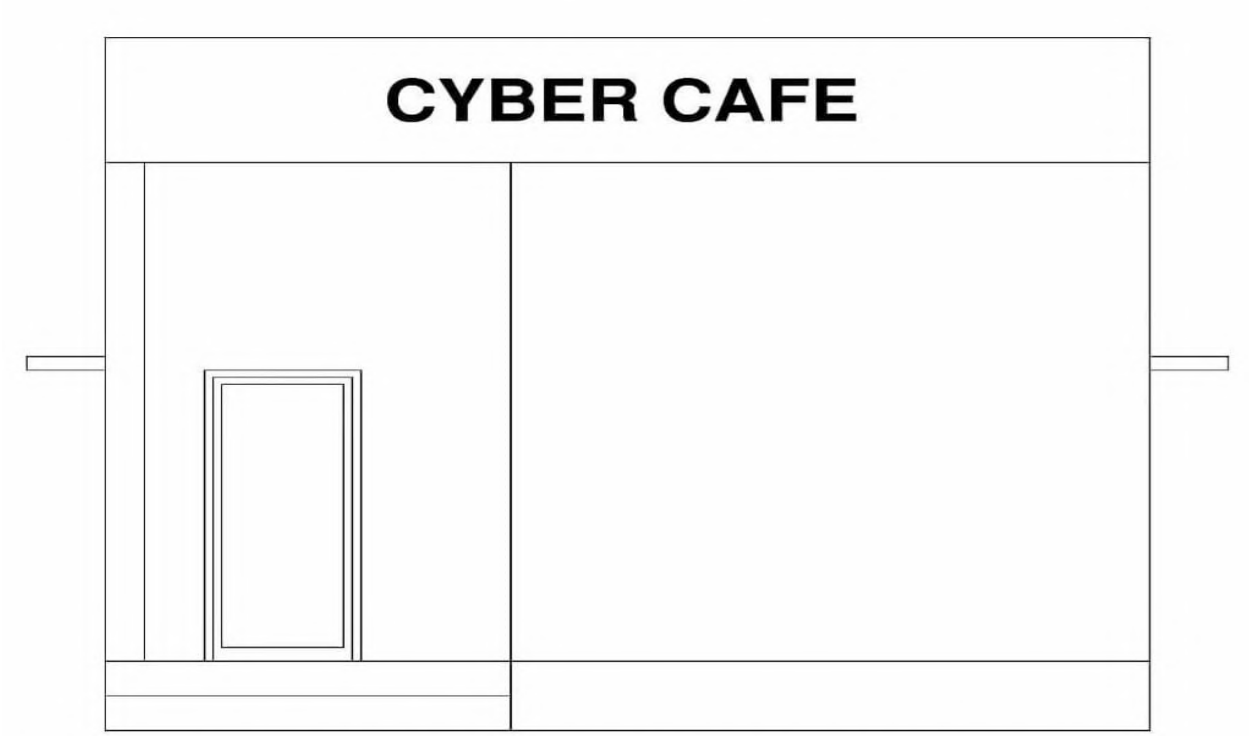
12	**CELLING PLASTER including scaffolding, curing, ect.**	116.12 m^2	230	m^2	**26707**
13	**2CM THICK MARBLE FLORING**	89.87 m^2	250	m^2	**22467**
16	**Wash basin**	2 Nos.	1100	Nos	**2200**
17	**Toilet seat (Indian)**	2 Nos.	1699	Nos	**3398**
				TOTAL = 10,06,960	
	Add 1.5% water charges				**15,104**
	Add 10% Contractor Profit				**1,00,696**
				TOTAL = Rs. 11,22,760	

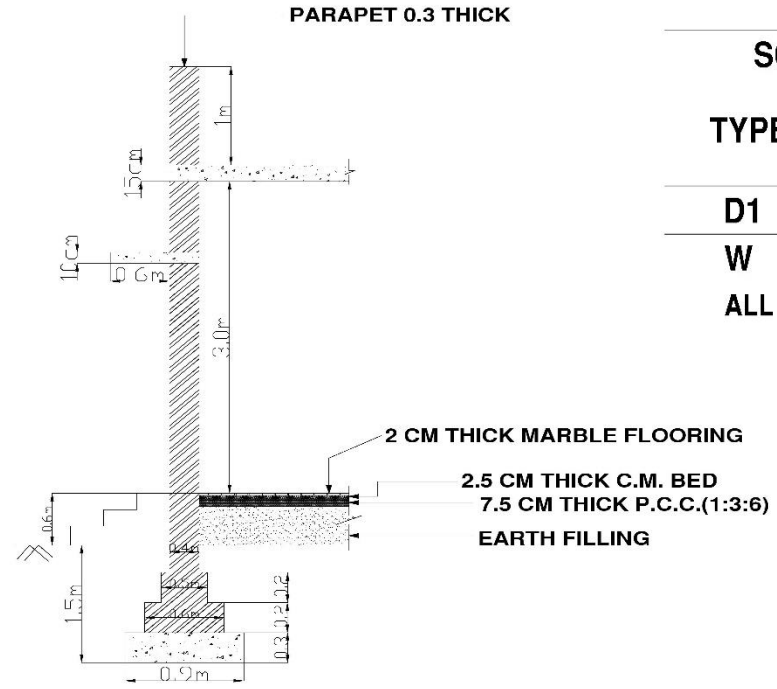
8.1.5 Smart village design (Civil)

Cyber cafe



th CamScanner **PLAN OF CYBER CAFE**





SCHEDULE OF OPENING

TYPE	NO.	SIZE
D1	1	1.2x2.1
W	4	1.2x1.2

ALL DIMENSIONS ARE IN METER

Fig.8.10 Plan of Cyber cafe

Table- 17 : Measurement sheet of Cyber cafe

MEASUREMENT SHEET						
CYBER CAFE						
Item no.	**Item Description**	**No.**	**Length (m)**	**Breadth (m)**	**Height (m)**	**Quantity**
1	**Excavation for Foundation**	1	34.15	0.9	1.5	**46.10 m^3**
2	**PCC in Foundation**	1	34.15	0.9	0.3	**9.22 m^3**
3	**Brick masonry upto plinth**					
	For 1st Step: L= 33.85m	1	33.85	0.6	0.3	6.09 m^3
	For 2nd Step: L= 33.75m	1	33.75	0.5	0.3	5.06 m^3
	For 3rd Step: L= 33.65m	1	33.65	0.4	0.5	6.06 m^3
					TOTAL = 17.21 m^3	
4	**Refilling of Foundation trench**	46.10 – 26.43 = 19.67 m^3				**TOTAL = 19.7m^3**
5	**Earth filling in plinth**	1	5.4	4.9	0.55	14.45 m^3
6	**P.C.C. in 1:3:6 CC for plinth**	1	5.4	4.9	0.075	1.98 m^3
7	**First class brick masonry in 1:6 CM for super structure**	1	46.74	0.3	3	**26.58 m^3**
8	**R.C.C.**					
	(1) Lintel					**0.09 m^3**
	(2) Slab		6	5.5	0.12	**3.96 m^3**
	(3) Chhaja	3	0.9	0.6	0.075	**0.1215 m^3**

	(4) Column (0.25 X 0.25)	4	0.25	0.25	3.0	**0.75 m^3**
	(5) Beam (0.3 X 0.23)	2	6	0.3	0.23	**0.828 m^3**
		2	5.5	0.3	0.23	**0.759 m^3**
					TOTAL = 6.51 m^3	
9	**Reinforcement for all R.C.C. members = 1% of R.C.C. = (1 X 6.51)/100 = 0.0651 kg/m^3**		= 0.0651 X 7850 = 511 kg		**TOTAL wt. OF REINFORCEMENT = 511 kg**	
10	**12 mm thick internal plaster in 1:4 CM**		-	-	-	**54.72 m^2**
11	**15 mm thick External plaster in C.M. 1:3**		-	-	-	**83.72 m^2**
12	**CELLING PLASTER**		-	-	-	**26.46 m^2**
13	**2CM THICK MARBLE FLORING**		-	-	-	**26.46 m^2**

Table – 18 : Abstract Sheet of Cyber cafe

ABSTRACT SHEET					
CYBER CAFE					
Item no.	**Description of item**	**Quantity**	**Rate (Rs.)**	**Per**	**Amount (Rs.)**
1	**Excavation for Foundation**	46.10 m^3	135	m^3	**6223**

2	**PCC in Foundation (1:4:8) including compaction and curing**	9.22 m^3	3500	m^3	32270
3	**Brick masonry upto plinth including curing, ect.**	17.21 m^3	3800	m^3	**65398**
4	**Refilling of Foundation trench**	19.7 m^3	135	m^3	**2659**
5	**Yellow soil filling in plinth with compaction.**	14.45 m^3	1200	m^3	**17340**
6	**P.C.C. in 1:3:6 CC for plinth including compaction and curing.**	1.98 m^3	3500	m^3	**6930**
7	**First class brick masonry in 1:6 CM for super structure including curing, etc.**	26.58 m^3	4200	m^3	**111636**
8	**R.C.C. including centering, finishing, curing, ect.**	6.51 m^3	6000	m^3	**39060**
9	**Reinforcement for all R.C.C. members**	511 kg	45	kg	**22995**
10	**12 mm thick internal plaster in 1:4 CM including scaffolding, racking of masonry joints, curing, ect.**	54.72 m^2	180	m^2	**9850**
11	**15 mm thick External plaster in C.M. 1:3 including scaffolding, racking of masonry joints, curing, ect.**	83.72 m^2	210	m^2	**17581**

12	**CELLING PLASTER including scaffolding, curing, ect.**	26.46 m^2	230	m^2	**6085**
13	**2CM THICK MARBLE FLORING**	26.46 m^2	250	m^2	**6615**
				TOTAL = 3,44,642	
	Add 1.5% water charges				**5170**
	Add 10% Contractor Profit				**34464**
				TOTAL = Rs. 3,84,276	

8.2 Reason for Students Recommending this Design

India lives in its villages, and while the cities have grown immensely over the last 20 years, rural areas have not seen that kind of development.
When we talk about allocated village, there is lack of basic facilities like Public toilet, Post office, Library, etc.
so, this is the reason to recommend this design.

8.3 About designs Suggestions / Benefit of the villagers

Following are the benefits if recommended design

- For improve health of village people one health center must be required.
- There is no vegetable market in village so people suffered to find vegetables and other items. For improve comfort of village people vegetable market must be available in village.
- To improve ground water table rain water harvesting system is help to store rain water and we can use this water for other purposes.
- Maintenance is required for effective function and use of existing facility available in village.

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

From Techno-economic survey and interaction with Sarpanch and Talati of Kharod village we decided to give the design for lack of facilities in phase I & II for future development of village.

In the phase-II we given the below design,

- Anganwadi
- Bio gas plant
- secondary school
- Rainwater harvesting
- Dudh mandali

After the design of all the above facility for Kharod village, the facility is help to development of village and livelihood of village people. So, we design above lack of facilities in phase I & II for more improvement and development of village and village dwellers.

10. Conclusion of the Entire Village Activities of the Project

The motive of Vishwakarma Yojana phase-VII is to uplift the lifestyle of the rural areas to its certain extent up to the level of an ideal village situated at the nearby location of that particular jurisdiction. We have tried to develop sustainable and economic design as per our knowledge and hard work from visiting the villages and provide proper design. In this phase we have focused mainly on Data collection and done the survey of village.

This Vishwakarma project phase viii will be helpful for better development of the village as physically as well as socially, which improves the overall lifestyle of people along with nation with preserving nature bit by bit. This will help in developing Smart villages in sustainable manner, reduce migration from villages and prevent the cities from the urban pressure. This should lead to some rethinking about the meaning of efficiency beyond the usual conceptions of economic or technical efficiency. Students who want to work towards preservation of rural soul of country can do many things for our own good and environment. By implanting given design proposals

It is an effective government scheme to develop the rural areas under economical cost with good workability and efficiency during its usage. The project tends to improve the physical, social as well as socio-cultural aspects of the village by implementing and improvising various infrastructures with regards to lesser or least hindrance to its rural authenticity.

Our main motto is to develop the undeveloped villages and rural areas with reference to the ideal village. Long-range planning has taken place in a public forum. The support of the community can also foster improved implementation opportunities. This should lead to some rethinking about the meaning of efficiency beyond the usual conceptions of economic or technical efficiency. Indeed, employment expansion is at least as important as growth in productivity. Moreover, employment creation and entrepreneurial activity mobilize the most abundant yet under-utilized resource in poor countries – the people for development. People who constitute resources on the supply side also provide markets on the demand side. This interactive causation between supply and demand is a potential source of economic growth that highlights the importance of domestic markets in the process of development.

An approach that will be used successfully when planning for the future of a community involves preceding the planning process with an exercise designed to develop vision of the future for the “Vishwakarma Yojana”. By developing Rural India, the future scenario for urbanization can be change in Sustainable manner.

We are proposing a design base on our survey, knowledge and Gap analysis to village for its development.

following are all design we propose for a village are:

1. Public Toilet
2. Post Office
3. Community Hall
4. Bus Stop
5. Dudh mandali
6. Rain water harvesting
7. Anganwadi.
8. Library
9. Bio gas plant

11. References

- www.onefivenine.com
- http://smartvillages.org/
- www.wikipedia.com
- https://www.journals.elsevier.com
- http://eeas.europa.eu/archives/delegations/fiji/press_corner/all_news/news/2015/2_0150420_01_en.pdf
- https://en.wikipedia.org/wiki/Sansad_Adarsh_Gram_Yojana
- https://earth.google.com/
- http://www.vyojana.gtu.ac.in/

  URDPFI guidelines

12. Annexure attachment

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

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

5

Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

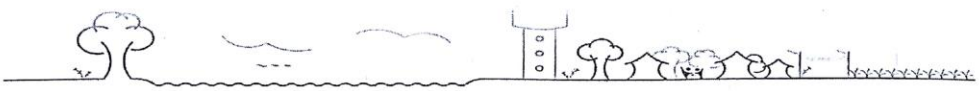
Name of Village:	BAVKA
Name of Taluka:	DAHOD
Name of District:	DAHOD
Name of Institute:	GOVERNMENT ENGINEERING COLLEGE DAHOD
Nodal Officer Name & Contact Detail:	PROF. D.K. OZA MO. NO.:-9426788106
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	PASAYA BHARATBHAI KALUBHAI (Sarpanch)
Date of Survey:	08/09/2020

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	7193	3640	3553	
ii)	2011	9384	4775	4609	1587

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	2321.77 hectares
	Forest Area (In hect.)	401.2 hectares
	Agricultural Land Area (In hect.)	1416.30 hectares
	Residential Area (In hect.)	514.1 Hectares



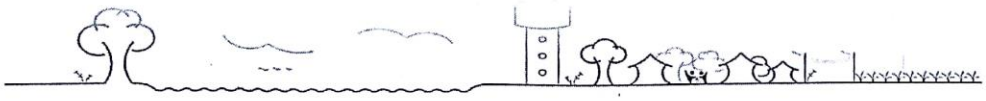
	Other Area (In hect.)	No
	Water bodies	80.3 hectares
	Nearest Town with Distance:	DAHOD , dahod is nearest town to bavka which is 15km away.

3. Occupational Details:

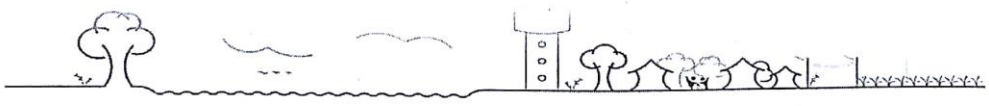
Name of Three Major Occupation groups in Village	1. AGRICULTURE
	2. SEMI INDUSTRIAL
	3. JOB

4. Physical Infrastructure Facilities:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated) • RO Water • Well (Covered/ Uncovered) • Hand pumps • Tube well/ Borehole • River/ Canal/ Spring/ Lake/ Pond	YES(Untreated) NO YES(uncovered) YES YES YES	NO NO	YES YES	Tap connections are located in a few areas.
Suggest ions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: 1 Lakh liters	No	Yes	closed
	Underground Sump	Capacity:			
Suggest ions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	NO	-	-	
Suggest ions if any: FOR SEWAGE THEY HAVE PROVIDED SEPTIC TANK.					

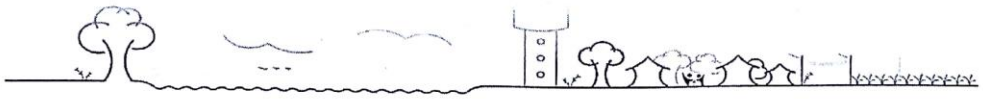


D.	Type of Drainage				
	Closed/ Open	No	No	Yes	
	If Open than Pucca / Kutchcha	No	No	Yes	
	Whether drain water is discharged directly in to Water bodies/Sewer plants	Water bodies	No	Yes	
Suggestions if any:					
E.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Black topped pucca	Yes	No	
	Main road	Black topped pucca	Yes	No	
	Internal streets	RCC	Yes	No	
	Nearest NH/SH/MDR/ODR Dist. in kms.	NH:- 12km SH:- 3km MDR:- 0km			NH No.47 which is 12km away.
Suggest ions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No (Railway station dahod which is 17km away)	–	–	
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	YES. GOOD	Yes	No	
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	AUTO, BUS, CHHAKDA AND PRIVATE VEHICLES	Yes	No	Most of people have private vehicles.
Suggest ions if any:					



G.	Electricity Distribution				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes (government) More than 6hrs.	Yes	No	24hrs electricity available.
	Power supply for Domestic Use	Yes MORE THAN 6hrs	Yes	No	24 hrs available
	Power supply for Agricultural Use	Yes more than 6 hrs	Yes	No	12 hrs
	Power supply for Commercial Use	Yes	Yes	No	
	Road/ Street Lights	Yes	No	Yes	Most of roads do not have provided street lights.
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	Yes		
	Renewable Energy Source Facilities (Y/ N)	Yes	No	Yes	Only provided on gram panchayat and schools.
	LED Facilities	No	No	Yes	
Suggest ions if any:					

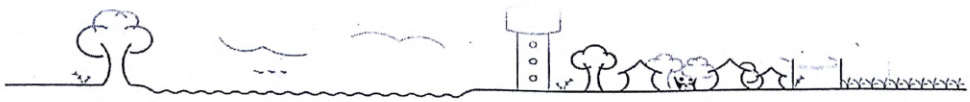
H.	Sanitation Facility				
	Public Latrine Blocks If available than Nos.	Yes 3	No	Yes	
	Location Condition	GAMATAL FALIYA GOOD Condition			
	Community Toilet (With bath/ without bath facilities)	YES (With bath)			



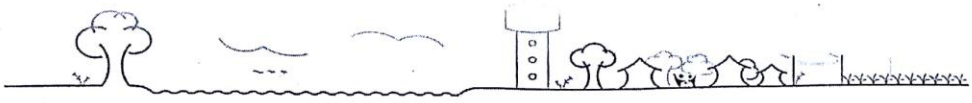
	Solid & liquid waste Disposal system available	NO	No	Yes	
	Any facility for Waste collection from road	NO	No	Yes	
Suggest ions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Stream, Well, tube well	yes		ground water level is high.
Suggest ions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)				98% houses are pucca.

5. **Social Infrastructural Facilities:**

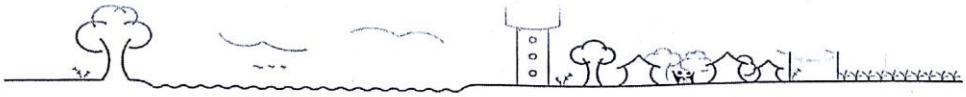
Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	2	YES	No	
	Private Clinic/Private Hospital/ Nursing Home	NO	–	–	private clinic 6km away from bavka. at jesawada.



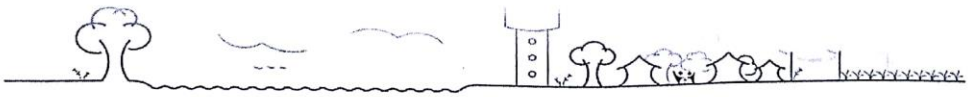
	If any of the above Facility is not available in village th an approx. dista nce from village: .....kms.				
Suggesti ons if any: Veterinary hospital facility available.					
L.	**Education Facilities:**				
	Aaganwadi/ Play group	17	YES	No	
	Primary School	9	YES	NO	upto 5th standard
	Secondary school	1	YES	NO	
	Higher sec. School	1	YES	NO	A few students also go to JESAWADA, DAHOD.
	ITI college/ vocational Training Center	1	YES	No	A few students also go to JESAWADA, DAHOD.
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	NO	-	-	Students go to DAHOD for graduation.
	If any of the above Facilit y is not available in village than suggest. distance from village: .....kms.				
6uggest ions if any: Navjivan Arts and commerce collage Dahod which is 18km away from BAVKA.					
M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:	Yes at gram panchayat	Yes	No	without TV.
	Condition:				



	Public Library (With daily newspaper supply: Y/N) Location: Condition:	yes first floor of gram panchayat Good	Yes	No	Library more than 12hrs open.
	Public Garden Location: Condition:	No	No	Yes	
	Village Pond Location: Condition:	Two pond are available.	Yes	No	Water distribution system not provided for irrigation or domestic puspose.
	Recreation Center Location: Condition:	–	–	–	
	Cinema/ Video Hall Location: Condition:	No	–	–	
	Assembly Polling Station Location: Condition:	Yes At primary school	Yes	No	
	Birth & Death Registration Office Location: Condition:	Gram panchayat	Yes	No	
If any of the above Facility is no t available in village than approx. distance from village : .....kms.					
7uggest ions if any:					



N.	Other Facilities				
	Post-office	Yes	Yes	No	
	Telecommunication Network/ STD booth	Yes	Yes	No	More than 80% people used mobile phone
	General Market	NO	-	-	People go to jesawada to shopping.
	Shops (Public Distribution System)	Yes	Yes	No	
	Panchayat Building	Yes	Yes	No	
	Pharmacy/Medical Shop	No	No	Yes	6km away. at jesawada
	Bank & ATM Facility	Yes	Yes	No	some peoples goes at jeasawada.
	Agriculture Co-operative Society	No	-	-	at jasawada
	Milk Co-operative Soc.	Yes	Yes	No	In current situation closed.
	Small Scale Industries	No			available at dahod(17km away)
	Internet Cafes/ Common Service Center/Wi Fi	Yes	Yes	No	
	Other Facility	No			
Suggestions if any:					



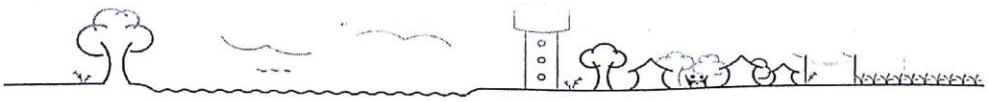
6. Sustainable /Green Infrastructure Facilities:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
O.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	No	-	-	
P.	Bio-Gas Plant	Yes(community)	No	Yes	Solar street lights and RWHS are available only at school and gram panchayat.
	Solar Street Lights	Yes	No	Yes	
	Rain Water Harvesting System	Yes	No	Yes	
Q.	Any Other	No			

7. Data Collection From Village

Village Base Map Available: Hard Copy/Soft Copy	Soft copy

Recent Projects going on for Development of Village	-Pradhan mantri awas yojana -Pradhan mantri gram sadak yojana, etc.
Any NGO working for village development	Self help groups

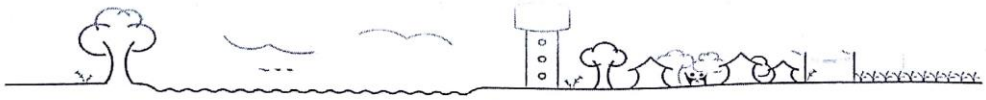


8. Additional Information/ Requirement:

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

9. Smart Village Proposal Design

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	First of fulfil Inadequate facilities. And then proceed on other work.	- Renewable Energy Sources - provide street lights in whole roads - Provide water distribution system - Develop small scale Industries - To develop small general market - Wi-Fi facility - Solar Street Lights - solid waste management - provide proper drainage facilities - Develop community Bio-Gas Plant	

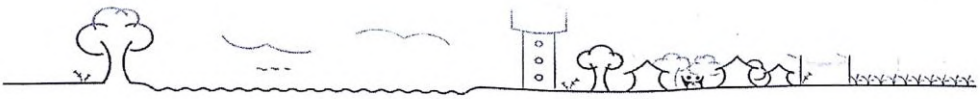


		- Should provide Rain Water Harvesting System - Develop gruh udhyog - e-gram service - Emphasize the use of solar device - Improve farming productivity	

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

પટ્ટાવાળા દિલીપ.
સરપંચ
ગ્રામ પંચાયત બાવકા
તા.જી.દાહોદ.



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

Gujarat Technological University, Ahmedabad, Gujarat

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:	Sabarkantha
Name of Taluka:	Talod
Name of Village:	Punsari
Name of Institute:	Government engineering college dahod
Nodal Officer Name & **Contact Detail:**	Prof. D.K. Oza +919426788106
Respondent Name: **(Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)**	Himanshu Patel (sarpanch)
Date of Survey:	19/09/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	5100	2653	2447	1109

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1395.65 23°20'59.46"N 73°8'12.48"E

2.	Forest Area (In hect.)	0
3.	Agricultural Land Area (In hect.)	1100
4.	Residential Area (In hect.)	
5.	Other Area (In hect.)	
6.	Distance to the nearest railway station (in kilometers):	Dhansura railway station (15km)
7.	Name of Nearest Town with Distance:	Talod (23km)
8.	Distance to the nearest bus station (in kilometers):	Langamath bus stop (3.9km)
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. Agricultural
	2. Animal husbandry, Dairy
	3. Small scale industries

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

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				

1.	**PIPED WATER** Piped Into Dwelling Piped To Yard/Plot Public Tap/Standpipe Tube Well Or Bore Well	Piped water connection provided in whole village.	Yes		Also water tankers are arranged.
2.	**DUG WELL** Protected Well Un Protected Well	Protected dug well	Yes		
3.	**WATER FROM SPRING** Protected Spring Unprotected Spring Rainwater Tanker Truck Cart With Small Tank				
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/** Irrigation Channel Bottled Water Hand Pump Other(Specify)**Lake/ Pond**	- Pond - Canal	Yes		
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:			
	Underground Sump	Capacity:			
Sugges tions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	Underground drainage facility provided in whole village.	Yes		
Sugges tions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Blac k Topped puc ca/ WBM**				

	Village approach road	Black topped pucca	Yes		
	Main road	Black topped pucca	Yes		
	Internal streets	R.C.C.	Yes		
	Nearest NH/SH/MDR/ODR Dist. in kms.	- ODR:- 0km - MDR:- 3.4km - SH:- 4.8km - NH:- 29km			
Sugges tions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No			Dhansura railway station (15km)
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes	Yes		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	- Panchayat bus - Private vehicle - S.T.	Yes	No	Mini-buses are used for transport purpose within the village.
Sugges tions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes More than 6 hrs.	Yes		66 KV punsari substation
	Power supply for Domestic Use	24hrs	Yes		
	Power supply for Agricultural Use	8hrs	Yes		
	Power supply for Commercial Use	24hrs	Yes		
	Road/ Street Lights	Yes	Yes		

	Electrification in Government Buildings/ Schools/ Hospitals	Yes	Yes		
	Renewable Energy Source Facilities (Y/ N)	Yes			
	LED Facilities	Yes	Yes		Around 450 LED
Sugges tions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.		Yes		
	Location Condition	Good			
	Community Toilet (With bath/ without bath facilities)		Yes		
	Solid & liquid waste Disposal system available	Yes	Yes		Proper disposal ground
	Any facility for Waste collection from road	Door to door waste collection.	Yes		Everyday collection
Sugges tions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL. OTHER (SPECIFY)	Pond-2 Canal Well-72 Tube well-114	Yes		
Suggestions if any:					
I.	**Housing Condition:**				

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	8 1 In PHS has infrastructural facilities exist, like sonography, Blood test laboratory, etc.			
	If any of the above Facility is no t available in villa ge than appr ox. distance fro m village: .....kms.				
Sugges tions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	8			
	Primary School	5	Yes		Digital classroom
	Secondary school	1			
	Higher sec. School	1			
	ITI college/ vocational Training Center	There are ITI and some other vocational training center exist.			

