DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION

BAVAKHAKHARIYA VILLAGE
JAMNAGAR DISTRICT

NAME	BRANCH NAME	ENROLLMENT NO
Ankit M. Solanki	Civil Engineering	186030306048
Sharad K. Badva	Civil Engineering	186030306002

COLLEGE NAME

ATMIYA INSTITUTE OF SCIENCE & TECHNOLOGY FOR DIPLOMA STUDIES

COLLAGE LOGO

NODAL OFFICERS NAME

MR. KHEMENDRA DATTANI

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY

Chandkheda, Ahmedabad – 382424 Gujarat

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CERTIFICATE

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

Detail Project Report for,

Bavakhakhariya Village, Jamnagar

District Under

Vishwakarma Yojana: Phase-VI

In partial fulfilment of the project offered by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

During the academic year 2020-21

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

NAME	BRANCH NAME	ENROLLMENT NO
Ankit M. Solanki	Civil Engineering	186030306048
Sharad K. Badva	Civil Engineering	186030306002

Date of Report Submission:	
Principal Name and Signature:	**Prof. M.S. Kagthara**
VY-Nodal Officer Name and Signature:	**Prof. KHEMENDRA DATTANI**
Internal(Evaluator)Guide Name and Signature:	
College Name:	**ATMIYA INSTITUTE OF SCIENCE & TECHNOLOGY FOR DIPLOMA STUDIES**
College Stamp:	

ABSTRACT

Vishwakarma Yojana is one of the initiatives towards urbanization that is village development by the government of Gujarat, which was allotted as a real time situation type project provides by GTU. About 75% of India's population, or 8000 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. 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. Vishwakarma Yojana project gives best practical experience to engineering students in his life.

"The main objective of this Yojana is "**Creation of infrastructure - connectivity, civic and social infrastructure along with provision of alternative Economy generation is the key pillars that the concept hinges on."**

For Development of Bavakhakhariya village we are trying to provide required facilities like Public garden and Bus stand as a physical infrastructure facility, primary health center (PHC)and Medical Store as Social Design, Assembly hall and Public Library as socio-cultural faciltty, water butt as a sustainable infrastructure, Avedoand Main gate as heritage design,Plastic water crusher and CCTV control room as a smart infrastructure facility, etc.

The village in Gujarat still not developed with respect to amenities required. The project will provide some design and recommendation of various infrastructure facilities for the development of village.

The main aim of the project is to provide urban amenities in rural areas and maintaining the rural soul. The project will help in development villages, sustainable manner, reduce migration from villages and communities for city. It consist is also assessment, renewable energy application, telecommunication etc. and social infrastructure facilities like education, health, library, community hall, recreation facilities like solar street light, rain water harvesting biogas plant & other sustainable development.

Key words: **Smart Infrastructure, Sustainable Infrastructure, Urbanization**

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 gratitudeto **Prof. (Dr.) Navin Sheth** ,**Hon'ble Vice Chancellor, Gujarat Technological University-Ahmadabad**, for his encouragement and giving us the wonder full project.

We also express our gratitude to **Dr. K. N. Kher**, **Registrar, Gujarat Technological University-Ahmedabad** for giving us complete support.

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We express our sincere thanks to **DDO, TDO, Sarpanch, Talati and staff members of Ahmedabad** District for providing us with requisite data whenever we approached them. Especially our thanks are to all villagers and stake holders for their support during Survey.

We are also thankful to our **Prof. M. S. Kagthara Principal**, faculties of our colleges for their encouragement and support to complete this project work.

An act of gratitude is expressed to our internal guide / Evaluator / Nodal Officer, **Mr. Khemendra R. Dattani from College Atmiya Institute of Technology and Science for Diploma Studies, Rajkot** for their invaluable guidance, constant inspiration and active involvement in our project work.

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

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

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

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1.1 Background and Study Area Location:

- We have visited Munjka village. Munjka is located in Rajkot city in Gujarat state, India. Munjka is well development village .So, we choose as a ideal village.
- Munjka pin code is 360005 and postal head office is in Rajkot University area.
- Rajkot is nearest town to munjka village. The surrounding nearby village from munjka is Motamova, Vavdi, Bedi etc.

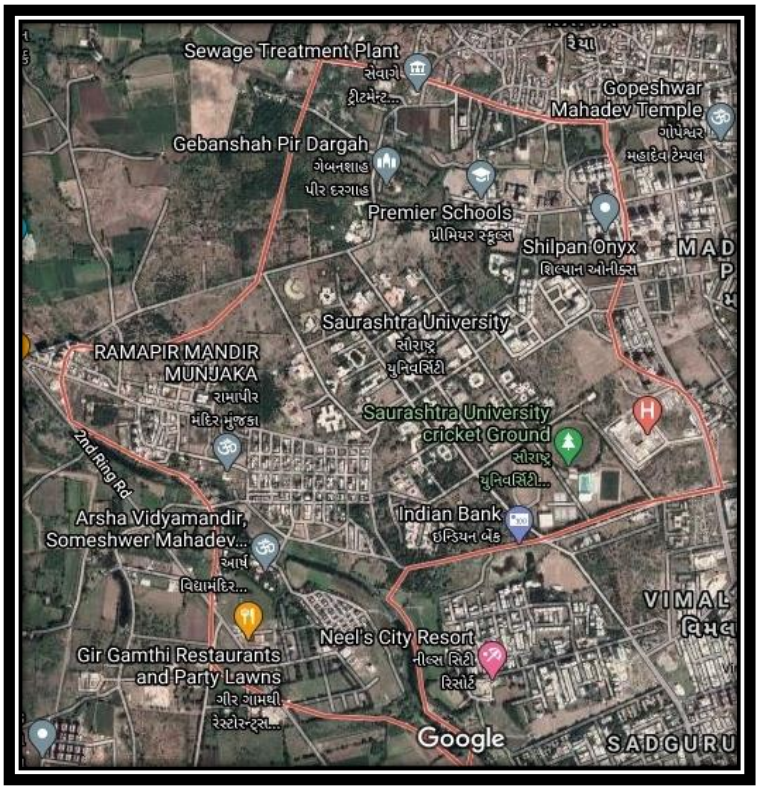


Figure 1: Maps of Munjka

1.2 Concept: Ideal village , Normal village:

- If any village have basic required facilities like education ,public health centre, bus stand, drainage, good housing , telecommunication system, banking and ATM, common toilets, drinking water etc...So that village consider as an ideal village like Munjka.
- So like Munjka we try to build other normal village to ideal villages. So, we definitely reduce people's migration rate to the urban areas.

1.2.1 Objectives:

- To reduce urban city pressure and lower the migration rate by developing village with a "rural soul" but with all urban facilities that a city may have to encourage people with new technology.
- Maintain wetland and forest in and around the village.
- Promote development in the village core area.
- Encourage the development of local businesses and services
- Ensure that future development avoids the natural environment.

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

- The current sarpanch of munjka village is Mr.JayeshbhaiJadav.
- Munjka village is 142 meter above sea level.
- The pin code is 360005. The village has overhead tank and undergroundsumo for water supply.
- Munjka village literacy rate is 75%.
- Road of Munjka village made by C.C and R.C.C.
- The residential area of village is 336 hectares and the agricultural area is 445 hectares .
- Garbage collection in munjka village it's by R.M.C.
- In past few years village is very developed so now this village is part of RMC.
- The main occupation of village is labour farming, job etc.

1.2.3 The ideal of a model/smart village:

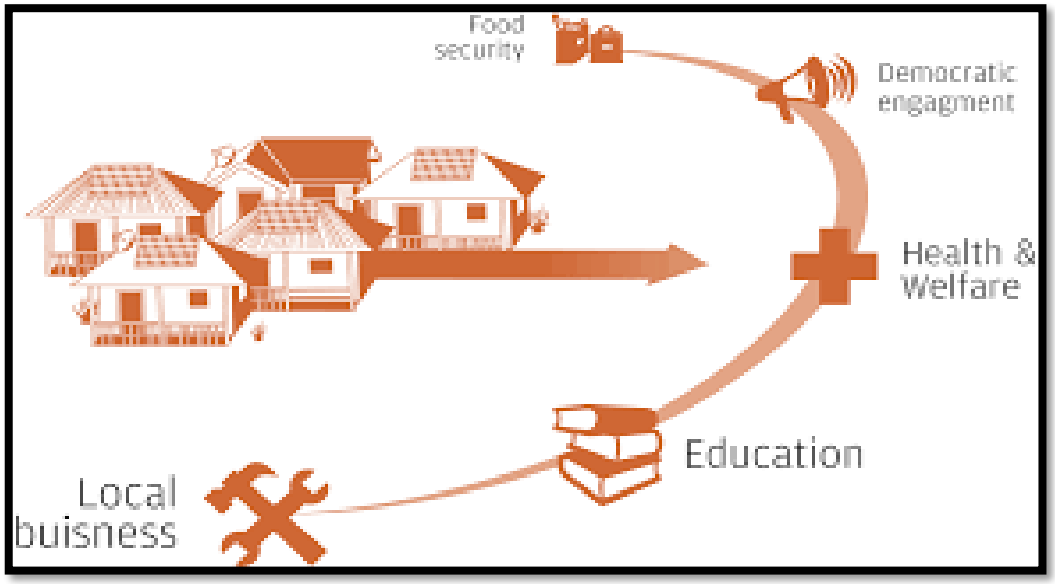


Figure 2: Smart village concept

Smart village India:

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

1.3 Detail study (socio economic Physical demographic and Infrastructure detail)of ideal Village/smart village with photograph:

(1) Basic details of Munjka:

- In Munjka village there is 753 houses. Population of munjka is 3483 as per 2011. In village male are 1816 and female are 1667 and 423 children under the age of 6.
- Munjka village rate literacy is 75%.2617 out of total 3483 population is educated.
- Rate of literacy of male and female are 76% and 73% respectively.
- The residential and agriculture area of munjka is 336 hec. and 445 hec. respectively.

Figure 3: Gate of Munjka village

Detail study of Munjka:

- In village there is good infrastructure facilities are available like hospital, collage, water facilities (over head tank), bank, gram panchayat etc.
- In water facility there are overhead tank with 1.5 lakhs litres and underground sump with 50,000 litres capacities for supplying water.

Figure 4: Harivandana collage of Munjka

Figure 5: Over head of Munjka

Figure 6: Aanganvadi of Munjka

- In Munjka village underground drainage system is available. Solid and liquid waste disposal system is also available in munjka village.
- Munjka village has good road facilities available .The main road of village is RCC and street light available in village.

Figure 7: Main Road

Figure 8: Street road

- In village good education facilities are available .The village has 2 primary schools, 1 secondary school, 1 high school and 3 anganvadi in village for children.

Figure 9: Primary school

Figure 10: Secondary school

- Munjka village has own grampanchayat.

Figure 11: Gram panchayat

- In village there are small clinic, medical store, 2 provisional stores, milk dairy and banking facilities with ATM are provide in village with good quality.

Figure 12: Medical store

Figure 13: Small stores

- Some of market store were close due to Covid-19 pandemic.

Figure 14: Commercial Building

Figure 15: ATM

Figure 16: Police station

- The highlight of Munjka village is Saurashtra University.

Figure 17: Saurashtra University

- Here are some extra photos of Munjka village.

Figure 18: Visit of Munjka

1.4 SWOT analysis of ideal village/smart village:

(1) Strength:

- Strength of village is good road and infrastructure facilities with great condition.
- Munjka has high literacy rate.

(2)Weakness:

- In village there are not special caring facilities for animals.
- No big infrastructure available like cinema and video hall, clothes store etc.
- Cleanness is not proper in village.

(3)Opportunity:

- In village educational opportunity for student like MYSY and other gov. Scheme are available.
- Opportunity like agro industry (government scheme) available for farmers.
- In future there is renewable resource will be develop.

(4)Threat:

- To introduce new government Scheme in village.
- To introduce new technical knowledge like new instrument with new tech.
- People are lazy to do something new.

1.5Future Prospective of development of the ideal village/smart village:

- Maintain village as ideal village or do whatever best for village.
- Use of new technology and new things to improve village development.

- In future make sure that village has sufficient health, drinking, sanitation, irrigation, education, domestic power supply and agricultural facilities are available.
- In future use of renewable energy sources.
- Aware people for cleanliness and make sure that village has pollution free atmosphere.

1.6 Benefits of visits of ideal village/smart village:

- Visiting ideal village we get hoe ideal village look like, so we understand how to develop and work in our selected village.
- Smart villages can translate into improved farm productivity, water conservation and economic independence to village youth. It makes great social, economic and political sense
- We get knowledge regarding various governments Scheme.
- By visiting village we get great experience so in future this experience help how to communicate with people and understand what difficulty bear village.
- Some other benefits such as:
    - Locally produced and locally consumed energy
    - Creation of job
    - Contribution to global environment
    - New technologies in education and e-learning.

1.7 Civil aspect required in ideal village/smart village:

- In civil aspect there are required good animals shelters for animals.
- Village has no citizen service centre so this is required.
- In village there is no public library so public library also required for village.
- There is no universally accepted definition of a smart village. It means different things to different people.
- The conceptualization of Smart Village, therefore, varies from country to country, depending on the level of development, willingness to change and reform, resources and aspirations of the village residents.

Chapter 2: About village literature review Bavakhakhariya village.

2.1 Introduction: Urban and rural village concept.

Figure 19: Urban vs. Rural

(1)Urban village:

- Urban villages are walk able, bicycle-friendly, transit-oriented, mixed-use neighbourhoods that can provide housing and jobs, environmental benefits, and quality of life improvements for a city's residents and the surrounding region.

(2) Rural village:

- Rural development usually relates to the method of enhancing the quality of life and financial well-being of an individual specifically living in populated and remote areas.
- Traditionally rural development is centred on the misuse of land-intensive natural resources such as forestry and agriculture. But today, increasing urbanisation and change in global production, networks have transformed the nature of rural areas.

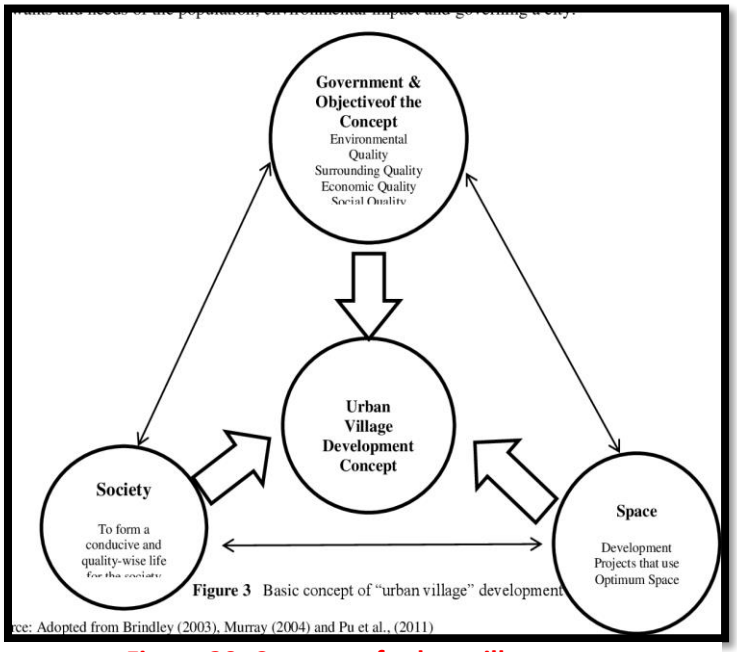


Figure 20: Concept of urban village

- Today, rural development still remains the core of the overall development of the country. It has become more than two-thirds of the country's people is dependent on agriculture for their livelihood and one-third of rural India is still below the poverty line. Therefore, it is important for the government to be productive and provide enough facility to upgrade their standard of living.

2.2 Importance of the rural development:

- Rural development is important not only for the majority of the population residing in a rural area but the growth of rural activities is necessary to stimulate the speed of overall economic expansion of the nation.
- Rural development is pretended to be noticeable importance in the country today than in the olden days in the process of the evolution of the nation. It is a strategy trying to obtain improved rural creation and productivity, higher socio-economic equality, and ambition, stability in social and economic development.
- The primitive task is to decrease the famine roughly about 70 percent of the rural population, implement sufficient and healthy food. Later, serve fair equipment of clothing and footwear, a clean environment and house, medical attention, recreational provision, education, transport, and communication.

2.3Ancient village/ Different definition of village:

(1) Rural area:

- A rural area is an open swath of land that has few homes or other buildings, and not very many people.
- A rural areas population density is very low. Many people live in a city, or urban area. Their homes and businesses are located very close to one another. In a rural area, there are fewer people, and their homes and businesses are located far away from one another.
- Agriculture is the primary industry in most rural areas. Most people live or work on farms or ranches. Hamlets, villages, towns, and other small settlements are in or surrounded by rural areas.
- Wildlife is more frequently found in rural areas than in cities because of the absence of people and buildings. In fact, rural areas are often called the country because residents can see and interact with the countries native wildlife.
- Throughout the world, more people live in rural areas than in urban areas. This has been changing rapidly, however. Urbanization is happening all over the world. In Asia, for example, the United Nations estimates that the urban population will increase by almost 2 billion by 2050.

(2) Urban area:

- In urban planning and design, an urban village is an urban development typically characterized by medium-density housing, mixed use zoning, good public transit and an emphasis on pre-destrinization and public space. Contemporary urban village ideas are closely related to New Urbanism and smart growth ideas initiated in the United States.

- Urban villages are seen to provide an alternative to recent patterns of urban development in many cities, especially decentralization and urban sprawl. They are generally purported to:
    - Reduce car reliance and promote cycling, walking and transit use
    - Provide a high level of self-containment (people working, recreating and living in the same area)
    - Help facilitate strong community institutions and interaction

2.4Scenario: Rural/ Urban village of India population growth:

T/R/U	1991-2001			2001-2011		
	P	M	F	P	M	F
Total	22.73	23.45	21.95	15.99	15.80	16.21
Rural	15.25	15.99	14.50	10.34	11.02	9.64
Urban	34.57	34.70	34.43	23.67	21.67	25.58

Table-1: Percentage rate of growth of population: 1991-2001 and 2001-2011.

T/R/U	1991			2001			2011		
	P	M	F	P	M	F	P	M	F
Rural	61.31	60.10	62.60	57.57	56.46	58.78	54.77	54.13	55.45
Urban	38.69	39.90	37.40	42.43	43.54	41.22	45.23	45.87	44.55

Table-2: Percentage share of population, 1991 to 2011

T/R/U	1991			2001			2011		
	P	M	F	P	M	F	P	M	F
Total	17.11	17.00	17.23	14.11	14.18	14.04	11.43	11.69	11.16
Rural	18.17	18.36	17.98	15.11	15.46	14.75	12.10	12.54	11.63
Urban	15.42	14.94	15.96	12.75	12.52	13.02	10.63	10.69	10.56

Table 3: Percentage share of child population (0-6)

T/R/U	1991	2001	2011
Total	934	922	925
Rural	972	960	948
Urban	875	873	899

Table-4: Population sex ratio: 1991 to 2011

T/R/U	1991	2001	2011
Total	946	913	883
Rural	953	916	880
Urban	934	908	888

Table-5: Child sex ratio (0-6 age)

T/R/U	1991			2001			2011		
	P	M	F	P	M	F	P	M	F
Total	64.87	76.56	52.32	76.88	85.97	67.03	82.91	89.82	75.48
Rural	55.52	69.74	40.96	70.36	81.93	58.40	77.09	86.39	67.38
Urban	79.20	86.41	70.87	85.48	91.03	79.09	89.84	93.79	85.44

Table-6: Rural-Urban literacy rates: 1991-2011

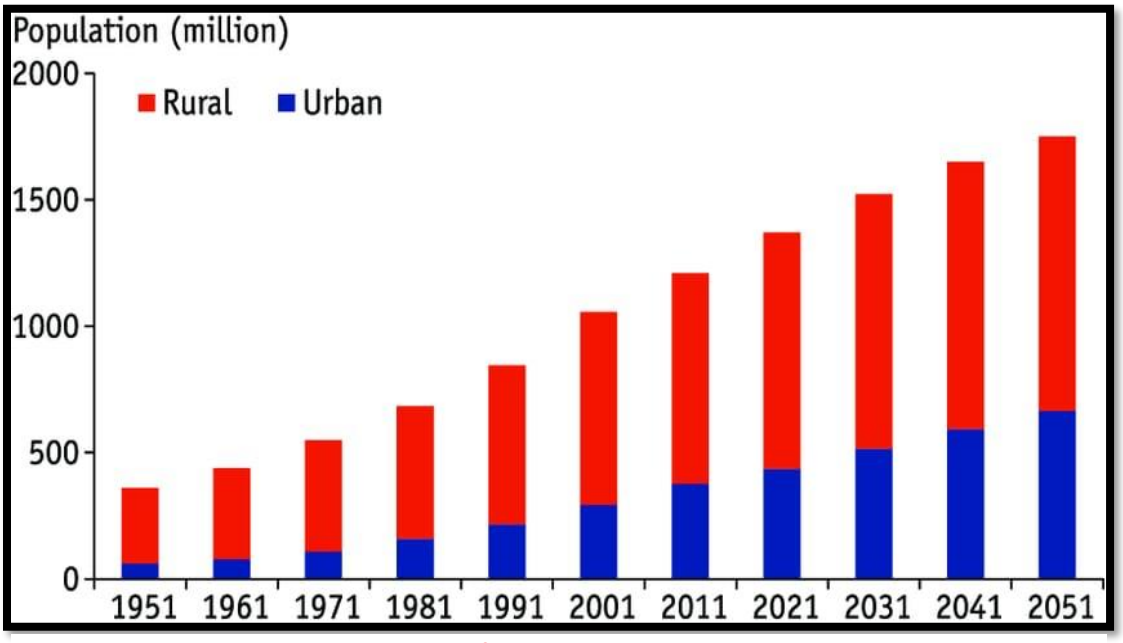


Figure 21: Graph of population in Rural and Urban

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

Description	2011	2001
Approximate Population	6.04 Corer	5.07 Corer
Actual Population	60,439,692	50,671,071
Male	31,491,260	26,385,577
Female	28,948,432	24,285,440
Population Growth	19.28%	22.48%
Percentage of total Population	4.99%	4.93%
Sex Ratio	919	920
Child Sex Ratio	890	883
Density/km2	308	258
Density/mi2	798	669
Area(Km)2	196,244	196,024
Area mi2	75,770	75,685
Total Child Population(0-6Age)	7,777,262	7,532,404
Male Population	4,115,384	4,000,148
Female Population	3,661,878	3,532,256
Literacy	78.03%	69.14%
Male Literacy	85.75%	79.66%
Female Literate	69.68%	57.80%
Total Literate	41,093,358	29,827,750
Male Literate	23,474,873	17,833,273
Female Literate	17,618,485	11,994,477

Table 7: Gujarat data of census 2011

2.6 Rural development issue-concern-measure issues concerns:

(1) People related problems
(2) Agricultural related problems
(3) Infrastructure related problems
(4) Economic problems
(5) Leadership related problems
(6) Administrative problems

1. People related problems

- Traditional way of thinking.
- Poor understanding.
- Low level of education to understand development efforts and new technology.
- Lack of confidence.
- Poor awareness
- Low level of education

2. Agriculture related problems

- Lack of expected awareness, knowledge, skill and attitude.
- Unavailability of inputs.
- Poor marketing facility.
- Insufficient extension staff and services.
- Multidimensional tasks to extension personal
- Small size of landholding.