	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	- Darshanyog mahavidyalaya (5.2km) - Arts and commerce college Dhanusura (11.7km)	-	-	
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					

L.	**Socio- Culture Facilities**	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)	Good	Gram panchayat building	Yes	
	Public Library (With daily newspaper supply: Y/N)	Good		Yes	
	Public Garden			Yes	
	Village Pond			Yes	
	Recreation Center				
	Cinema/ Video Hall	Good	Bayad (3.8km)		No
	Assembly Polling Station	Good	School	Yes	
	Birth & Death Registration Office	Good	Gram panchayat	Yes	
If any of the above Facility is not available in village than approx. distance from villag e: .....kms.					
Suggestions if any:					

M.	**Other Facilities**	Condition	Location	Available (YES)	Available (NO)

	Post-office			Yes	
	Telecommunication Network/ STD booth			Yes	
	General Market			Yes	
	Shops (Public Distribution System)			Yes	
	Panchayat Building			Yes	
	Pharmacy/Medical Shop				
	Bank & ATM Facility		- HDFC Bank - DENA Bank	Yes	
	Agriculture Co-operative Society				
	Milk Co-operative Soc.			Yes	
	Small Scale Industries			Yes	
	Internet Cafes/ Common Service Center/Wi Fi		In the whole village.	Yes	
	Youth Club				
	Mahila Mandal			Yes	
	Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-chaupal / Mills / Small Scale Industries			Yes Yes	
	Other Facility				

Suggesti ons if any:

N.	Other Facilities	Condition		Available (YES)	Available (NO)

	1. Have these programme implemented the village?			Yes	
	2. Are there any beneficiaries in the village from the following programme?				
	3. Janani Suraksha Yojana			Yes	
	4. Kishori Shakti Yojana			Yes	
	5. Balika Samriddhi Yojana			Yes	
	6. Mid-day Meal Programme			Yes	
	7. Intergrated Child Development Scheme (ICDS)			Yes	
	8. Mahila Mandal Protsahan Yojana (MMPY)				
	9. National Food for work Programme (NFFWP)			Yes	
	10. National Social Assistance Programme				
	11. Sanitation Programme (SP)			Yes	
	12. Rajiv Gandhi National Drinking Water Mission				
	13. Swarnjayanti Gram Swarozgar Yojana				
	14. Minimum Needs Programme (MNP)				
	15. National Rural Employment Programme				
	16. Employee Guarantee Scheme (EGS)				
	17. Prime Minister Rojgar Yojana (PMRY)				
	18. Jawahar Rozgar Yojana (JRY)				
	19. Indira Awas Yaojna (IAY)				
	20. Samagra Awas Yojana (SAY)				
	21. Sanjay Gandhi Niradhar Yojana (SGNY)			Yes	
	22. Jawahar Gram Samridhi Yojana (JGSY)				
	23. Other (SPECIFY)				

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	Renewable energy Sources			
2.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	Bio-gas plant exist Solar street lights available	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	Soft copy			
2.	Recent Projects going on for Development of Village	- Swachh bharat abhiyan - NREGA - Sardar awas yojna	Yes		
3.	Any NGO working for village development				

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**	All the buildings are new constructed.	
2.	**Additional Information/ Requirement**	No	
3.	**During the last six months how many times CLEANING …….. FOGGING…….. Drive was undertaken in the village?**	Cleaning is done every 3 months.	

IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	YES	Fulfill with natural resources.

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

તલાટી કમ મંત્રી
પુંસરી ગ્રામ પંચાયત
તા.તલોદ,જી.સા.કાં.

પંસરી ગ્રામ પંચાયત
તા.તલોદ,જી.સા.કાં.

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

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

Name of District:	DAHOD
Name of Taluka:	DAHOD
Name of Village:	KHAROD
Name of Institute:	GOVERNMENT ENGINEERING COLLEGE DAHOD
Nodal Officer Name & Contact Detail:	Prof. D.K. OZA
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	RASULBHAI KALUBHAI BHOHA (Sarpanch)
Date of Survey:	13/10/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	6459	3281	3178	928

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1294

2.	Forest Area (In hect.)	20
3.	Agricultural Land Area (In hect.)	765
4.	Residential Area (In hect.)	115
5.	Other Area (In hect.)	311
6.	Distance to the nearest railway station (in kilometers):	
7.	Name of Nearest Town with Distance:	Dahod (9 KM)
8.	Distance to the nearest bus station (in kilometers):	Dahod bus station (9.6 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. Farming
	2. Labor
	3. Industry worker

Major crops grown in the village:	1. Maize
	2. Gram
	3.

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				

1.	**PIPED WATER** Piped Into Dwelling Piped To Yard/Plot Public Tap/Standpipe Tube Well Or Bore Well	No	No	Yes	
2.	**DUG WELL** Protected Well Un Protected Well	No	No	Yes	
3.	**WATER FROM SPRING** Protected Spring Unprotected Spring	No	No	Yes	
4.	Rainwater Tanker Truck Cart With Small Tank **SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/** Irrigation Channel Bottled Water	No	No	Yes	
	Hand Pump	Yes	Yes	No	
	Other(Specify)**Lake/ Pond**	Available(Two pond)	Yes	No	
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	75000 ltr.		
	Underground Sump	Capacity:			
Sugges tions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1	Not constructed yet.	No	Yes	
Suggestions i f any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Black topped pucca	Yes	No	

	Main road	Black Topped pucaa	Yes	No	
	Internal streets	RCC	Yes	No	
	Nearest NH/SH/MDR/ODR Dist. in kms.	- MDR :- 0KM - SH :- 7 KM - NH :- 0 KM	-	-	
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No (Rentia railway station which is 3.3 KM away)	-	-	
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	No (Dahod bus station 9 km)	-	-	
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	- Auto - chhakda - Private vehicles	Yea	No	
Sugges tions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes (Government)	Yes	No	
	Power supply for Domestic Use	More than 6 hrs.	Yes	No	
	Power supply for Agricultural Use	More than 6 hrs.	Yes	No	
	Power supply for Commercial Use	More than 6 hrs.	Yes	No	
	Road/ Street Lights	Not provided.	No	Yes	
	Electrification in Government Buildings/ Schools/ Hospitals	More than 6 hrs.	Yes	No	

	Renewable Energy Source Facilities (Y/ N)	No	No	Yes	
	LED Facilities	No	No	Yes	
Sugges tions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	No	No	Yes	
	Location Condition	-	-	-	
	Community Toilet (With bath/ without bath facilities)	No	No	Yes	
	Solid & liquid waste Disposal system available	No	No	Yes	
	Any facility for Waste collection from road	No	-	-	
Sugges tions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL. OTHER (SPECIFY)	Pond :- 2 Canal :- 0	-	-	
Sugges tions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Data not available.	-	-	

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	8+1 (Mini anganwadi) = 9	Yes	No	
	Sub-Centre				
	PHC	PHC :- 2	Yes	No	
	BLOCK PHC				
	CHC/RH				
	District/ Govt. Hospital				
	Govt. Dispensary				
	Private Clinic	Not a private clinic.			
	Private Hospital/				
	Nursing Home				
	AYUSH Health Facility	AYUSH health facility available.			
	sonography /ultrasound facility				
	If any of the above Facility is not available in villa ge than appr ox. distance fro m village: .....kms.				
Sugges tions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	9	Yes	No	
	Primary School	5	Yes	No	
	Secondary school	1	Yes	No	The building of the secondary school was not built.
	Higher sec. School	-	-	-	
	ITI college/ vocational Training Center	No	-	-	

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

L.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)				
	Public Library (With daily newspaper supply: Y/N)				
	Public Garden				
	Village Pond				
	Recreation Center				
	Cinema/ Video Hall				
	Assembly Polling Station				
	Birth & Death Registration 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				
	Telecommunication Network/ STD booth				
	General Market				
	Shops (Public Distribution System)				
	Panchayat Building				
	Pharmacy/Medical Shop				
	Bank & ATM Facility				
	Agriculture Co-operative Society				
	Milk Co-operative Soc.				
	Small Scale Industries				
	Internet Cafes/ Common Service Center/Wi Fi				
	Youth Club				
	Mahila Mandal				

	Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-chaupal / Mills / Small Scale Industries	No No No NO No No No No Industries are available.	Yes Yes Yes Yes Yes Yes Yes Yes No		
	Other Facility				
Suggesti ons 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	Yes	-		
	4. Kishori Shakti Yojana	Yes	-		
	5. Balika Samriddhi Yojana	Yes	-		
	6. Mid-day Meal Programme	Yes	-		
	7. Intergrated Child Development Scheme (ICDS)	Yes	-		
	8. Mahila Mandal Protsahan Yojana (MMPY)				
	9. National Food for work Programme (NFFWP)	Yes	-		
	10. National Social Assistance Programme				
	11. Sanitation Programme (SP)				
	12. Rajiv Gandhi National Drinking Water Mission				
	13. Swarnjayanti Gram Swarozgar Yojana	Yes	-		
	14. Minimum Needs Programme (MNP)				
	15. National Rural Employment Programme	Yes	-		

	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 Yojan a (SGNY) 22. Jawahar Gram Samridhi Yojana (JGSY) 23. Other (SPECIFY)				

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

	Descriptions		Adequate	Inadequate	Remarks

Sr. No.		Information/ Details			
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	Not adopted	-	-	
2.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	No	-	-	
3.	Any Other	No	-	-	

VII. DATA COLLECTION FROM VILLAGE

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Village Base Map Available: Hard Copy/Soft Copy	Hard copy	-	-	Hand drawn map.
2.	Recent Projects going on for Development of Village				
3.	Any NGO working for village development	N M Sadguru foundation			

4.	Any natural calamity in the village during the last one year: EARTHQUAKES FLOODS CYCLONE DROUGHT LANDSLIDES AVALANCHE OTHER (SPECIFY)	No	-	-	

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

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

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

Sarpanch
Gram Panchayat, Kharod
Ta. Dist. Dahod

12.4 Gap Analysis of the Allocated Village

VILLAGE GAP Analysis					
Village Facilities	**Planning Commission/UDPFI Norms**	**Village Name:**	**Kharod (Dahod)**		
		Populati on: 6459			
		Existing	**Required as per Norms**	**Smart Village / Cities / Heritage Future Projection Design**	**Gap**
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	9	1	-	+8
Primary School	Each Per 2500 population	5	1	-	+4
Secondary School	Per 7,500 population	1	0	-	+1
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	2	0	-	+2
Child Welfare and Maternity Home	Per 10,000 population	0	0	-	0
Multispecialty Hospital	Per 100000 Population	0	0	-	0
Public Latrines	1 for 50 families (if toilet is not there in home, especially for slum pockets & kutcha house)	0	1	-	-1
Physical Infrastructure Facilities					
Transportation		**Adequate**		-	-
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 main highway of Kharod village	-	-
Drinking Water (Minimum 70 lpcd)		**Indequate**	-	-	-
Over Head Tank	1/3 of Total Demand	**Indequate**	1	1	0
U/G Sump	2/3 of Total Demand	**Indequate**	0	1	-1
Drainage Network - Open		**Inadequate**	Unavailable	-	-
Drainage Network - Cover		**Inadequate**	Unavailable	-	-
Waste Management System		**Inadequate**	-	-	-
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	0	1	-	-1
Public Library	Per 15000 Population	0	0	-	+0
Cremation Ground	Per 20,000 population	0	1	-	-1
Post Office	Per 10,000 population	1	1	-	0
Gram Panchayat Building	Each individual/group panchayat	1	1	-	0
APMC	Per 100000 Population	0	0	-	0
Fire Station	Per 100000 Population	0	0	-	0
Public Garden	Per village	0	1	-	-1
Police post	Per 40,000Population	0	0	-	0
Shopping Mall : **Shops are unavailable in village**					
Electrical Design					
Electricity Network		**Adequate**			
Any Smart Village Facility					
Technology		**RO Water Plant**	Unavailable		
		ESR cap	-		
		Sump cap	Unavailable		
		Lat	-		

Table.19 GAP analysis of allocated village

12.5 Summary Details of All the villages Designs in Table form As Part-I and Part-II

Sr. No.	Village Name	Discipline	Part-I	Part-II
1	**Kharod**	Civil	Public toilet	Public Garden
			Library	Anganwadi
			Community Hall	Bio gas plant
			Cyber cafe	Rain water harvesting
			Bus stand	Dudh mandali
			Post office	Gram panchayat
2	**Bhatiwada**	Civil	Public toilet	Gram panchayat
			Medical Store	Solid waste management
			Gram panchayat	Drainage system
			Solar street lights	Solar street light
			Solar panels	Community hall
			Krushi seva centre	Road side arboriculture
			Library	Dudh mandali
3	**Moti kharaj**	Civil	Low cost toilet	Secondary school
			ATM	Water harvesting
			Public Library	
			Cyber cafe	bus station
			Super market	public garden
			Community Hall	bank

4	**Kharedi**	Civil	Road maintenance	Gram panchayat
			Medical store	Library
			Super market	Reacreational center
			Rain water harvesting	Secondary school
			Dudh mandali	Garden
			ATM	Paver block

Table – 20 : Summary of all villages

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

All the drawings and images are attached in their respective chapters along with designs and their listing are mentioned in the list of figures along with their page numbers. And we have added A3 sheets of proposed designs at the end of the Vishwakarma Yojana Phase VIII part 2 report.

Note :- All dimensions are in meters unless stated otherwise.

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

Summary Of Photographs Of Kharod – Allocated Village :

Summary of Photographs of Bavka – Ideal village :

Summary of Photographs of Punsari – Smart village :

12.8 Village Interaction with Sarpanch Report with the photograph :

As per the guideline of Vishwakarma Yojana VIII, We visited Kharod village for the study purpose.
We met Sarpanch and Talati cum mantra. We met other staff member also, and they gave us good response. Still we tried our best for collection of data from other sources.
We also visited through the village and interacted with villagers directly and asked them about the present situation of village. We had conducted a Techno-economic survey of Kharod village.
After doing the survey of the village, we prepared gap analysis and designed necessary facilities for Kharod village.
We designed Public toilet, Library and Community Hall. And also we had carried out Estimate of these.

Fig 12.1 Interact with the Sarpanch

12.9 Sarpanch Letter giving information about the village development :

❖ Approval Letter for Proposed Designs approval :

Approval Letter For Proposed Design Approval

To,

Sarpanch shree,

Village : Kharod

Dist : Dahod

Subject : Approval of design proposal for Kharod village to the students of Gujarat Technological University – Ahmedabad for Vishwakarma yojana phase – VIII

Dear sir,

As per "Vishwakarma Yojana Phase – VIII" we had selected Kharod village as part of project. From the visits of village and valuable information provided by you, as the outcome of our project we are proposing design with a details plan, estimation and costing.

Kindly accept our design proposal, do assuming that this project is allocated by government of Gujarat with consent from Gujarat technological university – Ahmedabad. for the saw we students of Government engineering college Dahod are proposing the design for study purpose only.

Sr. No	Enrollment No.	Students Name	Contact No.
1	170180106024	Kaushik Deval	8469232008
2	170180106116	Aftab Vahora	787862655

Detail of proposed design :

1. Public Toilet
2. Library
3. Community Hall

I am Talati cum mantri/sarpanch of Kharod village and accepting your proposal design for development of village given by guidelines under Vishwakarma Yojana Phase – VIII.

Date : 19/10/2020

Place : Kharod

Sarpanch
Gram Panchayat, Kharod
Talati cum mantri/Sarpanch

Kharod, Dahod

❖ Approval Letter For Swachhta & Covid-19 Activity approval

Approval Letter For Swachhta & Covid-19 Awareness Activity

Vishwakarma Yojana Phase – VIII

Kharod village

Dist : Dahod

Subject : Approval of doing awareness activity for swachhta and Covid-19 for Kharod village

I sarpanch/Talati of Kharod village undersigned gives approval of doing swachhta and Covid awareness activity under Vishwakarma Yojana Phase – VIII by students of Government engineering college Dahod.

Sr. No	Enrollment No.	Students Name
1	170180106024	Kaushik Deval
2	170180106116	Aftab Vahora

Date : 19/10/2020

Place : Kharod

Sarpanch
Gram Panchayat, Kharod
Ta. Dist. Dahod
Seal of Grampanchayat

VY-PHASE-VIII-PART-II

13. From the Chapter- 9 future designs of the aspects (Feasibility, Construction, Operation and maintenance of various design options in Rural Areas along with cost with AutoCAD designs / planning with any software

13.1 Design Proposals for Part-2 :

1	Physical Design	Public Garden
2	Social Design	Bio gas plant
3	Socio-cultural design	Dudh mandali
4	Sustainable design	Rain water harvesting
5	Smart Design	Anganwadi
6	Heritage design	Gram panchayat

13.1.1 Civil Design 1

Public Garden

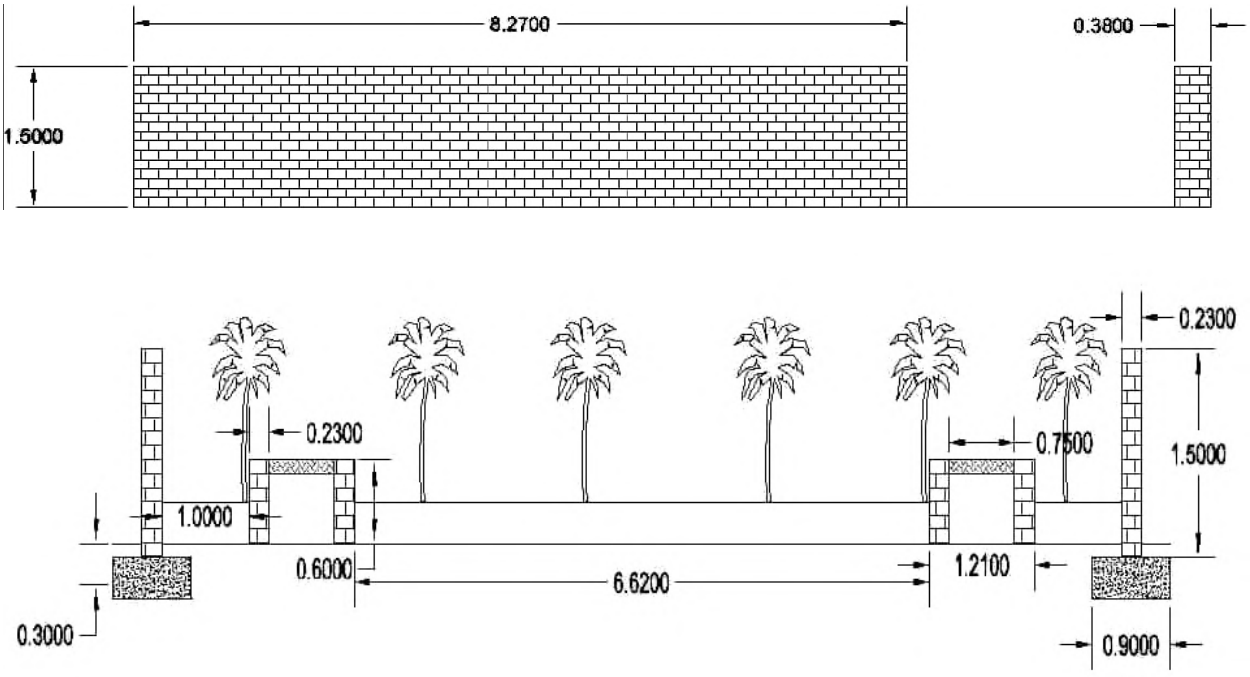


Fig 13.1 Elevation and cross section of Garden

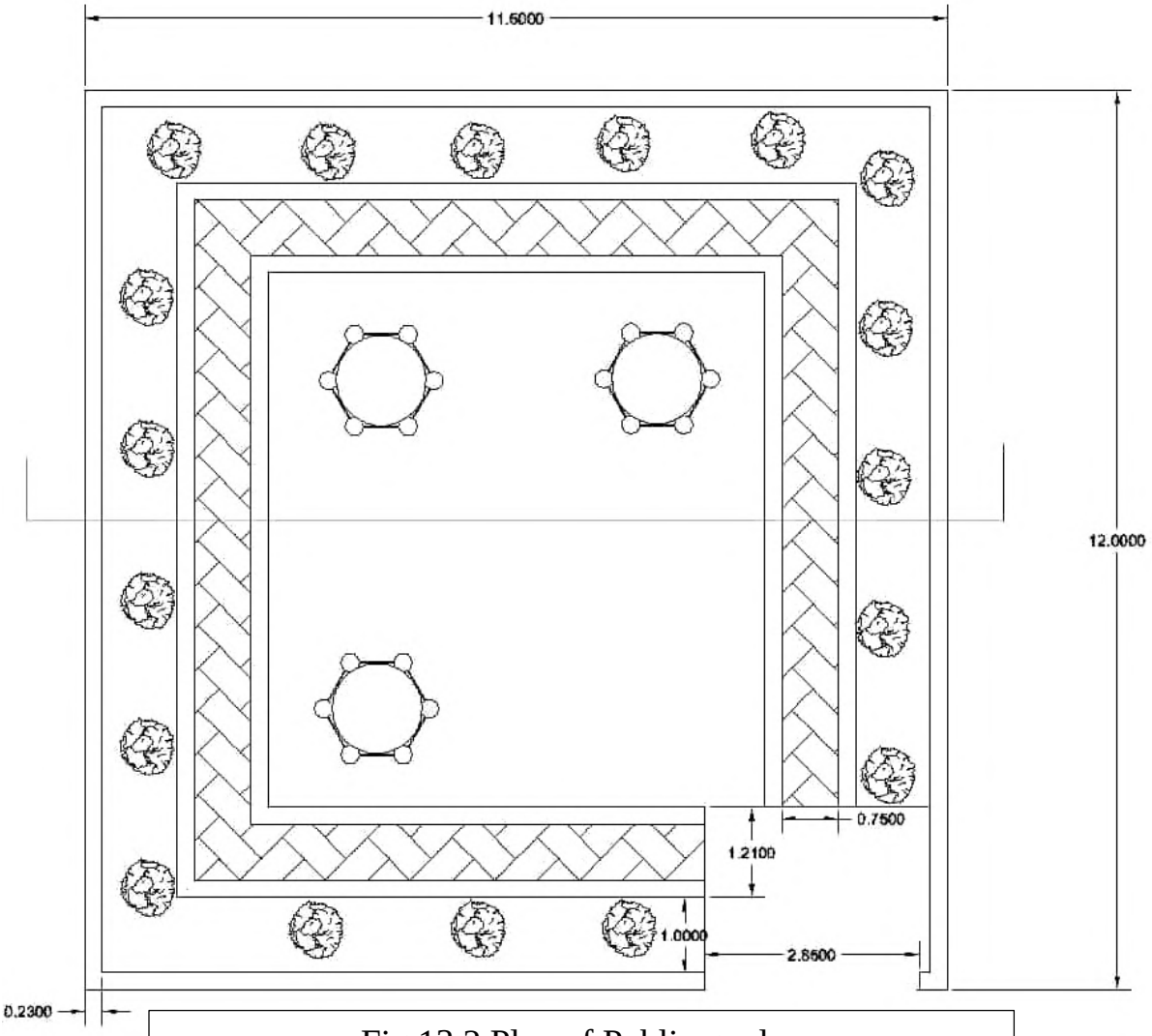


Fig 13.2 Plan of Public garden

Table.21 Measurement sheet of Garden

MEASUREMENT SHEET						
Public Garden						
Item no.	**Item Description**	**No.**	**Length (m)**	**Breadth (m)**	**Height (m)**	**Quantity**
1	**Excavation of Foundation in soft Murrum, soil or sand from 0.0 m. to 1.50 m. depth including lifting and laying in 90 m.**	1	45.4	0.9	1.5	**61.29 m^3**

	lead area as instructed.					
2	**PCC work [1:4:8]**	1	45.4	0.9	0.3	**12.26 m^3**
3	**Wall**	1	45.40	0.23	1.5	**15.66 m^3**
4	**20mm thick plaster**	1	94	-	1.5	141 m^2
	Deduction gate	1	5.68	-	1.5	8.52 m^2
					Total = 132.48 m^2	
5	**Brick wall**	1	60.66	0.23	0.6	**8.37 m^3**
6	**Earth filling**					
	Middle part	1	7.12	6.62	0.3	14.14 m^3
	Side part	1	36.95	1	0.3	11.09 m^3
	under walk part	1	30.33	0.75	0.5	11.37 m^3
					Total = 36.60 m^3	

Table. 22 Abstract sheet of Public Garden

ABSTRACT SHEET					
Public Garden					
Item no.	**Description of item**	**Quantity**	**Rate (Rs.)**	**Per**	**Amount (Rs.)**
1	**Excavation of Foundation in Soft Murrum, Soil or Sand from 0.0 mtr. to 1.50 mtr depth including lifting and laying in 90 mtr. lead area as instructed**	61.29 m^3	97	m^3	**5945**
2	**PCC work (1:4:8)**	12.26 m^3	1900	m^3	23294
3	**Brick Masonry Super Structure in proportion of 1:6**	15.56 m^3	3218	m^3	**50393**

4	**Filling with foundation & plinth with selected garden soil in layer of 20cm including watering and ramming complete**	36.60 m^3	290	m^3	**10614**
5	**Water Proof Cement Plaster 20 mm thick using Water Proofing Compound and in the ratio of 1:3 with necessary finishing**	132.5 m^2	203	m^2	**26893**
6	**Carpet lawn**	47.17 m^2	260	m^2	**12264**
7	**Tree plantation**	18 nos.	220	nos.	**3960**
8	**Supply & Fixing of CC Precast interlocking paving blocks of size 60 mm thick and of compresive strength of 250 kg / sq.cm (Red / Yellow / Grey Color), to be supplied and fixed as instructed with Concreting 1:2:4 the end blocks (without Cement joints) in bedding of Bhogavo**	22.73 m^2	348	m^2	**7910**
				TOTAL = 1,41,275	
	Add 1.5% water charges				**2119**
	Add 10% Contractor Profit				**14128**
				TOTAL = Rs. 1,57,521	

13.1.2 Civil design 2

Anganwadi

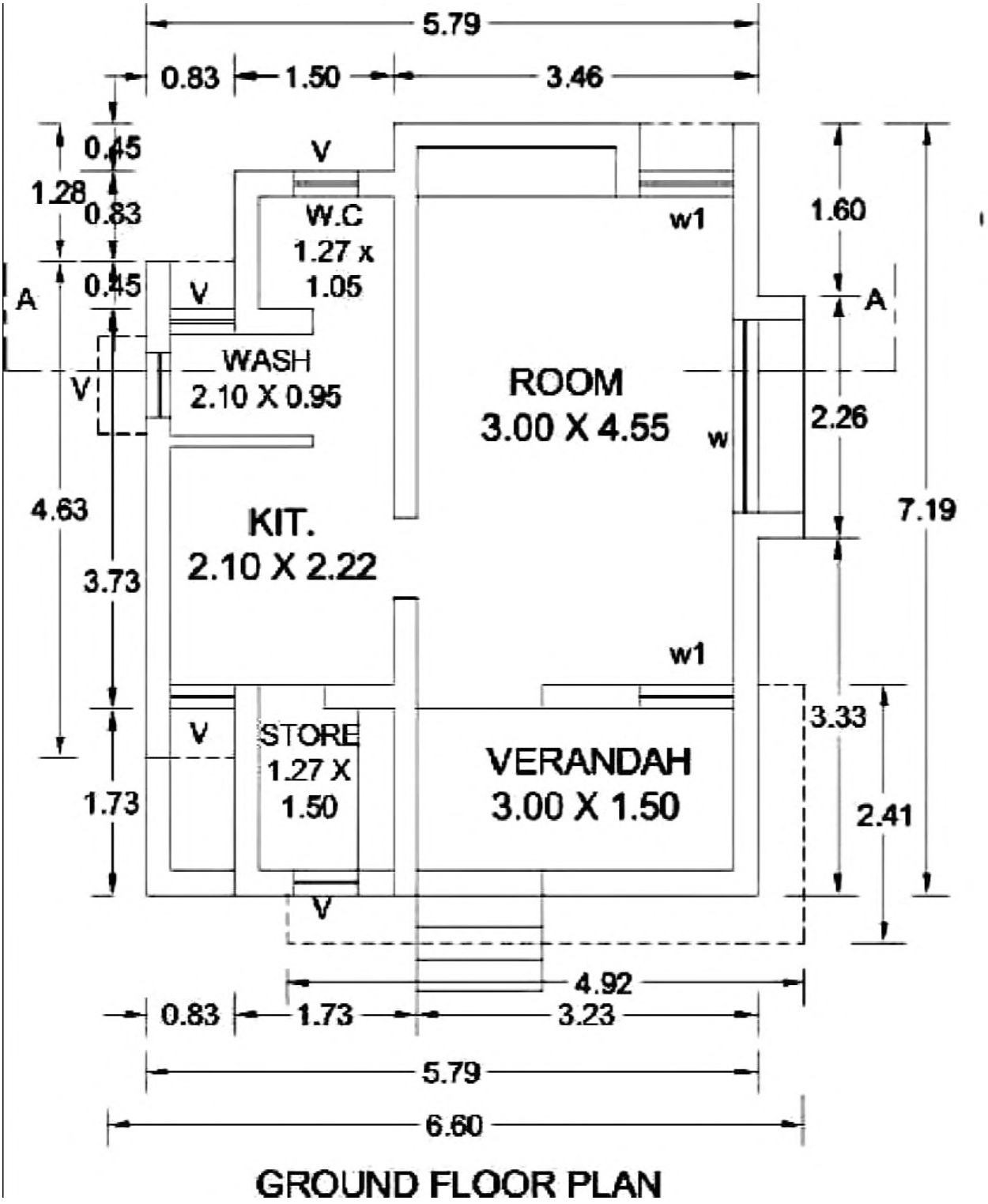


Fig 13.3 Plan of Anganvadi

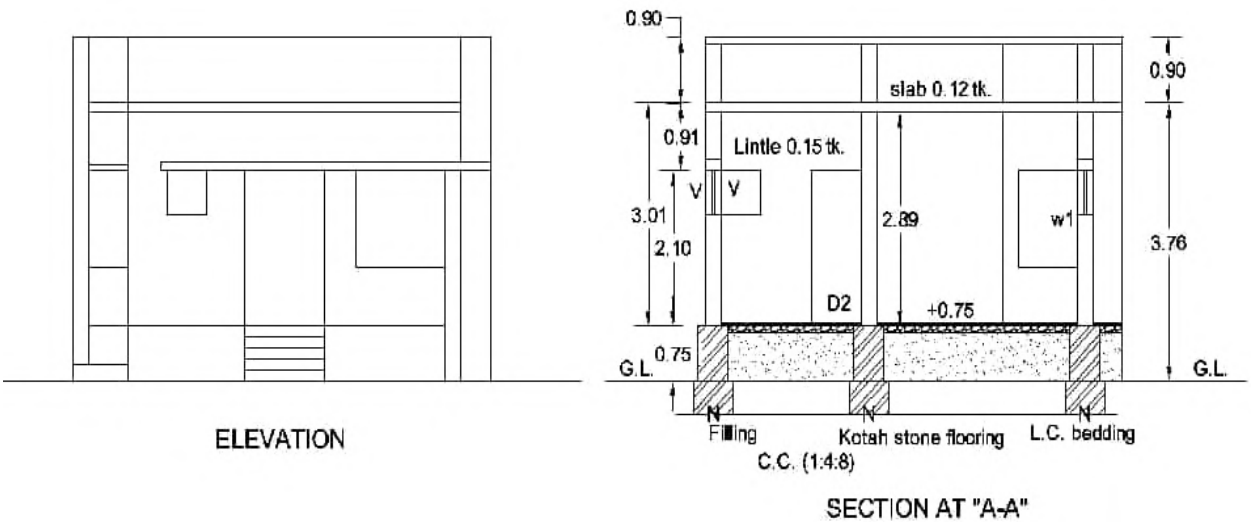


Fig 13.4 Elevation and Cross section of Anganwadi

Table. 23 Measurement sheet of Anganwadi

MEASUREMENT SHEET						
ANGANWADI						
Item no.	**Item Description**	**No.**	**Length (m)**	**Breadth (m)**	**Height (m)**	**Quantity**
1	**Excavation for Foundation**	1	38.96	0.9	1.5	**52.59 m^3**
2	**PCC in Foundation**	1	38.96	0.9	0.3	**10.52 m^3**
3	**Brick masonry upto plinth**					
	For 1st Step:	1	33.96	0.6	0.2	4.07 m^3
	For 2nd Step:	1	33.94	0.5	0.2	4.07 m^3
	For 3rd Step:	1	32.98	0.4	1.4	18.47 m^3
					TOTAL = 26.61 m^3	
4	**Refilling of Foundation trench**	52.59 – 10.52 – 26.61 = 15.46 m^3 **TOTAL = 15.46 m^3**				
5	**Earth filling in plinth**					
	Room	1	3	4.55	0.55	7.51 m^3

	Verandah	1	3.0	1.5	0.55	2.48 m^3
	kit	1	2.1	2.22	0.55	2.56 m^3
	w.c.	1	3.27	2.15	0.55	3.87 m^3
					TOTAL = 16.42 m^3	
6	**P.C.C. in 1:3:6 CC for plinth**					
	Room	1	3	4.55	0.075	1.03 m^3
	Verandah	1	3.0	1.5	0.075	1.031 m^3
	kit	2	2.1	2.22	0.075	0.41 m^3
	w.c.	1	3.27	2.15	0.075	0.41 m^3
					TOTAL = 2.88 m^3	
7	**First class brick masonry in 1:6 CM for super structure**	1	38.96	0.3	3	**35.06 m^3**
	Deduction for,					
	Door (D1)	3	1.2	0.3	2.1	-2.27 m^3
	Door (D2)	3	1.0	0.3	2.1	-1.89 m^3
	Window (W1)	3	1.2	0.3	1.2	-1.29 m^3
	Window (W2)	4	1.5	0.3	1.2	-2.16 m^3
	Deduction for lintel,					
	Door (D1)	3	1.5	0.3	0.15	-0.27 m^3
	Door (D2)	3	1.3	0.3	0.15	-0.059 m^3
	Window (W1)	3	1.5	0.3	0.15	-0.135 m^3
	Window (W2)	4	1.8	0.3	0.15	-0.081 m^3
	Brick for parapet	1	38.96	0.3	1.0	11.69 m^3
					Total = 38.59 m^3	
8	**R.C.C.**					
	(1) Lintel					0.55 m^3
	(2) Slab		13	10	0.12	15.6 m^3
	(3) Chhaja	5	0.9	0.6	0.075	0.21 m^3
	(4) Column (0.25 X 0.25)	10	0.25	0.25	3.0	1.88 m^3

	(5) Beam (0.3 X 0.23)	3	13	0.3	0.23	2.69 m^3
		4	10	0.3	0.23	2.76 m^3
					TOTAL = 23.68 m^3	
9	**Reinforcement for all R.C.C. members = 1% of R.C.C. = (1 X 23.68)/100 = 0.2368 kg/m^3**		= 0.2368 X 7850 = 1458 kg		**TOTAL wt. OF REINFORCEMENT = 1458 kg**	
10	**12 mm thick internal plaster in 1:4 CM**					
	Room	1	38	-	3.0	144 m^2
	Verandah	1	16	-	3.0	48 m^2
	kit	2	6.9	-	3.0	41.4 m^2
	w.c.	1	11.5	-	3.0	34.4 m^2
					TOTAL = 137.9 m^2	
11	**15 mm thick External plaster in C.M. 1:3**		46	-	4.0	**124 m^2**
12	**CELLING PLASTER**					
	Room	1	9.6	9.4	-	90.24 m^2
	Verandah	1	2.5	5.5	-	13.75 m^2
	kit	2	1.25	2.2	-	5.5 m^2
	w.c.	1	1.25	4.5	-	6.63 m^2
					TOTAL = 116.12 m^2	
13	**2CM THICK MARBLE FLORING**					
	Room	1	9.6	9.4	-	63.99 m^2
	Verandah	1	2.5	5.5	-	13.75 m^2
	kit	2	1.25	2.2	-	5.5 m^2
	w.c.	1	1.25	4.5	-	6.63 m^2

					TOTAL = 89.87 m^2	

Table. 24 Abstract sheet of Anganwadi

ABSTRACT SHEET					
ANGANWADI					
Item no.	**Description of item**	**Quantity**	**Rate (Rs.)**	**Per**	**Amount (Rs.)**
1	**Excavation for Foundation**	52.59 m^3	135	m^3	**7099**
2	**PCC in Foundation (1:4:8) including compaction and curing**	10.52 m^3	3500	m^3	**36820**
3	**Brick masonry upto plinth including curing, ect.**	26.61 m^3	3100	m^3	**82491**
4	**Refilling of Foundation trench**	15.46 m^3	135	m^3	**2087**
5	**Yellow soil filling in plinth with compaction.**	16.42 m^3	1200	m^3	**19704**
6	**P.C.C. in 1:3:6 CC for plinth including compaction and curing.**	2.88 m^3	3500	m^3	**10080**
7	**First class brick masonry in 1:6 CM for super structure including curing, etc.**	38.06 m^3	3500	m^3	**133210**
8	**R.C.C. including centering, finishing, curing, ect.**	23.68 m^3	4500	m^3	106560
9	**Reinforcement for all R.C.C. members**	1458 kg	45	kg	**83610**

10	**12 mm thick internal plaster in 1:4 CM including scaffolding, racking of masonry joints, curing, ect.**	137.9 m^2	180	m^2	**24822**
11	**15 mm thick External plaster in C.M. 1:3 including scaffolding, racking of masonry joints, curing, ect.**	124 m^2	210	m^2	**26040**
12	**CELLING PLASTER including scaffolding, curing, ect.**	116.12 m^2	230	m^2	**26707**
13	**2CM THICK MARBLE FLORING**	89.87 m^2	250	m^2	**22467**
16	**Wash basin**	2 Nos.	1100	Nos	**2200**
17	**Toilet seat (Indian)**	2 Nos.	1699	Nos	**3398**
				TOTAL = 4,86,966	
	Add 1.5% water charges				**7304**
	Add 10% Contractor Profit				**48,696**
				TOTAL = Rs. 5,42,966	

- In village eight Anganwadi are available, so some children are drop due to high congestion in Anganwadi. need to construct a another one.
- It is provide basic health care.
- Pre-school activities, health checkup, ect.
- It is a government sponsored child-care and mother-care centre.
- It caters to children in the 0-6 age group.
- Integrated child development services program to combat child hunger and malnutrition.

13.1.3 Civil Design 3

Biogas plant

DESCRIPTION OF BIO GAS PLANT

- ✓ Bio gas plant is one of the plants for renewable energy sources. It transforms rural village in to clean village and provide gas as energy source and gives fertilizer at end.
- ✓ Day to day operation.
- ✓ Daily 5000 - 5500 kg cow dung is fed into the plant. The amount of cow dung fed varies with number of cattle present (500/animal/day). Poultry waste and kitchen waste can also be added if it is available.
- ✓ Equal amount of water is added in the inlet tank, mixed (manually), and let in the digester. Water is procured manually from near by wells (Maximum 50 feet away).
- ✓ The availability of water is not a problem as normally every household that hascattle has that much amount of water available. Entire operation of biogas plant is done by the woman in the household which calls upon extra efforts to be put in by her.
- ✓ The gas collected in the dome after digestion is used as and when required. The usability of gas depends on its pressure inside the dome.
- ✓ The output slurry is dried and used as manure in beneficiary's own farms. Initial cost of the plant.

BASIC THINGS:

- Total numbers of animals in village = 1200
- As per standard data assume per day dung of animal= 10.5 Kg.
- So total per day dung = 1200 * 10.5 =12600 Kg./day

DESIGN OF DIGESTER

- Assume retention period (RT) = 70 days.
- Assume mixing proportion of solid and water is 1:2.
- Now total amount of slurry per day (Sd) = Total per day dung + Water amount
  = 12600 + (2*12600)
  = 37800 Kg. / day
  = 37.8 m^3 / day
- Digester volume (Vd) = Sd *RT
  = 37.8 * 70
  = 2646 m^3

- Assume cylinder shaped of bio gas plant.
- Provide total one numbers of units in different areas,
- So, digester volume becomes for one unit =2646/1= 2646 m^3
- So, provide = 2650 m^3
- Total digester volume (Vd) = πr2h
- 2650 = πr2*10 (assume h=10m) So dimensions of digester are H = 10 m
- R = 12 m

DESIGN OF GAS HOLDER

- Assume digester temperature= 26-28˚C
- Now from following fig find Gd by taking RT=70 days' Specific gas production Gd =37 Lit. / Kg. /day
- Daily gas production G = Gd X Feed volume
  = 37 X 12600
  = 466200 Lit.
  = 466.2 m^3
- Now assume gas holder capacity = 60
- Gas holder volume = Daily gas production X Capacity of holder= 466.2 X 0.6 = 279.72 m^3
- So, take Gas holder volume = 280 m^3
- Now for 1 unit provide volume of holder of each unit = 280 /1 = 280 m^3
- Take It = 280 m3 Provide cylinder shaped holder; so…
- Volume =πr2h 280 = 3.14 X r X 1 (assume h=1m) R = 12 m So, dimensions of Gas holder are: H= 1 m

DESIGN OF INLET AND OUTLET

- Total volume of slurry mix per unit = 37.8 /1= 37.8 m^3/ day
- Assume two-time filling operation inplant.
- So, take total volume of slurry = 37.8 ÷ 2 = 18.9 m^3/ day
- Take it = 19 m^3/ day Provide rectangulartank…
- Total volume for one time mixing of slurry= L X B X H
- 19 = L X B X 1 (assume H=1m)
- Dimension of inlet are L = 4.5 m, B = 4.5 m & H = 1 m
- Here 18.9 m^3/ day required < 19 m^3/ day provided……. Hence OK.

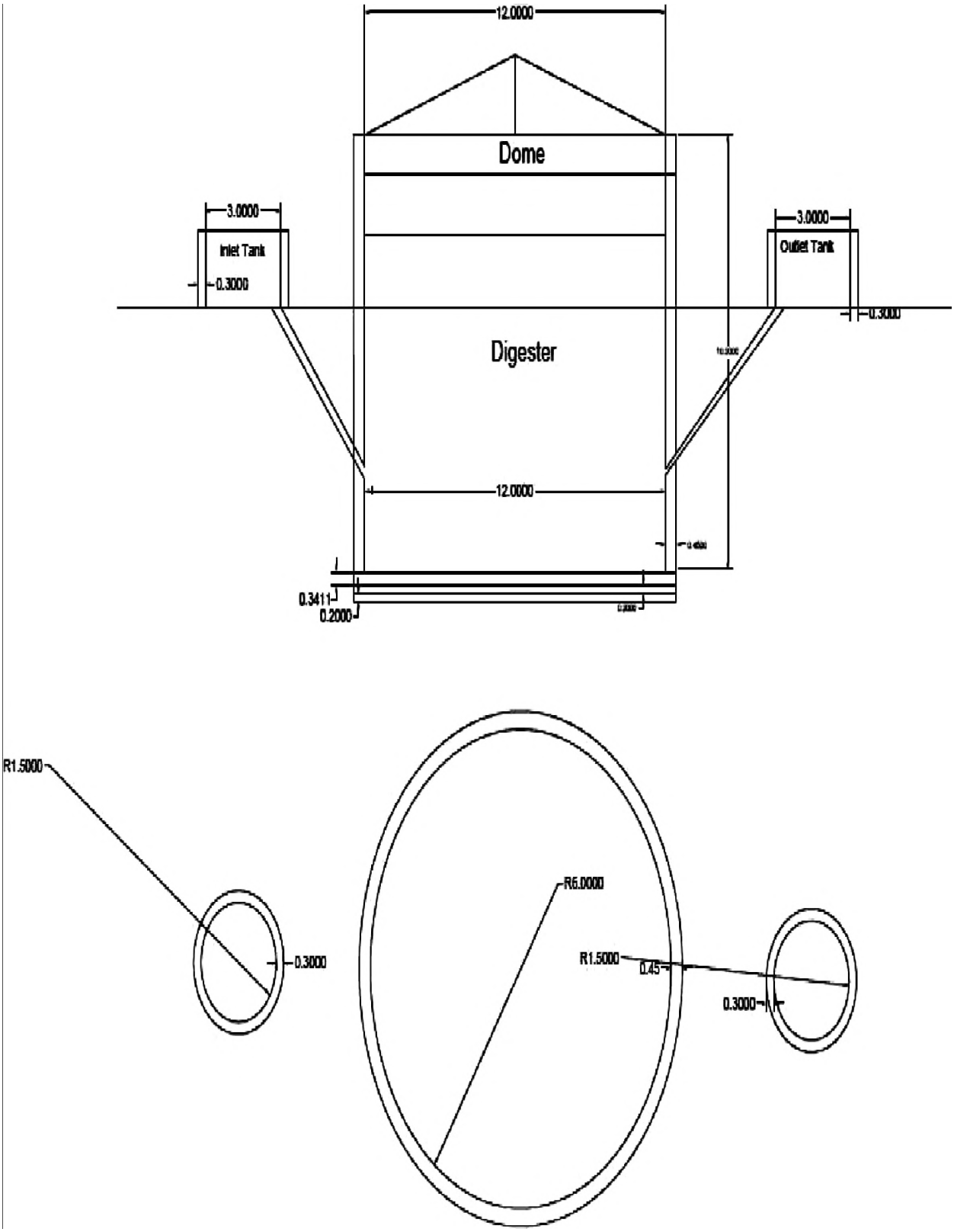


Fig 13.5 Plan and cross section of Biogas

Sr. No.	Components	Capital Cost in Rs.
1.	Gas Holder and Frame	39,500
2.	Piping and Stove	17,000
3.	Civil engineering Construction	63,499
	Total =	**1,19,999**

Table. 25 Cost of Biogas plant

13.1.4 Civil design 4

Rain water harvesting

Sustainable Design Proposals- Rainwater Harvesting System:

- ✓ After the survey and data collection, we are decided to design rainwater harvesting techniques over a Gram panchayat building of Kharod village.
- ✓ Community hall is in Rectangular shape. It terraces dimensions are as follows:
  - Width of terrace = 15m
  - Length of terrace = 23m
  - Total area of terrace = 15 x 23m = 345 m^2

Design of Components of Rainwater Harvesting System:

Design of Tank

- Per capita water requirement = 5 lit/day
- Annual average rainfall =1903.83mm
- Area of roof = 345 m^2
- Run off coefficient = 0.75
- Avg. rain fall in day = 26mm
- Water available from terrace = annual avg. rain falls x area of terrace x avg. rain fall in day
- Daily a consumptive use of water = 1000 lit

Filter Unit:

- It is preferable to filter the rainwater before storing it if leaves and other organic material enter the storage tank, they decompose and support bacterial growth in the tank.
- Dirt and other debris, if not filtered out, can cause blocks in the plumbing system when the stored rainwater is used Different filters exist some are commercially available while others can be put together by us.

Sand gravel filter:

- This is a do-it-yourself filter consisting of three layers of gravel, sand and gravel, separated by meshes. The filter can be made in a fibrocement tank or in a HDPE drum.