3. Infrastructural related problems

Poor infrastructure facilities like:

- Water
- Electricity
- Transport
- Education institutions
- Communication
- Health
- Employment
- Storage facility etc

4. Economic problems

- Unfavourable economic condition to adopt high cost technology
- High cost of inputs.
- Under privileged rural industries.

5. Leadership related problems

- Leadership among the hands of inactive and incompetent people.
- Self-interest of leader.

6. Administrative problems
- Political interference
- Lack of motivation and interest
- Unwillingness to work in village
- Improper utilization of budget
- No proper monitoring of programs and lack in their implementation.

Concerns:

The major problems that have been identified are poverty, illiteracy, unemployment, homelessness and crimes and violence. Poverty is the condition when the individuals experience scarcity of resources that are necessary to sustain their living condition appropriately.

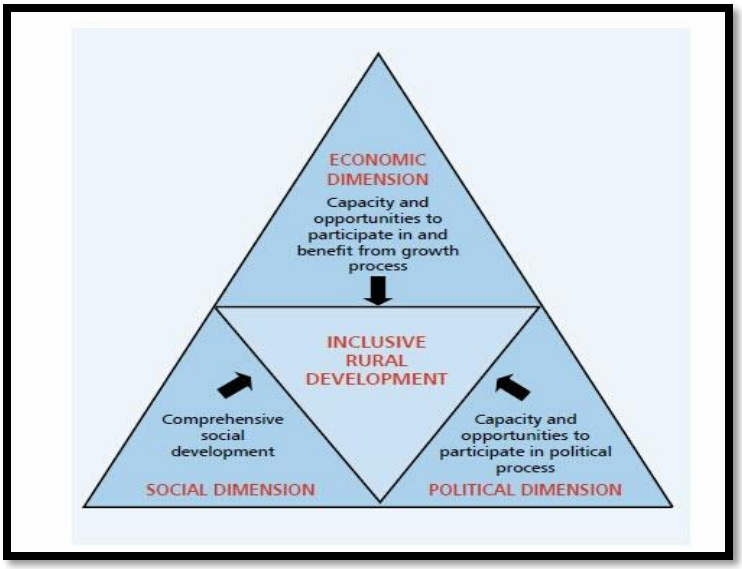


Figure 22: Inclusive rural development

2.7 Various infrastructure guidelines with the norms for village for the provisions of different infrastructure facility.

(1) Education
- Basic education facility like primary and secondary school.
- Small library for extra knowledge.

(2) Health
- Primary health centre.

(3) Roads
- Street roads, main roads are well developed with side plantation if possible.

(4) Sanitation/Cleanness
- Public toilet
- Solid waste management
- Drainage
- Door to door collection.

(5) New technology in village

- Wi-Fi and internet
- E-gram facility
- Electrification
- Solar system

(6) Grampanchaya

- Good panchayat
- Good community to increase village development

(7) Child development

- Aanganvadi
- Small Park for children.
- Equipment to develop child knowledge.

(8) Water facilities

- Water hand pump
- Water pipe line for daily use and drinking
- Construction ponds, wells…etc.

(9) Basic stores

- General store
- Small market
- Food stores etc...

Figure 23: Infrastructure facilities of village

2.8 Ancient /Existing electrical concept study as a literature review for village development:

- This is electrical concept, so that's not part of our project.

2.9 Other project/ schemes:

List of various rural development scheme in India.

(1) Deendayalupadhyaygrameenkushalyojna.
(2) Roshni: Skill development scheme for tribal.
(3) Swachhbharat mission.
(4) SansadAdarsh Gram Yojna.
(5) Heritage development and augmentation yojna (HRIDAY).
(6) Mahatma Gandhi national rural employment guarantee scheme (MGNREGS).
(7) National rural livelihood mission.
(8) Pradhanmantri gram sadak mission.

Chapter 3: Smart (cities/village) concept and its visit.

3.1 Introduction: Concepts, definitions and practice:

Concept:

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

Definition:

Communities in rural areas that use innovative solutions to improve their resilience, building on load strength and opportunities. So that type village who has all basic necessity for people with good facilities like education, health care, good sanitation etc... That's called as smart village.

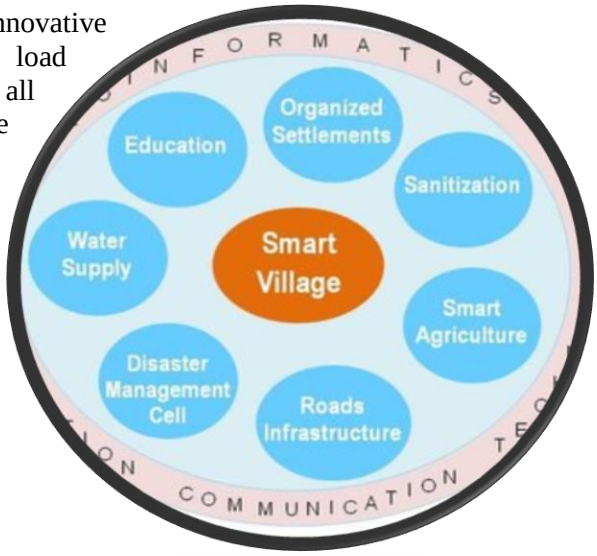


Figure 24: Concept of Smart village

Practice:

- Recreation facility
- Reading facility
- Farming facility
- Health facility
- Sports club facility
- Plantation etc...

3.2 Vision-goals:

Vision

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

Goals

- Develop good infrastructure with basic amenities.
- Develop good environment with less pollution.
- Make village/city clean and safe as well as possible.
- Increase city/ village knowledge with new technology and instrument to development of place.

Standards:

- Some standards activities for smart city is:
- Strategy: use smart strategy to develop city or village
- Process: use smart and economical process with great management.
- Management and smart work: management with smart most important in projects.
- Explanation: good explanation is effect good at year project.

Performance measurement indicators:

- City keys provides a validated, holistic performance measurement framework for monitoring and comparing the implementation of smart city solutions, with the objective of speeding up the transaction to low carbon, resource- efficient cities.

3.3Technological options:

- Smart energy
- Smart transportation
- Smart data
- Smart infrastructure
- Smart mobility
- Smart mobility
- Smart education
- Smart banking
- Smart health care
- Smart instrument
- Smart agriculture
- Smart sanitation with drainage etc...

3.4 Road map and safe guards:

- A road map is map which shows the road in a particular area in detail.
- Countable noun. A road map of something is a detailed account of it, often intended to help people use or understand it.

Road Safety

Technical Safeguards

- Drive at a steady speed. Avoid sudden acceleration.

- Do not race the engine when waiting at traffic. Switch off, whenever waiting for over a minute.
- Do not uses choke any more than is required.
- Do not ride on clutch pedal.
- Anticipate stops and bends. Slow down well in advance, reduce the speed of the engine and do not use sudden application of brakes.
- Remain in low gears for minimum time. Change to higher gear as soon as possible.
- Park the car in such a way that you will not require to drive out in reverse gear.
- Do not carry excessive luggage on roof when travelling in speed on highway.
- On highways limit your cruising speed to between 40-50 KMPH.

3.5 Issues and challenges:

Environmental challenges:

- Climate changes
- Water pollution
- Air Pollution
- Soil erosion
- Land pollution
- Noise pollution

Social economic challenges:

- Unemployment
- Corruption
- Lack of education
- Growing population
- Lack knowledge of new technology
- Health
- Lack of excitement
- Laziness nature
- Governmental issue etc...

3.6 Smart infrastructure- intelligent traffic management:

- With the increasing world population, the number of problems has increased. The problems associated with our social environment have tremendously increased. These problems involve pollution, hunger problems, traffic issues, health issues, etc. The problem to focus on today is Traffic.

- In the past few decades, traffic congestion has extremely increased. The solution to this traffic congestion is some digital or intelligent system that could help in better flow of traffic and less congestion. It is the time when we should leave behind our antique systems and apply new technology and innovations in our lives. As it is quite difficult to widen the roads or make the cars small but it is possible to control them efficiently and in a better way. One of the possible solutions is an intelligent system with controls the system in a better way than the conventional ways.

- If we see the conventional traffic management system, some of the traffic signals are automatic signals which use timers and some of them are manual in which a traffic warden is standing who changes the signal according to the traffic condition. The problem arises when there's a signal with timer and there is no traffic from the opposite side, but still, some people have to wait till the timer ends. This causes a huge traffic line in that opposite direction. The other problem is that the

warden may provide large time to one side by mistake, which again creates a huge line in the opposite direction. Another problem is of over-speeding. Some unreasonable people of the society violate the rules which if for their own betterment. Over-speeding can cause fatal accidents and deaths too. The conventional method is to use a speed checking camera. If a vehicle crosses the speed limit, the camera tells the speed and the traffic warden runs his car behind that vehicle, stops him and gives him a warning in the form of a "Challan".

- To overcome these problems, Artificial Intelligence (AI) can be used; where Artificial Intelligence is to simulate the intelligence of human beings which is processed by computers. These processes consist of "procurement" of data and information and manipulation of the data and "reasoning" which is using rules to reach some results and self-improvement. Nowadays this technology is being applied in different fields of life; traffic management system is one of them. According to the BBC, Artificial Intelligence can end traffic jams. Artificial Intelligence should not be used because it's a trending thing; it should be used because it can help in building a better and smart society. Almost every developed state is now using or trying to implement artificial intelligence in their traffic management systems to avoid accidents. The question is how it works? Sensors are installed everywhere; in parking places, traffic control signals and at the intersection of roads, which use Artificial Intelligence to accumulate helpful data for the government officials to plan their city initiatives in an efficient manner. A radar-based monitoring system can also be applied, which is currently being used in New Delhi, India. High-resolution CCTV cameras are also applied to take a snap of vehicles which break the rules and violate laws. "Automated Number Plate Recognition Cameras" (ANPR) is applied which directly send the Challan (fine slip) to the residence law violators. The raw data which collected is extremely bigger than what humans can see, manipulate and evaluate. This is the point where the role of Artificial Intelligence takes place. It can help in keeping a count of a huge number of pedestrians, automobiles, or any other movements and also keeps a track on their speeds. It can also do face recognition, vehicle number plate reading and evaluate and manipulate all satellite data up to a high extent to create patterns essential for the development of cities.

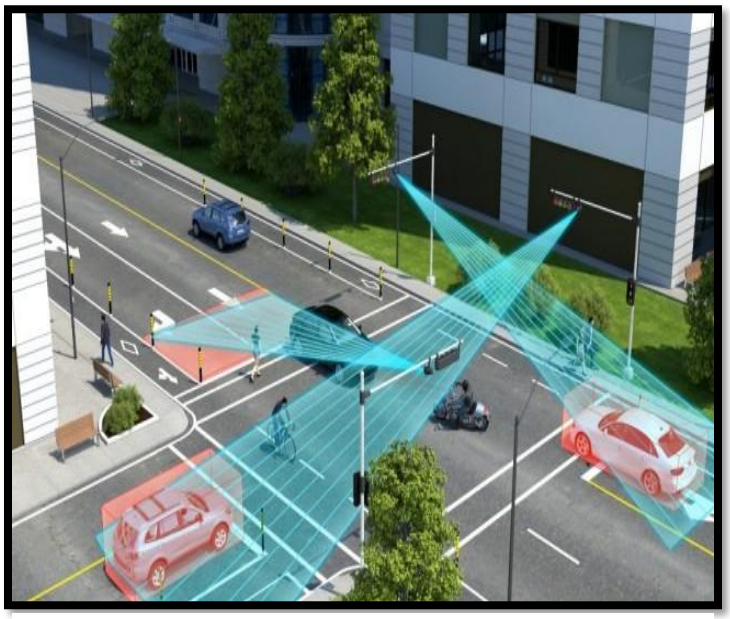


Figure25: Intelligent Traffic Management System

- As the world population is increasing, the traffic is also increasing. We can do nothing to slow down the pace with which the population of the world is increasing but what we can control is traffic. So it is important to come up with some idea to help out the problems occurring in traffic management. The use of Artificial Intelligence can enable us to control the traffic in a better and efficient way. It helps to control traffic and save human lives. Many developed countries are using this technique nowadays and this is spreading day by day in this global village.

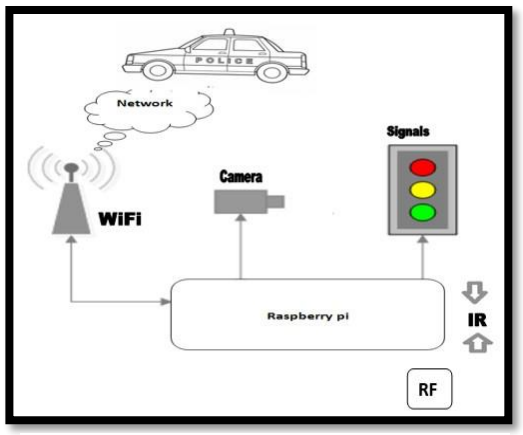


Figure 26: Intelligent Traffic Management System

3.7 Cyber security or any other concept as per.

- **What is Cyber Security?**
  Cyber security is the practice of defending computers, servers, mobile devices, electronic systems, networks, and data from malicious attacks. It's also known as information technology security or electronic information security. The term applies in a variety of contexts, from business to mobile computing, and can be divided into a few common categories.
- **Network security** is the practice of securing a computer network from intruders, whether targeted attackers or opportunistic malware.
- **Application security** focuses on keeping software and devices free of threats. A compromised application could provide access to the data its designed to protect. Successful security begins in the design stage, well before a program or device is deployed.
- **Information security** protects the integrity and privacy of data, both in storage and in transit.
- **Operational security** includes the processes and decisions for handling and protecting data assets. The permissions users have when accessing a network and the procedures that determine how and where data may be stored or shared all fall under this umbrella.
- **Disaster recovery and business continuity** define how an organization responds to a cyber-security incident or any other event that causes the loss of operations or data. Disaster recovery policies dictate how the organization restores its operations and information to return to the same operating capacity as before the event. Business continuity is the plan the organization falls back on while trying to operate without certain resources.
- **End-user education** addresses the most unpredictable cyber-security factor: people. Anyone can accidentally introduce a virus to an otherwise secure system by failing to follow good security practices. Teaching users to delete suspicious email attachments, not plug in unidentified USB drives, and various other important lessons is vital for the security of any organization.
- Types of cyber threats
  The threats countered by cyber-security are three-fold:
  1. **Cybercrime** includes single actors or groups targeting systems for financial gain or to cause disruption.
  2. **Cyber-attack** often involves politically motivated information gathering.
  3. **Cyber terrorism** is intended to undermine electronic systems to cause panic or fear.

3.8 Redevelopment – Greenfield development district cooling:

Retrofitting:

- Retrofitting is the process of modifying something after it has been manufactured.
- Retrofitting building involves changing its systems or structure after its initial construction and occupation. This work can improve amenities for the building's occupants and improve the performance of the building. As technology develops, building retrofits can significantly reduce energy and water usage.

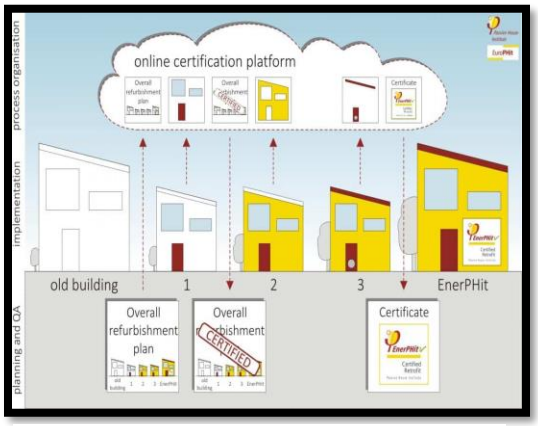


Figure 27: Retrofitting houses

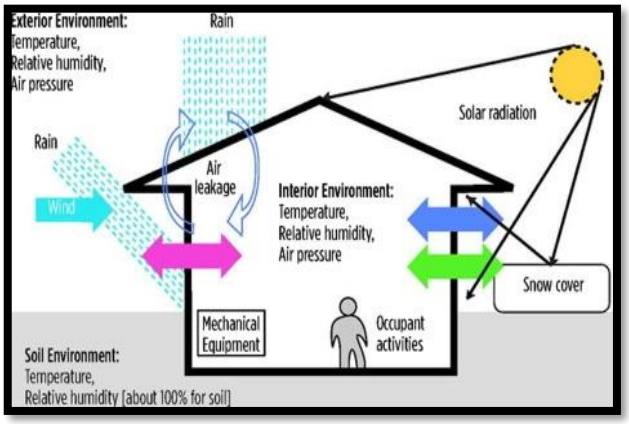


Figure 28: Retrofitting strategy for building

Redevelopment:

- Redevelopment is any new construction on site that has pre existing uses. It represents a process of land development uses to revitalize the physical, economic and social fabric of urban space.

Greenfield development:

- A Greenfield development is a real estate construction project on previously non-development land .Examples of typical Greenfield development sites are:
  - Agricultural field
  - Forest land
  - Unused land parcels
- A Greenfield site is often at the edge of a city, town or suburban area, on a waterway or near a highway off ramp. Those locations make them ideal sport to construct new commercial buildings to support a regions growth.

Figure 29: Greenfield development

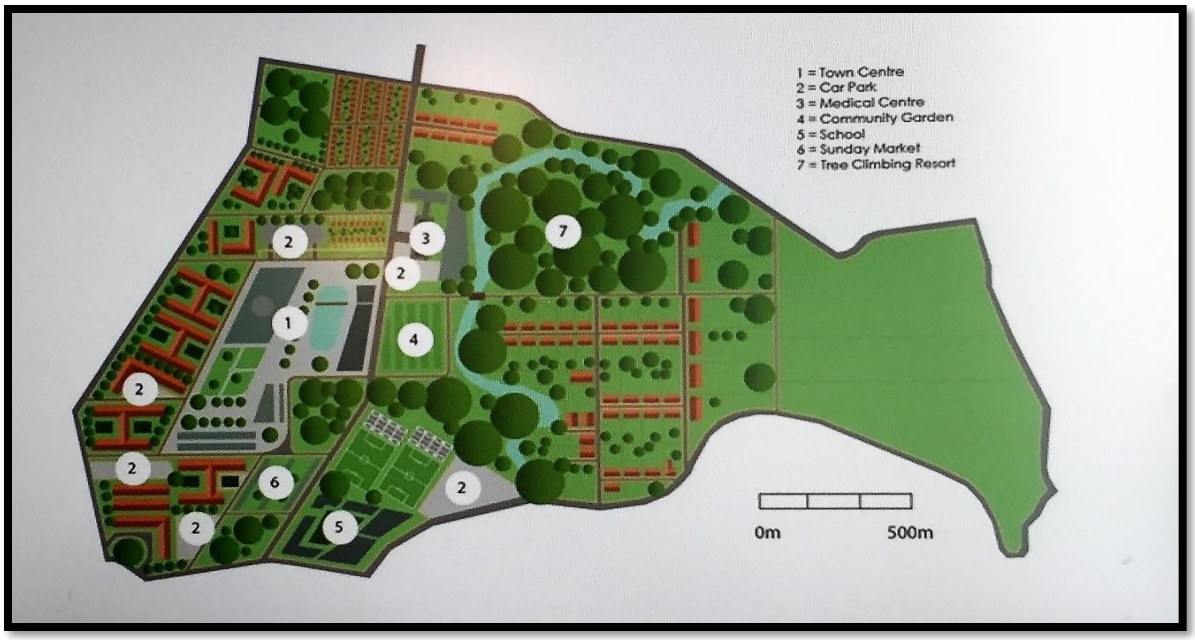


Figure 30: Plan of Greenfield development

3.9 Strategic option for fast development:

- The strategic components of area based development in the smart cities mission are city improvement (retrofitting), city renewal (redevelopment) and city extension (Greenfield development) plus a pan-city initiative in which smart solution are applied covering larger parts of the city.
- Previously we understand the concept of retrofitting, redevelopment and Greenfield development so we know what's they are and how it's work.

3.10 India's urban water and sanitation challenges and role if indigenous technologies:

Role of indigenous technologies:

- Indigenous technology is used by the native inhabitants of a country or region and it constitutes an important part of its cultural heritage.
- Characteristically, indigenous technologies seek to engage and evoke significant knowledge and experiences reflective of the indigenous world through meaningful infractions.

India's urban water and sanitation challenges:

- The problem of access to safe drinking water and sanitation facilities in urban areas of India is a major concern. There is a need to reuse treated wastewater in order to meet the current and future demands for water.
- The consistent increase in the rate of growth of India's population has also led to the increase in demand for water, particularly in the urban areas where the rate of increase is higher compared to rural areas. In 2001, urban population was 285 million and assuming water supply of 135 litres per capita per day, the domestic water demand is estimated at around 38,475 million litres per day (MLD), whereas as in 2011 urban population was 377 million with a domestic water demand of 50,895 MLD. It shows that growth in urban population leads to additional water demand of 12,420 MLD in urban areas. The water supply of 135 litres per capita per day (LPCD) as a service level benchmark should be given for domestic water use in urban local bodies. However, currently as per Central Public Health and Environmental Engineering Organisation (CPHEEO), an average water supply in urban local bodies is 69.25 LPCD. This indicates that there is a vast gap between the demand and supply of water in urban areas of India.
- The problem of access to safe drinking water and sanitation facilities in urban areas of India is also a major concern. It is estimated that by 2050, half of India's population will be living in urban areas and will face acute water problems. At present, 163 million people do not have access to safe drinking-water and 210 million people lack access to improved basic sanitation in India. In urban areas, 96% have access to an improved water source and 54% to improved sanitation. Whereas in rural areas, which accounts for 72% of India's population lives, only 84% have access to safe water and only 21% for sanitation. In addition, there is a lack of wastewater treatment facilities to treat the wastewater of a growing population. There is a need to reuse treated wastewater in order to meet the current and future demands for water.