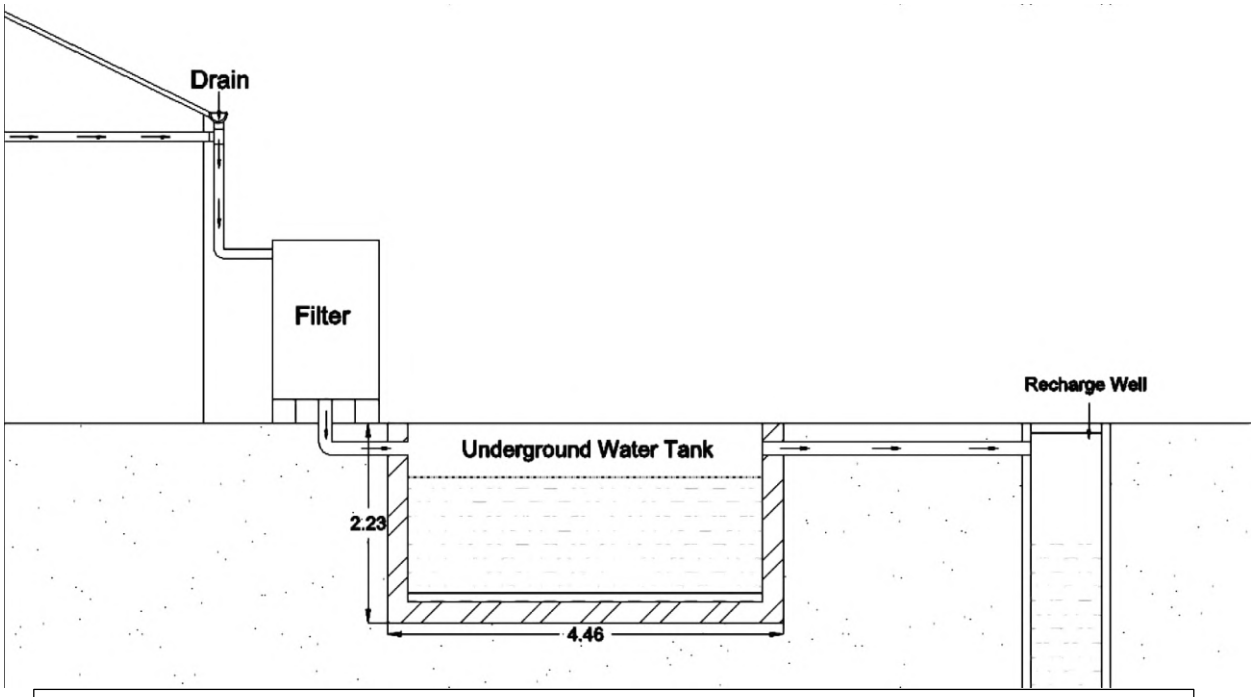


Fig. 13.6 Cross section of Rainwater harvesting

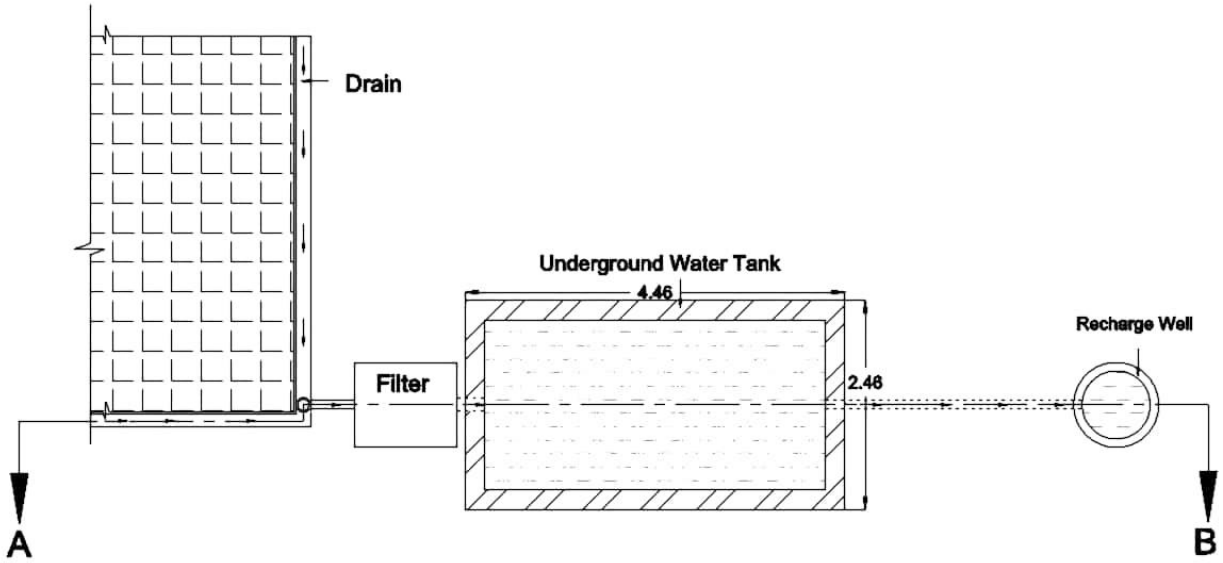


Fig. 13.7 Plan of of Rainwater harvesting

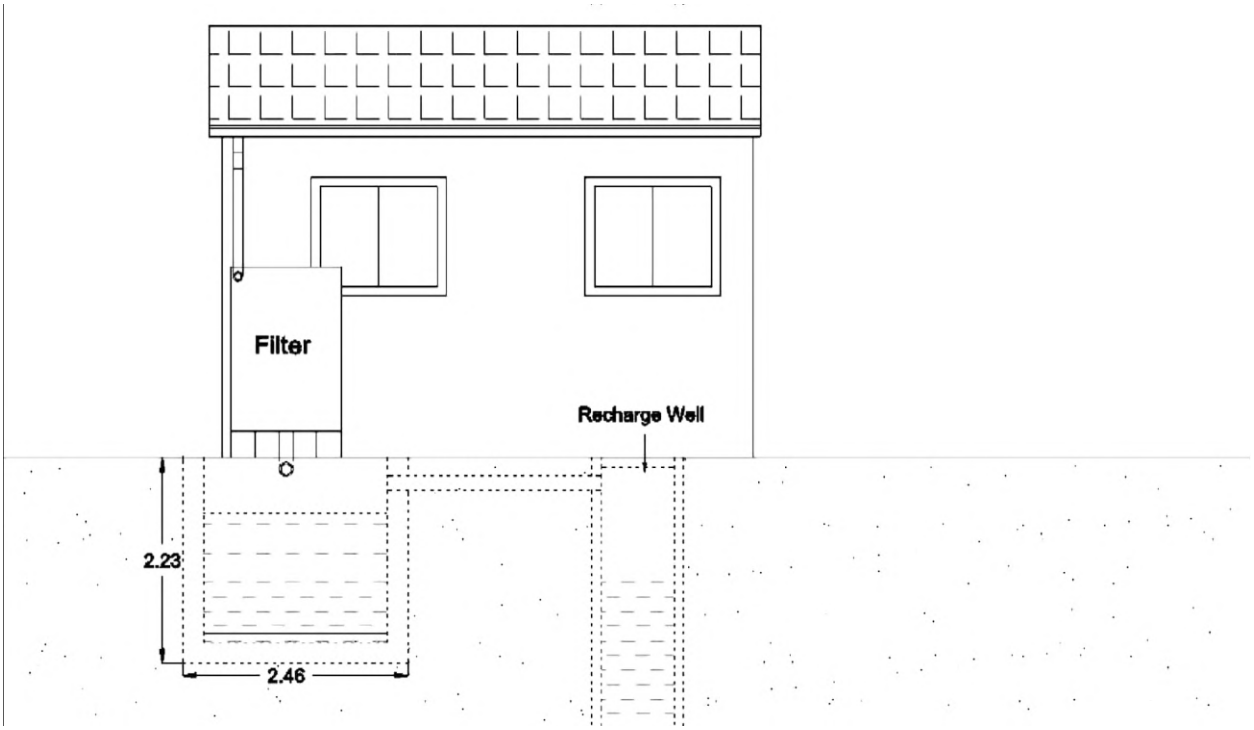


Fig. 13.8 Elevation of Rainwater harvesting

MEASUREMENT SHEET						
Rain Water Harvesting						
Item no.	**Item Description**	**No.**	**Length (m)**	**Breadth (m)**	**Height (m)**	**Quantity**
1	**Excavation**					
	Storage Tank	1	4.46	2.46	2.23	**24.46 m^3**
2	**RCC Work**					
	Bottom Slab	1	4.46	2.46	0.3	3.29 m^3
	C/C length of side walls	1	12.92	0.3	2	7.75 m^3
	Top Slab	1	4.46	2.46	0.15	1.65 m^3
					TOTAL = 12.69 m^3	
3	**Plastering Work**					
	Plaster outside tank	1	13.84	–	2.23	30.86 m^2
	Bottom of tank outside	1	4.46	2.46	–	10.97 m^2
					TOTAL = 41.83 m^2	

	Plaster inside tank	1	12.92	–	2	25.74 m^2
	Top of bottom slab (inside)	1	4.23	2.23	–	9.43 m^2
	Bottom of top slab (inside)	1	4.23	2.23	–	9.43 m^2
					TOTAL = 44.7 m^2	
4	**Centering & Shuttering**					
	Bottom Slab :					
	Bottom	1	4.46	2.46	–	**10.97 m^2**
	Side 1	2	4.46	–	0.3	**2.67 m^2**
	Side 2	2	–	2.43	0.3	**1.46 m^2**
	RCC Walls :					
	Total length of Wall 1	2	4.46		2	**17.84 m^2**
	Total length of Wall 2	2	2		2	**6 m^2**
	Top Slab :					
	Bottom of slab	1	4.46	2.46		**16.97 m^2**
	Side 1	1	4.46		0.15	**0.67 m^2**
	Side 2	1		2.46	0.15	**0.37 m^2**
					TOTAL = 50.95 m^2	

Table.27 Abstract sheet of rainwater harvesting

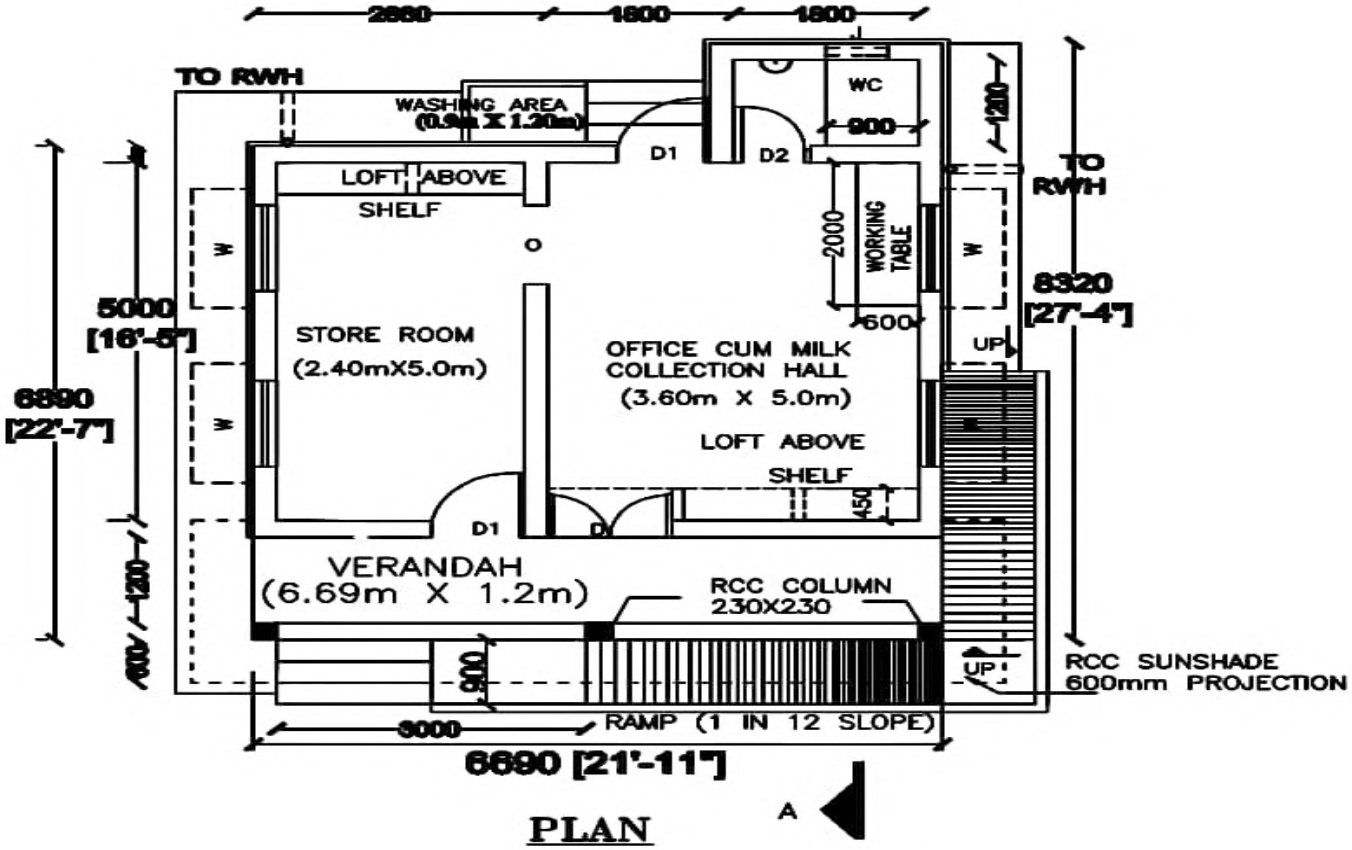
ABSTRACT SHEET					
Rain Water Harvesting					
Item no.	**Item Description**	**Quantity**	**Rate (Rs.)**	**Per**	**Amount (Rs.)**
1	**Excavation**	24.46	110	Cu.m	**2,691**
2	**RCC Work**	12.69	965	Cu.m	**12,246**
3	**Cement**	110	280	Bag	**30,800**
4	**Centering Work**	50.95	130	Sq.m	**6,624**

5	**Steel Work**	50.95	200	Sq.m	**10,190**
6	**Sand**	6.64	900	Cu.m	**5,976**
7	**Aggregate**	10.25	1000	Sq.m	**10,250**
8	**Steel**	997	55	KG	**54,835**
9	**Binding Wire**	9.97	60	KG	**599**
10	**Shuttering**	50.95	70	Sq.m	**3,567**
11	**Filter media**	1.5		L.S.	**9,000**
12	**Inside Plaster**	44.47	1.5	Sq.m	**6,671**
13	**Outside Plaster**	41.83	250	Sq.m	**10,458**
			TOTAL = 1,63,907 Rs.		
	Add 1.5% water charges				**2459**
	Add 10% Cotractor Profit				**16391**
			TOTAL = 1,82,727 Rs.		

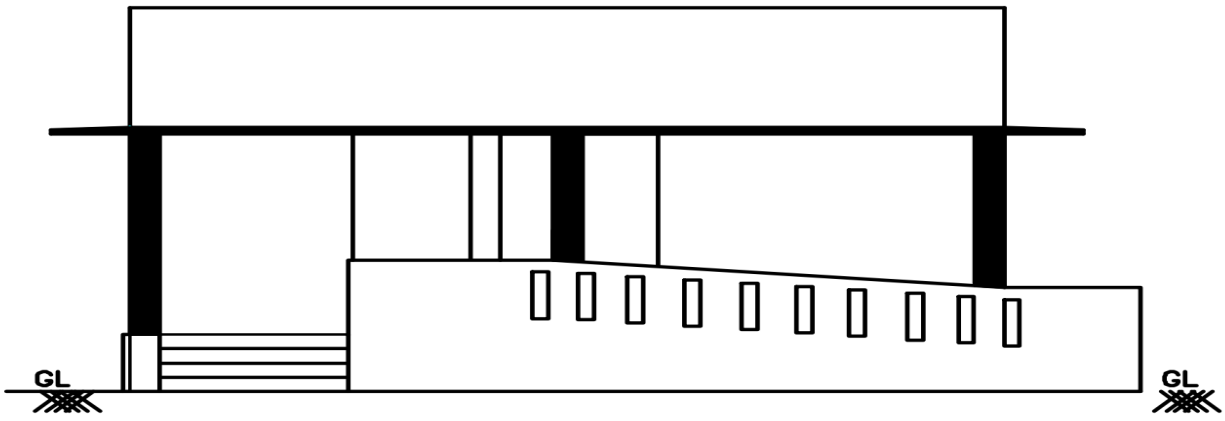
- In rural areas, this is most often done at small-scale. It is a simple, low-cost technique that requires minimum specific expertise or knowledge and offers many benefits.
- Rainwater is collected on the roof and transported with gutters to a storage reservoir, where it provides water at the point of consumption or can be used for recharging a well or the aquifer.
- There for regular maintenance (cleaning, repairs, etc.) as well as a treatment before water consumption (e.g. filtration or/and disinfection) are very important.
- Low cost and affordable.

13.1.5 Civil design 5

Dudh mandala

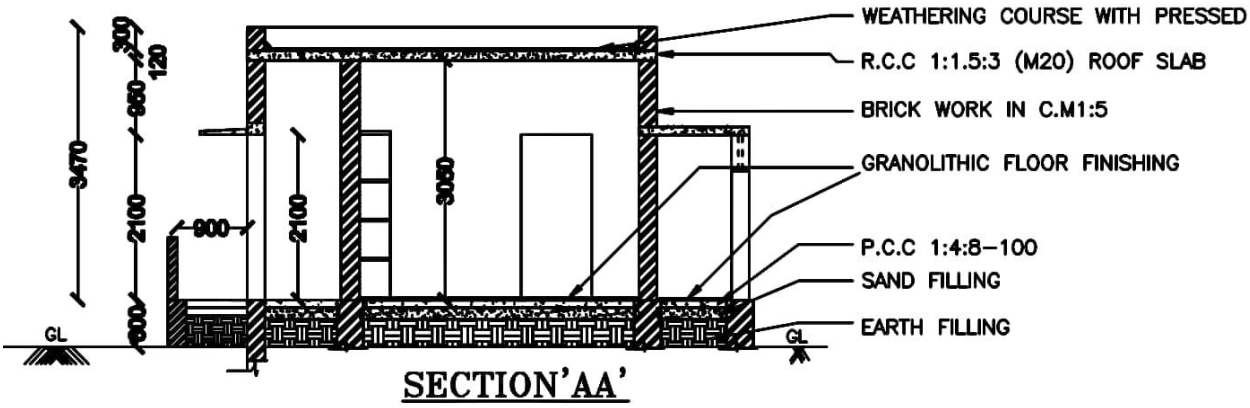


PLAN



ELEVATION

Fig. 13.9 Plan and Elevation of Dudh mandali



SECTION'AA'

Table. 28 Measurement sheet of dudh mandali

MEASUREMENT SHEET						
DUDH MANDALI						
Item no.	**Item Description**	**No.**	**Length (m)**	**Breadth (m)**	**Height (m)**	**Quantity**
1	**Excavation for Foundation**	1	39.6	0.9	1.5	**39.20 m^3**
2	**PCC in Foundation**	1	39.6	0.9	0.3	**8.24 m^3**
3	**Brick masonry upto plinth**					
	For 1st Step: L= 40.2m	1	40.2	0.6	0.3	4.82 m^3
	For 2nd Step: L= 40.4m	1	40.4	0.5	0.3	4.04 m^3
	For 3rd Step: L= 40.6m	1	40.6	0.4	0.5	3.24 m^3
					TOTAL = 16.21 m^3	
4	**Refilling of Foundation trench**	396.10 – 26.43 = 19.67 m^3 **TOTAL = 12.7m^3**				
5	**Earth filling in plinth**	1	5.4	4.9	0.55	14.45 m^3
6	**P.C.C. in 1:3:6 CC for plinth**	1	5.4	4.9	0.075	1.98 m^3

7	**First class brick masonry in 1:6 CM for super structure**	1	39.6	0.3	3	**26.58 m^3**
8	**R.C.C.**					
	(1) Lintel					**0.09 m^3**
	(2) Slab		6	5.5	0.12	**3.96 m^3**
	(3) Chhaja	3	0.9	0.6	0.075	**0.1215 m^3**
	(4) Column (0.25 X 0.25)	4	0.25	0.25	3.0	**0.75 m^3**
	(5) Beam (0.3 X 0.23)	2	6	0.3	0.23	**0.828 m^3**
		2	5.5	0.3	0.23	**0.759 m^3**
					TOTAL = 6.51 m^3	
9	**Reinforcement for all R.C.C. members = 1% of R.C.C. = (1 X 6.51)/100 = 0.0651 kg/m^3**		= 0.0651 X 7850 = 511 kg		**TOTAL wt. OF REINFORCEMENT = 511 kg**	
10	**12 mm thick internal plaster in 1:4 CM**		-	-	-	**54.72 m^2**
11	**15 mm thick External plaster in C.M. 1:3**		-	-	-	**83.72 m^2**
12	**CELLING PLASTER**		-	-	-	**26.46 m^2**
13	**2CM THICK MARBLE FLORING**		-	-	-	**26.46 m^2**

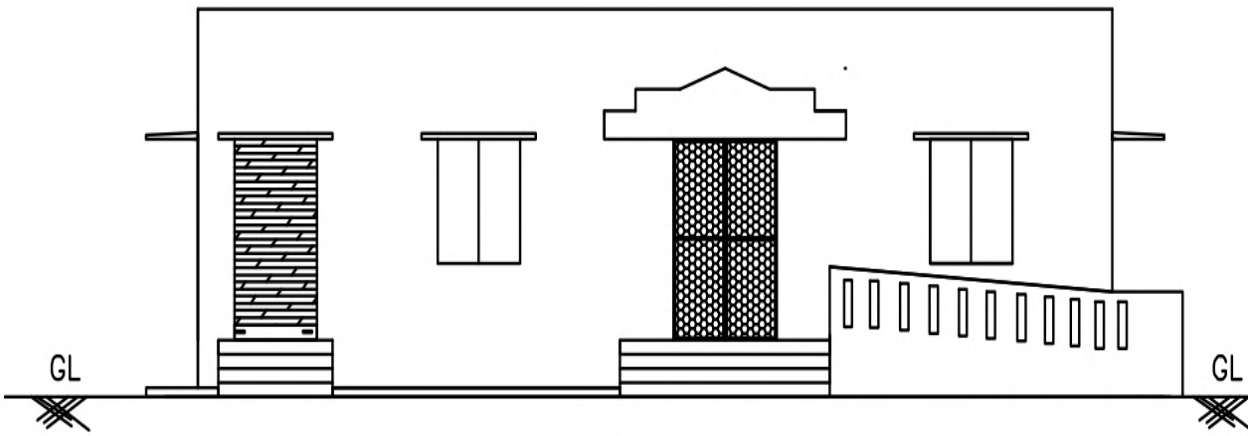
Table. 29 Abstract sheet of Dudh mandala

ABSTRACT SHEET					
DUDH MANDALI					
Item no.	**Description of item**	**Quantity**	**Rate (Rs.)**	**Per**	**Amount (Rs.)**
1	**Excavation for Foundation**	39.20 m^3	135	m^3	**5292**
2	**PCC in Foundation (1:4:8) including compaction and curing**	8.24 m^3	3500	m^3	28840
3	**Brick masonry upto plinth including curing, ect.**	16.21 m^3	3800	m^3	**61598**
4	**Refilling of Foundation trench**	12.7m^3	135	m^3	**1714**
5	**Yellow soil filling in plinth with compaction.**	14.45 m^3	1200	m^3	**17340**
6	**P.C.C. in 1:3:6 CC for plinth including compaction and curing.**	1.98 m^3	3500	m^3	**6930**
7	**First class brick masonry in 1:6 CM for super structure including curing, etc.**	26.58 m^3	4200	m^3	**111636**
8	**R.C.C. including centering, finishing, curing, ect.**	6.51 m^3	6000	m^3	**39060**
9	**Reinforcement for all R.C.C. members**	511 kg	45	kg	**22995**
10	**12 mm thick internal plaster in 1:4 CM including scaffolding, racking of masonry joints, curing, ect.**	54.72 m^2	180	m^2	**9850**

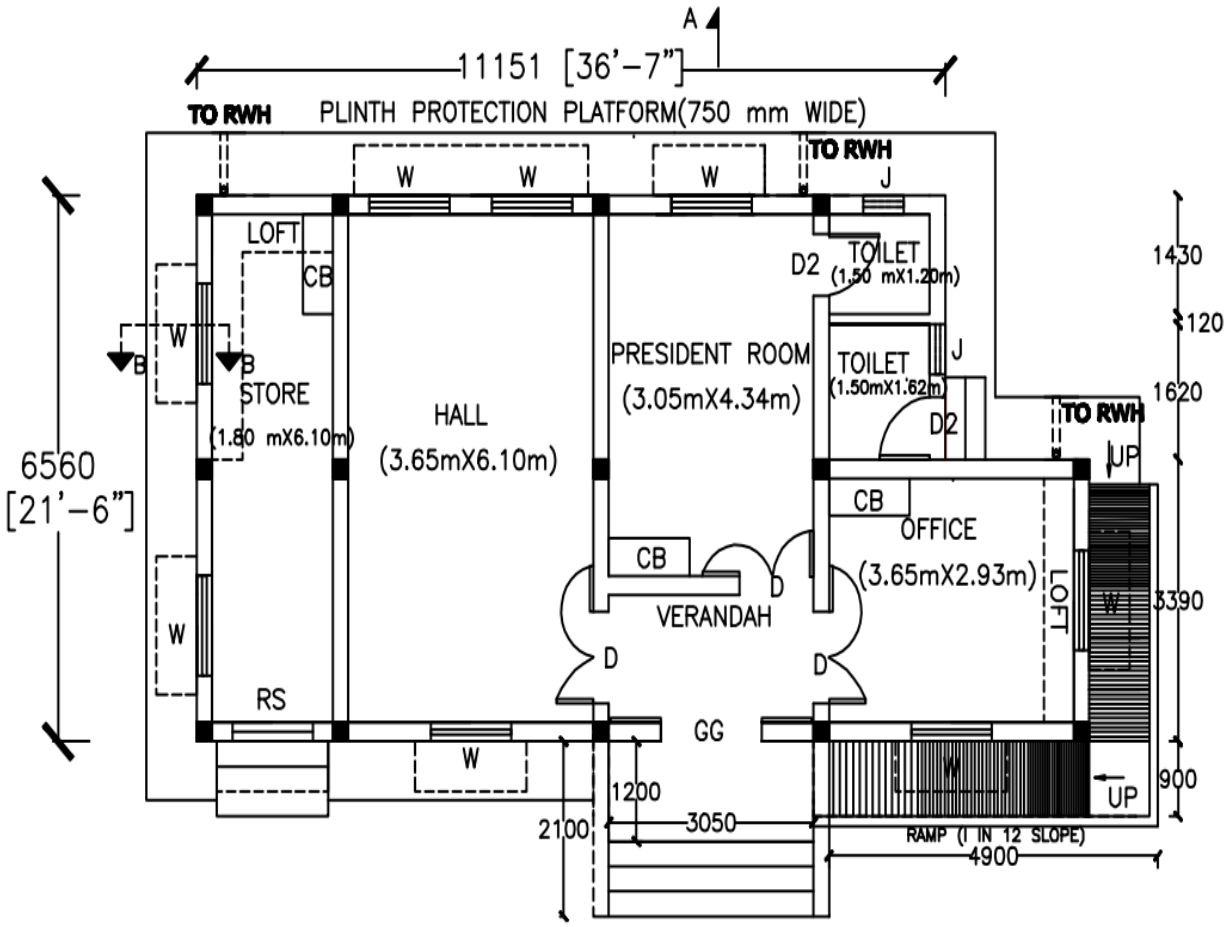
11	**15 mm thick External plaster in C.M. 1:3 including scaffolding, racking of masonry joints, curing, ect.**	83.72 m^2	210	m^2	**17581**
12	**CELLING PLASTER including scaffolding, curing, ect.**	26.46 m^2	230	m^2	**6085**
13	**2CM THICK MARBLE FLORING**	26.46 m^2	250	m^2	**6615**
				TOTAL = 3,35,536	
	Add 1.5% water charges				**5033**
	Add 10% Contractor Profit				**33555**
				TOTAL = Rs. 3,74,124	

13.1.6 Civil design 6

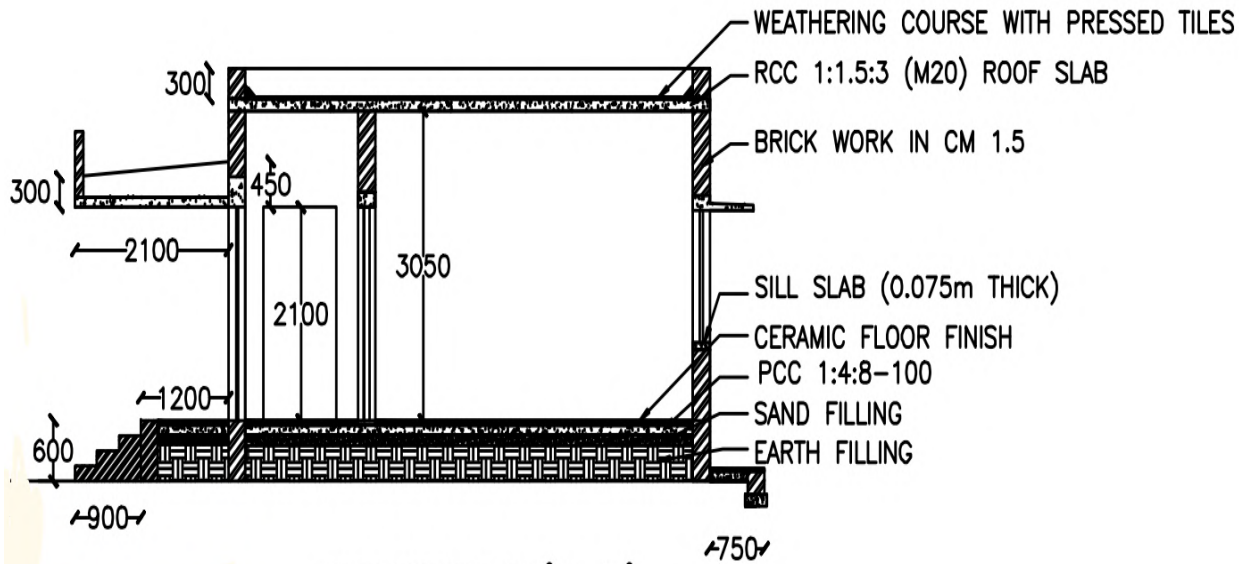
Gram Panchayat



ELEVATION



PLAN A



SECTION'AA'

Table. 30 Measurement sheet of Gram panchayat

MEASUREMENT SHEET						
GRAM PANCHAYAT						
Item no.	**Item Description**	**No.**	**Length (m)**	**Breadth (m)**	**Height (m)**	**Quantity**
1	**Excavation for Foundation**	1	63.2	0.9	1.5	**85.32 m^3**
2	**PCC in Foundation**	1	63.2	0.9	0.3	**17.06 m^3**
3	**Brick masonry upto plinth**					
	For 1st Step: L= 65m	1	65	0.6	0.3	11.7 m^3
	For 2nd Step: L= 65.6m	1	65.6	0.5	0.3	9.84 m^3
	For 3rd Step: L= 66.2m	1	66.2	0.4	0.5	13.24 m^3
					TOTAL = 34.78 m^3	
4	**Refilling of Foundation trench**	79.92 – 15.98 – 32.66 = 31.28 m^3 **TOTAL = 31.28 m^3**				
5	**Earth filling in plinth**					
	hall	1	7	7	0.55	26.95 m^3
	Toilet	2	1.5	2.0	0.55	3.3 m^3
	office	1	5.0	2.0	0.55	5.5 m^3
	President room	1	2.0	7.0	0.55	7.7 m^3
	store	1	9.0	2.0	0.55	9.9 m^3
					TOTAL = 53.35 m^3	
6	**P.C.C. in 1:3:6 CC for plinth**					
	hall	1	7	7	0.075	3.68 m^3
	Toilet	2	1.5	2.0	0.075	0.45 m^3
	office	1	5.0	2.0	0.075	0.75 m^3
	President room	1	2.0	7.0	0.075	1.05 m^3

	store	1	9.0	2.0	0.075	1.35 m^3
					TOTAL = 7.28 m^3	
7	**First class brick masonry in 1:6 CM for super structure**	1	63.2	0.3	3	**56.88 m^3**
	Deduction for,					
	Door (D1)	1	1.2	0.3	2.1	-0.76 m^3
	Door (D2)	3	1.0	0.3	2.1	-1.89 m^3
	Window (W)	6	1.2	0.3	1.2	-2.59
	Ventilation (V)	2	0.6	0.3	0.6	-0.22 m^3
	Deduction for lintel,					
	Door (D1)	1	1.5	0.3	0.15	-0.068 m^3
	Door (D2)	3	1.3	0.3	0.15	-0.175 m^3
	Window (W)	6	1.5	0.3	0.15	-0.405
	Ventilation (V)	2	0.9	0.3	0.15	-0.081 m^3
	Brick for parapet	1	34.68	0.3	1.0	10.40 m^3
					Total = 54.28 m^3	
8	**R.C.C.**					
	(1) Lintel					0.729 m^3
	(2) Slab		9.3	7.8	0.12	8.38 m^3
	(3) Chhaja	10	0.9	0.6	0.075	0.405 m^3
	(4) Column (0.25 X 0.25)	4	0.25	0.25	3.0	0.75 m^3
	(5) Beam (0.3 X 0.23)	2	7.6	0.3	0.23	1.05 m^3
		3	7.6	0.3	0.23	1.57 m^3
					TOTAL = 12.88 m^3	
9	**Reinforcement for all R.C.C. members = 1% of R.C.C. = (1 X 12.88)/100**		= 0.1288 X 7850 = 1011 kg		**TOTAL wt. OF REINFORCEMENT = 1011 kg**	

	= 0.1288 kg/m^3					
10	**12 mm thick internal plaster in 1:4 CM**					
	For hall	1	28	-	3.0	84 m^2
	For office	1	7	-	3.0	42 m^2
	For president office	1	14	-	3.0	42 m^2
	For store	1	11	-	1.5	16.5 m^2
					TOTAL = 184.5 m^2	
11	**15 mm thick External plaster in C.M. 1:3**		39.2	-	4.0	**156.8 m^2**
12	**CELLING PLASTER**					
	hall	1	7	7	-	49 m^2
	office	1	1.5	2.0	-	6 m^2
	president office	1	5.0	2.0	-	10 m^2
	store	1	3.5	2	-	7
					TOTAL = 72 m^2	
13	**2CM THICK MARBLE FLORING**					
	hall	1	7	7	-	49 m^2
	office	1	1.5	2.0	-	6 m^2
	president office	1	5.0	2.0	-	10 m^2
	store	1	3.5	2	-	7
					TOTAL = 72 m^2	
14	**For OPEN PASSAGE PAVING BLOCKS**					
	For passage-1	1	7.0	2.0	-	14 m^2
	For passage-2	1	2.0	7.0	-	14 m^2
					TOTAL = 28 m^2	

Table. 31 Abstract sheet of Gram panchayat

ABSTRACT SHEET					
GRAM PANCHAYAT					
Item no.	**Description of item**	**Quantity**	**Rate (Rs.)**	**Per**	**Amount (Rs.)**
1	**Excavation for Foundation**	85.32 m^3	135	m^3	**11518**
2	**PCC in Foundation (1:4:8) including compaction and curing**	17.06 m^3	3500	m^3	59710
3	**Brick masonry upto plinth including curing, ect.**	34.78 m^3	3800	m^3	**132164**
4	**Refilling of Foundation trench**	31.66 m^3	135	m^3	**4274**
5	**Yellow soil filling in plinth with compaction.**	53.35 m^3	1200	m^3	**64020**
6	**P.C.C. in 1:3:6 CC for plinth including compaction and curing.**	7.28 m^3	3500	m^3	**25480**
7	**First class brick masonry in 1:6 CM for super structure including curing, etc.**	56.88 m^3	4200	m^3	**238896**
8	**R.C.C. including centering, finishing, curing, ect.**	12.88 m^3	6000	m^3	**77280**
9	**Reinforcement for all R.C.C. members**	1011 kg	45	kg	**45495**
10	**12 mm thick internal plaster in 1:4 CM including scaffolding, racking of masonry joints, curing, ect.**	184.5 m^2	180	m^2	**33210**

11	**15 mm thick External plaster in C.M. 1:3 including scaffolding, racking of masonry joints, curing, ect.**	156.8 m^2	210	m^2	**32928**
12	**CELLING PLASTER including scaffolding, curing, ect.**	65 m^2	230	m^2	**14950**
13	**2CM THICK MARBLE FLORING**	65 m^2	250	m^2	**16250**
14	**Paving blocks**	32 m^2	550	m^2	**17600**
15	**Water tap sink**	5 Nos	1300	Nos	**6500**
16	**Wash basin**	2 Nos.	1100	Nos	**2200**
17	**Toilet seat (Indian)**	2 Nos.	1699	Nos	**3398**
				TOTAL = 7,85,873	
	Add 1.5% water charges				**11,788**
	Add 10% Contractor Profit				**78,587**
				TOTAL = Rs. 8,76,248	

13.2 Reason for Students Recommending this Design

- 65 % of income come from milk production but no facility for milk collection that why it's imp. To provide a design which highly improved a income and sustainable for village people.
- Child and mother care.
- There is no any social culture facility so we think built a new garden.

- The Gram panchayat building is so poor condition in external and internal surface so we think it is essentially need to renovation building.
- To provide water in summer season.
- To introduce a new recreational area of the village.
- Proper techniques for agricultural purpose are to be used
- Door to door dustbins are required for the purpose of garbage collection
- The village bus stop is also poor condition so it is need to renovation.
- The Gram panchayat building is so poor condition in external and internal surface so we think it is essentially need to renovation building.

13.3 About designs Suggestions / Benefit of the villagers

- We suggest of the villagers to use non conventional energy source like Solar enery, bio gas energy, wind energy etc.
- There is no any public garden or recreational centre is available in village so we also think about to design of it.
- Rain water harvesting system for government buildings.
- Milk co-operative for improvement of villager's wealth.
- Village are covered by GIDC, take a knowledge about contract and get small contract from company which improved income of village.
- Due to rainharvesting availability of more water in a particular house.
- In social infrastructure facility we observed health facility, anganwadi, primary and secondary school etc. We should design public toilet as a social infrastructure facility.
- Biogas is a renewable, as well as a clean, source of energy. Gas generated through biodigestion is non-polluting; it actually reduced greenhouse emission.
- They're a place where people can spend time and socialize in a relaxing natural environment. This is especially good in areas where most people live in apartments or in homes that don't have much land around them. This is good for both physical and mental health.

14. Technical Options with Case Studies

Case Studies on Smart construction materials and techniques

Introduction: To understand all how and about of super performing construction materials we must study materials according to their use from very root to tip. By that way we can easily conclude and infer about the application, implementation and feasibility of that particular construction material. Elements of construction where these smart materials and techniques shall be implemented are:

- Foundation, Plinth, Beam, Column, Wall, Sill, Window, Door, Roof, Parapet, Skylights, Finishing Works

Super performing materials :

1. Advancements in Concrete

- **1.1 High Performance Concrete:-** Lafarge has developed a whole new family of concretes called Ductal. These concretes have high compressive and flexural strength, and their special characteristics enable the achievement of outstanding architectural feats. Ductal concrete incorporates strengthening fibers and opens the horizon to ultrahigh performance due to its special composition which provides it with outstanding strength, six to eight times greater than traditional concrete (under compression).“Fiber-reinforced” means that it contains metal fibers which make it a ductile material. Highly resistant to bending, its great flexural strength means it can withstand significant transformations without breaking. Ductal also comes with organic fibers for applications with less load and for advanced architectural applications.

Fig. Bridge made of high performance concrete

- **1.2 Light Transmitting Concrete:-** The days of dull, grey concrete could be about to end. A Hungarian architect has combined the world’s most popular building material with optical fiber from Schott to create a new type of concrete that transmits light. A wall made of “LitraCon” allegedly has the strength of traditional concrete but thanks to an embedded array of glass fibers can display a view of the outside world, such as the silhouette of a tree, for example. “Thousands of optical glass fibers form a matrix and run parallel to each other between the two main surfaces of every block,” explained its inventor Áron Losonczi. “Shadows on the lighter side will appear with sharp

outlines on the darker one. Even the colours remain the same. This special effect creates the general impression that the thickness and weight of a concrete wall will disappear." The hope is that the new material will transform the interior appearance of concrete buildings by making them feel light and airy rather than dark and heavy.

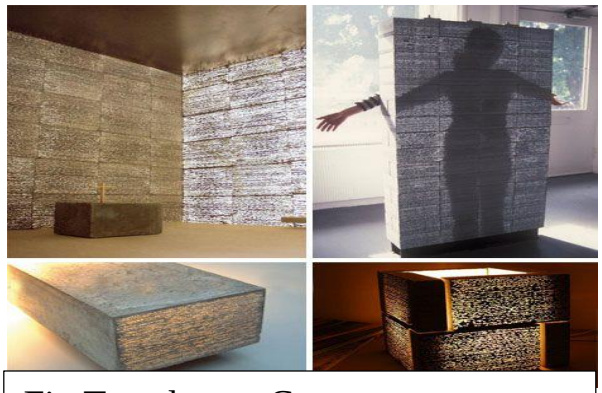


Fig.Translucent Concrete

- **1.3 Pervious Concrete**:- Pervious pavement is a cement-based concrete product that has a porous structure which allows rainwater to pass directly through the pavement and into the soil naturally. This porosity is achieved without compromising the strength, durability, or integrity of the concrete structure itself. The pavement is comprised of a special blend of Portland cement, coarse aggregate rock, and water. Once dried, the pavement has a porous texture that allows water to drain through it at the rate of 8 to 12 gallons per minute per square foot. Tests conclude that a square foot of Bahia sod drains at the rate of 2 1/2 to 3 gallons per minute. According to the manufacturer, this rapid flow-through ratio inspired the phrase "the pavement that drinks water."

Fig.Water Permeable Concrete

- **1.4 Aerated Concrete:-** It was discovered in 1914 in Sweden that adding aluminum powder to cement, lime, water, and finely ground sand caused the mixture to expand dramatically. The Swedes allowed this "foamed" concrete to harden in a mold, and then they cured it in a pressurized steam chamber--an autoclave. Autoclaved aerated concrete is produced by about 200 plants in 35 countries and is used extensively in residential, commercial, and industrial buildings. At a density of roughly one-fifth that of conventional concrete and a compressive strength of about onetenth, AAC is used in load-

Fig. Light Weight Concrete

bearing walls only in lowrise buildings. In high-rises, AAC is used in partition and curtain walls

- **1.5 Floating Concrete:-** By replacing sand and gravel with tiny polymeric spheres, University of Washington materials scientists have created a concrete stronger than traditional concrete but so light it floats in water. The team won the regional American Society of Civil Engineers Concrete Canoe Competition last year.

Fig. Floatable Concrete

2. Foamed Aluminum

"Light-as-air, stronger-than-steel materials are just beginning to shape our world. Foamed aluminum first emerged from the lab in the frame of a 1998 Karman concept car. Ten times stronger than traditional aluminum at just one tenth the weight, the material allows a more fuel-efficient vehicle. Its isotropic cellular structure helps the frame absorb shock and serves as an insulating firewall between the engine and the rest of the car. The foaming process can also be applied to steel, lead, tin, and zinc."The product is a high strength, extremely light weight material that possesses high durability, excellent finish and lasting value. The foam comes in an assortment of densities and sizes up to five feet wide and up to fifty feet long. It has numerous applications including architectural, automotive, marine, military, aviation, transportation, electronics, appliances, and signage.

3. Woven Stainless steel

K5 New York is now offering woven stainless steel in 18 different weaves, produced in Switzerland by G. Bopp. This product has been used in projects as diverse as railing systems and furniture components. Custom weaves and patterns are also possible.

4. Creative Weave Metal Mesh

Metal meshes have been known as decorative and functional design elements in architecture for only a few years. During the continuous product development along with ordinary use such as an fence element it became clear that metal meshes also have considerable technical advantages which are

Fig.Woven Metal

extremely relevant in the field of architecture. Today, the architect has a wide range of mesh samples at hand, with weaving widths up to eight meters, which allow for great design flexibility. Woven metallic meshes used as partition elements convey a new dimension to any space. They can be used as projection screens, and, taking into account their acoustic characteristics, are suitable for the use in public buildings, opera houses and concert halls.

5. Aerogel

Aerogel or "Air glass" is a transparent material that looks like glass, insulates better than mineral wool and is more heat resistant than aluminum. The material has many interesting properties and possible applications such as insulation in windows and solar collectors, windows in firewalls, a component in airconditioning equipment, etc. Aerogel is molded, giving the possibility of getting different shapes: cylinders, cubes, plates of varying thickness etc. Chemically, Aerogel is composed of quartz and a great deal of air, making it fragile. The grains of quartz are small compared to the wavelength of light, giving Aerogel good transparency properties. At around 750°C (1380°F), it starts to shrink and slowly collapses to a piece of ordinary quartz. Aerogel can be cut with a band saw and holes can be drilled with a metal drill. It should be noted that Aerogel is nonflammable and non-toxic.

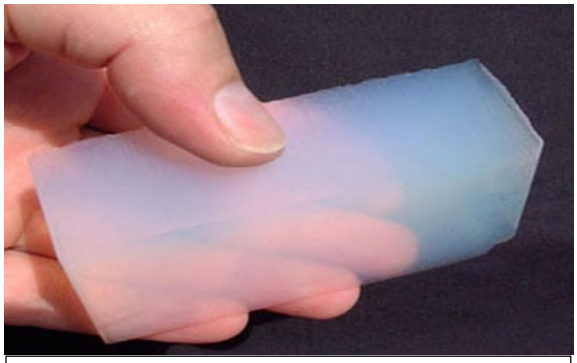


Fig. Aerogel

6. Laminated Thermo Plastic Panels

Blizzard Composite GmbH manufactures hightech plastic composites for the architectural field as well as the trucking industry. Their core expanding machinery heats up and vertically expands solid thermoplastic sheets, which are then processed into sandwich panels by lamination equipment. Due to the unique geometry of the Pep Core, the panels are of low weight and provide an excellent combination of high stiffness and compressive strength.

7. Banner works Koryn Rolstad is a Seattle-based industrial artist who leads an integrated team of industrial designers, graphic designers, project managers and production staff in creating large-scale aerial sculptures and public art installations around the world. Known as "Banner works," her

Fig.Fabric in Use as Sharing Device

pieces dexterously cross the boundaries between sculpture and signage, art and engineering.

8. Tension Fabric Structure

"Transform it's" provocative tension fabric structures are appropriate for use in entertainment venues, special events, exhibits & trade shows, or anywhere that fabric architecture is appropriate. Made of nylon spandex, the structures offer a viable surface for any type of projection or lighting display, including front and rear projected video. It is also possible to print on the fabric via silk-screening or dye sublimation digital printing.

Fig. Tensile Fabric Structures

9. Other Super Performing Multi Purposed Material

- **Geoweb:** Cellular confinement system for vertical vegetation for green walls.
- **Aero Formed Aluminum:** Tightly corrugated aluminum sheets as in bamboo mats.
- **Flexible Framing Track:** For flexible outlining and fencing. A fence framed in metallic frame.
- **3D Molded Plywood:** Fast manufacturing furniture.
- **Corrugated Glass:** For inside esthetics and thermal insulation.
- **Braille Tiles:** Exclusively for people with weak eye sight or completely blind when it comes to universal design.

Some Repurposed Materials and techniques

- **Rubber Sidewalks:** Sidewalks or walkways made using used tires and hard boarding sheets.
- **Strawboard:** Made from agro waste mainly.
- **Bagasse Boards:** Boards made of material left from sugarcane after extracting juice.
- **Natural Fiber Insulation:** Insulation panels made out of used cloths.
- **Frit:** Fine powdered glass from waste with ceramics remolded for reuse.
- **Acousti-cell:** Boards made for acoustics from rubber shredding.
- **Plasphalt:** Plastic blended with asphalt on roads for waste management.
- **Fly-Ash Concrete:** Using Fly-ash residue as strengthening material with cement.

Conclusion:

	Material	Uses	Advantages
1.	High Performance Conc.	Beam	On long span structures like bridges and halls
2.	Light Transmitting Conc.	Interior walls	Energy Saving
3.	Pervious Conc	Paving, Parking, Walkways	Will be permeable for water supporting water table recharge
4.	Floating Conc.	Marine architecture	Will save construction cost
5.	Weave Metal Mesh	Half walls, Fences, Acoustic walls	Cost and time effective
6.	Aerogel	Skylight, Thermal panels	Heat resistive, transparent
7.	Super Black	Paints, Varnishes and Finishes	Less Reflective, absorptive
8.	Banner work	Shading device, Landscape element	Time, Cost, Energy efficient
9.	Geoweb	Vertical Gardening, Green walls	Energy conserving, Water conserving
10.	Framing Track	Flexible boundaries and Fences	Quick and versatile
11.	3D Molded Plywood	Furniture, Formworks	Time Saving, Repetitive design
12.	Braille Tiles	On Floor or Walls	Signage for Blinds
13.	Rubber Side Walks	Foot path, Walkways	Waste managing, Time saving, Eco-Friendly
14.	Natural Fiber Insulation	Thermal Panels, Blocks	Re-Used Technique i ,Re purposed
15.	Fly Ash Concrete	Beams, Columns, Slab	Repurposed , Provides strength to base material

References:- **1.** www.igbc.in **2.** www.grihaindia.org **3.** www.architecture.com **4.** www.terabeam.com **5.** www.transstudio.com **6.** www.wikipedia.com **7.** Photo-Catalytic Construction Materials and Reduction In Air Pollutans-Mirat D.Gurol, Blasker Chair Professor Of Environmental Engineering

14.1 Civil engineering

14.1.1 Advance Earthquake Resistant

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.

There are many known and practiced measures to protect against seismic threats. Let's take a look at some of the earthquake resistant techniques used.

Techniques for earthquake resistant design of structures :

- **Floating Foundation**

The levitating or floating foundation separates the substructure of a building from its superstructure.

One way of doing this is by floating a building above its foundation on lead-rubber bearings that comprise a solid lead core covered in alternating layers of rubber and steel. The bearings are attached to the building and its foundation with the help of steel plates. So, when an earthquake occurs, the floating foundation can move without moving the structure above it.

In Japan this base isolation system works at a whole new level. Their design allows buildings to float mid-air. The system levitates, keeping the building on a cushion of air. The system has in-built sensors for detection of seismic activity and these sensors communicate with the air compressor that creates the layer of air between the building and its base.

- **Shock Absorption:**

Similar to the shock absorbers used in vehicles, buildings also makes use of this technology. This earthquake resistant technology helps buildings slow down and reduce the magnitude of vibratory motions. Ideally shock absorbers should be placed at each level of the building – one end attached to the beam and the other end to the column. Each comprises a piston head that moves inside a cylinder full of silicone oil. During earthquakes, the horizontal motion of building will make the piston push against the oil, transforming mechanical energy from the quake to heat.

- **Rocking Core-Wall:**

Modern high-rise buildings use this technique to improve seismic resistance at a low cost. To make this work, a reinforced concrete core is set through the heart of the structure, surrounded by elevator banks. Many modern high-rise buildings use this technique to increase seismic resistance in an affordable way. It works most effectively when used together with base isolation. For base isolation, elastometric bearings are built with alternating layers of steel and natural rubber/neoprene. The bearing thus created has low horizontal stiffness and vertical rigidity. The combination is highly effective, cost-friendly and simple to implement.

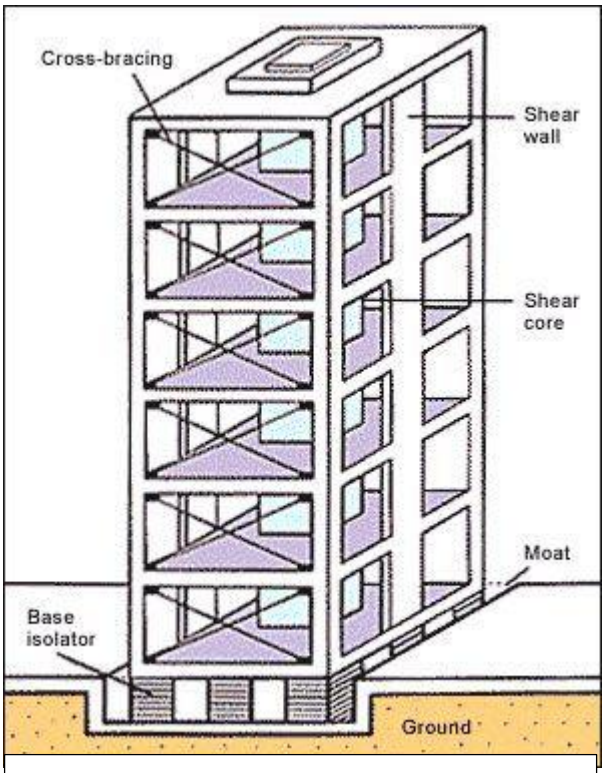


Fig.earthquake resistant design

- **Pendulum Power:**

The pendulum power technique works by suspending a huge mass near the top of the structure. This mass is supported by steel cables and viscous fluid dampers are placed between the mass and the building that it protects. In case of any seismic activity, the pendulum moves in the opposite direction to balance the energy. Each of the pendulums are tuned to sync with the natural frequency of the structure and these systems are called tuned mas dampers. Their goal is to counter resonance and reduce the structure's dynamic response.

- **Symmetry, Diaphragms And Cross-Bracing:**

Generally one common criterion for seismic designs is symmetry. Seismic risks of asymmetrical designs are higher. L-Shaped, T-Shaped and split-level structures may be more visually appealing but they are also prone to torsion. Thus engineers design symmetrical structures to keep the forces equally distributed through the structure and limit ornamental elements like cornices, cantilever projections etc.

An earthquake has a significant lateral force. Seismic designing counteracts these forces in both horizontal and vertical structural systems. Diaphragms are integral to horizontal structures – such as floors of a building or roof. Engineers design each diaphragm on its own deck and strengthen it horizontally so it can distribute sideways forces with vertical structure parts.

With vertical structures, engineers have several approaches. Braced frames are often used in building walls. Braced frames rely on trusses for resisting sideways motion. Cross-bracing is a technique that uses two diagonal members in an X-shape to build wall trusses and it is a popular technique to build earthquake resistant structures.

14.1.2 Seismic Retrofitting of buildings

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.

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.

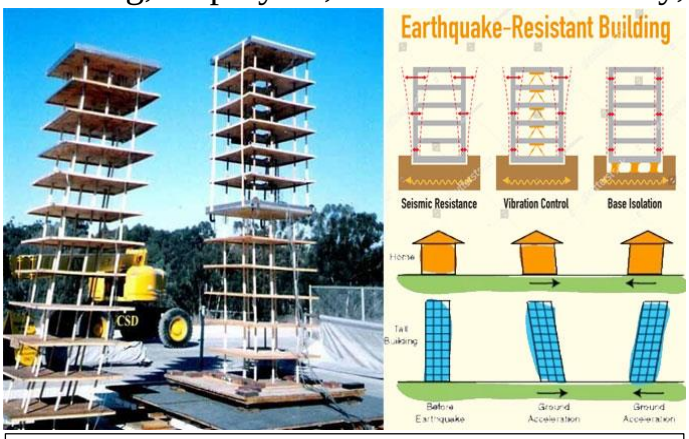


Fig. Seismic Retrofitting

- **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 be placed at the exterior of the building. Not preferred in the interior of the structure to avoid interior mouldings.

- **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.

- **Jacketing (Local Retrofitting Technique):**

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

Types of Jacketing

1. Steeel jacket,
2. Reinforced Concrete jacket
3. Fibre Reinforced Polymer Composite (FRPC) jacket

Purpose for jacketing:

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

- **Base Isolation (or Seismic Isolation):**

Isolation of superstructure from the foundation is known as base isolation. It is the most powerful tool for passive structural vibration control techniques.

Advantages of Base Isolation

Isolates Building from ground motion – Lesser seismic loads, hence lesser damage to the structure, -Minimal repair of superstructure. Building can remain serviceable throughout construction. Does not involve major intrusion upon existing superstructure.

14.1.3 Advance Practices in Construction field in modern material, Techniques

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

Advanced construction technologies are commonly described as including (amongst many others) advanced forms of:

3D printing.

Materials.

Building information modeling (BIM).

Cladding systems.

Computer aided design and computer aided manufacturing (CAD/CAM).

Computer numerical control.

Construction Innovation Hub.

Construction plant.

Modern methods of construction.