3.11 Initiative in village development by local self – government:

- Town panchyat and city corporation requires regular audit support .
- Technical support staff needs to be strengthened in each urban local bodies and to dedicated energy conservation unit need to place at least in bigger urban local bodies.
- DPCs at least initiate in bigger urban local bodies.

3.12 Smart Initiatives by district Municipal Corporation:

- In Rajkot, Municipal Corporation is taking a step for developing toward smart city and its vision to develop as smart, liveable and iconic city of Gujarat.
- So they needed city as inclusive growth and sustainable development by leveraging its historical strength and providing state of the art infrastructure, delivery of services and empowering ecosystem by enabling citizen to realize.

3.13 Any project contributed working by government/ NGO/ other digital country concept:

Leader programme:

- The leader programme is a European union initiative to support rural development project initiated at the local level in order to revitalize rural areas and create job.
- Leader I ran from 1991-93
- Leader II ran from 1994-99
- Leader+ from 2000-2006
- In the current programming period (2014-2020) the leader method has been extended to cover not only rural but also coastal and urban area under the banner of community-led local development (CLLD).

OBJECTIVE:

- To encourage experiment in rural development.
- To support cooperation between rural territories: Several LAGs can share their resources.
- To network rural areas, by sharing experiences and expertise in the development of rural areas by creating databases, publications and other modes of information exchange.

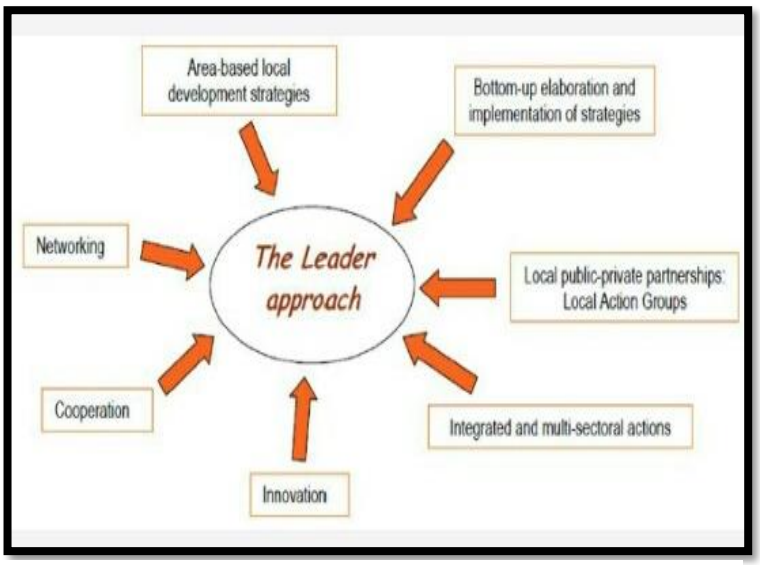


Figure 31: Leader Program

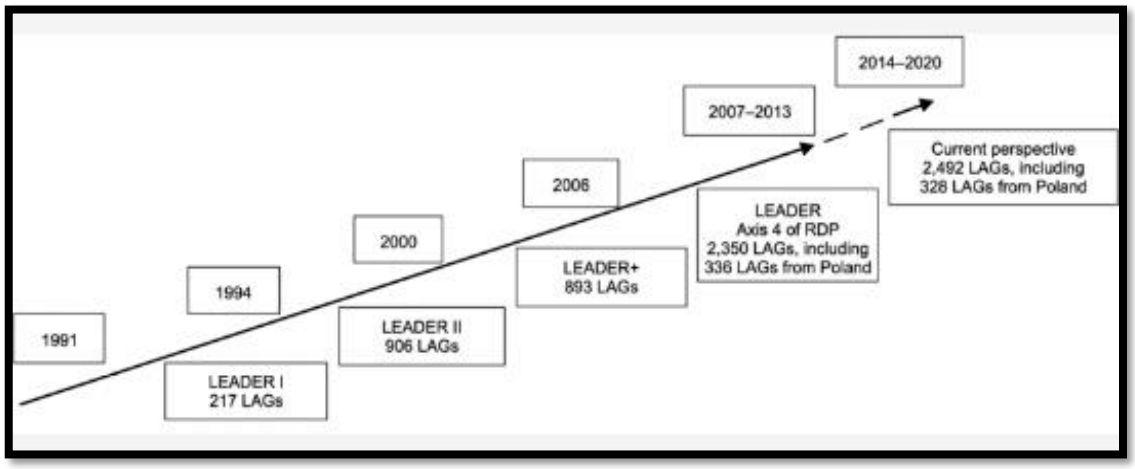


Figure 32: Evolution of leader Program

3.14 How to implement other countries smart village project in India's village:

- By visiting the countries having smart village, we can study and analyze the smart village of that country.
- After that study one particular village of India, after studying the situation of the village we can implement the project of other country's smart village project.

Chapter 4: Allocated – Bavakhakhariya village

4.1 Introduction:

- We selected Bavakhakhariya as an allocated village of Vishwakarmayojna.
- Village situated in Kalavadtaluka of Jamnagar district in Gujarat, India.
- Area pin code of village is 361162. It is 55 km away from district headquarter of Rajkot.
- Kalavad is nearest town from Bavakhakhariya (6 km).

Figure 33: Map of village

4.1.2 Justification/ Need of the study:

Importance of Village Studies:

- Village studies have its own importance. These have enriched the knowledge of the Indian Society in general and rural India in particular. These have given great encouragement to the growth of rural society.

Figure 34: Satellite map of village

- After independence, planners in India realised that unless Indian villages were properly studied, no real progress could be made.
- Scholars now began to pay more and more attention to village studies.

(i)Village studies help in planning rural reconstruction.

(ii) Village studies provide useful information to other disciplines.

(iii) Village studies provide useful knowledge about Indian social reality

4.1.3 Study area (Broadly define):

- In Vishwakarmayojna project we selected one village for studying and surveying which is the Bavakhakhariya village of Jamnagar district.
- This is our study area and we have to find problems related to village like studying ,structural, general amenities etc....
- Bavakhakhariya is 55 km away from Jamnagar.
- From survey we observed that's the village has not larger area and lack of facilities and infrastructure.
- The village has primary school and two anganvadi.
- Village has open drainage system but waste management is not available

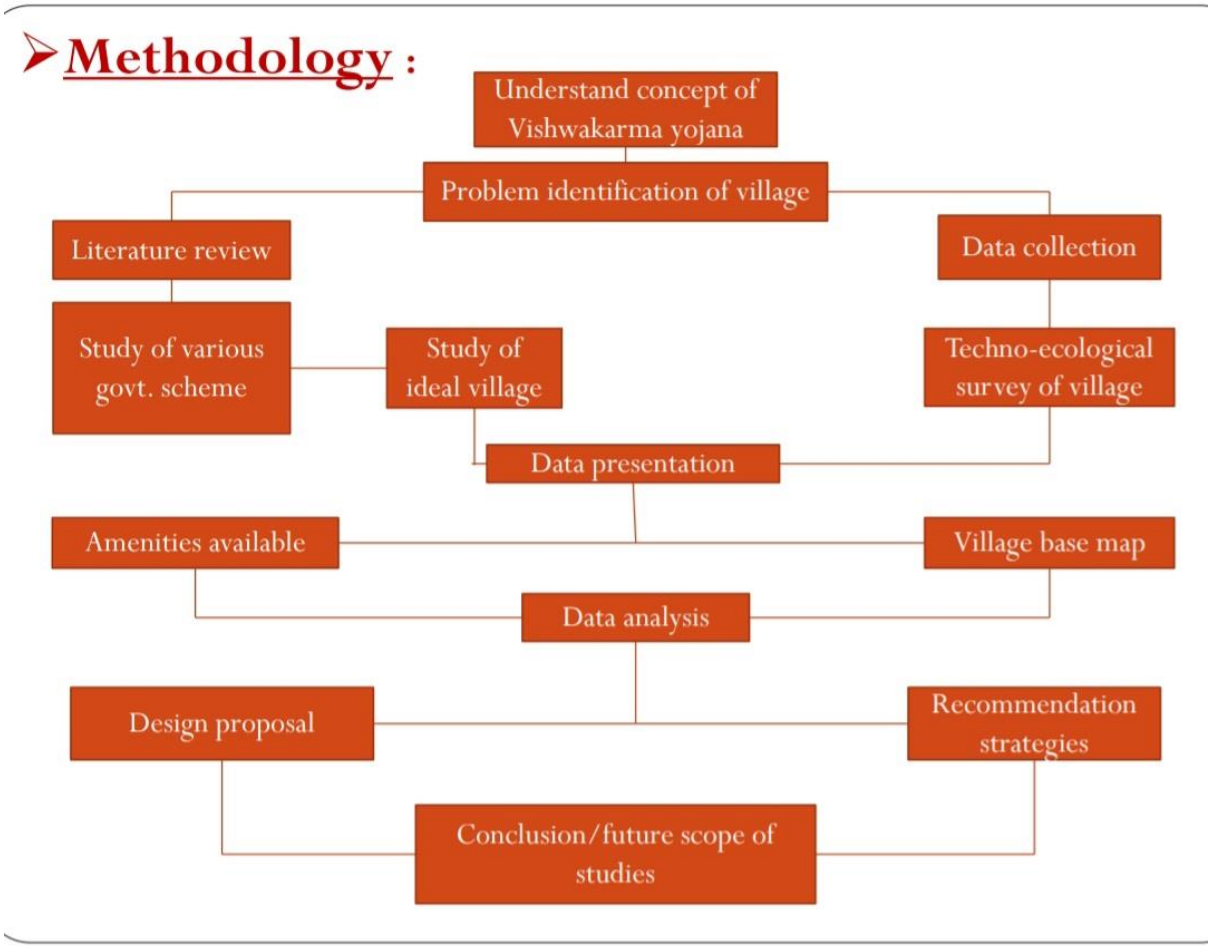
4.1.4. Objectives of the study:

- To make the village as anew modern village.
- To study the future growth and future scenario of village.
- To aware people for cleanliness and built pollution for atmosphere.
- To planning and design for village basic facilities and needs.
- To understand the problems facing by village.

4.1.5. Scope of the study:

- To development of village compare to the city area in the basic facility to needed for people and their amenities and to study whole village.
- Based on these studies the requirement can be known and the further plan based on this requirement can be visualize for compacted development of the village.

4.1.6. Methodology frame work for development of your village:



4.1.7. Available methodology for development of related to civil:

- Bavakhakhariya village has some basic facilities as below,
  1. Primary school
  2. Aanganvadi
  3. Post office
  4. Overhead tank
  5. Bus stand
  6. Gram Panchayat
  7. Village map
  8. Drainage

4.2 Study area of Bavakhakhariya village:

4.2.1 Study area location with brief history land use details:

- GTU allocated one village to us of Gujarat for surveying which is the Bavakhakhariya village of Jamnagar district.

- This village is our study area and we have to find problem related to structure and general amenities in village.
- Area pin code of village is 361162.
- According to census 2011 information the location code or village code of Bavakhakhariya village is 513806.
- Geographical area of village is 473.97 hectares.
- Village has own gram panchayat as per 2009.

Particulars	Total	Male	Female
Populations No. of houses Literacy rate Working pop. Child (0-6) pop. By 2011 Girl child (0-6)pop by 2011	1322 255 77.29% 62.2% 142 42.3%(60)	622 - 86.72% - - -	660 - 68.17% - - -
ST Population SC population	0.0% 25.3%(334)	176	158

Table 8– basic detail of village

- **Here are some Maps of village study area (Bavakhakhariya):**

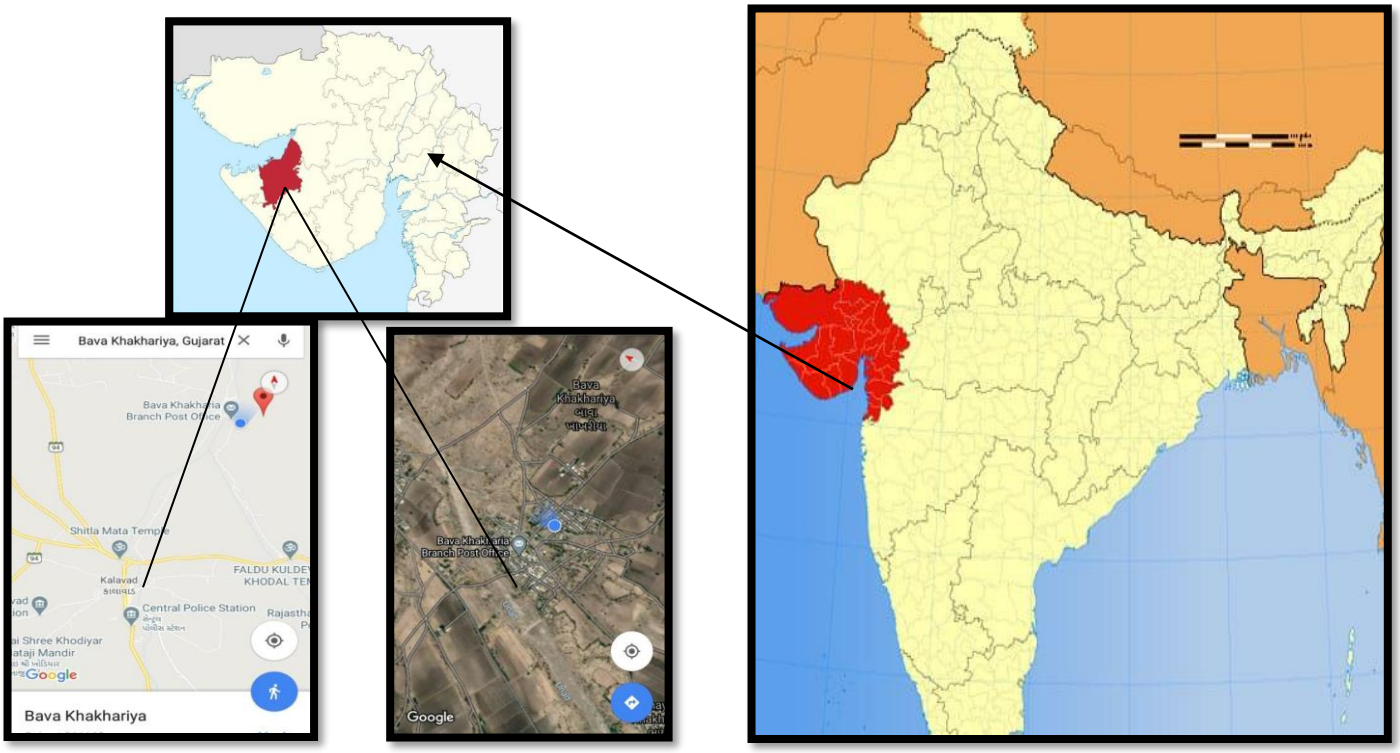


Figure 35: Location of study area

4.2.2 Base location map, land map:

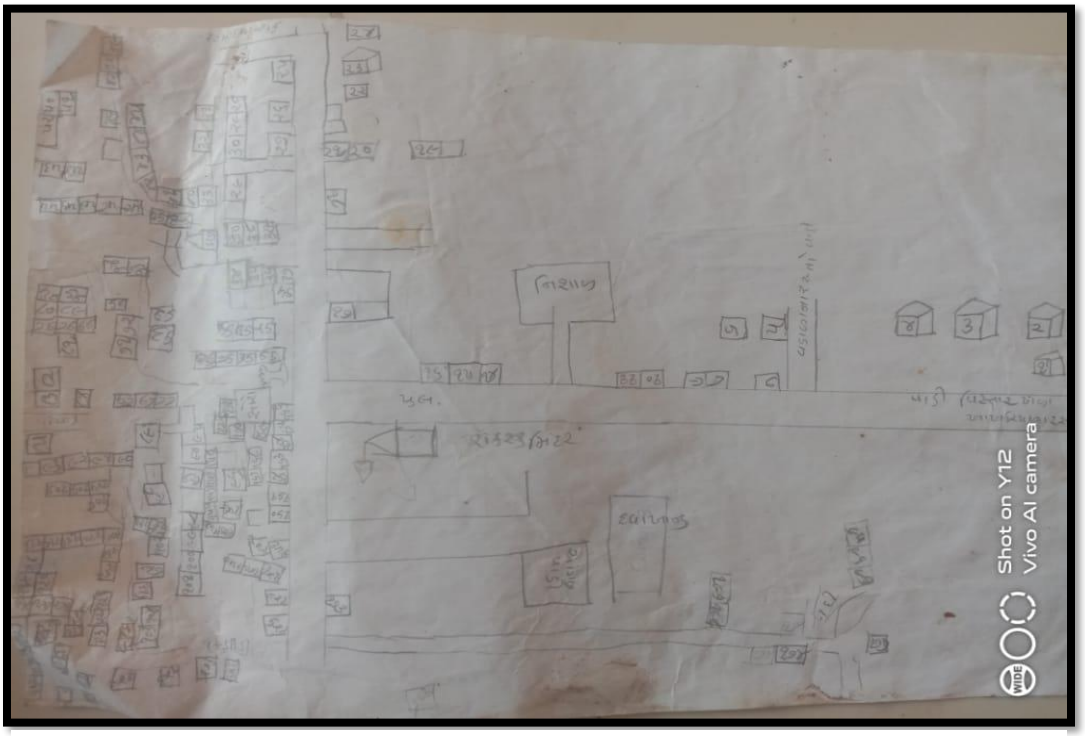


Figure 36: Base location map

4.2.3. Physical and demographical growth:

- The total number of household is Bavakhakhariya village are 255.
- It relies on the total population of 1322 people .As far is male population concern the village Bavakhakhariya and the total female population no. is 660. The reference taken to publish the data is of year 2011.

4.2.4 Economic generation profile/banks:

- The village has good electrification system which distributed 24x7 hours for domestic use and 8 hours for agricultural use.
- There are many small stores and dairy for milk production.
- The village has post office but not in good condition.
- The village doesn't have good facilities for infrastructures. So village need good development.
- In village many people work interest is farming, meson work and labour work, but there is luck knowledge of new technology and instruments.

4.2.5. Actual problems faced by village and smart solution:

Problems faced by village:

- Improper drainage
- Improper streets road
- Lack of waste management

- Improper school
- There is no scope of an entertainment in village.
- Many facilities are not available shop, library, community hall, gardens etc...
- In village there no skill development and not any internet cafe available for people.

Smart solution:

- By providing perfect drainage
- By constructing proper road connections
- By giving well taking financial help from various government project.
- Work for Swachhbharatyojna
- Giving skill trainings in school
- Use of renewable sources
- By giving knowledge of new technologies
- Some weeks organized other activities for knowledge and entertainment.

4.2.6. Social scenario-preservation of traditions, festivals, cuisine:

- In Bavakhakhariya village people follow Indian traditions and cuisine, they celebrate all the Indian festivals but they also respect other cultures tradition and culture.

4.2.7. Migration reason/Trends:

- One of the main reasons of migration is employment opportunities in cities.
- Studying and technology also reason for migration.
- Many people going cities for urban and fashionable lifestyle and bright future.
- Cities have good health care than village.
- There are some reasons for migrations like educational opportunities, heath care, good jobs and works, amazing lifestyle, great facilities, great opportunities, bright future etc...

4.3 Data collection Bavakhakhariya village:

4.3.1 Describe methods for data collection:

- Transportation survey
- Interview with sarpanch/panchayat member/ aanganvadi member
- Occupational survey
- Techno economic survey
- Educational survey

4.3.2 Primary details of survey:

- In survey we collected many details of village like educational, population, literacy rate of village, infrastructure details etc...

- We also visit village infrastructure like school, gram panchayat, post office, temple, bus stand etc...
- In survey we interact with some people of village to understand their problems and what villagers needed.
- We ask some question to village so we understand village conditions and what villagers needed in village.
- In village young generation is smart and energetic but some old people believe in some superstition and it's bad for village.
- In survey of road we found mix raw and cement concrete roads. Some roads are good but many roads are not in good conditions.
- Village has not proper waste management.
- In village main works are agriculture mason work, labour work.
- In survey we understand village and villagers, so we can know what type of development village needed.

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

- According to our survey and on the basis of information given by the villagers the average size of house is around 100 var. or above 100 var.
- In village almost houses are well developed and around 10 to 15% houses are in poor conditions.

4.3.4 No. of human being in one house:

- In village, there are average 4 to 6 person per household.

4.3.5 Material available locally in the village and material out sourced by the village:

- In village brick bhatti available for making brick and sand is also available in village for construction.
- For other materials, villagers go to their taluka (Kalavad) and take whatever he wants.

4.3.6 Geographical details:

Particular	Total
Geographical area	473.97 hectare
Forest area	0
Farming area	352 hectare
Irrigation area	215 hectare
Elevation (above sea level)	87 meter
Latitude/ longitude	27.2046*N,77.4977*E

Table 9: Geographical details of village

4.3.7Demographical detail-caste wise population details/which ID proof using by village:

- As a ID proof generally villagers use aadhar card, because aadhar card is a national ID. So all villagers have aadhar card.

Population

Census Parameter	Census Data
Total Population	1322
Total No of Houses	255
Female Population %	49.9 % (660)
Total Literacy rate %	69.0 % (912)
Female Literacy rate	30.9 % (409)
Scheduled Tribes Population %	0.0 % (0)
Scheduled Caste Population %	25.3 % (334)
Working Population %	62.2 %
Child(0 -6) Population by 2011	142
Girl Child(0 -6) Population % by 2011	42.3 % (60)

4.3.8 Occupational Detail: Occupation wise details/ majority business:

- Main occupations of villagers are farming, links less (mason work) and labour work.
- In village there are small business and work like general stores, bike repairing, welding etc...

4.3.9 Agricultural details/ organic farming/ fishery:

- For many villagers agriculture is the main source of income.
- The farmers if village has lack knowledge of new technology but some farmers use and they know about new techniques and instrument.
- In farming rivers, deep wells and check dam provides water for irrigation.
- Their form soil suitable for cotton, groundnut, wheat and gram so that is their main planting.

Figure 37: Farms of village

4.3.10 Physical infrastructure facilities- manufacturing hub/ ware house:

- There is no ware house for storage crops.
- In physical infrastructures village has post office, gram panchayat, bus stand, sub health centre, overhead tank, primary school, temple etc...

4.3.11 Tourism development available in the village for attracting the tourist:

- There is no tourism activities and place in Bavakhakhariya village

4.4 Infrastructure details (with exiting village photograph):

4.4.1 Drinking water/ water management facilities:

- For drinking purpose, people use Narmada yojna water throw pipes at their homes.
- Village has also overhead tank.
- Village has also hand pump for water and also has protected well.