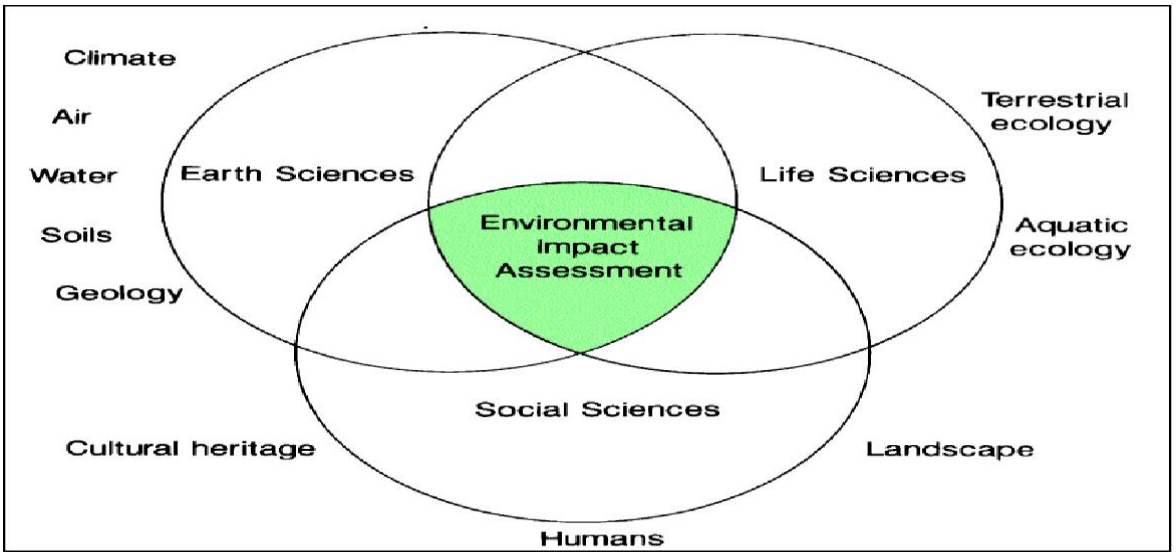
Modular construction.

14.1.4 Engineering Aspects of soil mechanics – 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.

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.



The objective of EIA:

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.

14.1.5 Water supply-sewerage system-Waste water-Sustainable development

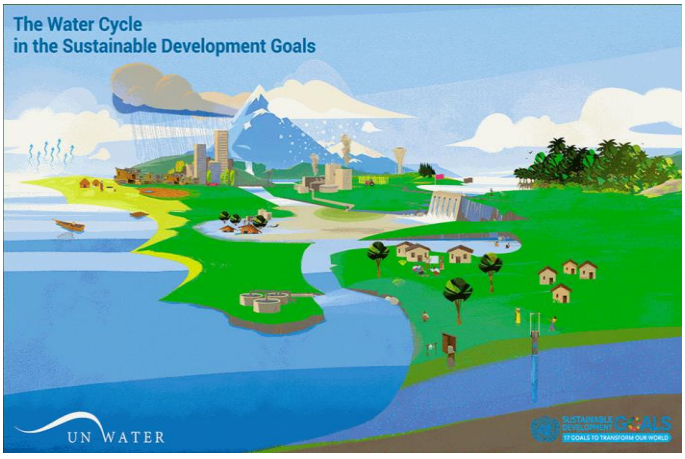
The Sustainable Development Goals (SDGs) are the most recent attempt by the international community to mobilise government, private and non-governmental actors at national, regional and local levels to improve the quality of life of billions of people in the developed and developing worlds. The goals are an ambitious, challenging and much-needed action plan for "people, planet and prosperity" until the year 2030.

Of the 17 SDGs, the sixth goal is to "ensure availability and sustainable management of water and sanitation for all". The achievement of this goal, even if partially, would greatly benefit humankind, given the importance of clean water for overall socio-economic development and quality of life, including health and environmental protection.

Water resources are under pressure from continuing population growth and urbanisation, rapid industralisation, and expanding and intensifying food production, particularly in developing countries and in urban areas. Urban populations may nearly double from current 3.4 billion to 6.4 billion by 2050. Numbers of people living in slums will rise even faster, with most of the rapid expansion in urbanization taking place not in megacities, but in small and medium sized cities with populations of less than 500 000.

Water pollution and impacts on human health and environment

Worsening water pollution affects both developed and developing countries. In developing countries, it is mostly due to rapid population growth and urbanisation, increased industrial and other economic activities, and intensification and expansion of agriculture, coupled with lack of local and national legal and institutional capacities.



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

Total existing scenario of the implementation

Education system: Village have good level of education system upto primary school. There are secondary school is available, but secondary school's building is not exist. So, secondary school building is required.

Roads: In this village only 80% roads are CC roads and the rest are kutccha road. In the rainy season roads gets clogged due to excessive rain water.

Drainage system: In this village drainage is available in some area.

Panchayat building: Panchayat building is rest on the main gate of village. The condition of the panchayat building is good.

Co-operative milk dairy: No facility available for collection of milk. its need a facility to improve a wealth of village.

Water storage facility: In village a greater problem is water. Village have only 25000 lit. Water collection tank is available but it is closed.

Anganwadi: In village eight Anganwadi are available, so some children are drop due to high congestion in Anganwadi. Need to construct a another one.

Post-office: Post-office is not available. So, Post-office is required.

Table. 32 Benefits of Design

Sr. No	Design Name	Period	Amount Expenditure	Benefit
1.	Public toilet	Within 1 year	53,922/-	• As a part of swatch bharat. • Increase hygiene and reduce dirtiness. • More access to toilet for urination and defecation. • Use for wash hands use mirror for grooming
2.	Library	Within 1 year	13,93,090/-	• They offer free educational resources to everyone

3.	Community Hall	Long term	17,63,283/-	• Meetings and other social activities. • Boosts the local economy • Easy access and space for village different program.
4.	Cyber cafe	within 6 months	29,40,316/-	• Availability internet and for the people who can know about the internet
5.	Bus stand	within 1 year	1,82,727/-	• Provide shelter or waiting area for people.
6.	Post office	Within 1 year	5,86,966/-	• Easy to excess post or courier. • No need to travel. • Provide risk free transection and saving a money of village people.
7.	Public Garden	within 2 years	1,57,521/-	• They're a place where people can spend time and socialize in a relaxing natural environment.
8.	Anganwadi	within 6 months	5,42,966/-	• Child and mother care
9.	Bio gas plant	within 1 year	1,19,999/-	• Biogas is a renewable, as well as a clean, source of energy
10.	Rain water harvesting	within 6 months	1,82,727/-	• Suitable for Irrigation. Harvesting allows the collection of large amounts of water
11.	Dudh mandali	within 1 year	3,74,124/-	• Improve a milk collection and income of village.
12.	Gram Paanchyat	Within 1 years	8,76,248/-	• It is the local self government organization of india

16. Survey by Interviewing With Talati and Sarpanch

Gujarat Technological University,
Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

CHAPTER- 16

Sr.	Questions	Yes/ No	Remarks
1	What are the sources of income in village?	Yes	9-12 source
2	What are the chances of employment in village?	Yes	industry
3	What are the special technical facilities in village?	NO	
4	Is any debt on village dwellers?	NO	
5	Are village people getting agricultural help?	NO	
6	Is women health awareness Program organized in village?	yes	
7	Are women having opportunity to work and income?	yes	
8	Child girl education is appreciated in village?	yes	
9	Facility of vaccination to child is available in village?	yes	
10	Are village people aware about child vaccination and done to each and every child as per norms?	yes	done by ashawarkex
11	Women help line number information is provided to village people?	NO	
12	Is water scarcity in village? How many days per year?	NO	
13	Is village under any debt?	—	
14	Is any serious issue due to debt from bank or any person happened in village?	—	
15	Is any suicide like incident observed in village due to government policy, debt or threatening?	—	
16	Is any death of patient occurred due to unavailability of medical facility in village?	—	
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.	10	
18	Is village improvement is observed in comparative scenario from past to present?	yes	
19	Is any unavoidable difficulty village people are facing? Any natural calamity is there?	NO	
20	Life Living standard of girls and women is appreciated and uplifted in village?	yes	

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

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

Sarpanch
Gram Panchayat, Kharod
Ta. Dist. Dahod

17. Irrigation/Agriculture activites & Industry, Alternate techniques & Solution

Scenario of Irrigation and Agricultural activities in India

Irrigation in India includes a network of major and minor canals from Indian rivers, groundwater well based systems, tanks, and other rainwater harvesting projects for agricultural activities. Of these groundwater system is the largest. In 2013-14, only about 36.7% of total agricultural land in India was reliably irrigated,[2] and remaining 2/3rd cultivated land in India is dependent on monsoons. 65% of the irrigation in India is from groundwater. Currently about 51% of the agricultural area cultivating food grains is covered by irrigation. The rest of the area is dependent on rainfall which is most of the times unreliable and unpredictable.

Indian govt launched a demand side water management plan costing INR6000 crore or USD854 million across 8,350 water stressed villages of 78 districts in 7 states - Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh - over five years from 2021-2022 to 2026-27, with the view to harvest rainwater, enhance water table, water recharge rate with village panchayat level water management plans.

Irrigation & Agricultural Activities in the Kharod village

The Kharod village has an approximate irrigation land of 760 ha. out of total 1264 ha. land. The major occupation in village is farming / agriculture & major crops grown in a village are Maiz, wheat, rice or dangar, etc.

Majority of Peoples are involed in Agriculture sector. In kharod village peoples are not aware about Organic farming. So, this village awareness needed about Fishery and Organic farming.

Other Main Sources of Irrigation Facility

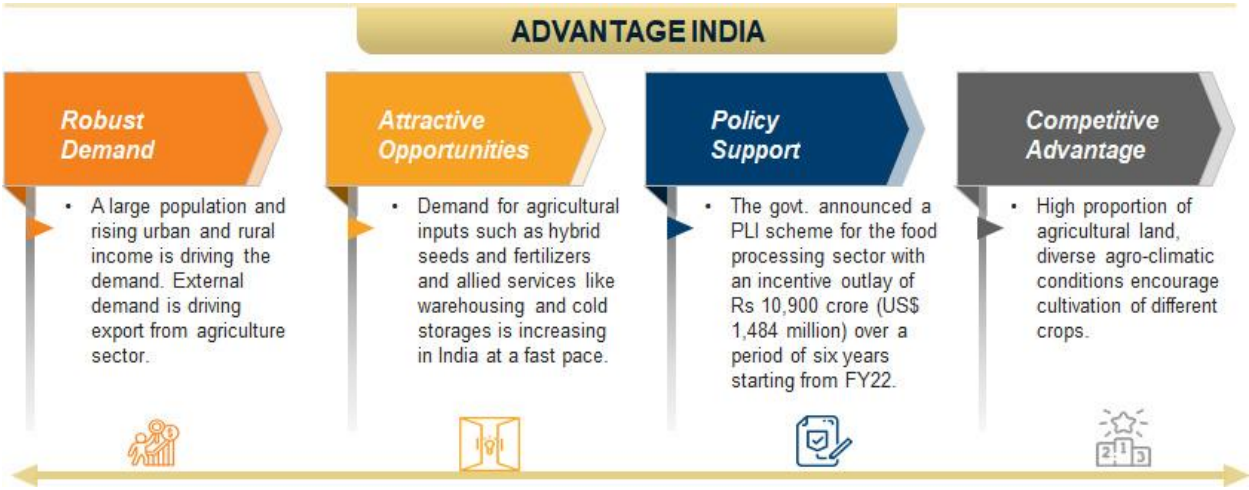
- Tank / Pond
- Well
- Tube Well
- Underground Sump

Fig. 17.1 Lake & river of Kharod village

Agro Industry

Agro-based industry would mean any activity involved in cultivation, under controlled conditions of agricultural and horticultural crops, including floriculture and cultivation of vegetables and postharvest operation on all fruits and vegetables. The development of agro-industries has assumed crucial importance in the economic planning and progress of the country.

An agro-industry is an enterprise that processes bio-mass, i.e. agricultural raw materials, which include ground and tree crops as well as livestock and fisheries, to create edible or usable forms, improve storage and shelf life, create easily transportable forms, enhance nutritive value, and extract chemicals for other uses.



The agro-industry generates new demand on the farm sector for more and different agricultural outputs which are more suitable for processing. An agro-processing plant can open up new crop and livestock opportunities to the farmer and thus increase the farm income and employment. The following issues to be checked and researched. The Indian food industry is poised for huge growth, increasing its

contribution to world food trade every year. In, India, the food sector has emerged as a high-growth and high profit sector.

Importance of Agro-based industries in India

- Provide employment to landless agricultural labor and tribal population from rural and backward areas.
- Ensure the development and stability of rural economy through diversification and reduced dependence on agriculture.
- Ensure the alleviation of poverty by providing steady sources of income and livelihood.
- Earn much required foreign exchange for the country.
- Improve the standard of living in rural areas.
- Help in reducing the extreme inequalities in the distribution of income and wealth.
- Are easy to establish.
- Support balanced growth between agriculture and industry, and
- Help in avoiding wastage of perishable agricultural products.

Scenario and Scope of Agro-based industries in India

India is the second-largest populated country accounting for 18% of the total world population. With an increase in the population, the need for various agricultural products has increased significantly. This rise has prompted the farmers to adopt enhanced technologies and methods in dairy, fisheries and livestock in order to meet the diversified food needs of the people. Additionally, more than 50% of India's population is dependent on agricultural products which is further promoting the growth of the market.

Over the past few years, India's GDP has been growing at a steady pace which has resulted in a rise in the disposable incomes of the consumers. This rise has driven the agriculture market both in terms of the producer and consumer. It has enabled farmers to invest more in advanced agricultural infrastructure such as irrigation facilities, quality seeds, equipment's, fertilizers, warehousing, cold storage, etc. It has also increased the consumers purchasing power creating a positive impact on the domestic demand of agriculture products.

India represents one of the most bio-diverse countries in the world. The country encompasses various types of climatic conditions and soil types suitable for cultivating a large number of cereals, fruits, vegetables, flowers, cash crops, etc. The Indo-Gangetic plain, for instance, represents one of the most fertile lands across the globe. In addition, India also represents the second largest fish producing country in the world. The country has diverse resources ranging from deep seas to lakes in the

mountains and more than 10% of the global biodiversity in terms of fish and shellfish species.

Government support plays a vital role in the growth of the Indian agriculture sector as agriculture remains a primary means of livelihood for more than 50% to 60% of the India's total population and as such represents the most important vote bank for any government. The Indian government is providing subsidies to farmers on water, power, agricultural equipment, fertilizers, hybrid seeds, etc. The Government has also exempted agriculture income under the Indian income tax act, meaning income earned from agricultural operations is not taxed. Moreover, both state and central government often waive off loans given to farmers.

The introduction of contract farming has also created a positive impact on the agriculture industry. Contract farming reduces the load on the central and state level procurement system by increasing the private sector investments in agriculture. It also provides more exposure to the farmers to world class mechanized technology related to agriculture.

The emergence of modern retail has also been an important catalyst for the agriculture industry. Modern retail helps in the elimination of middle men from the distribution chain, thereby providing better remuneration to the farmers. Organized retail enables the farmers to directly sell their produce to modern organized retail networks, thereby helping them to get a better price as compared to small-scale local vegetable markets. These retailers have also started signing supply agreements with various farmers which further assures them of a minimum income. Moreover, these agreements help farmers in reducing wastage, transportation costs and providing fresh supply of food items to the consumer.

The establishment of rural banking and credit system has also played a pivotal role in the growth of the agriculture industry. The transformation of agriculture from subsistence to commercialisation requires investment on the farm along with the use of modern inputs. With the availability of credit, the constraint on certain inputs like seed, fertilizer, pesticides, hired labour, etc. has been reduced.

18. Social Activities – Any Activates Planned By Students

One Day Door to Door Health Awareness/Education campaing

On date 07/03/2021, for health awareness door to door visit is organized by Kaushik and Aftab in Kharod village. This activity is successfully completed with the help of Sarpanch of Kharod, Ashaworkers of Kharod village.

Mainly focused on following point in this visit are.:

- The value of cleanliness in village.
- Basic medical facility available in PHC and CHC.
- Facility and advantage of MAA Card and Ayush.
- Advantage of various vaccine and medicines provide by government for Covid-19.

We thankful to all dignitaries who help us for successfully organize and give a precious time and knowledge. Also, people which are help directly and indirectly to successfully completion of this camp.

Plantation:

We have done plantation on the open ground behind of primary school with the students of village in the presence of school. We have explained the importance of tree plantation to the students. Also explain how can trees are heplfull for our eco-cycle, for rain, for clean air, ect.

Fig. 18.1 Activity

19. KHAROD VILLAGE SAGY Questionnaire
Survey form with the Sarpanch Signature

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Kharod Gram Panchayat: Kharod Ward No. –

Block: Dahod District: Dahod

State: Gujarat L S Constituency: Dahod

1. Family Identity and Size

Name of Head of Household	Rasulbhai Bhoha							Male/ Female	Male
SECC Survey ID: -	–	Family Size	5	Over 18	4	6 to 18	1	Under 6	0

2. Category & Entitlement Details (Tick as appropriate)

Social Category[1]	S.T.	Life Insurance ✓	1. All Adults 2. Some Adults ✓ 3. None	AABY	1. Yes 2. ✓ No	Kisan Credit Card	No Yes / No
Poverty Status Year[2]:	1. BPL 2. ✓ APL	X 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]
Shantaben bhoha	46	F	N	Married	HSC	Y	Y	N
Rohit bhoha	20	M	N	unmar.	Graduation	Y	Y	N
Chetan bhoha	19	M	N	unmar.	HSC	Y	Y	N

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
Drashti bhoha	17	F	N	1	04	Y	10th	Y

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	NO	NO
Children	NO	NO

9. House & Homestead Data

Own House: Yes / No	No. of Rooms: 8
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	7 Acer	2. Cultivable Area	5.5 Acer
3. Irrigated Area	1.5 Acer	4. Uncultivable Area	1.5 Acer

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
Maize	quintal	12
Black gram	quintal	3

17. Livestock Numbers

Cows: 1	Bullocks: 2	Calves: ____
Female Buffalo: ____	Male Buffalo: ____	Buffalo Calves: ____
Goats/ Sheep: 4	Poultry/ Ducks: –	Pigs: –
Any other: Type –		No. ____
Shelter for Livestock: Pucca / Kutcha / None		
Average Daily Production of Milk(Litres): 5 l.		

18. What games do Children Play
Kabbadi, cricket

19. Do children play musical instrument (mention)
NO

Schedule Filled By:– Kaushik Deval
Principal Respondent: Rasulbhai
Date of Survey: 7/5/2021

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: Kharod

b. Block: Dahod

c. District: Dahod

d. State: Gujarat

e. Lok Sabha Constituency: Dahod

f. Number of Wards in the Gram Panchayat: 12

g. Number of Villages in the Gram Panchayat: 6567

h. Names of Villages:

Kharod

Demographic Information

Number of Households 928 Total Population 6459 Male 3281 Female 3178

SC HHs – ST HHs 6459 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)	Yes	
c.	Nearest Community Health Centre (CHC)	No	3 km.
d.	Nearest Post Office	Yes	
e.	Nearest Bank Branch (Any)	No	9 km.
f.	Nearest Bank with CBS Facility	No	9 km.
g.	Nearest ATM	No	9 km
h.	Nearest Primary School	Yes	
i.	Nearest Middle School	Yes	
j.	Nearest Secondary School	Yes	
k.	Nearest Higher Secondary School / +2 College	No	5 km.
l.	Nearest Graduate College	No	9 km.
m	Nearest ITI / Polytechnic Centre	No	9 km.
n	Kisan Seva Kendra	–	–

1

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
o	Agriculture Credit Cooperative Society	NO	
p	Nearest Agro Service Centre	NO	
p	MSP based Government Procurement Centre	NO	12 km.
q	Milk Cooperative /Collection Centre	NO	5 km.
r	Veterinary Care Centre	NO	8 km.
s	Ayurveda Centre	NO	14 km.
t	E – Seva Kendra	NO	
u	Bus Stop	Yes	
v	Railway Station	NO	91 km.
w	Library	NO	
x	Common Service Centre	Yes	

IV. Sports Facilities in the Gram Panchayat

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

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 8

b. Number of villages without Angan Wadi Centres —

Names of such villages: —

c. Schools (Number)

Primary Private: — Primary Govt.: 5

Middle Private: — Middle Govt.: 5

Secondary Private: — Secondary Govt.: 1

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)	Yes					—	—
b.	Kerosene	No	No	No	No	Private Grocery	—	—
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 _____ Not Covered ✓	kharod	
b.	Hand Pump Coverage in Villages:	Covered ✓ Not Covered _____	kharod	
c.	Coverage under Covered Drains:	Covered ✓ Not Covered _____	kharod	
d.	Coverage under Open Drains:	Covered _____ Not Covered ✓	kharod	
e.	Villages with Household Electricity Connection (Numbers)	Connected ✓ Not Connected	kharod	

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	765	d.	Pasture / Grazing Land	–	g.	Check Dam	5
b.	Irrigated Land	765	e.	Forests/ Plantations	–	h.	Wells/Bore Wells	25
c.	Un-irrigated Land	115	f.	Other Common Land	–	i	Tanks /Ponds	2

[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)	25 (app.)
b)	Number of Households receiving pension (old age, widow, disability)	47
c)	Number of eligible Households who are not receiving pension	–
d)	Number of Households eligible for Ration Card	820
e)	Number of eligible HHs having ration cards	915
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	720
i)	Number of Job Card holders who completed 100 days of work during 2013-14	120
j)	Number of shops selling alcohol	–
k)	Number of BPL families	627
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	10
s)	Number of SHGs	–
t)	Number of active SHGs	–
u)	Number of SHG Federations	–
v)	Number of Youth Clubs	2
w)	Number of Bharat Nirman Volunteers	–

Name and Signature of Surveyor and Respondent'

kaushik Deval Surveyor	Rasulbhai bhoha PRI Respondent (Preferably Gram Panchayat Chairperson)	Sarpanch Gram Panchayat, Kharod Ta. Dist. Dahod Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	07/05/2021 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: Kharod

b. Ward Number: –

c. Gram Panchayat: Kharod

d. Block: Dahod

e. District: Dahod

f. State: Gujarat

g. Lok Sabha Constituency: Dahod

h. Number of Habitations / Hamlets in the Gram Panchayat: 928

i. Names of Habitations / Hamlets:

–

Demographic Information

Number of Households 926 Total Population 6459 Male 3281 Female 3178

SC HHs – ST HHs 6459 OBC HHs – Other HHs –

II. Access to Infrastructure/Amenities etc.

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
a.	Nearest Primary School	Yes	
b.	Nearest Middle School	Yes	
c.	Nearest Secondary School	Yes	
d.	Kisan Seva Kendra	–	
e.	Milk Cooperative /Collection Centre	NO	8 km.
g.	Health Sub Centre	Yes	
h.	Bank	NO	9. km.
i.	ATM	NO	9 km
j.	Bus Stop	Yes	
k.	Railway Station	NO	9 km.

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

1

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
l	Library	NO	8 km.
m	Common Service Centre	yes	
n	Veterinary Care Centre	NO	6 km.

ii. Road Connectivity

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

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

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

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

b. Coverage under Open Drains: None *(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: None

v. Coverage of Habitations under Electrification

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

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

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

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

vi. Sports Facilities in the Village

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

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

vii. Education, ICDS

a. Number of Anganwadi Centres: 8

c. Schools (Number)

Primary Private: — Primary Govt.: 5

Middle Private: — Middle Govt.: 5

Secondary Private: — Secondary Govt.: 1

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	765	d.	Pasture / Grazing Land	–	g.	Check Dam	5
b.	Irrigated Land	765	e.	Forests/ Plnatations	–	h.	Wells/Bore Wells	25
c.	Un-irrigated Land	115	f.	Other Common Land	–	I	Tanks /Ponds	2

ix. Entitlement Related Parameters		
1	Number of active Job Card holders under MGNREGA	720
2	Number of active Job Card holders who have completed 100 days of work	140
3	Number of shops selling alcohol	–
4	Number of BPL families	–
5	Number of landless households	–
6	Number of IAY beneficiaries	–
7	Number of FRA beneficiaries	–
8	Number of common sanitation complexes	–
9	Number of SHGs	12
10	Number of active SHGs	6
11	Existence of SHG Federation in the Village (Yes / No)	No
12	Number of Youth Clubs	2
13	Number of Bharat Nirman Volunteers	7

Name and Signature of Surveyor and Respondent'

Kaushik Desai	Rasulbhai bhaha	Sarpanch Gram Panchayat, Kharod Ta. Dist. Dahod	7/5/2021
Surveyor	PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey

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

Vishwakarma yojana phase-8 Kharod village Detailed project report
1 message

KAUSHIK DEVAL <kaushikkumardeval@gmail.com> Tue, Jul 6, 2021 at 4:12 PM
To: ddo-dah@gujarat.gov.in, collector-dah@gujarat.gov.in

We are students of Government engineering College, Dahod affiliated to Gujarat technological University-GTU. GTU has been assigned Vishwakarma yojana phase-8 under which students survey various villages and design various amenities to deliver to the village making them an ideal place for living a better life as per requirement & village problems 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 notify about "Kharod" village profile of issues for development and our design work for them which is attached in the form of report below with amount expenditures and benifits.

Contact person :-
Kaushikkumar Deval : Number- 9313124547
Email address: kaushikkumardeval@gmail.com

VY-PHASE-VIII-FINAL-REPORT-KHAROD-VILLAGE-compressed.pdf
11.1 MB

21. Comprehensive report for the entire village

COMPREHENSIVE REPORT

ON

Vishwakarma Yojana: Phase VIII

AN APPROACH TOWARDS RURBANISATION

KHAROD Village

DAHOD District

Prepared By

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
KAUSHIK DEVAL	CIVIL ENGINEERING	170180106024
AFTAB VAHORA	CIVIL ENGINEERING	17018010106116

COLLEGE NAME
Government engineering college Dahod

NODAL OFFICERS NAME
Prof. D. K. Oza

Year: 2020-21

Gujarat Technological University,
Chandkheda, Ahmedabad – 382424 Gujarat

INTRODUCTION

About 70% of India's population, or 750 million, live in its 600,000 villages. The average village has 200-250 households, and occupies an area of 5 sq. km. Most of this is farmland, and it is typical to find all the houses in one or two clusters. Villages are thus spaced 2-3 km apart, and spread out in all directions from the market towns. The market centers are typically spaced 30-40 km apart. Each such Centre serves a catchment of around 250-300 villages in a radius of about 20 km. As the population and the economy grow, several large villages are continually morphing into towns and market centers. Around 65% of the State's population is living in rural areas. People in rural areas should have the same quality of life as is enjoyed by people living in sub urban and urban areas. Further there are cascading effects of poverty, unemployment, poor and inadequate infrastructure in rural areas on urban centers causing slums and consequential social and economic tensions manifesting in economic deprivation and urban poverty. Hence Rural Development which is concerned with economic growth and social justice, improvement in the living standard of the rural people by providing adequate and quality social services and minimum basic needs becomes essential. The present study deals with the same.

Vishwakarma Yojana would provide "Design to Delivery" solution for development of villages in 'Rurban' areas. The developmental work in villages that could undertake as per the need of the village in particular includes Physical infrastructure facilities (Water, Drainage, Road, Electricity, Solid waste Management, Storm Water Network, and Telecommunication & Other), Social infrastructure facilities (Education, Health, Community Hall, Library, Recreation Facilities & other) and renewable energy (Rain water harvesting, Biogas plant, Solar Street lights & Other) for Sustainable development.