Figure 38: Overhead tank

Figure 39: Hand Pump

Figure 40: Narmada water lines

Figure 41: Well

4.4.2 Drainage network/ sanitation facilities:

- In village there is underground drainage available.
- Underground system is small but this open in small river. So river's water becomes very dirty and not useful.
- In village for sanitation there is not proper waste management so that's also bad thing.

Figure 42: Under drainage system

4.4.3 Transportation and road network:

- For public transport bus stand available in village, also have private vehicles like rickshaw, eco etc...
- In village there is no any railway station and nearest railway station is around 55 km in Jamnagar.
- In village there are c.c. road in main road and street but that's not enough, many street road are only WBM road. So we can say that village has average road network.
- Villagers more use their own vehicle for transportation, so bus stand not in good condition and in day only 2 times bus come in village.
- So we can say that village have average road network and transportation.

Figure 43: Main road

Figure 44: Street road

4.4.4Housing condition:

- In village there are total 255 houses.
- Village has good housing condition. There are few percentages houses are in poor condition and majority of houses are well.
- There is 24 hours electricity in houses.
- In every house there are Narmada lines for water supply.
- Because of poor condition of houses there no one living in there and who is living they are not that kind of financial well and educated, so they need knowledge and advantage of Aavasyojna.

Figure 45: Housing conditions:

4.4.5 Social infrastructure facilities, health, education, community hall and library:

Health:

- In village there is one health centre available but not any PHC and not any medical shop available for villagers.
- Health centre building is not very good but it's in average condition

Figure 46: Sub health centre

Education:

- There are 2 Aanganvadi and one primary school.
- Aanganvadi are in good condition.
- Primary school is in new construction because old one is in very bad condition, so villagers made decision to replace old building to new constructed building.

Figure 47: Aanganvadi

Figure 48: Old school building

Figure 49: Destroyed school building

Community hall:

- There is no community hall in village.

Library:

- There is no library in Bavakhakhariya village.

4.4.6 Existing condition of public buildings and maintenance of exiting public infrastructure:

Bus stand:

- In Bavakhakhariya village there is one bus stand.
- The structure condition and environment condition of bus stand is very poor there of bus stand is very poor .There are lots of cracks with bad environment condition.
- There is required new design of bus stand.

Figure 50: Bus stand

Post Office:

- In Bavakhakhariya village there is one post office.
- The structural design of post office is very bad and
  Not have smart facilities.
- Post office needed a new building.

Figure 51: Post office

Gram Panchayat:

- In Bavakhakhariya village there is one gram panchayatbuilding.
- There is in very good condition because it's constructedjust now.
- Gram panchayat also have e-gram facility.

Figure 52: Gram panchayat

Temple:

- In village there are main 3 temples.
- Those are in good condition.
- Those structure are good and don't need new temple.
- 3 temples are mainly named of gods are god Shiva, god Rama and god Vachharaj.

Figure 53: Temple

Required new infrastructure and facilities:

- Play ground
- Assembly hall
- Library
- Skill development centre for youngster
- PHC
- Solid waste management
- Public garden
- Public toilet
- Public water drinking facility

4.4.7 Technology mobile/ Wi- Fi/ Internet usage details:

- In Bavakhakhariya village's every house has one or more android phones or non android phones.
- People mostly use the mobile network Jio, Airtel and VI.
- There is no Wi-Fi service is providing.
- In village there is one jio town for great internet usage so mostly youngster usage jio network.

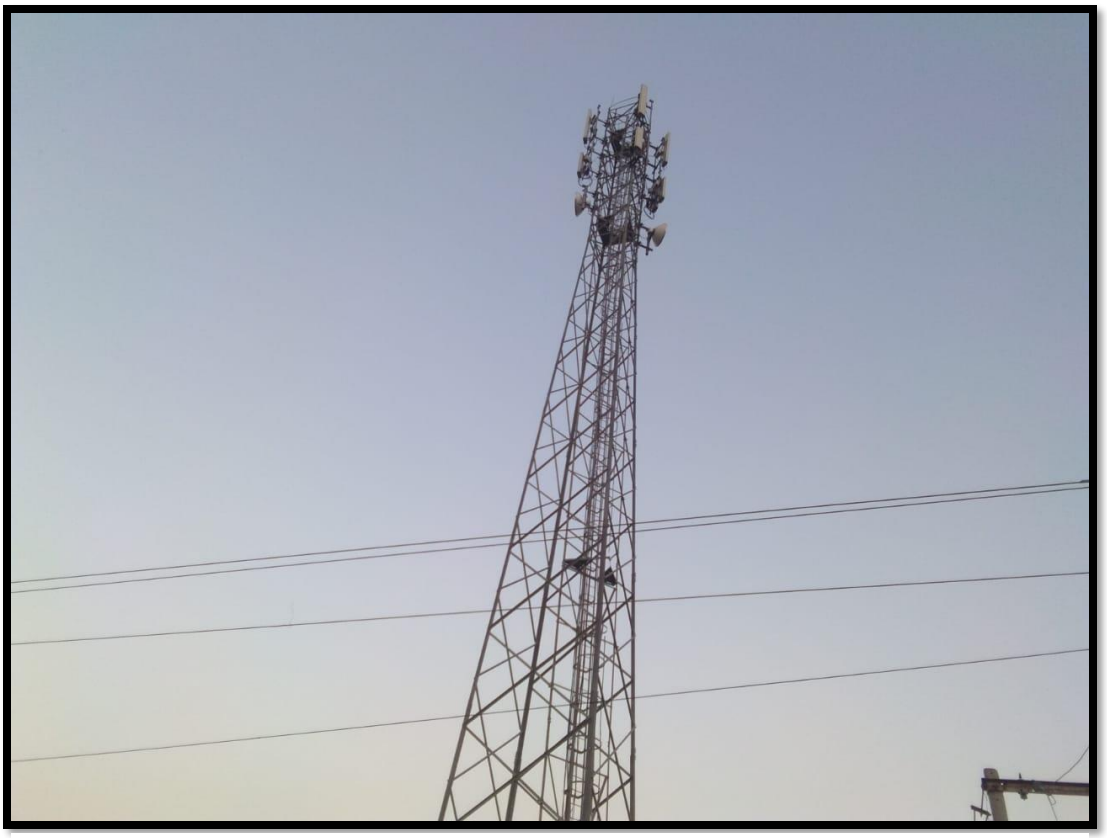


Figure 54: Network tower

4.4.8 Sports activity as gram panchayat:

- In Bavakhakhariya village there is no any sport activity done or promote by gram panchayat also does not take any step for development of sports.

4.4.9 Socio-cultural facilities, public garden/ park/ play ground/ pond/other re-creation facilities:

- In village there are not any facilities like public garden, park, play, ground, pond, re-creation facilities etc...

4.4.10 Other facilities:

- In other facilities village has own burial sites in good condition.
- In other facilities, village also have cowshed.

Figure 55: Burial sites

Figure 56: Cowshed

4.4.11 Any other details:

- Village has good independency but that affect on village development because people through anywhere their garbage and waste, so that's bad thing about village.
- Environmentally this village is in average condition because not aware to cleanliness, so that's also that's also problem foe village.

Figure 57: Waste

4.5 Electrical concept:

- 4.5 is electrical concept, so that's not part of our project.

4.6 Existing institution like- village administration-detail profile:

4.6.1 Bachatmandali:

- There are not any Bachatmandali in Bavakhakhariya village.

4.6.2 Dudhmandali:

- There is one dudhmandali in village.
- The condition of dudhmandali is poor.

Figure 58: Dairy

4.6.3Mahila forum:

- There are not any facilities of mahila forum in village.

4.6.4 Plantation for the pollution:

- In village youngster and school students do plantation work for environment.

4.6.5 Rain water harvesting- waste water recycling:

- Villagers not collect or use of rain water, so there are not any facility of rain water harvesting and waste water recycling.

4.6.6 Agriculture development:

- In village some people used new agriculture techniques and equipment but many people not effort costly techniques and instrument.

4.6.7 Any other:

- In village gram panchayat handle the development of village.
- Gram panchayat introduce new yojna for village.

Chapter 5: Technical option with case study

5.1 Concept (civil)

5.1.1 Advance sustainable construction techniques:

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.

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:

- 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
- Examples include treating water on-site, no smoking, recycling food containers, etc.
- Conserving Energy
- Selecting sustainable and recycled materials

5.1.2 Soil Liquefaction:

- **Definition:**
  "A Phenomenon whereby a saturated or partially saturated soil substantially loses strength and stiffness in response to an applied stress, usually earthquake shaking or other sudden change in stress condition, causing it to behave like a liquid is called **Soil Liquefaction".**

- **How does Soil Liquefaction Work:**
  The soil is a mixture of soil particles that stay connected together. These particles naturally rest upon each other due to gravity and form grids based on its properties. Each particle produces its own contact force by the surrounding particle. These contact forces together hold all the individual soil particles in their place. Soil liquefaction occurs due to sudden and rapid load on

the soil particle. The sudden water pressure leads to soil losing its cohesive strength. Once the soil loses its cohesion, it gets softened, weak and loses its solid properties that are converted to liquid properties.

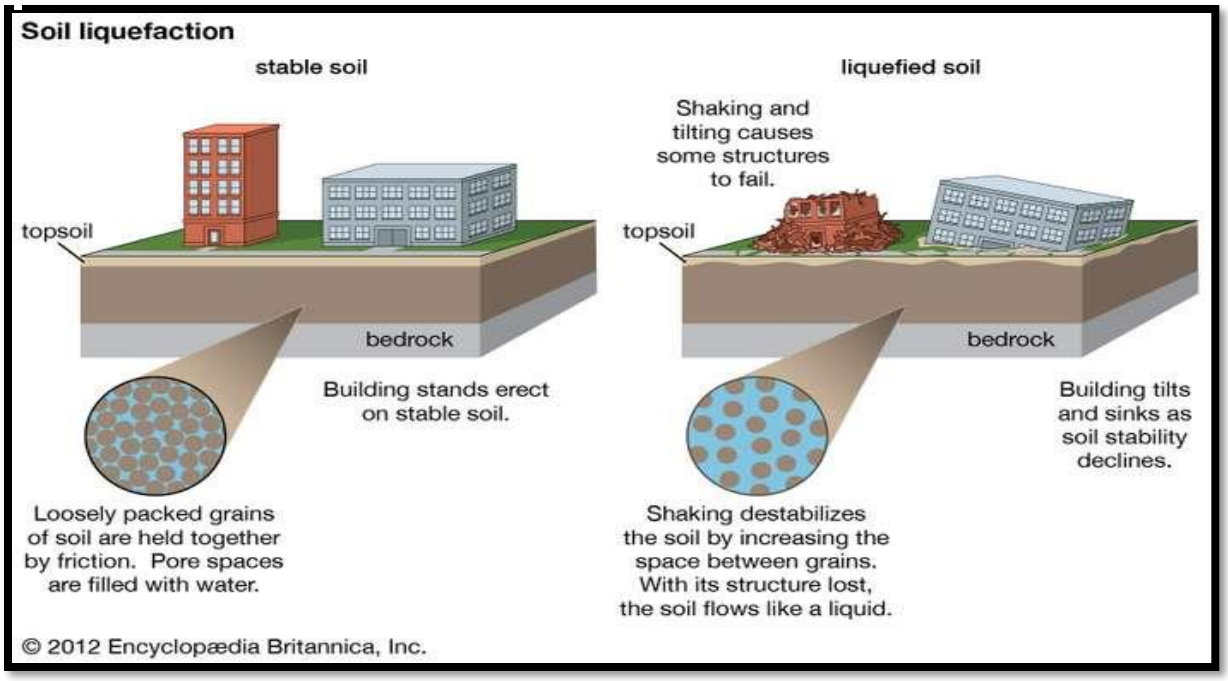


Figure 59: 2 Qualities of a stable soil when compared to a liquefied soil
Source: Britannica Encyclopaedia 2012

- **What is the importance of Soil Liquefaction?**

Earthquakes or seismic events cause number of disturbances in the ground which can harm or damage the structural stability which could turn fatal. Liquefaction causes a sudden movement shift that is out of sync with the rest of the structure. This might cause several structural damages to the property leading to casualties. Liquefaction in saturated soils generates a quicksand effect. This phenomenon occurs during liquefaction when the building or the foundation gets pulled into the diluted soil causing it to lean and eventually collapse. Construction of buildings near water bodies use retaining walls which are heavily dependent on the strength and stiffness of the soil. Once the soil gets liquefied, the retaining wall collapses which could cause landslides

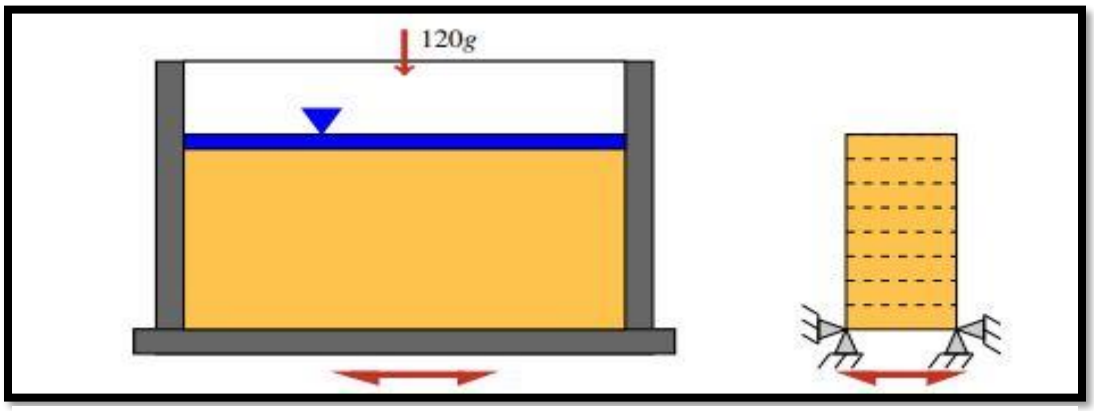


Figure 60: Protype Model of shaking table benchmark for Soil Liquefaction

- **Shaking table benchmark for Soil Liquefaction:**

In the shaking table benchmark, a 38 m high column of loose, fully saturated sand is considered. The bottom of the column is impermeable and subjected to an acceleration of 0.2g sin(3πt). Centrifuge tests presented in [10] were carried out at Rensselaer Polytechnic Institute (RPI) for a scaled-down column. These experiments were performed using a laminar box consisting of rings which were allowed to move laterally, parallel to the direction of shearing. The laboratory results are compared with numerical data obtained with a finite difference method utilizing the UBCSAND model for a prototype-scale benchmark referred to as RPI model 1 [10]. The complexity of the numerical analysis was elegantly reduced to a one-dimensional representation of the problem by making the following assumptions. First of all, each horizontal layer was allowed to change its volume in the vertical direction and undergo shear deformation due to horizontal shear stress, while compression and expansion in the horizontal direction were prohibited. In addition, uniform strains and stresses along every horizontal plane were assume

- **Liquefaction during Seismic events:**

Seismic events affect ground conditions. Liquefaction of soil causes structural instability in buildings. This occurs due to various instances of structural failure. The liquefied ground cannot sustain the stresses of its load from the foundations. Foundations will sink into the sand deposit and cause the building to lean and eventually collapse. Soil liquefaction occurs only in areas which have saturated soils. Most of these areas are located near a water body such as lakes, ponds, rivers etc.

Buildings constructed in this zone must adhere strict codes and bylaws. The soil can sustain the ground forces in general conditions. But an earthquake or strong motion/vibrations in the ground can cause water logging which increases the liquid consistency in the soil. The soil loses its rigidity and the ground cannot support the loads causing them to sink or collapse.

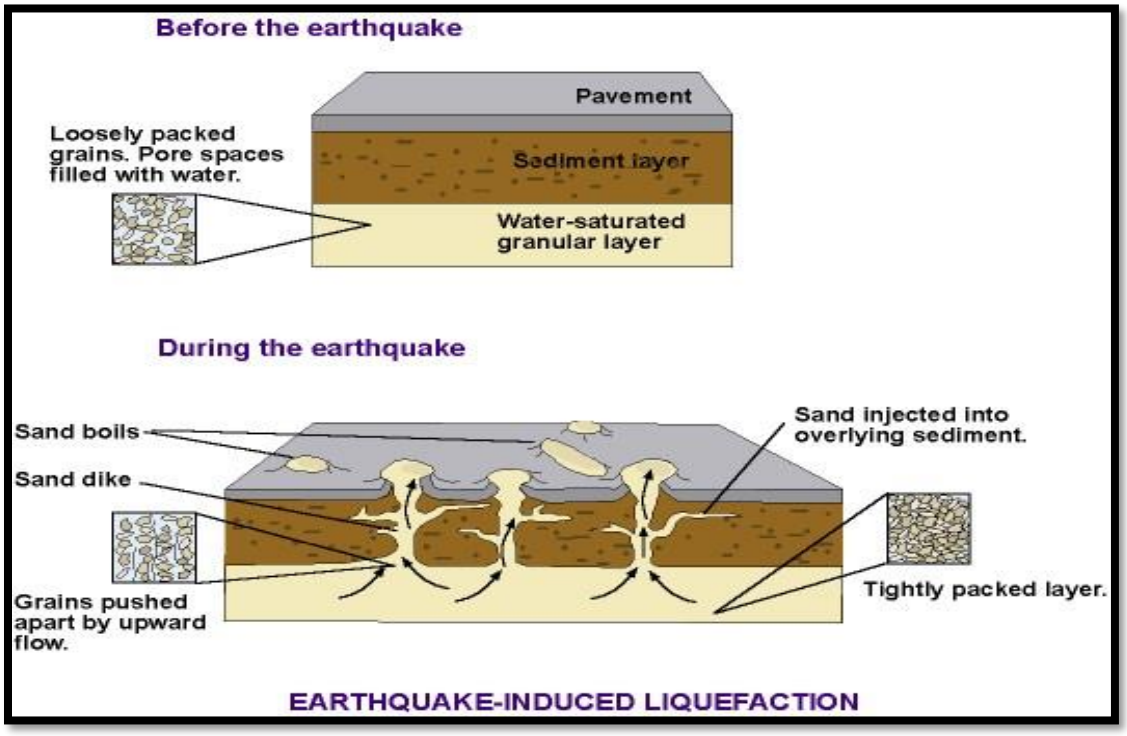


Figure 61: Liquefaction before and during earthquake

5.1.3 Sustanable sanitation:

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

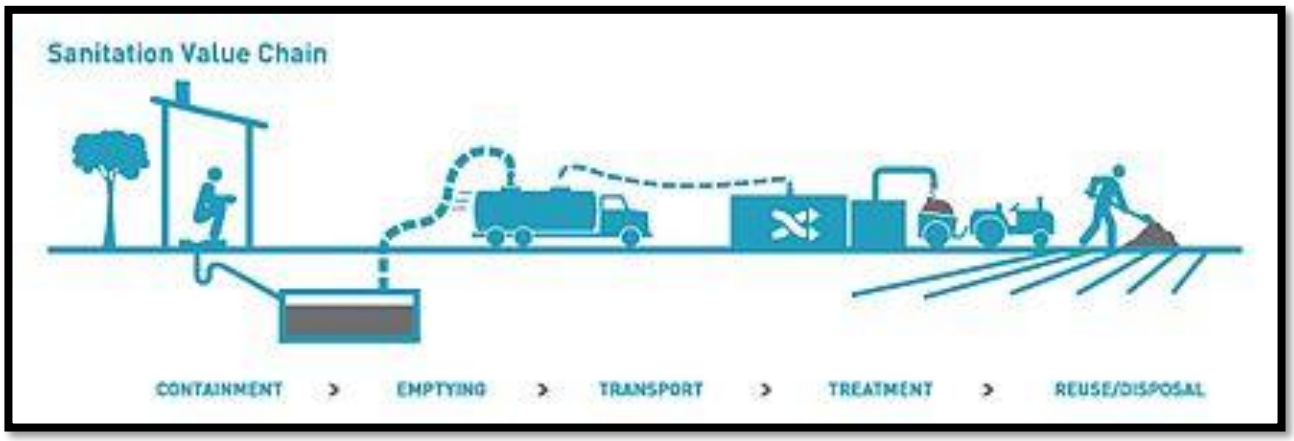


Figure 62: Sanitation Value chain

The purpose of sustainable sanitation is the same as sanitation in general: to protect human health. However, "sustainable sanitation" attends to all processes of the system: This includes methods of collecting, transporting, treating and the disposal (or reuse) of waste.

5.1.4 Transport Infrastructure:

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

5.1.5 Vertical farming:

What Is Vertical Farming?

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

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

How Vertical Farming Works:

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

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

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

Figure 63: Vertical farming

5.1.6 Corrosion mechanism, prevention and 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 impromptu 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 an) ordinary, b) surface medications, c) electrochemical medicines and d) outline arrangements. The overall point of this examination was to recognize the key consumption administration strategies and embrace exact examinations concentrated on full-scale RC structures to explore their long haul execution.

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.

5.1.7 Sewege treatment plant:

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

Sewage treatment may also be referred to as wastewater treatment. However, the latter is a broader term that can also refer to industrial wastewater. For most cities, the sewer system will also carry a proportion of industrial effluent to the sewage treatment plant that has usually received pre-treatment at the factories to reduce the pollutant load. If the sewer system is a combined sewer, then it will also carry urban runoff (stormwater) to the sewage treatment plant. Sewage is conveyed in sewerage which comprises the drains, pipework and pumps to convey the sewage to the treatment works inlet.

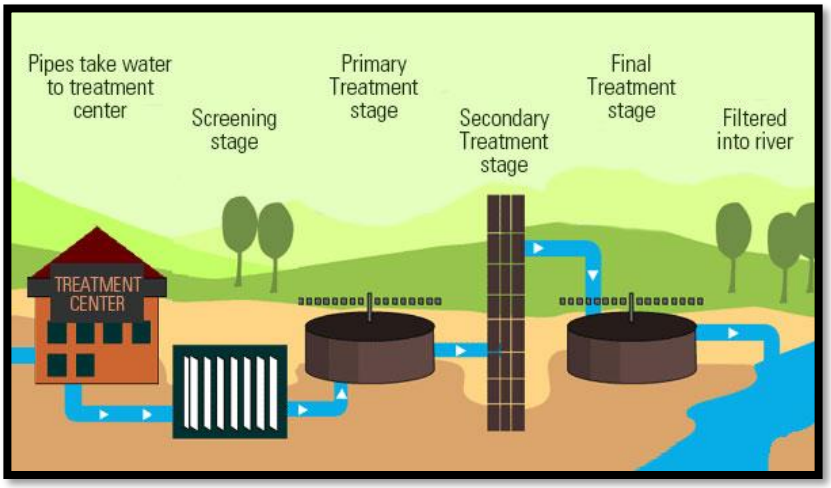


Figure 64: Sewage Treatment

Chapter 6: Swatchhbharat mission

6.1 Swatchhta needed in allocated village exiting situation with photograph.

Figure 65: Swachh Bharat Gramin

- In Bavakhakhariya village there is not any activities done under swatch bharat.
- In this village only primary school's teacher work on swatch bharat mission but it's limited to school not in village.
- In village, there are not any activities done or running for waste garbage management.
- In village there are underground drainages but its water open in small river so river's water become dirty and non-useful.

Figure 66: Waste in Village

6.2 Guidelines-Implementation in allocated village with photograph.

Use of dustbin:

- In Bavakhakhariya village there is no common dustbin and not even have personal housedustbin available.
- So in village for waste not proper system available for waste manage.
- If village doing use of dustbin so at least village has clear his first step of cleaningand swatch bharat.

Figure 67: Use of dustbin

Door to door collection:

- In the newly collection system, domestic users are required to leave outside their house in placeclearly visible and reachable by collection operatory.
- This system is very useful and great but for any onevillage that is costly for municipal so we make sure this system applied in all case of village so this system make work .

Figure 68: Door to door collection

Public toilet in village:

- Public toilet promote health and sanitary so public understand the importance of swatchta.
- Problem with common toilet is many villages do outside for latrine and nature's call and he/she don't want to conveyance that villagers to importanceof public toilet.
- Public toilet gives us good environment and its help to village clean.

Figure 69: Public toilet in village

Cleaning rivers and road:

- Healthy Riverreduces human health risk and improvedquality of life.
- So village can live long and villagers make farming great.
- If rivers are clean so nature, animals and humans are safe from disease.
- So make sure river are clean.

Figure 70: Cleaning rivers

- In village safe and clean road gave us to safetransportation, good environment and beautiful look.
- So in village it is desirable to road cleaning as early as possible in the morning so that the village looks clean before the road and streets get busy in the morning.
- Road cleaning a part of make village clean so that's our duty to make road clean and safe.

Figure 71: Cleaning roads

Community:

- Make village community for swatch bharat mission so in future they take duty to ensure that village is clean.
- So village easily comfortable to take to them village problems and find solution easily.
- So swatch bharat mission running easily and successfully.

6.3 Activities done by students for allocated village with photograph:

- Due to Covid -19 pandemic we didn't do any kind of activities such like this.

Chapter 7: Village Condition due to Covid -19

7.1 Taken step in allocated village related to existing situation with photograph:

- Due to covid-19, the situation in India and his village has highlighted the weakness of public healthcare provision.
- India requires more resources to expand the pool of trained doctors accessible to its majority rural population and improve the trust people have in them.

7.2 Situation in allocated village:

- In Bavakhakhariya village there was one case of Covid-19.
- People go to sub health centre to check for Covid-19.
- People doing implement of social distancing.
- In village Aasha workers go to every home to survey of covid-19.
- Aanganvadi gave tabulates to villagers for immunity.
- Villagers try to make their village safe and covid free.

Figure 72: Vilage situation

7.3 Any other step taken by the student/ villagers:

- In village Aasha workers, Aanganvadi workers, school teachers and doctor motivated people due to covid-19 and also gave knowledge about covid-19.
- So people understand the situation of covid-19 and village becomes safer.
- In village doctors does 2 times covid-19 virus check-up for village with full safety .
- Villagers also keep connecting with new to their own safety.

Chapter 8: Sustainable design planning proposal (prototype design) part-I:

8.1 Design proposal:

- There Are many existing design such as over-head tank, post office, gram panchayat, aanganvadi, SHC and bus stand. The design of gram panchayat and aanganvadi are appropriate.
- There is no any PHC but there is one SHC.
- There is also underground drainage system but not in all village.
- The primary school condition not well so villagers decide to build new primary school with help of government.
- There are not good road services.
- There are problem with overhead tank, because in tank there is some leakages so that's not good.
- Post office building is very old, so post office needed new design.
- There is no any animal drinking facilities for animals, so we try to do design of animals drinking facilities.

8.2 Recommendations of the design:

- PHC
- Public garden
- Avedo
- Road(c.c)
- Community hall
- Library
- Post office
- Entry gate
- Public toilet
- Water butt

8.3 About design suggestions/benefit of the villagers:

- Due to construction of PHC villagers don't go outside for some small disease.
- Public garden gives good environment and positivity in village.
- For animal, village need animal deinking facilities (Avedo).
- Good road network gives good transported facilities.
- Community hall used for any type of programme, meeting etc…
- For new generation, village need good library for knowledge.
- Public toilet is symbol of sanitation, public toilet gives good sanitation and environment.
- This some design and facilities is important to village for their development.

8.1.1 Sustainable Design (Civil):(Water butt)

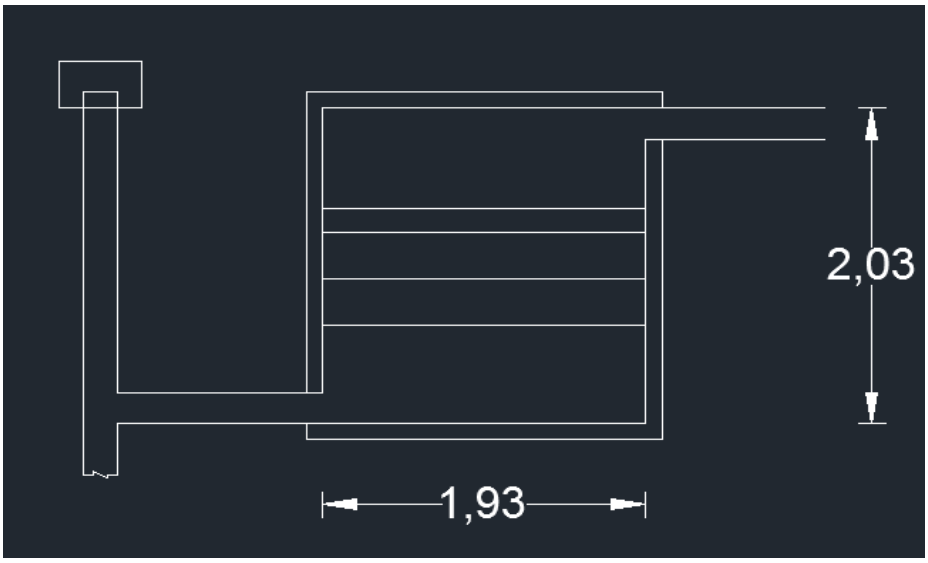


Figure 73: Elevation

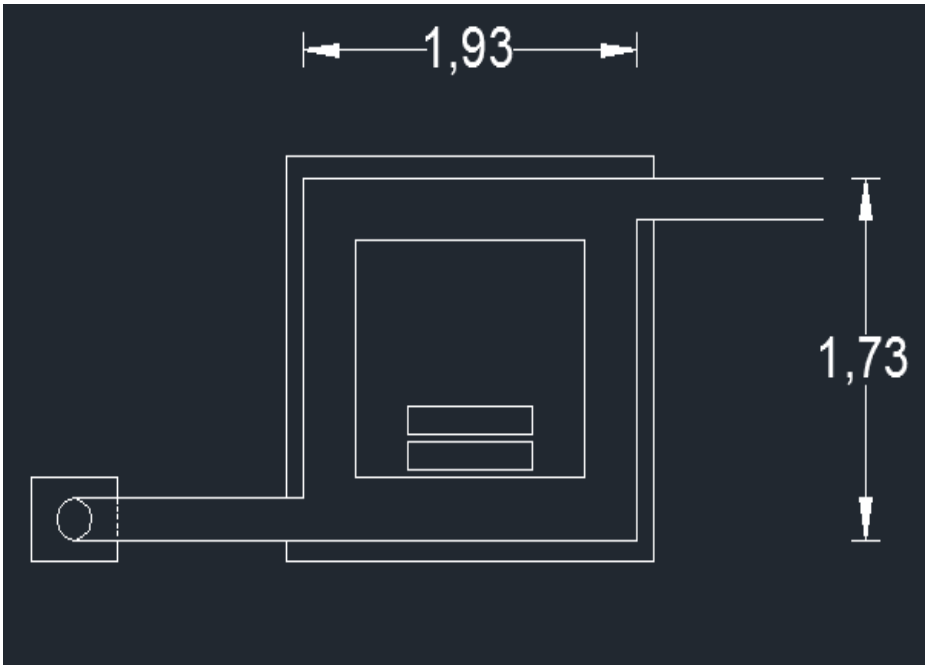


Figure 74: Plan

➢ Measurement sheet of water butt

Sr. no.	Description Of Item	Nos.	Length (m)	Breadth (m)	Height (m)	Quantity
1	**Excavation for foundation**	-	1.93	1.73	2.03	6.78 m^3
					TOTAL	**6.78 m^3**
2	**Brick work**					
	B.w. in both side	-	3.46	0.10	2.03	0.70 m^3
	Upside and billow	-	3.66	1.62	0.10	0.60 m^3
					TOTAL	**1.73 m^3**
3	**Deduction**	-	0.91	0.91	0.10	0.082 m^3
					TOTAL	**0.82 m^3**
4	**Plaster**					
	Side wall 1	2	1.73	-	1.93	6.68m^2
	Side wall 2	2	1.52	-	1.93	5.87 m^2
	Bottom	1	1.73	1.52	-	2.63 m^2
	Celling	2	1.73	1.52	-	5.26 m^2
					TOTAL	**20.44 m^2**

▯ Abstract sheet of water butt

Sr. no.	Description Of Item	Quantities	Rate	Unit	Amount
1	Excavation	6.78	85	m^3	5,76.3
2	B.W. for water tank cm(1:4)	1.6	3500	m^3	5,740
3	Smooth plaster on inside wall, Bottom & celling cm(1:3)	20.44	150	m^2	3,066
				TOTAL	**9,382.3**
				Add2% of water charge	187.65
				Add 3% of Contingencies	281.466
				Add 10% of electric charge	938.22
				Add 5% of plumbing charge	469.11
				Grand Total	**11,260/-**

8.1.2 Physical design:(Public Garden)

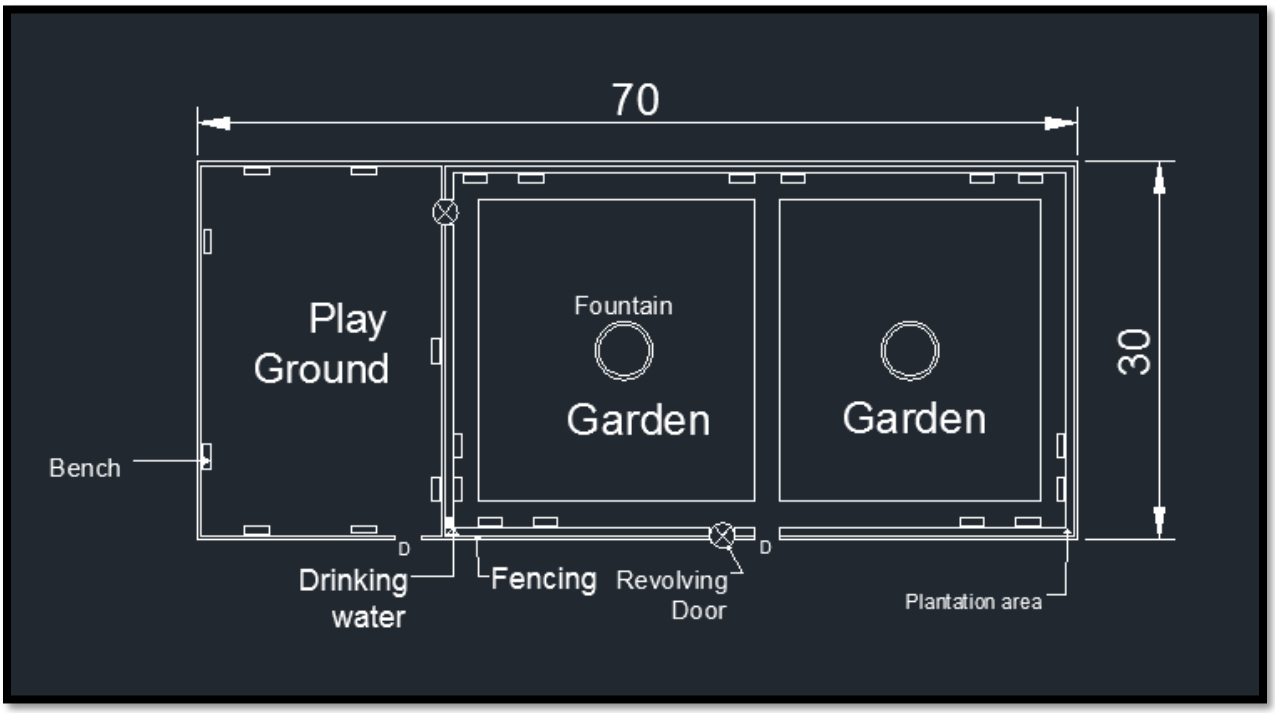


Figure75: Plan of Village's Public Garden

TYPE	SIZE
D1	3 m x 2.1 m
Revolving Door	2.5 m x 1.5 m

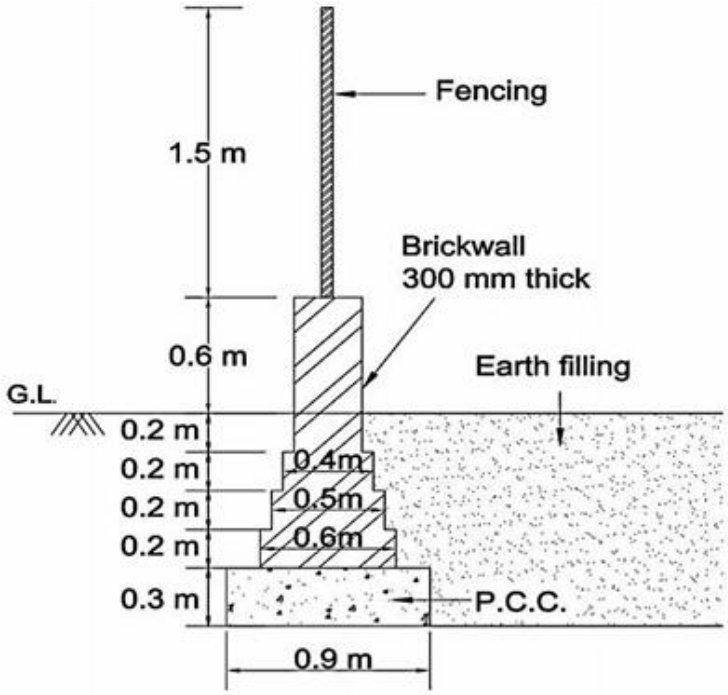


Figure76 : Section

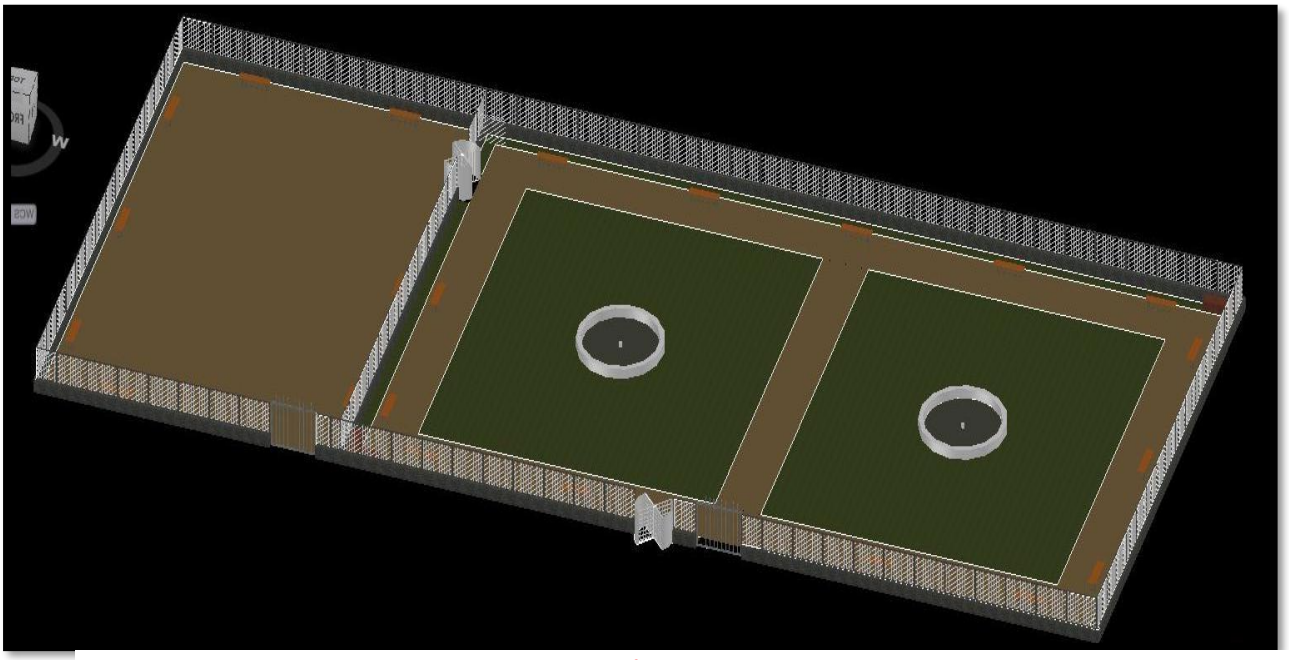


Figure 77 : 3D

(Quantity Measurement sheet):

Sr. No.	Description Of Item	Nos.	Length (m)	Breadth (m)	Height (m)	Quantity
1	**Excavation for foundation** Net centre line =228.5 – ( ) = 227.6 Number of junction = 2	1	227.6	0.9	1.1	225.32 m^3
2	**PCC for foundation**	1	227.6	0.9	0.3	61.45 m^3
3	**Brick Masonry up to GL**					
	Step 1 (Width 0.6 m) L = 228.5 -( ) = 227.9	1	227.9	0.6	0.2	27.35 m^3
	Step 2 (Width 0.5 m) L = 228.5 -( ) = 227.5	1	227.5	0.5	0.2	22.75 m^3
	Step 3 (Width 0.4 m) L = 228.5 -( ) = 227.7	1	227.7	0.4	0.2	18.22 m^3
	Step 4 (Width 0.3 m)	1	227.9	0.3	0.2	13.67 m^3

	L = 228.5 -( ) = 227.9					
				Total Brickwork		**81.99 m^3**
4	**Sand filling up to G.L.**					
	Quantity = (Excavation –PCC-Brick work upto GL) = (225.32 – 61.45 –81.99) =81.88	-	-	-	-	81.88 m^3
5	**Brick Masonry above GL**					
	L = 228.5 -( ) = 227.9	1	227.9	0.3	0.6	41.02 m^3
	Deduction for door-windows					
	D	2	3	0.3	0.6	-1.08 m^3
	Revolving door	2	2.5	0.3	0.6	-0.9 m^3
				Total		**39.04 m^3**
6	**Plaster**					
	External	2	70	-	0.6	84 m^2
		2	-	30	0.6	36 m^2
	Internal	2	69.1	-	0.6	82.92 m^2
		4	-	29.4	0.6	70.56 m^2
	Deduction for door-windows					
	D	4	3	-	0.6	-3.6 m^2
	Revolving door	4	2.5	-	0.6	-3 m^2
				Total		**266.88 m^2**
7	**Fencing**					
	Length = 228.5 m	1	228.5		1.5	**342.75 m^2**
8	**Sand for Play Ground and walk way**					
	Play Ground	1	19.7	29.4	0.2	115.83 m^3
	Walk Way	2	48	3	0.2	57.6 m^3

		3	28	3	0.2	50.4 m^3

				Total		**223.83 m^2**

MATERIAL QUANTITY CALCULATION:

1. **P.C.C. in foundation and space between Plinth level(1:4:8):-**

- **For 1 m^3wet concrete, 1.52 m^3 dry concrete is required.**

1 m^3 ⟶ 1.52 m^3
61.45 m^3 ⟶ ? (93.40m^3)

Proportion 1:4:8 =13

Cement = = 7.18 m^3 = 205.28 Bags

Sand = 28.74 m^3

Aggregate = 57.47 m^3

2. **Brickwork (1:6)**

- **For 1 m^3 of brickwork 500 bricks are required.**

1 m^3 ⟶ 500 Nos.
121.03 m^3 ⟶ ? (60515Nos.)