NEED OF THE STUDY

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

65% of the population of the country lives on agriculture which contributes only 15 % to the country's GDP. If we compare this with China which has a similar sector contribution to the GDP, only 30% of people depend on agriculture whereas in country like USA just 2% of the people are dependent on agriculture. Rurbanisation addresses this concern and imbalance by providing alternate jobs to rural masses dependent. So it is very important to develop rural area compare to urban one.

OBJECTIVES OF THE STUDY

Following are the various objectives of study…….

- To provide insufficient basic physical infrastructure facilities like Water Supply, Transportation, Sewerage and Solid Waste Management etc.
- To provide insufficient Social infrastructure facilities like health and education facilities and to ensure proper delivery of facilities to village dwellers.
- To promote integrated development of rural areas with provision of quality housing, better connectivity, employment opportunities and supporting physical and social infrastructure.
- To provide Internal roads within village settlement & efficient mass transportation systems between clusters of villages to improve connectivity
- To Identification sanitation facilities that are needed to be improve like sewerage and drainage line, dumping facilities, Electricity connections.
- Refurbishing of village lakes, water tanks and wells, construction of rain water harvesting structures for sustainable Development.

STUDY AREA

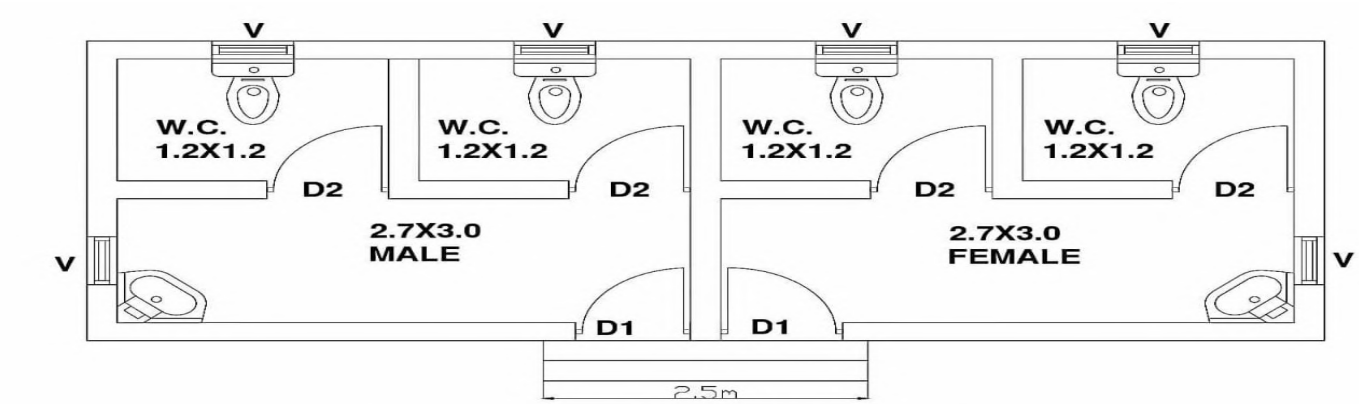
Study area mainly includes study of **Kharod Village** which is situated at Dahod Taluka in Dahod District of Gujarat State, India.

The Vishwakarma Yojana is aimed to Rurban development of the village. For that purpose study area is decided for taking detail information of the village. The study area includes education, social life, basic needs of the person, economic growth of village, transport facilities etc.

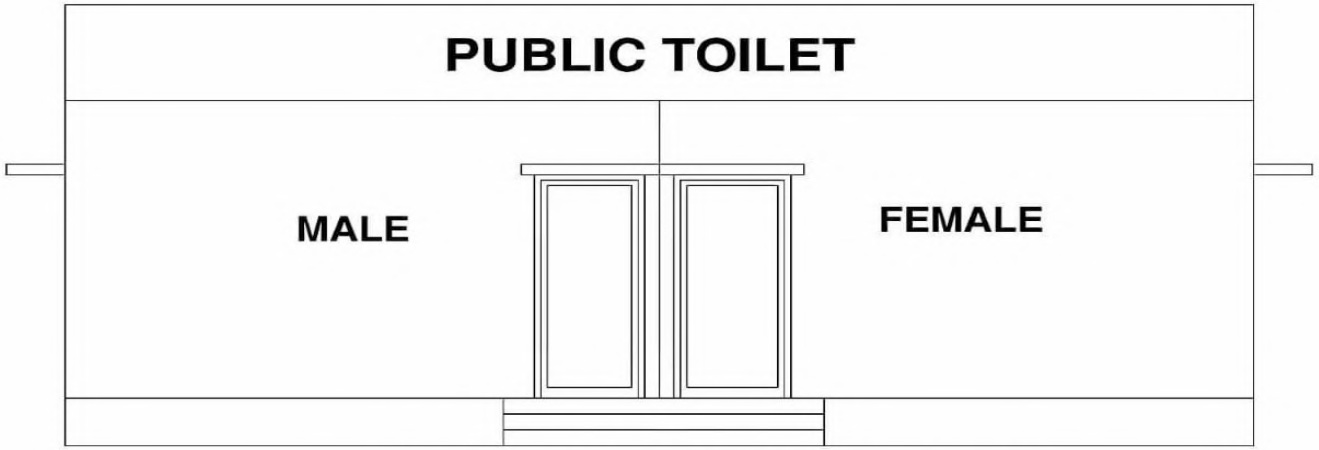
Education includes various facilities like Anganwadi, Primary School, Secondary School, Higher Secondary School, College etc. Medical Facility includes study of Gov. / Panchyat Dispensary, Health Centre, PHC & CHC, Child Welfare and Maternity Home, Hospital etc.

For this village development we had proposed designs are following :

Part - 1	Part - 2
(1) Public toilet	(7) Dudh mandali
(2) Library	(8) Bio gas plant
(3) Community Hall	(9) Secondary school
(4) Cyber cafe	(10) Anganwadi
(5) Bus stand	(11) Rain water harvesting
(6) Post office	(12) Gram panchayat



PLAN OF PUBLIC TOILET



ELEVATION OF PUBLIC TOILET

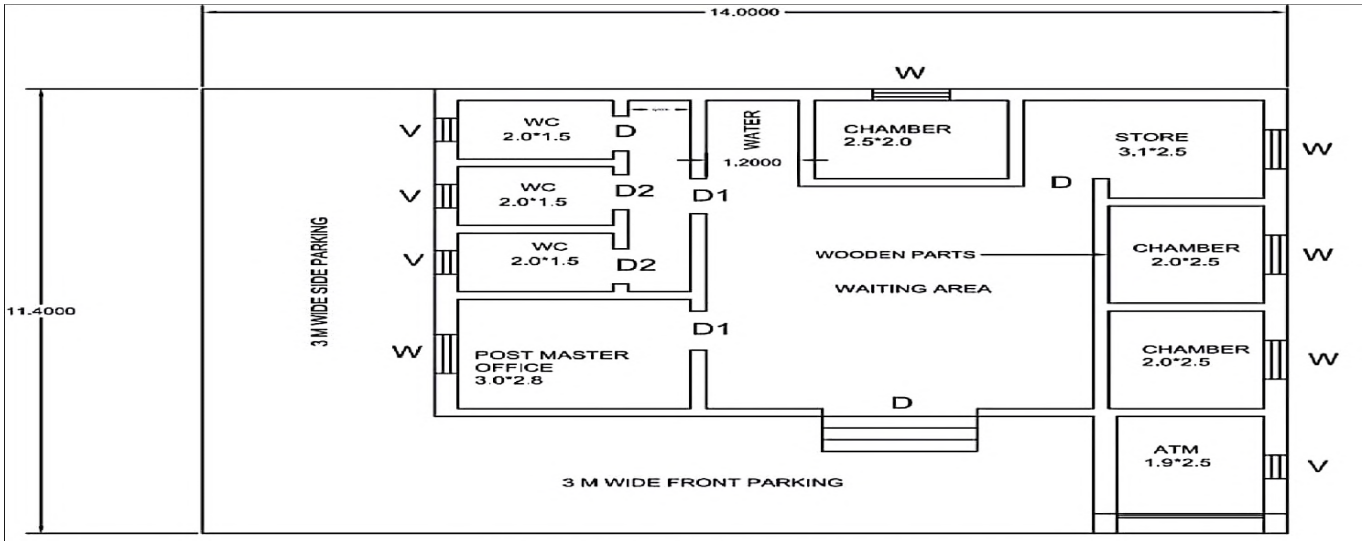
- All dimension in meter.
- Drawing should be read not to scale.
- Design is prepared only for education purpose. Corrected all data must be check before use.

To
Vishwakarma Yojana
Phase VIII
Gujarat technological university
Chandkheda-Ahmedabad

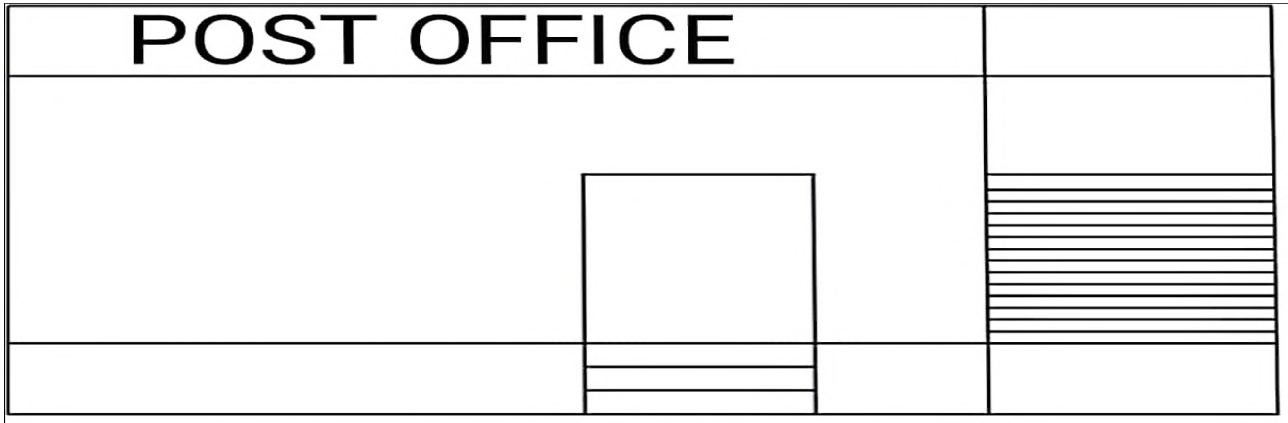
Government engineering college Dahod
Zalod road, Dahod,
389151

Design number : 1

Public toilet



PLAN OF POST OFFICE FOR KHAROD



ELEVATION OF POST OFFICE

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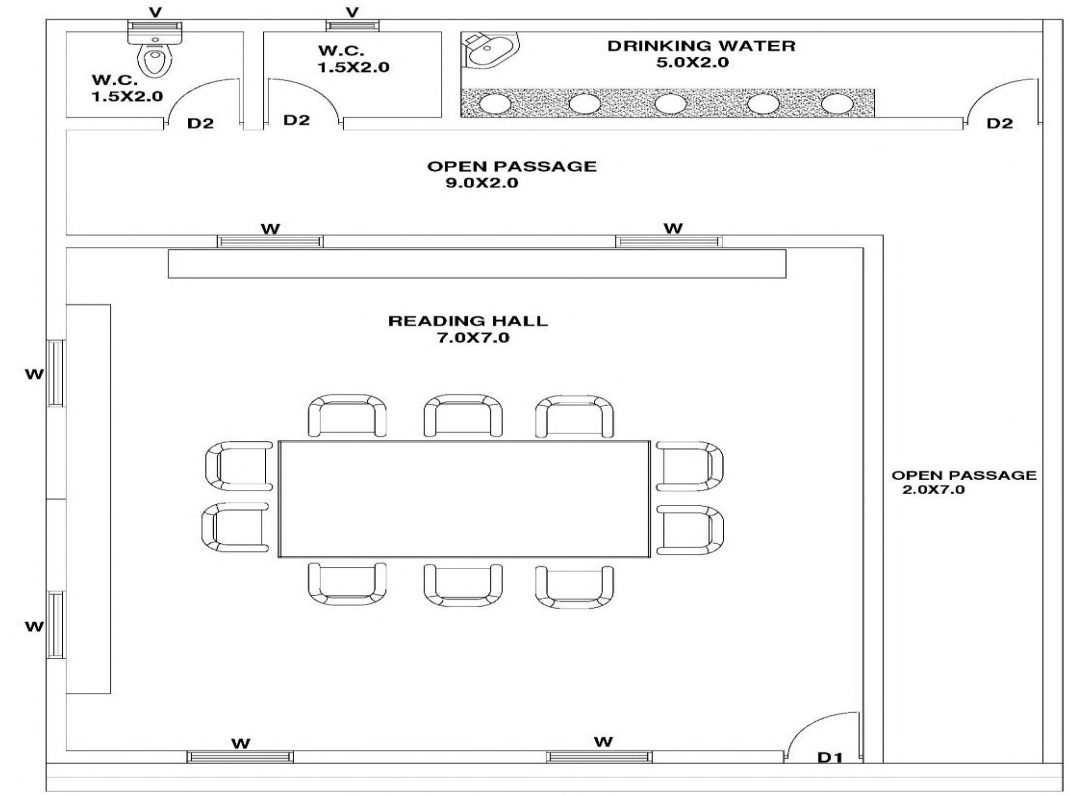
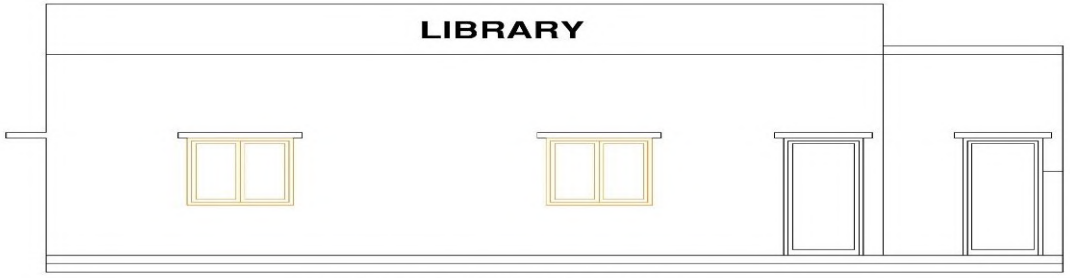
Design number : 2

Post Office



PLAN OF LIBRARY



ELEVATION OF LIBRARY

- All dimension in meter.
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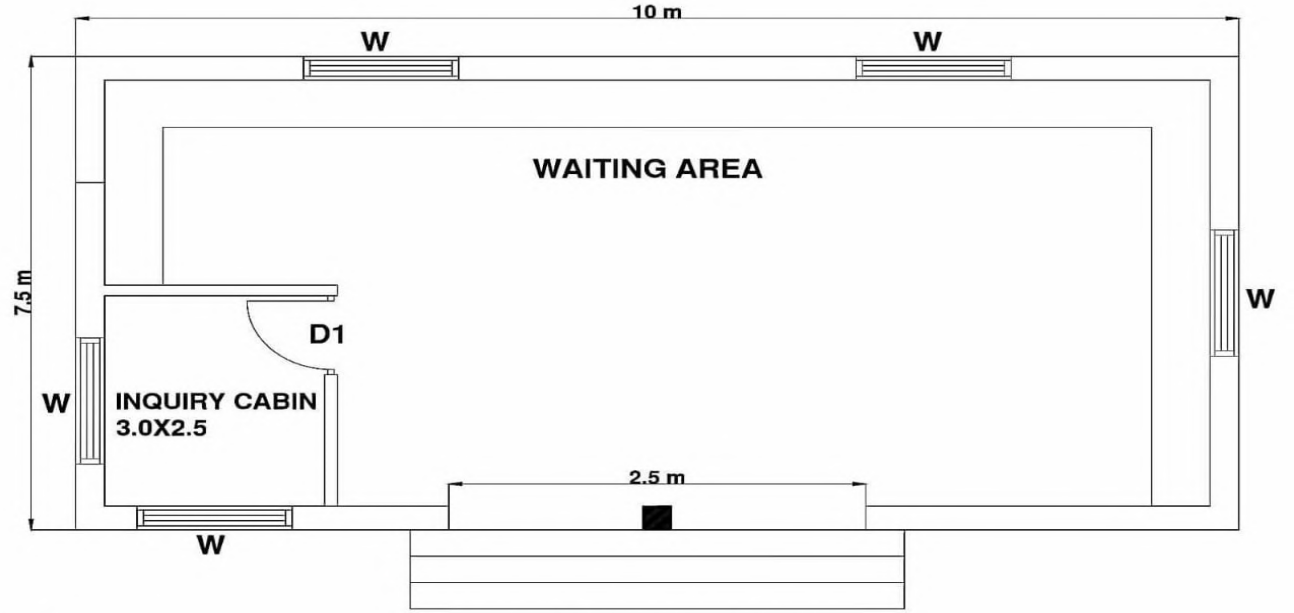
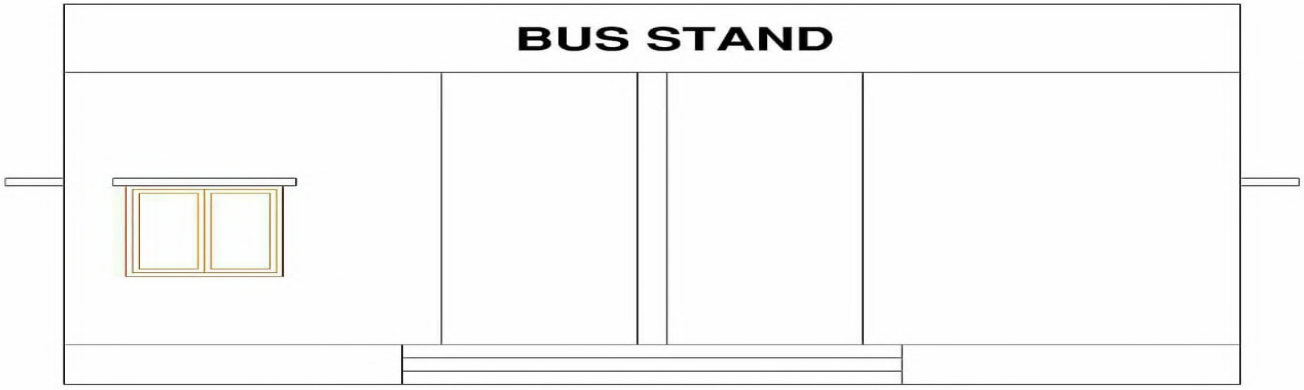
Design number : 3

Library



PLAN OF BUS STAND



ELEVATION OF BUS STAND

- All dimension in meter.
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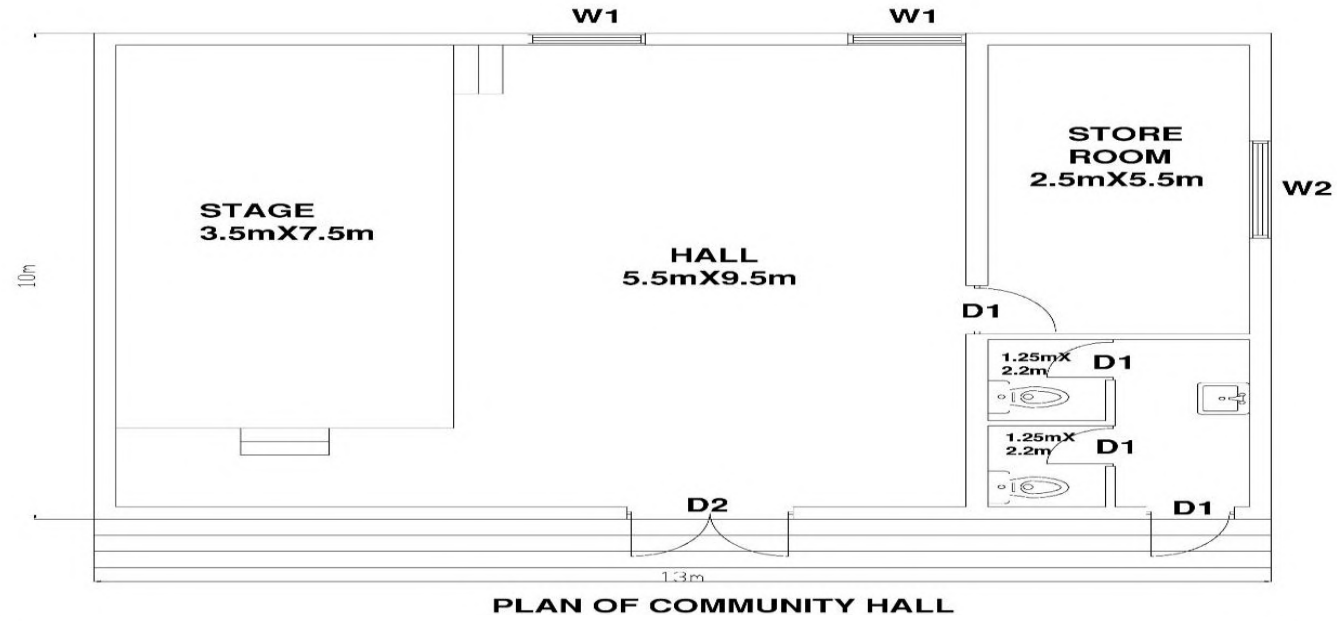
Design number : 4

Bus stand



PLAN OF COMMUNITY HALL

ELEVATION OF COMMUNITY HALL

- All dimension in meter.
- Drawing should be read not to scale.

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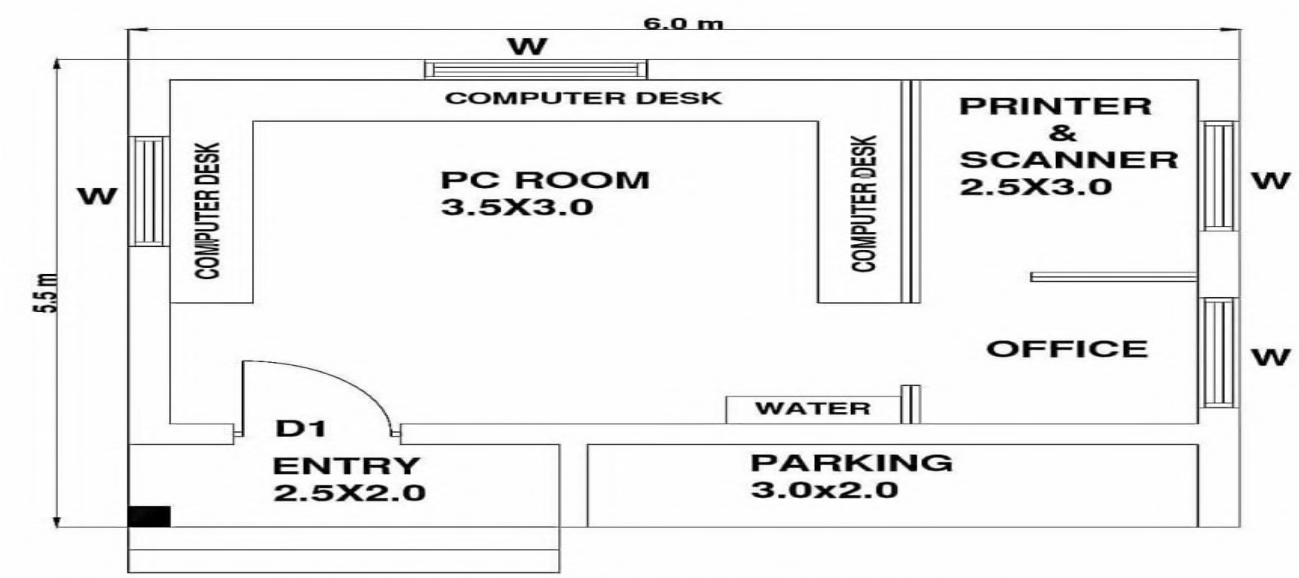
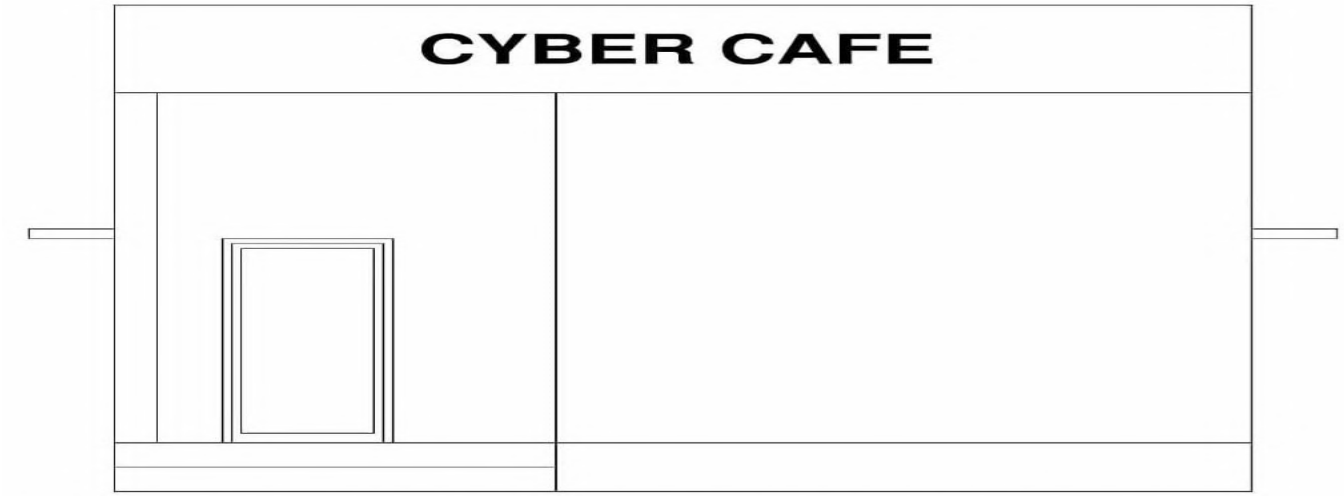
Design number : 5

Community hall



 PLAN OF CYBER CAFE



 ELEVATION OF CYBER CAFE

- All dimension in meter.
- Drawing should be read not to scale.