Proportion =1:6

- **For 1 m^3 brickwork 0.33 m^3 mortar is required.**

1 m^3 ⟶ 0.33 m^3
121.03 m^3 ⟶ ? (39.94m^3)

Cement = 39.94 = 5.70 m^3 = = 163 Bags
Sand = 39.94 =34.23 m^3

4. **Plaster 12 mm thick (1:4)**

- **For 100 m2 Plasterwork 2 m3 mortar isrequired.**

100 m^2 ⟶ 2m^3
266.88 m^2 ⟶ ? (5.34m^3)

Proportion =1:4

Cement = 5.34 =1.06 m^3 = = 30.5 Bags

Sand = 5.34 = 4.27 m^3

ABSTRACT SHEET:

Sr. No.	Description Of Item	Quantities	Rate	Per	Amount
1	Excavation	225.32 m^3	110	Cu. M	24785
2	PCC	61.45 m^3	965	Cu. M	59300
3	Sand Filling	81.88 m^3	90	Cu. M	7370
4	Brick Work	121.03 m^3	1250	Cu. M.	151288
5	Plaster	266.88 m^2	150	Sq. M..	40032
6	Cement	399 bags	280	Bag	111720
7	Sand	67.24 m^3	900	Cu. M.	60516
8	Aggregate	57.47 m^3	1000	Cu. M.	57470
9	Brick	60515 nos.	4	Brick	242060
10	Fencing	228.5	360	Meter	82260
11	Sand for garden	223.83	3440	Cu. M.	769975.2
12	Bench	22 nos.	1500	Nos.	33000
13	Dust Bins	6 nos.	1000	Nos.	6000
14	Fountain	2 nos.	L.S.		50000
				TOTAL	1695776
		Add 1.5% water charge Rs.			25437
		Add 10% contractor profits Rs.			169578
				Total cost	**18,90,800**

8.1.3 Social design:

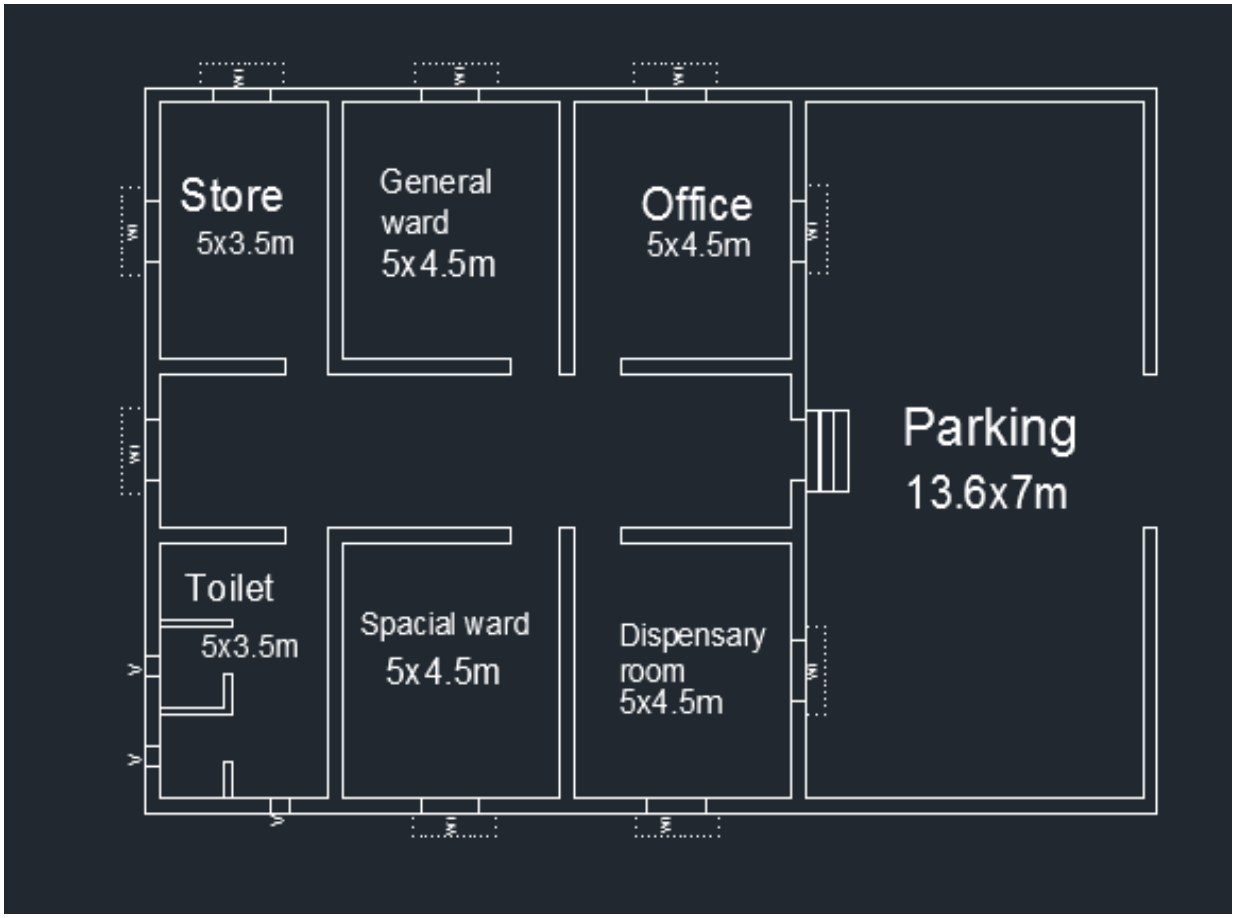


Figure 78: Plan of PHC

TYPE	SIZE
D	3 m x 2.1 m
D1	1.0 m x 2.1 m
D2	0.9 m x 2.1 m
W1	1.2 m x 1.2 m
V	0.4 m x 0.4 m

Schedule of Doors and Windows

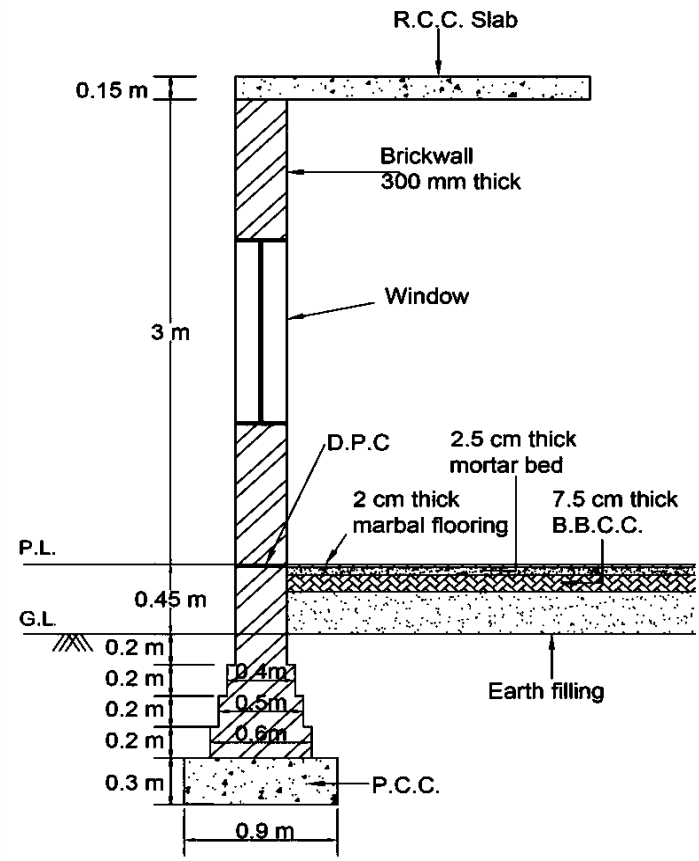


Figure 79: Section

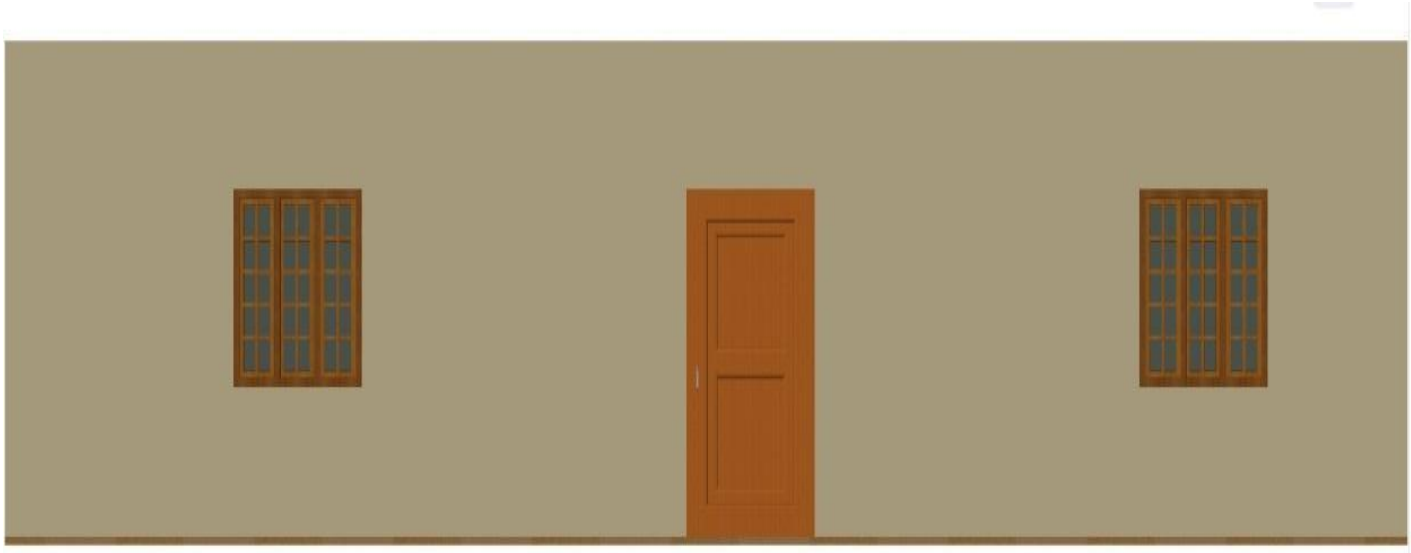


Figure 80: Elevation

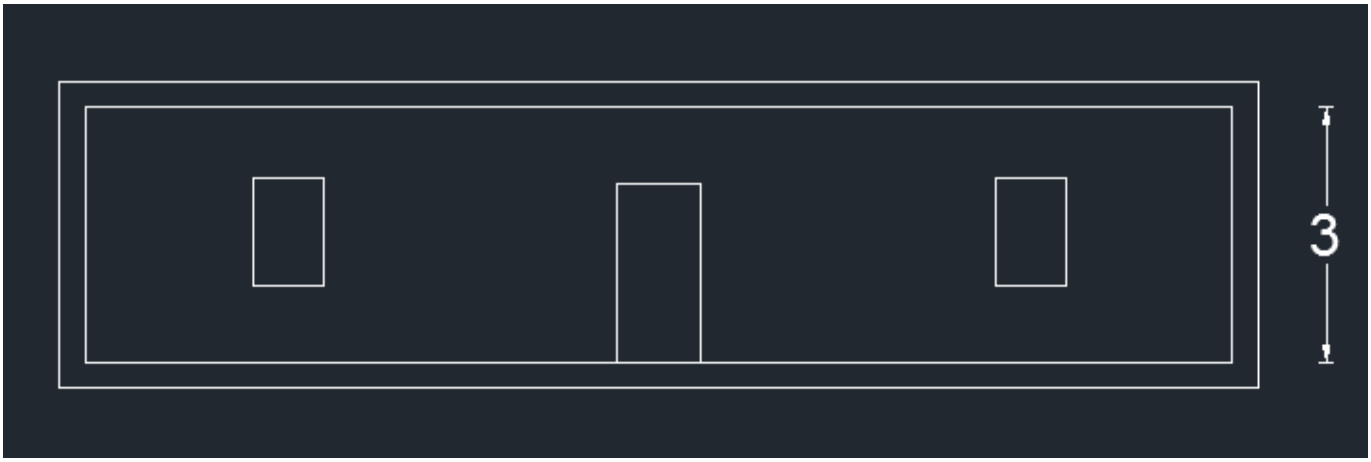


Figure 81: Elevation

Quantity (Measurement sheet):

Sr. No.	Description Of Item	Nos.	Length (m)	Breadth (m)	Height (m)	Quantity
1	**Excavation for foundation** Net centre line =131.1 – ( ) = Number of junction = 14	1	124.8	0.9	1.1	123.55 m^3
2	**PCC for foundation**	1	124.8	0.9	0.3	33.70 m^3
3	**Brick Masonry upto Plinth**					
	Step 1 (Width 0.6 m) L = 131.1 -( ) = 126.9	1	126.9	0.6	0.2	15.23 m^3
	Step 2 (Width 0.5 m) L = 131.1 -( ) = 127.6	1	127.6	0.5	0.2	12.76 m^3
	Step 3 (Width 0.4 m) L = 131.1 -( ) = 128.3	1	128.3	0.4	0.2	10.26 m^3
	Step 4 (Width 0.3 m) L = 131.1 -( ) = 129	1	129	0.3	0.2	7.74 m^3
	Step 5 (Width 0.3 m) L = 131.1 -( ) = 129	1	129	0.3	0.45	17.41 m^3
				Total Brickwork		**63.40 m^3**
4	**Sand filling up to G.L.**					
	Quantity = (Excavation –PCC-Brick work upto GL) = (123.55 – 33.70 –45.99) =43.86	-	-	-	-	43.86 m^3

5	**Brick Masonry above plinth up to slab level**					
	Compound wall L = 28.2	1	28.2	0.3	2.1	17.77 m^3
	3 m Height wall L = 131.1 -( ) = 129	1	129	0.3	3	116.1 m^3
	Deduction for door-windows					
	D	1	3	0.3	2.1	-1.89 m^3
	D1	1	1	0.3	2.1	-0.42 m^3
	D2	1	0.9	0.3	2.1	-0.57 m^3
	W1	1	1.2	0.3	1.2	-0.43 m^3
	V	3	0.4	0.3	0.4	-0.14 m^3
	Entry	1	1.2	0.3	2.1	-0.756
	Deduction for door-windows lintel					
	D	1	3.3	0.3	0.1	-0.1 m^3
	D1	1	1.3	0.3	0.1	-0.039 m^3
	D2	1	1.2	0.3	0.1	-0.036 m^3
	W1	1	1.5	0.3	0.1	-0.045 m^3
	V	3	0.7	0.3	0.1	-0.021 m^3
	Entry	1	1.5	0.3	0.1	-0.045 m^3
				Total		**111.60 m^3**
6	**Sand filling for Plinth level**					
	For office, dispensary room, special ward and general ward	4	5	4.5	0.33	29.7 m^3
	For toilet and store	2	5	3.5	0.33	11.55 m^3
	For passage	1	3	13.1	0.33	12.97 m^3
				Total		**54.22 m^3**
7	**BBCC above sand filling**					
	For office, dispensary room, special ward and general ward	4	5	4.5	0.075	6.75 m^3
	For toilet and store	2	5	3.5	0.075	2.625 m^3
	For passage	1	3	13.1	0.075	2.95 m^3

				Total		**12.32 m^3**
8	**Marbal flooring**					
	For office, dispensary room, special ward and general ward	4	5	4.5	-	90 m^2
	For toilet and store	2	5	3.5	-	35 m^2
	For passage	1	3	13.1	-	39.3 m^2
				Total		**164.3 m^2**
8	**Concreting for slab**	1	14.2	13.7	0.15	**29.18 m^3**
9	**Formwork for slab**	2	14.2	-	0.17	4.83 m^2
		2	13.7	-	0.17	4.66 m^2
				Total		**9.55 m^2**
10	**Inside plaster**					
	For office, dispensary room, special ward and general ward	8	5	-	3	120 m^2
		8	-	4.5	3	108 m^2
	For toilet and store	4	5	-	3	60 m^2
		4	-	3.5	3	42 m^2
	For passage	2	3	-	3	18 m^2
		2	-	13.1	3	78.6 m^2
	Parking	1	13.6	-	3	40.8 m^2
		1	13.6	-	2.1	28.56 m^2
		2	7	-	2.1	29.4 m^2
	Deduction for door-windows					
	D	1	3	-	2.1	-3.15 m^2
	D1	8	1	-	2.1	-8.4 m^2
	D2	4	0.9	-	2.1	-3.78 m^2
	W1	11	1.2	-	1.2	-7.92 m^2
	V	3	0.4	-	0.4	-0.24 m^2

	Entry		1.2	-	2.1	-2.52 m^2
				Total		**499.35 m^2**
11	**Outside plaster**					
	Compound wall	1	29.1	-	2.1	61.11
	Main wall	1	41.9	-	3	125.7
	Deduction for door-windows					
	W1	7	1.2	-	1.2	-5.04 m^2
	V	3	0.4	-	0.4	-0.24 m^2
	D		3	-	2.1	-3.15 m^2
				Total		**178.38 m^2**

MATERIAL QUANTITY CALCULATION :

1. P.C.C. in foundation and space between Plinth level(1:4:8):-

- **For 1 m^3wet concrete, 1.52 m^3 dry concrete is required.**

1 m^3 ⟶ 1.52 m^3
33.70 m^3 ⟶ ? (51.22m^3)

Proportion 1:4:8 =13

Cement = = 3.94 m^3 = —— 113 Bags

Sand = 15.76 m^3

Aggregate = 31.52 m^3

2. Brickwork(1:6)

- **For 1 m^3 of brickwork 500 bricks arerequired.**

1 m^3 ⟶ 500 Nos.
175 m^3 ⟶ ? (87500Nos.)

Proportion =1:6

- **For 1 m^3 brickwork 0.33 m^3 mortar isrequired.**

1 m^3 ⟶ 0.33 m^3
175 m^3 ⟶ ? (57.75m^3)

Cement = 57.75 =8.25 m^3 = = 236 Bags

Sand = 57.75 =49.5 m^3

3. R.C.C work for slab(1:1.5:3)

- **For 1 m^3wet concrete, 1.52 m^3 dry concrete is required.**

1 m^3 ⟶ 1.52 m^3
29.18 m^3 ⟶ ? (44.35m^3)

Proportion 1:1.5:3 = 5.5

Cement = = 8.06 m^3 = —— 231 Bags

Sand = 12.10 m^3

Aggregate = 24.19 m^3

Assume 1% steel

Volume of steel = = 0.2918 m^3

Density of steel = 7850 kg/ m^3

Mass of steel = 0.2918 7850 =2291 kg

- **For 100 kg of steel, 1 kg binding wire isrequired.**
- **For 2291 kg of steel, 23 kg binding wire isrequired.**

4. Inside Plaster 12 mm thick (1:4)

- **For 100 m2 Plasterwork 2 m3 mortar isrequired.**

100 m^2 ⟶ 2m^3
499.35 m^2 ⟶ ? (9.99m^3)

Proportion =1:4

Cement = 9.99 =2 m^3 = = 58 Bags

Sand = 9.99 = 8 m^3

5. Outside Plaster 20 mm thick(1:3)

- **For 100 m2 Plasterwork 2 m3 mortar isrequired.**

100 m^2 ⟶ 2m^3
178.38 ~~m^2~~ ⟶ ? (3.57m^3)

Proportion =1:3

Cement = 3.57 =0.89 m^3 = = 26 Bags

Sand = 3.57 = 2.68 m^3

5. Brick bat cement concrete in foundation (B.B.C.C.) (1:5:10)

- **For 12.32 m^3 BBCC work, 12.32 m^3 brick bats arerequired.**

Proportion =1:5:10

Volume of sand is one half of the volume of brick bats.

∴ Volume of sand is required = ~~m^3~~

Now the volume of cement is of the volume of sand.

Cement = 6.16 =1.23 m^3 = = 36 Bags

ABSTRACT SHEET:

Sr. No.	Description Of Item	Quantities	Rate	Per	Amount
1	Excavation	123.55 m^3	110	Cu. M	13591
2	PCC	33.70m^3	965	Cu. M	32521
3	Sand Filling	98.08 m^3	90	Cu. M	8828
4	Concreting Work	194.53 m^2	130	Sq. M.	25290
5	Brick Work	175 m^3	1250	Cu. M.	218750
6	Inside Plaster	499.35 m^2	150	Sq. M..	74903
7	Outside Plaster	178.38 m^2	250	Sq. M..	44595
8	Steel Work	194.53 m^2	200	Sq. M..	38906
9	Shuttering	194.53 m^2	70	Sq. M..	13620
10	Marble work	194.53 m^2	600	Sq. M..	116718
11	BBCC	12.32 m^3	2700	Cu. M.	34500
12	Cement	720 bags	280	Bag	201600
13	Sand	94.2 m^3	900	Cu. M.	84780
14	Aggregate	55.71 m^3	1000	Cu. M.	55710
15	Brick	94000 nos.	4	Brick	376000
16	Steel	2291 kg	55	Kg	126005
17	Binding Wire	23 kg	60	Kg	1380
				TOTAL	14,67,697
		Add 1.5% water charge Rs.			22,016
		Add 10% contractor profits Rs.			1,46,770
				Total Cost	**16,36,500 Rs.**

8.1.4 Socio-culture Design:

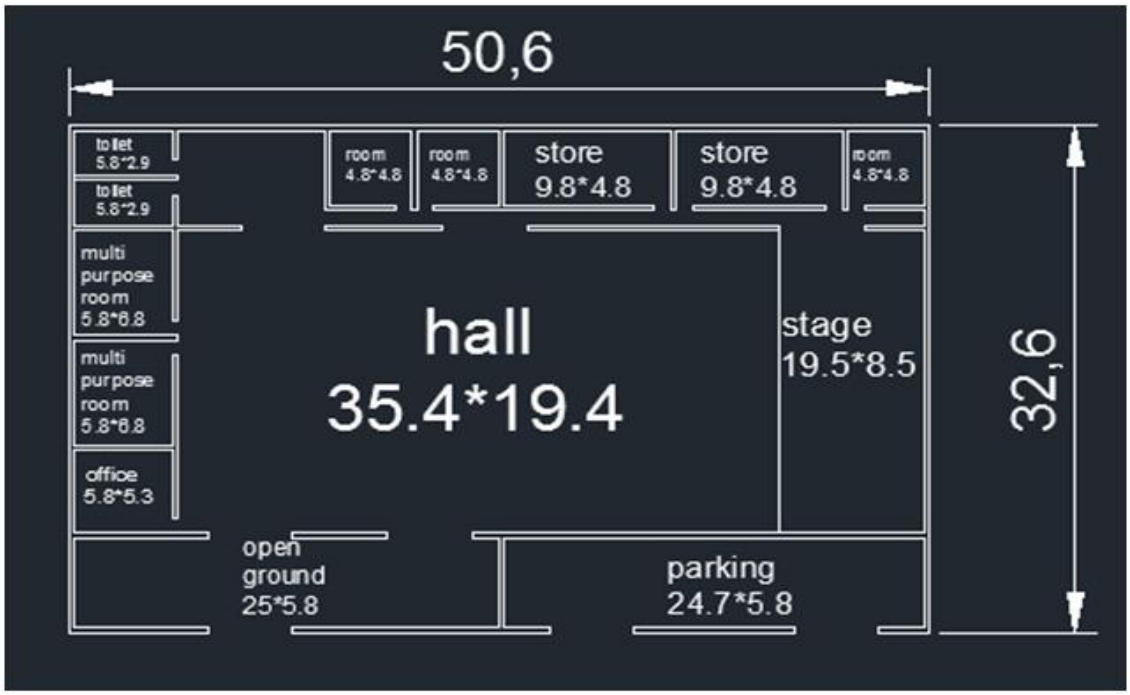


Figure 82 : Community hall

- **Estimate:**

SR.	Description Of Item	No	Length	Breath	Depth	Quantity
	Long wall 1:					
	50.3m	4				
	Long wall 2:					
	15+4.8+4.8+0.30+0.30+9.8+0.30+9.8+0.30+4.8+0.15 =35.5m	1				
	Long wall 3:					
	5.8	3				
	Short wall 1:					
	32.3m	3				
	Short wall 2:	5				
	4.8m					
1	Excavation in soil:(0.90)					
	LW1=50.3+0.90=51.2	4	51.2	0.90	1.5	276.48
	LW2=35.5+0.90=36.4	1	36.4	0.90	1.5	49.14