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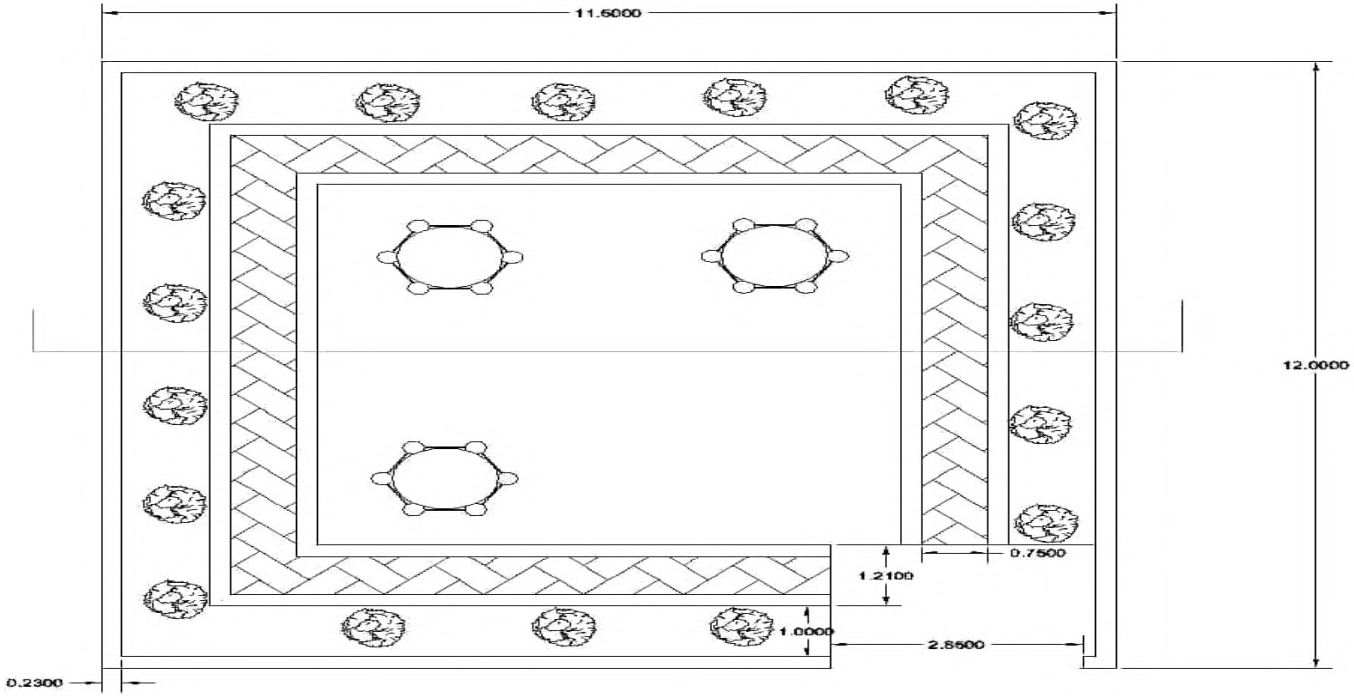
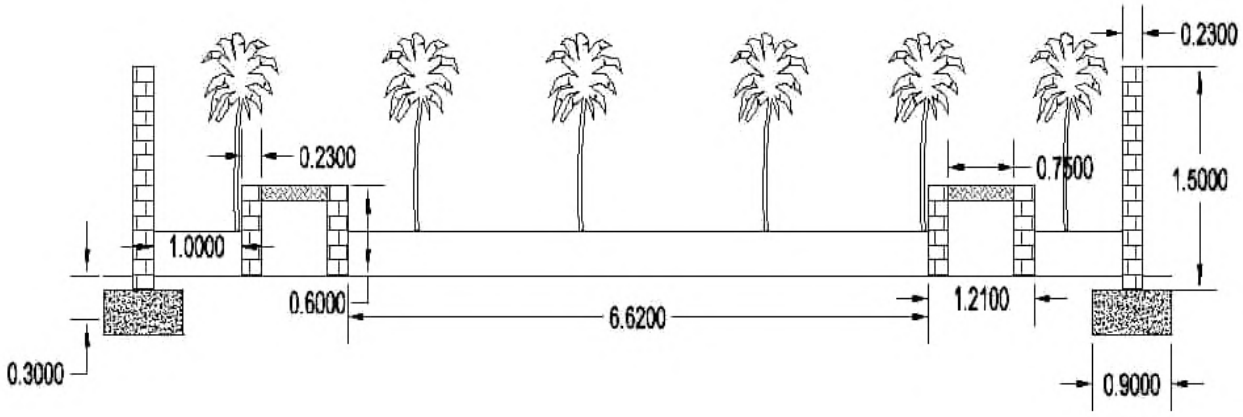
389151

Design number : 6

Cyber cafe





- All dimension in meter.
- Drawing should be read not to scale.

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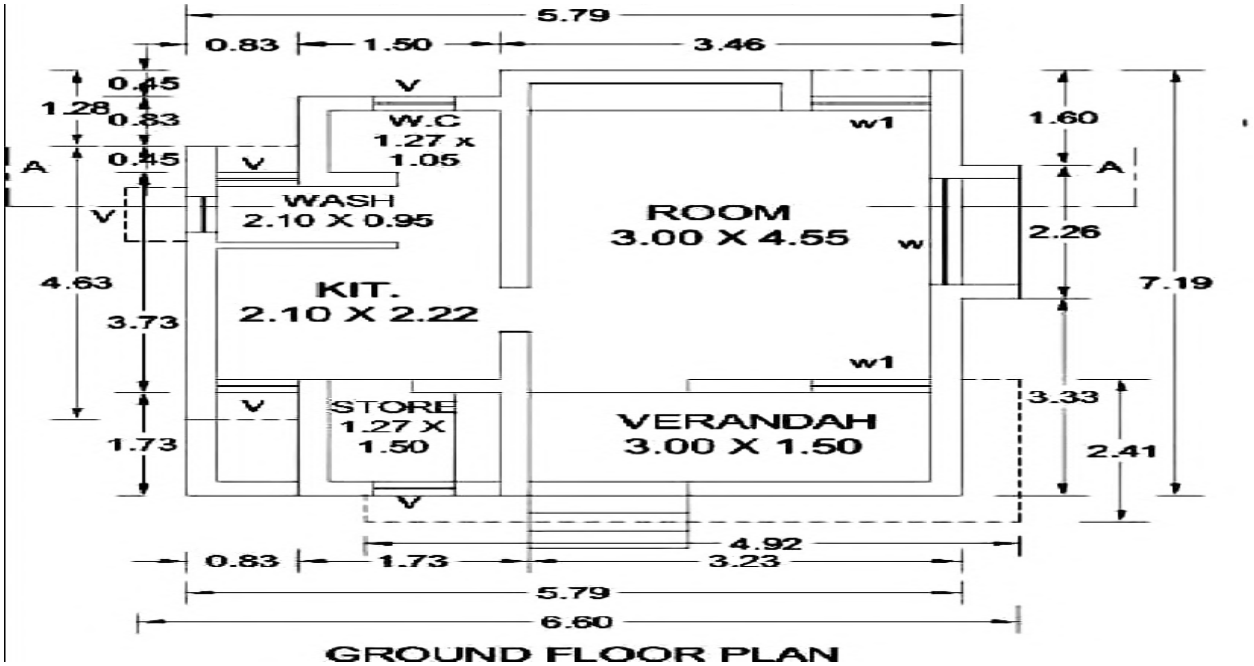
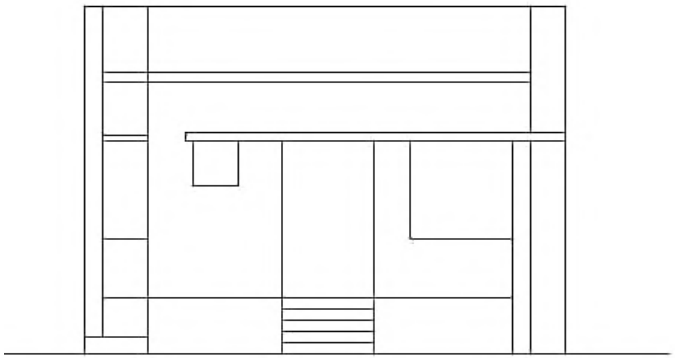
Design number : 7

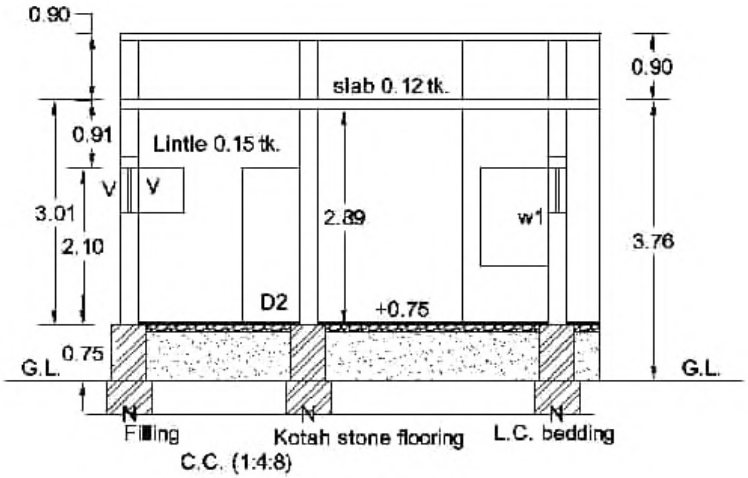
Public Garden



GROUND FLOOR PLAN



ELEVATION



SECTION AT "A-A"

- All dimension in meter.
- Drawing should be read not to scale.

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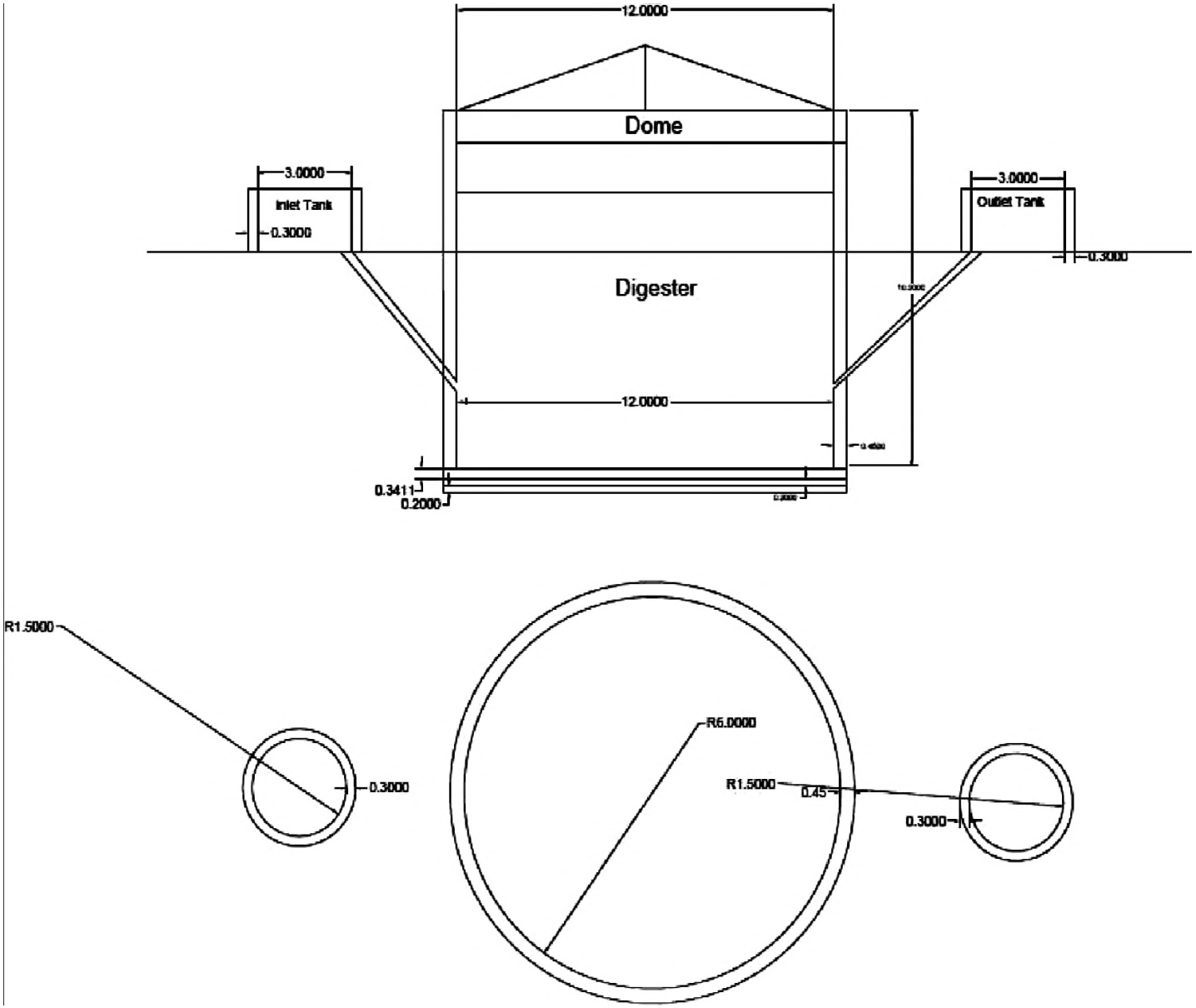
Zalod road, Dahod,
389151

Design number : 8

Anganwadi



- All dimension in meter.
- Drawing should be read not to scale.

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Design number : 9

Biogas

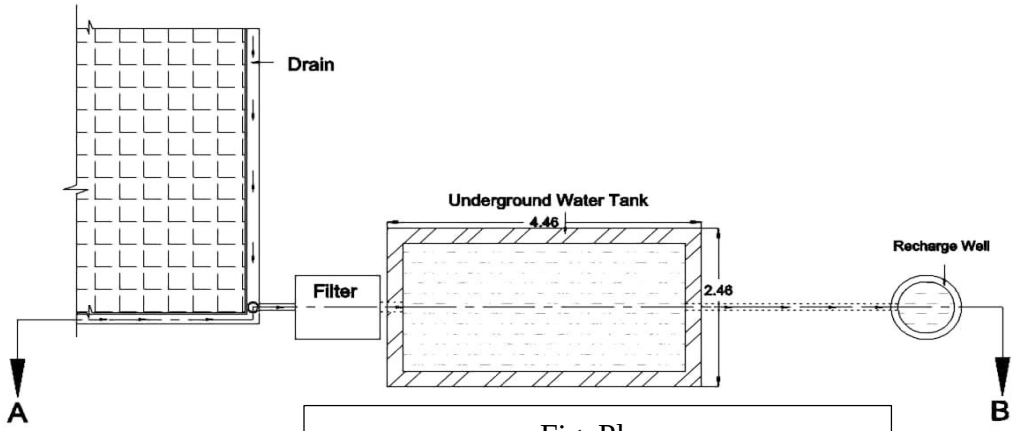

Fig. Plan

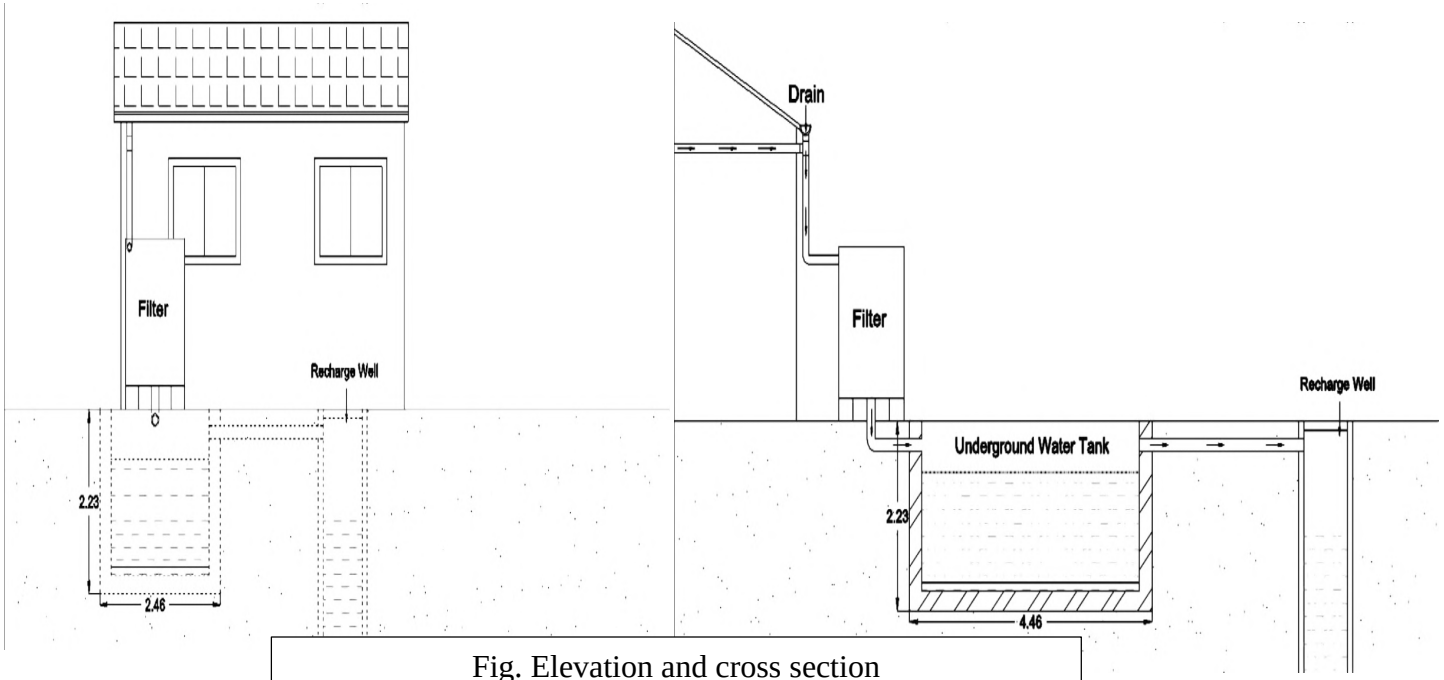

Fig. Elevation and cross section

- All dimension in meter.
- Drawing should be read not to scale.

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To
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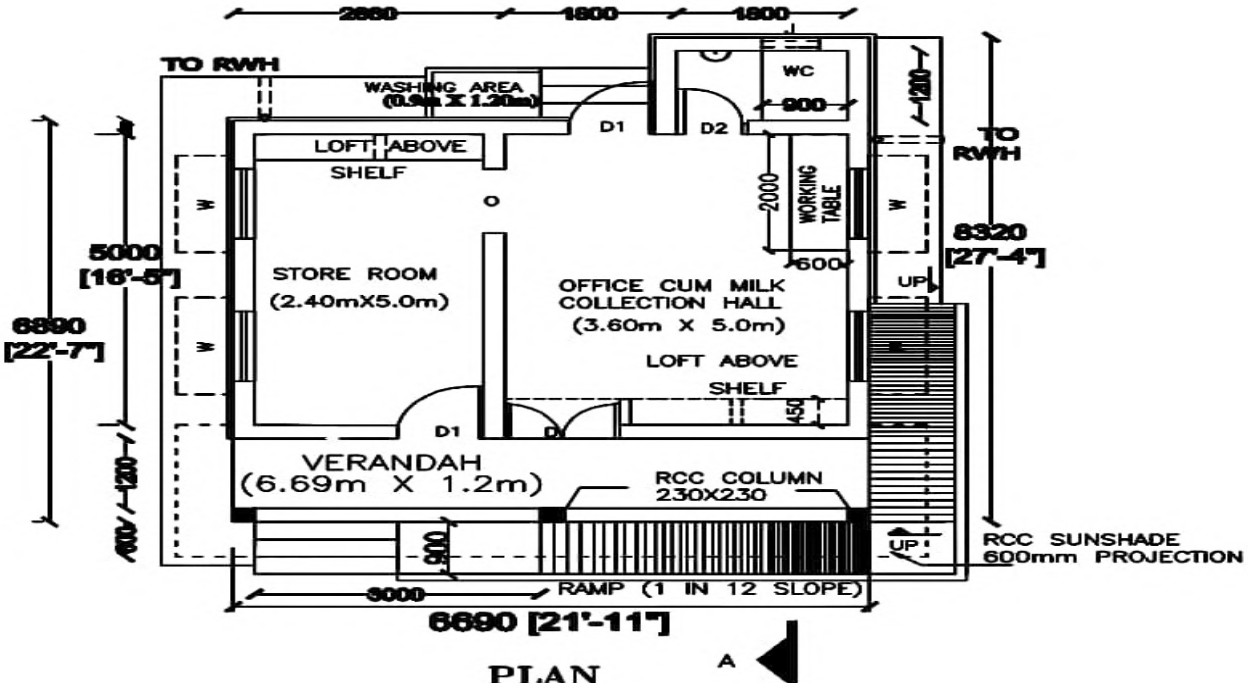
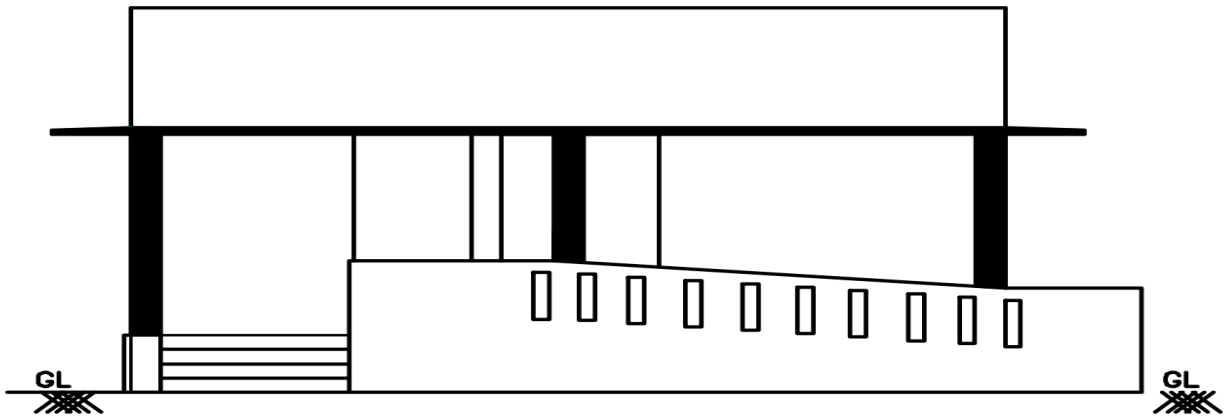
Design number : 10

Rainwater harvesting



PLAN



ELEVATION

- All dimension in meter.
- Drawing should be read not to scale.

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To
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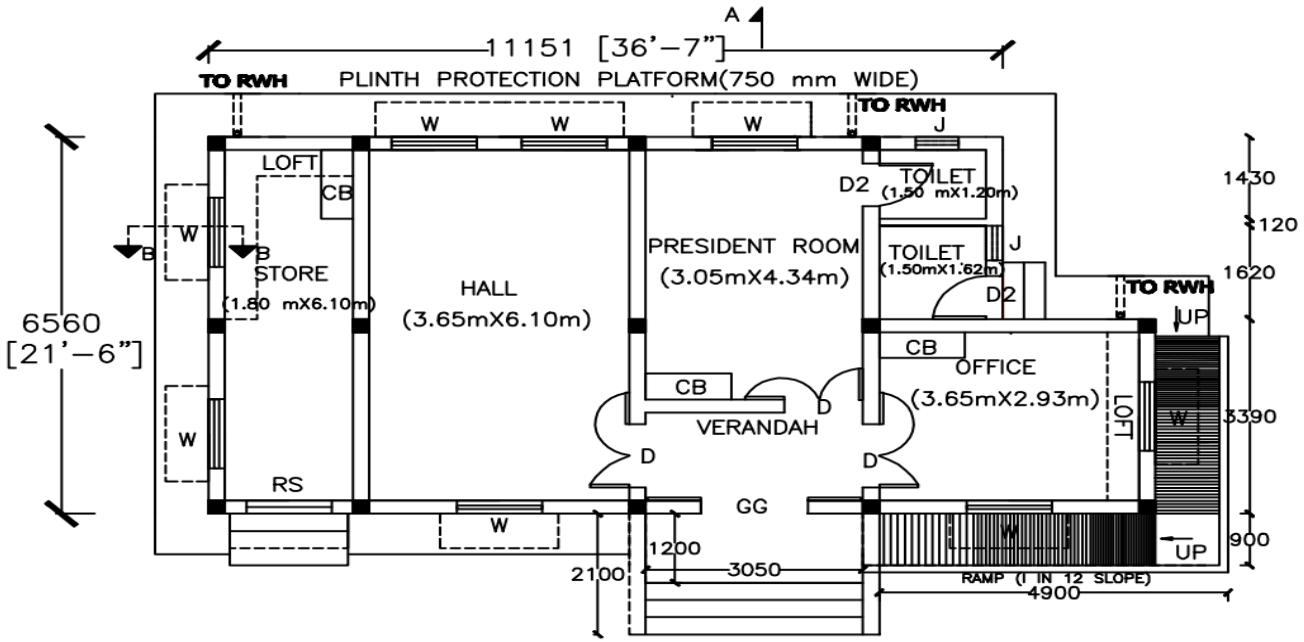
Phase VIII
Gujarat technological university
Chandkheda-Ahmedabad

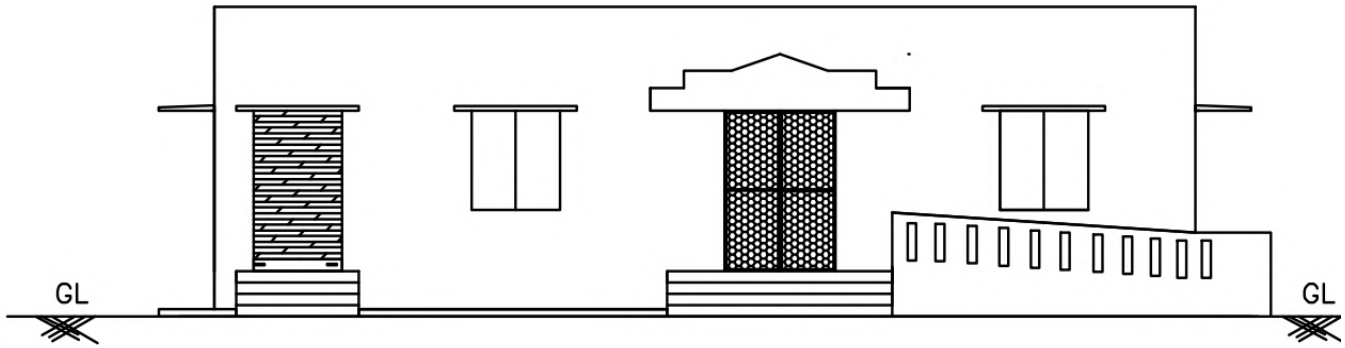
Government engineering college
Dahod
Zalod road, Dahod, 389151

Design number : 11

Dudh mandali



PLAN A



ELEVATION

- All dimension in meter.
- Drawing should be read not to scale.

Design is prepared only for education purpose. Corrected all data must be check before use.

To
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Design number : 12

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