	LW3=5.8+0.90=6.7	3	6.7	0.90	1.5	27.135
	SW1=32.3-0.90=31.4	3	31.4	0.90	1.5	127.17
	SW2=4.8-0.90=3.9	5	3.9	0.90	1.5	26.325
						Total Quantity:506.25m^3
2	PCC Work:(0.90)					
	LW1=50.3+0.90=51.2	4	51.2	0.9	0.3	55.62
	LW2=35.5+0.90=36.4	1	36.4	0.9	0.3	9.828
	LW3=5.8+0.90=6.7	3	6.7	0.9	0.3	5.427
	SW1=32.3-0.90=31.4	3	31.4	0.9	0.3	25.4
	SW2=4.8-0.90=3.9	5	3.9	0.9	0.3	5.265
						Total Quantity:101.54m^3
3	Brick Work in foundation:(0.6)					
	Step 1(0.6)					
	LW1=50.3+0.6=50.9	4	50.9	0.6	0.2	24.432
	LW2=35.5+0.6=36.1	1	36.1	0.6	0.2	4.332
	LW3=5.8+0.6=6.4	3	6.4	0.6	0.2	2.304
	SW1=32.3-0.6=31.7	3	31.7	0.6	0.2	11.412
	SW2=4.8-0.6=4.2	5	4.2	0.6	0.2	2.52
						Total Quantity:45m^3
	Step 2 (0.5)					
	LW1=50.3+0.5=50.8	4	50.8	0.5	0.2	20.32
	LW2=35.5+0.5=36	1	36	0.5	0.2	3.5
	LW3=5.8+0.5=6.3	3	6.3	0.5	0.2	1.89
	SW1=32.3-0.5=31.8	3	31.8	0.5	0.2	9.54
	SW2=4.8-0.5=4.3	5	4.3	0.5	0.2	2.15
						Total Quantity:37.4m^3
	Step 3 (0.4)					
	LW1=50.3+0.4=50.7	4	50.7	0.4	0.2	16.224
	LW2=35.5+0.4=35.9	1	35.9	0.4	0.2	2.872
	LW3=5.8+0.4=6.2	3	6.2	0.4	0.2	1.488
	SW1=32.3-0.4=31.9	3	31.9	0.4	0.2	7.656
	SW2=4.8-0.4=4.4	5	4.4	0.4	0.2	1.76
						Total Quantity:30m^3
	Step 4(0.3)					
	LW1=50.3+0.3=50.6	4	50.6	0.3	0.2	12.144
	LW2=35.5+0.3=35.8	1	35.8	0.3	0.2	2.148
	LW3=5.8+0.3=6.1	3	6.1	0.3	0.2	1.098
	SW1=32.3-0.3=32	3	32	0.3	0.2	5.76
	SW2=4.8-0.3=4.5	3	4.5	0.3	0.2	1.35
						Total Quantity:22.5m^3
	Total brick work in foundation=45+37.4+30+22.5=134.9m^3					
4	Brick Work in super structure:(height 3.78)					

	LW1=50.3+0.3=50.6	4	50.6	0.3	3.78	229.52
	LW2=35.5+0.3=35.8	1	35.8	0.3	3.78	40.59
	LW3=5.8+0.3=6.1	3	6.1	0.3	3.78	20.75
	SW1=32.3-0.3=32	3	32	0.3	3.78	108.86
	SW2=4.8-0.3=4.5	5	4.5	0.3	3.78	25.515
						Total Quantity:425.235m^3
	Deduction of door and lintel (0.3 wall)					
	D	8	5	0.3	2.1	25.2
	D1	10	1.2	0.3	2.1	7.56
						Total: 32.76
	Lintel					
	D	8	5	0.3	0.12	1.44
	D1	10	1.2	0.3	0.12	0.432
						Total: 1.872
	Total brick work for super structure =425.235-32.76-1.872=390.603m^3					
5	Flooring work:					
	Room	3	4.8	4.8	-	69.12
	Store	2	9.8	4.8	-	94.08
	Multi-purpose room	2	5.8	6.8	-	78.88
	Office	1	5.8	5.3	-	39.44
	Hall	1	35.4	19.4	-	686.76
	Stage	1	8.5	19.4	-	164.9
	Toilet	2	5.8	2.9	-	33.64
						Total Quantity: 1166.82m^3
6	Slab work (RCC):					
	L=50.6m					
	W=32.6(0.30+5.8)=26.5	1	50.6	0.10		
	Total Quantity: 134.09m^3					
7	Plastering work:					
	• Siling plaster					
	Room	3	4.8	4.8	-	69.16
	Store	2	9.8	4.8	-	99.08
	Multi-purpose room	2	5.8	6.8	-	78.88
	Office	1	5.8	5.3	-	39.44
	Hall	1	35.4	19.4	-	686.76
	Stage	1	4.5	19.4	-	164.9
	Toilet	2	5.8	2.9	-	33.4
						Total= 1166.82m^3
	• Outside wall plaster					

	Wall-1=32.6m	2	32.6	-	3.78	246.456
	Wall-2=50.6m	2	50.6	-	3.78	382.536
					Total=	**628.992m^2**
	Inside Plaster					
	Hall					
	Wall-1	3	35.4	-	3	318.6
	Wall-2	2	19.4	-	3	116.4
					Total=	**435m^2**
	Open ground					
	Wall-1	2	25		3	150
	Wall-2	2	5.8		3	34.8
					Total=	**184.8m^2**
	Parking					
	Wall-1	2	24.7	-	3	148.2
	Wall-2	2	5.8	-	3	34.8
					Total=	**183m^2**
	Office					
	Wall-1	2	5.8	-	3	34.8
	Wall-2	2	6.8	-	3	31.8
					Total=	**66.6m^2**
	2 Multi-purpose room					
	Wall-1	4	5.8	-	3	69.6
	Wall-2	4	6.8	-	3	81.6
					Total=	**151.2m^2**
	Toilet					
	Wall-1	4	5.8	-	3	69.6
	Wall-2	4	6.8	-	3	81.6
					Total=	**104.4m^2**
	Room					
	Wall-1	13	4.8	-	3	
						Total=187.2m^2
	Store					
	Wall-1	4	9.8	-	3	117.6
	Wall-2	4	4.8	-	3	57.6
					Total=	**175.2m^2**
	Extra wall					
	Wall-1	1	35.5	-	3	106.5
	Wall-2	1	6.1	-	3	18.3
					Total=	**124.8m^3**
	Plastering work=435+184.8+183+66.6+151.2+104.4+187.2+175.2+124.8=1612.2m^2					
	• Deduction of door= 32.76m^3					
	• **Total inside and outside plaster= 628.992+1612.2-32.76=2208.432m^2**					

8.1.5 Smart village design:

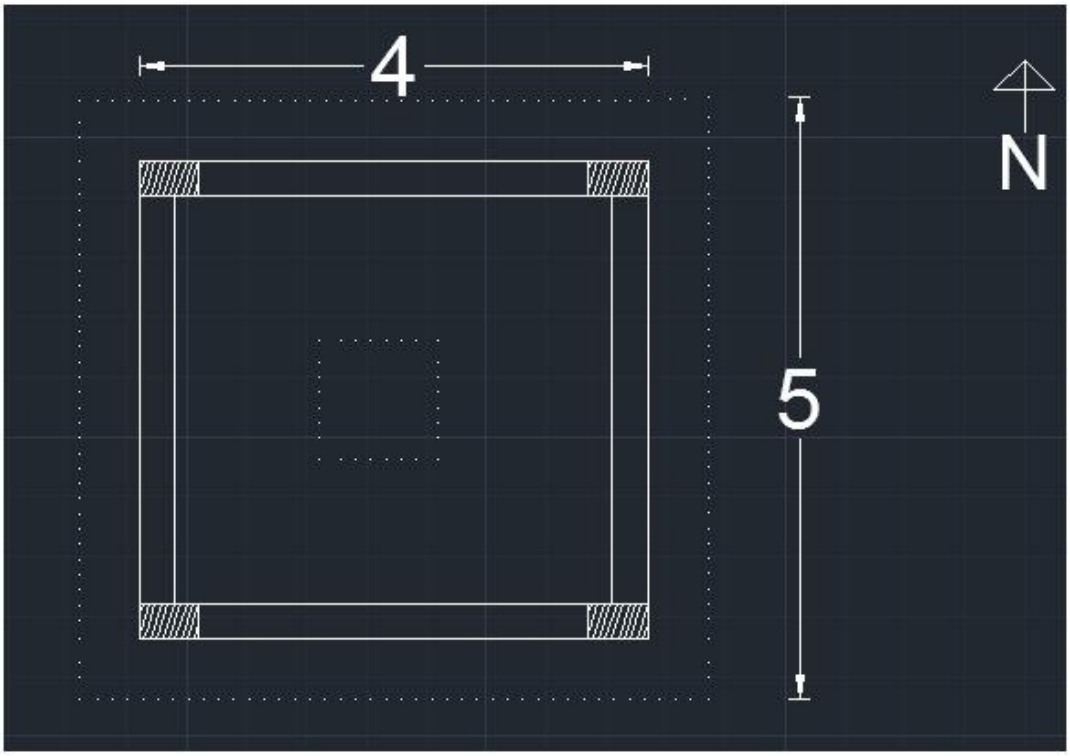


Figure 83: Plan of plastic bottle crusher machine

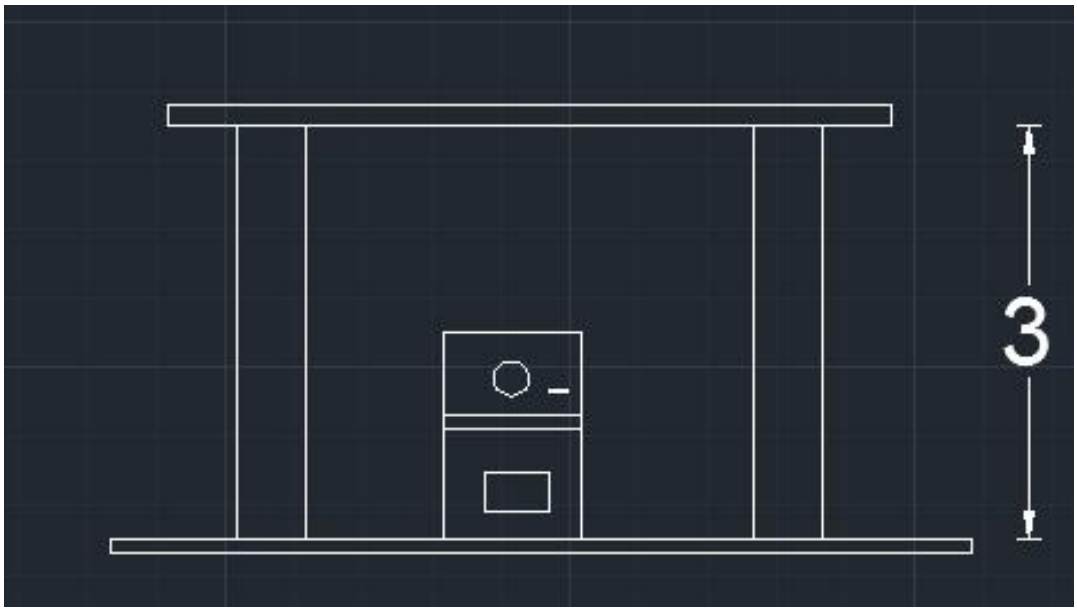


Figure 84: Elevation of plastic bottle crusher machine

- **Estimate:**

Sr	Description Of Item	No	Length	Breadth	Depth	Quantity
1)	Excavation in foundation					
	Footing size=1.2x1.2m	4	1.2	1.2	1.2	6.912
	Number of column =4					
2)	PCC for foundation	4	1.2	1.2	0.1	0.576
3)	Concreting in footing					
	Part-1(Rectangle)	1	1.2	1.2	0.25	$0.36m^3$
	Part-2(Slop)					
	Area-1 top surface	1	0.5	0.3	-	0.15
	Area-2 bottom surface					
	Height of surface (H)					
	Edge of footing	1	1.2	1.2	-	1.44
	0.5-0.25+0.25					
	Volume					
	$=(H/3)\ [A_1+A_2+(A_1+A_2)^{0.5}]$					
	$=(0.25/3)[0.15+1.44+(0.15x1.44)^{0.5}]=$ $0.171m^3$					
	Total = for 1 column = $0.171m^3$					
	=for 4 column = $0.684m^3$					
4)	**Concreting for column in foundation**					
	(Height= excavation – PCC – Depth)	**4**	**0.5**	**0.3**	**0.6**	**$0.36m^3$**
	= 1.2-0.10.5=0.6					
5)	**Concreting in column**	**6**	**0.5**	**0.3**	**3**	**$2.7m^3$**
6)	**Concreting for slab**	**1**	**4**	**5**	**0.15**	**$3m^3$**
7)	**Plaster**					
	➢ **For column**					
	0.5m side	**8**	**0.5**	**-**	**3**	**$12m^2$**
	0.3m side	**8**	**0.3**	**-**	**3**	**$7.2m^2$**
	➢ **For slab**	**1**	**4**	**5**	**-**	**$20m^2$**
	Total= $29.2m^2$					

8.1.6: Heritage village design (civil):

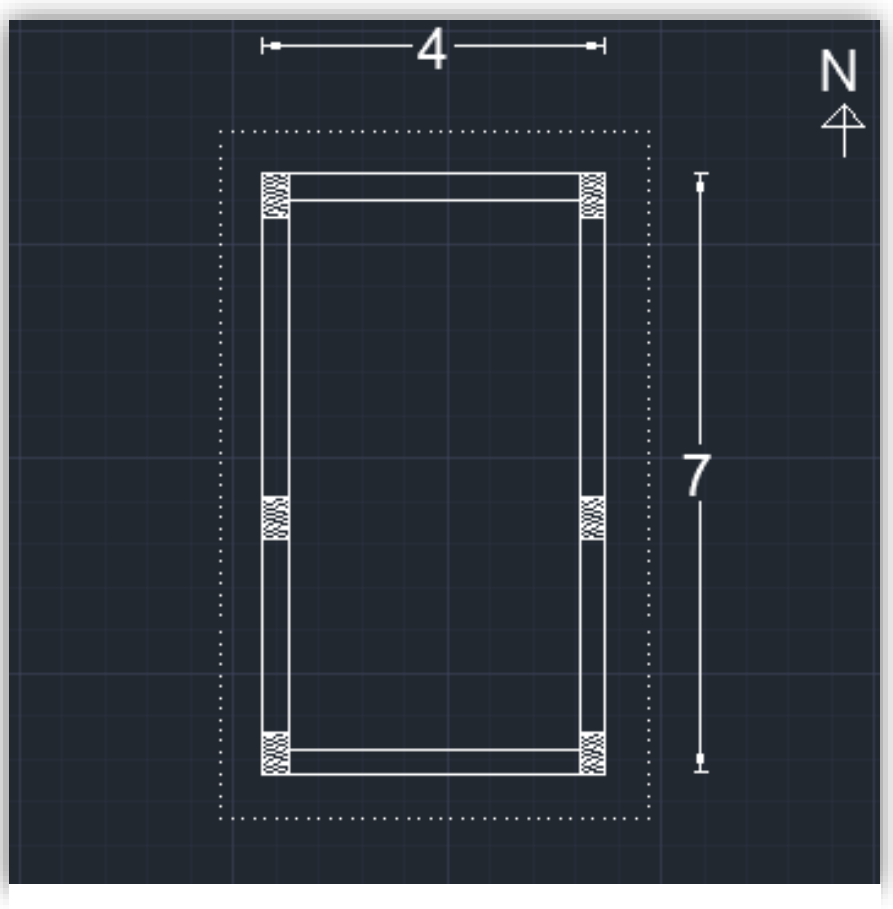


Figure 85: Plan of Drinking water facility for animal

TYPE	C/S SIZE
BEAM	0.3 m x 0.3 m
COLUMN	0.5 m x 0.3 m

Column Height = 2.5 m

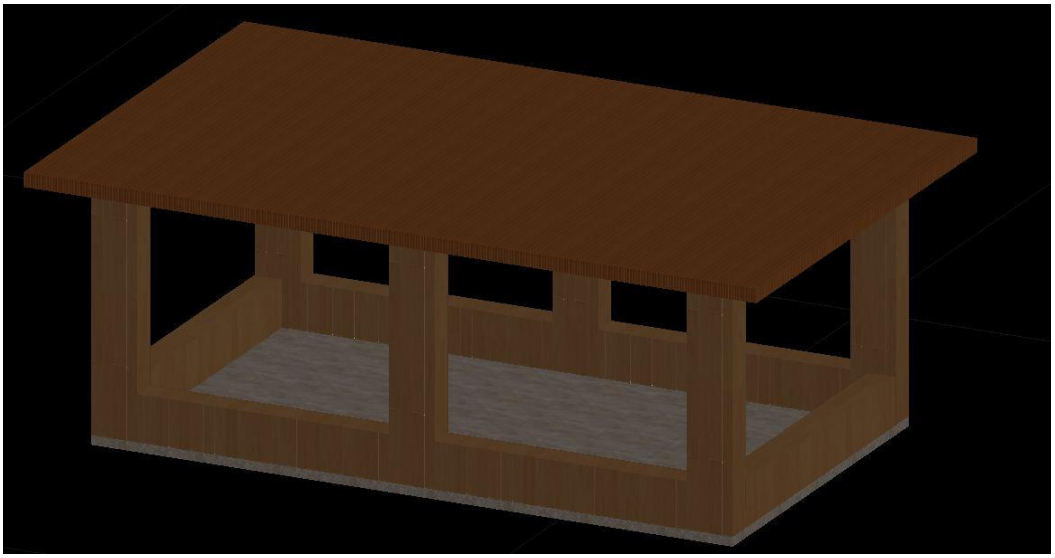


Figure 86: 3D model of Drinking water facility for animal

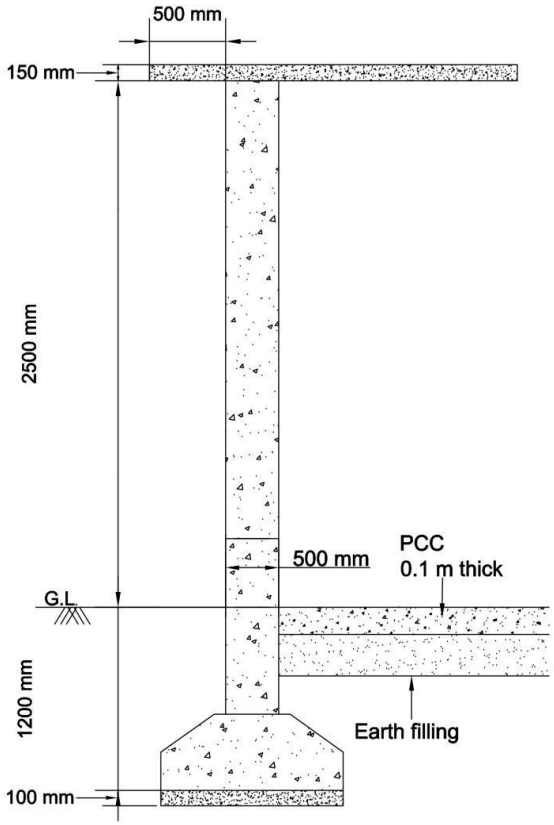


Figure 87: Section of Drinking water facility for animal

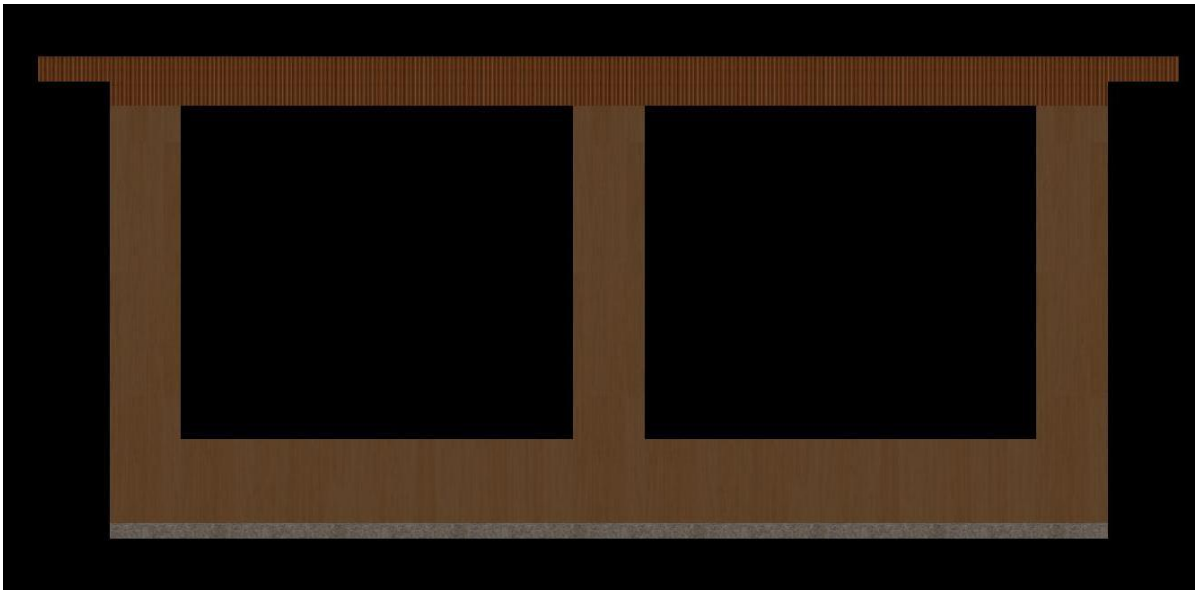


Figure 88: Elevation of Drinking water facility for animal

(Quantity Measurement sheet):

Sr. No.	Description Of Item	Nos.	Length (m)	Breadth (m)	Height (m)	Quantity
1	**Excavation for foundation** Footing size 1.2m X 1.2 m Number of column = 6	6	1.2	1.2	1.2	10.37 m^3
2	**PCC for foundation**	6	1.2	1.2	0.1	0.864 m^3
3	**Concreting in footing**					
	Part-1 (Rectangle)	1	1.2	1.2	0.25	0.36 m^3
	Part-2 (Slope) Area - 1 Top surface	1	0.5	0.3	-	0.15
	Area - 2 Bottom surface **Height of slope(H)** = D - edge of footing = 0.5 – 0.25 = 0.25	1	1.2	1.2	-	1.44
	Volume = (H/3)[A_1 + A_2 + (A_1 X A_2)$^{0.5}$] = (0.25/3)[0.15 + 1.44 + (0.15 X 1.44)$^{0.5}$] 0.171	-	-	-	-	0.171 m^3
			Total	For 1 Column		0.171 m^3
				For 6 Column		**1.03 m^3**
4	**Concreting in column in foundation**					
	Height = Excavation – PCC – D = 1.2 – 0.1 – 0.5 = 0.6	6	0.5	0.3	0.6	0.54 m^3
5	**Sand filling up to GL**					
	(Excavation Qty– PCC Qty - Concreting In Footing,SlopeAndColumn) = 10.37 –0.864 – 0.54 = 8.97	-	-	-	-	8.97 m^3
6	**Concreting in plinth beam** Size of beam = 0.3 m x 0.3 m	4	2.75	0.3	0.3	0.99 m^3
		2	3.4	0.3	0.3	0.612 m^3
				Total		**1.60 m^3**

7	**Sand filling in space between plinth beam**	1	6.4	3.4	0.35	7.62 m^3

8	**PCC in space between plinth beam**	1	6.4	3.4	0.1	2.18 m^3
9	**Concreting in column**	6	0.5	0.3	2.5	2.25 m^3
10	**Brick Masonry above plinth up to slab level**					
	L = 12.3 m	1	12.3	0.3	0.5	1.845 m^3
11	**Concreting in Beam below slab level** Size of beam = 0.3 m x 0.3 m	4	2.75	0.3	0.3	0.99 m^3
		2	3.4	0.3	0.3	0.612 m^3
				Total		**1.60 m^3**
12	**Concreting for slab**	1	8	5	0.15	6 m^3
13	**Plaster**					
	For wall	4	7	-	0.5	14 m^2
		4	-	4	0.5	8 m^2
	For Column	6	1.6	-	2	19.2 m^2
	For Beam	4	2.75	-	0.3	3.3 m^2
		2	3.4	-	0.3	2.04 m^2
	For Slab	2	8	-	5	80 m^2
				Total		**126.54 m^2**

MATERIAL QUANTITY CALCULATION:

1. P.C.C. in foundation and space between Plinth level(1:4:8):-

- **For 1 m^3wet concrete, 1.52 m^3 dry concrete is required.**

1 m^3 $\longrightarrow$ 1.52 m^3
3.04 m^3 $\longrightarrow$? (4.63m^3)
Proportion 1:4:8 =13

Cement = 0.356 m^3 = 11 Bags

Sand = 1.42 m^3

Aggregate = 2.85 m^3

2. Brickwork (1:6)

- **For 1 m^3 of brickwork 500 bricks are required.**

1 m^3 ⟶ 500 Nos.
1.845 m^3 ⟶ ? (1000Nos.)

Proportion =1:6

- **For 1 m^3 brickwork 0.33 m^3 mortar is required.**

1 m^3 ⟶ 0.33 m^3
1.845 m^3 ⟶ ? (0.61m^3)

Cement = 0.61 = 0.087 m^3 == 2.5 Bags

Sand = 0.61 =0.52 m^3

3. R.C.C work (1:1.5:3)

- **For 1 m^3wet concrete, 1.52 m^3 dry concrete is required.**

1 m^3 ⟶ 1.52 m^3
13.02 m^3 ⟶ ? (19.79m^3)

Proportion 1:1.5:3 = 5.5

Cement = = 3.6 m^3 = — 103 Bags

Sand = 5.40 m^3

Aggregate = 10.79 m^3

Assume 1% steel

Volume of steel = — = 0.13 m^3

Density of steel = 7850 kg/ m^3

Mass of steel = 0.13 7850 =1025 kg

- **For 100 kg of steel, 1 kg binding wire is required.**
- **For 1025 kg of steel, 10.5 kg binding wire is required.**

4. Plaster 12 mm thick (1:4)

- **For 100 m2 Plasterwork 2 m3 mortar is required.**

  100 m^2 $\longrightarrow$ 2m^3

  126.54 m^2 $\longrightarrow$? (2.53m^3)

  Proportion =1:4

  Cement = 2.53 =0.51 m^3 = = 15 Bags

  Sand = 2.53 = 2.02 m^3

ABSTRACT SHEET:

Sr. No.	Description Of Item	Quantities	Rate	Per	Amount
1	Excavation	10.37 m^3	110	Cu. M	1141
2	PCC	3.04 m^3	965	Cu. M	2934
3	Sand Filling	16.6 m^3	90	Cu. M	1500
4	Concreting Work	13.02 m^2	130	Sq. M.	1695
5	Brick Work	1.85 m^3	1250	Cu. M.	2315
6	Plaster	126.54 m^2	150	Sq. M..	18981
8	Steel Work	40 m^2	200	Sq. M..	8000
9	Shuttering	40 m^2	70	Sq. M..	2800
12	Cement	132 bags	280	Bag	36960
13	Sand	9.36 m^3	900	Cu. M.	8424
14	Aggregate	13.64 m^3	1000	Cu. M.	13640
15	Brick	1000 nos.	4	Brick	4000
16	Steel	1025 kg	55	Kg	56375
17	Binding Wire	10.5 kg	60	Kg	630
				TOTAL	159395
		Add 1.5% water charge Rs.			2391
		Add 10% contractor profits Rs.			15940
				Total Cost	**1,77,726**

Chapter 9: Proposing design for future development of the Village for the part-2 design

- **In the project we gave 6 designs for part-1.**

  1) PHC
  2) Public garden
  3) Assembly garden
  4) Plastic bottle crusher machine
  5) Avedo
  6) Water butt

- **For part-2 we are thinking about some design like:**

  - Bus stand
  - Library
  - Post office
  - Medical store
  - Village gate
  - Public toilet
  - ATM
  - CCTV and control room
  - Secondary school
  - Play ground

- This is some basic designs for development of the village.
- In this design we will choose 6 designs according to necessity of village.
- If village need some different design from this, we will also try to make it.
- This design will be done by basic necessity of the village and villagers, so for future development and people's good life this design is very important.

Chapter 10: Conclusion of the entire village activities of the Project

- Vishwakarma project is provide the benefits of real work experience to engineering student and simultaneously apply their technical knowledge in the development of infrastructure in rural development.
- In this project first of all we choose 3 villages. In three villages one was ideal village, second is smart village and third is allocated village.
- We visited all three village and we discussed with peoples, sarpanch and their mantris for understanding problems in village and what village needed for development.
- We did techno economic survey in village so we understand the condition of village like, geographical details, infrastructure details, occupational details, demographical details, cultural facilities and other facilities.
- We compare allocated village over smart village and ideal village. So, we understand that how exactly developed village works and what facilities and design we gave in our selected village.
- From survey of ideal village (Mujka) and smart village (Kolki), we make some design for allocated village (Bavakhakhariya). We designed some of the following facilities for the village:

  - Public garden(Physical Infrastructure)
  - water butt(Sustainable Infrastructure)
  - Public Health Centre (Social Infrastructure)
  - Assembly hall(Socio- cultural Infrastructure)
  - Plastic crusher machine(Smart Infrastructure)
  - Avedo.(Heritage Infrastructure)

- By providing this required facilities in village, development and growth of village can be possible. So migration and urban pressure can be reduce and livelihood of village dweller will increase.
- This project is helped us to understand the village situation their problem and how to solved it, this project increase our skills and make it batter. We got lots of knowledge about village their infrastructure and how to deal with people.
- We learn lots of to doing this project and we enjoy it. So thank you to GTU, you gave us that type of project.

Chapter 11: References refereed for this project

1) Wikipedia
2) Google maps
3) Census of India
4) National Geographic
5) Sociology discussion .com
6) Bujus.com
7) Megtransport.gov.in
8) Yourarticlelibrary.com
9) Makkan.com
10) Google.com
11) Techno economic survey from of all villages

Chapter 12: Annexure attachment

12.1 Scanned copy of ideal village survey form:

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	MUNJKA
Name of Taluka:	RAJKOT
Name of District:	RAJKOT
Name of Institute:	ATMIYA INSTITUTE OF SCINCE & TECH. FOR DIPLOMA
Nodal Officer Name & Contact Detail:	PROF. KHEMENDRA R. DATTANI Mo:- 9409014376
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	TEACHER & SARPANCH
Date of Survey:	24/12/2020

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	2011	1110	901	406
ii)	2011	3483	1816	1661	753

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	748 HECTOR
	Forest Area (In hect.)	—
	Agricultural Land Area (In hect.)	445 HECTOR
	Residential Area (In hect.)	336 HECTOR
	Other Area (In hect.)	300 HECTOR
	Water bodies	R.M.C.
	Nearest Town with Distance:	RAJKOT (1KM)

3. **Occupational Details:**

Name of Three Major Occupation groups in Village	1. FARMING 2. SAND-AGGREGATE 3. LABOUR

4. **Physical Infrastructure Facilities:**

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated) • RO Water	FOR DRINK		✓	MORE REQUIRE
	• Well (Covered/ Uncovered)	1 (UNCOVER)		✓	MORE REQUIRE
	• Hand pumps • Tube well/ Borehole	1 (NOT IN WORK)		✓	
	• River/ Canal/ Spring/ Lake/ Pond	BOREHOLE	✓	-	
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: 1.5 lakh	✓		
	Underground Sump	Capacity: 50,000L	✓		
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	UNDER. (Y)	✓		
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	closed	✓		
	If Open than Pucca / Kutchcha	P / K 96% / 4%	✓		
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	No.			QUICK REQUIRE
Suggestions if any:					

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E.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	C.C	✓		
	Main road	R.C.C	✓		
	Internal streets	C.C	✓		
	Nearest NH/SH/MDR/ODR Dist. in kms.	JAMNAGAR NH.			
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	(No) IN RAJKOT			REQUIRED
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	No — IN RAJKOT			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	CITY BUS/ AUTO RIKSHA/ PRIVATE VEHICLE	✓		
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	GOVT. 24 HR.	✓		
	Power supply for Domestic Use	24 HR.	✓		
	Power supply for Agricultural Use	8 HR.		✓	10 HR.
	Power supply for Commercial Use	24 HR.	✓		
	Road/ Street Lights	YES	✓		

	Electrification in Government Buildings/ Schools/ Hospitals	GOOD	✓		
	Renewable Energy Source Facilities (Y/ N)	NO			REQUIRE
	LED Facilities	YES		✓	
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	NO			
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	NO			REQUIRED
	Solid & liquid waste Disposal system available	NO IN RAJKOT			
	Any facility for Waste collection from road	R.M.C (DOOR TO DOOR)	✓		
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	WELL/ BOREHOLE	✓		
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	K / P 4% 96%	✓		

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

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K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	SUB CENTER		✓	REQUIRE (P.H.C.)
	Private Clinic/Private Hospital/ Nursing Home	YES			
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
L.	**Education Facilities:**				
	Aaganwadi/ Play group	3 AAN...	✓		
	Primary School	2	✓		
	Secondary school	1(PRIVATE)		✓	
	Higher sec. School	1(PRIVATE)	✓		
	ITI college/ vocational Training Center				
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	SAURASTRA UNIVERSITY IN MUNJKA	✓		
	If any of the above Facility is not available in village than approx. distance from village: ..1....kms RAJKOT. (ITI)				
Suggestions if any:					
M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:	No.		✓	

	Condition:				
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	IN UNIVER. GOOD GOOD	✓		
	Public Garden Location: Condition:	YES GOOD BAD		✓	
	Village Pond Location: Condition:	NO			
	Recreation Center Location: Condition:	NO			REQUIRE
	Cinema/ Video Hall Location: Condition:	NO			
	Assembly Polling Station Location: Condition:	YES - AVG. GOOD.	✓		
	Birth & Death Registration Office Location: Condition:	YES IN RAJKOT	✓		

If any of the above Facility is not available in village than approx. distance from village: ~~...1.....~~kms. RAJKOT (CINEMA)

Suggestions if any:

N.	Other Facilities				
	Post-office	NO			REQUIRE
	Telecommunication Network/ STD booth	YES	✓		

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

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

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

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	YES / SOFT COPY

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

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)	YES (PHC/SCHOOL) REQUIRED. (PUBLIC TOILET)	
2.	Additional Information/ Requirement	—	

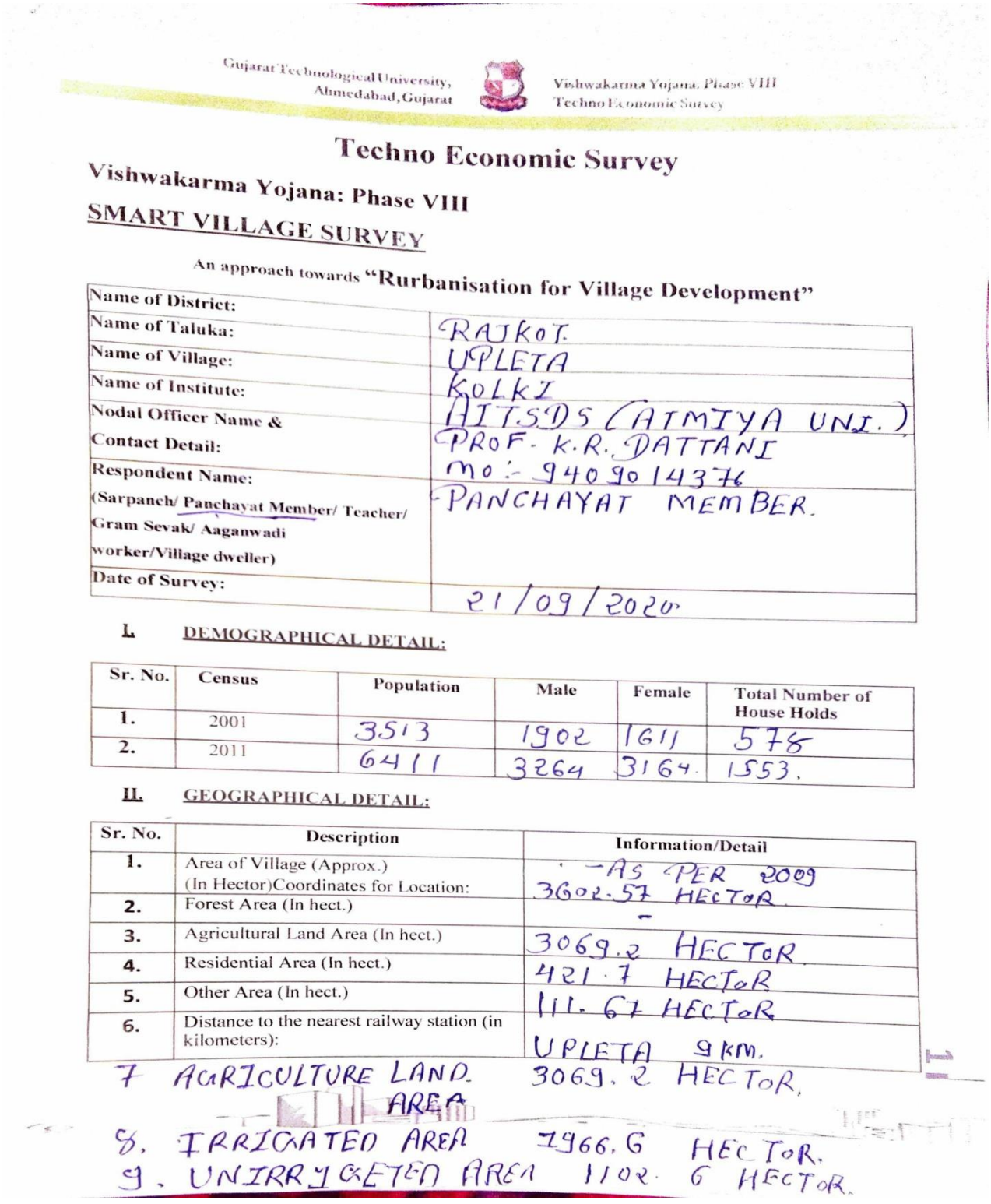
9. Smart Village Proposal Design

Sr. No.	Descriptions	Information/ Detail	Remarks
1.			

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

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

12.2 Scanned copy of smart village survey form:



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Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

Name of District:	RAJKOT.
Name of Taluka:	UPLETA
Name of Village:	KOLKI
Name of Institute:	AITSDS (ATMIYA UNI.)
Nodal Officer Name & Contact Detail:	PROF. K.R. DATTANI mo:- 9409014376
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	PANCHAYAT MEMBER.
Date of Survey:	21/09/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	3513	1902	1611	578
2.	2011	6411	3264	3164	1553.

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	AS PER 2009 3602.57 HECTOR.
2.	Forest Area (In hect.)	-
3.	Agricultural Land Area (In hect.)	3069.2 HECTOR.
4.	Residential Area (In hect.)	421.7 HECTOR
5.	Other Area (In hect.)	111.67 HECTOR
6.	Distance to the nearest railway station (in kilometers):	UPLETA 9 KM.

7 AGRICULTURE LAND AREA 3069.2 HECTOR.

8. IRRIGATED AREA 1966.6 HECTOR.

9. UNIRRIGETED AREA 1102.6 HECTOR.

7.	Name of Nearest Town with Distance:	UPLETA 9KM.
8.	Distance to the nearest bus station (in kilometers):	IN VILLAGE
9.	Whether village is connected to all road for the any facility or town or City?	YES.

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	FARMING
	2.	LABOUR WORK
	3.	COTTAGE INDUSTRY.
Major crops grown in the village:	1.	GROUND NUT
	2.	COTTON
	3.	WHEAT.

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	BORE WELL	✓		
2.	**DUG WELL** Protected Well Un Protected Well	✓		✓	
3.	**WATER FROM SPRING** Protected Spring ✓ Unprotected Spring ✓	DAM	✓		
	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**	BORE WELL	✓		

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Suggestions if any:						
B.	Water Tank Facility					
✓	Overhead Tank	Capacity:	10,00,000			
	Underground Sump	Capacity:	5,00,000			
Suggestions if any:						
C.	The Type of Drainage Facility					
	A. UNDERGROUND DRAINAGE	UNDER GROUND				
	1					
	2					
	B. OPEN WITH OUTLET	OUTLET IN RIVER.	✓			
	C. OPEN WITHOUT OUTLET					
Suggestions if any:						
D.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM					
	Village approach road	C.C.	✓			
	Main road	C.C.	✓			
	Internal streets	C.C.	✓			
	Nearest NH/SH/MDR/ODR Dist. in kms.	NH-8B 9 KM.	✓			
Suggestions if any:						
E.	Transport Facility					
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NO				
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	YES	✓			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	ALL	✓			
Suggestions if any:						
F.	Electricity Distribution					
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	GOVT.			24 HOUR.	

3

	Power supply for Domestic Use	GOVT.	✓		24 HOUR.
✓	Power supply for Agricultural Use	GOVT	✓		-
	Power supply for Commercial Use	GOVT.	✓		24 HOUR
	Road/ Street Lights	GOVT	✓		24 HOUR.
	Electrification in Government Buildings/ Schools/ Hospitals	GOVT	✓		24 HOUR
	Renewable Energy Source Facilities (Y/ N)	SOLAR	✓		-
	LED Facilities	YES.	✓		
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	YES		40. TOILET	
	Location Condition	AVG.			
	Community Toilet (With bath/ without bath facilities)	NO			
	Solid & liquid waste Disposal system available	YES			
	Any facility for Waste collection from road	YES.			
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL OTHER (SPECIFY)	BORE CANAL WELL.			
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	1:1/99:1 K/P	✓		

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	6.	✓		
	Sub-Centre	No			
	PHC	AVG CONG.	✓		CONDITION ACCH.
	BLOCK PHC	·No			
	CHC/RH	No			
	District/ Govt. Hospital	No			
	Govt. Dispensary	No			
	Private Clinic	✓			
	Private Hospital/ Nursing Home	No			
	AYUSH Health Facility	✓	✓		
	sonography /ultrasound facility	No			
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group				
	Primary School	✓		✓	MAINTENANCE
	Secondary school	✓	✓		
	Higher sec. School	✓	✓		
	ITI college/ vocational Training Center	No.			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	No			
	If any of the above Facility is not available in village than approx. distance from village: 9 .....kms.				

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Suggestions if any:

L.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)	Good	IN VILLAGE.	YES	
	Public Library (With daily newspaper supply: Y/N)	V. Good	IN VILLAGE	YES	
	Public Garden				
	Village Pond	Good	GOOM AWAY FROM VIL.	YES.	
	Recreation Center				NO.
	Cinema/ Video Hall				NO
	Assembly Polling Station				NO
	Birth & Death Registration			YES	IN PANCH.

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

Suggestions if any:

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

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	Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-chaupal / Mills / Small Scale Industries	GOOD GOOD (Oil/Milk)	100M FROM VIL. 500-100m FROM VIL	YES YES.	NO.
	Other Facility				

Suggestions if any:

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

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→ R.O SYSTEM IN WHOLE VILLAGE
ICOIN - SNs →4 TO 5L WATER.

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VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

8

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

IX. Smart Village / Heritage Details

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

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

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

[illegible]
સરપંચ,
શ્રી ગ્રામ પંચાયત-કોલકી

12.3 Scanned copy of allocated village survey form:

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

Name of District:	JAMNAGAR
Name of Taluka:	KALAVAD
Name of Village:	BAVAKHAKHARIYA
Name of Institute:	ATMIYA Ins. of SCIENCE & TECH. FOR DIPL
Nodal Officer Name & Contact Detail:	PROF. K.R. DATTANI Mo :- 9409014376
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	PANCHAYAT MEMBER, AAGANWADI WORKER.
Date of Survey:	18 SEP 2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	1322	662	660	255

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	473.97 HECTARES
2.	Forest Area (In hect.)	—
3.	Agricultural Land Area (In hect.)	352 HECTARES
4.	Residential Area (In hect.)	—
5.	Other Area (In hect.)	—
6.	Distance to the nearest railway station (in kilometers):	RAJKOT 50 km & JAMNAGAR

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

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1. FARMING 2. LABOUR WORK 3. MASON WORK

Major crops grown in the village:	1. PEANUTS 2. Cotton 3. WHEAT

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

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	Other(Specify)Lake/ Pond	NO			
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank ✓	Capacity:	50 000 L		
	Underground Sump	Capacity:	-		
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1	UNDER GROUND DRAIN.	✓		
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	DAMAR	✓		
	Main road	C.C.	✓		
	Internal streets	C.C.		✓	
	Nearest NH/SH/MDR/ODR Dist. in kms.	MDR 5KM			
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NO			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	YES		✓	
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	ALL	✓		
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	GOVT.			24 HOUR

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	Power supply for Domestic Use	GoVT	✓		24 HOUR
	Power supply for Agricultural Use	GoVT	✓		8 HOUR
	Power supply for Commercial Use	GoVT	✓		24 HOUR
	Road/ Street Lights	GoVT		✓	–
	Electrification in Government Buildings/ Schools/ Hospitals	GoVT	✓		24 HOUR
	Renewable Energy Source Facilities (Y/ N)	NO			
	LED Facilities	NO			
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	NO			
	Location Condition	–			
	Community Toilet (With bath/ without bath facilities)	NO			
	Solid & liquid waste Disposal system available	NO			
	Any facility for Waste collection from road	NO			
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL OTHER (SPECIFY)	BORE WELL, RIVER, DAM.			
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	PUCCA			

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	2	✓		
	Sub-Centre	~~No~~ YES		✓	
	PHC	No			
	BLOCK PHC	No			
	CHC/RH	No			
	District/ Govt. Hospital	No			
	Govt. Dispensary	No			
	Private Clinic	No			
	Private Hospital/ Nursing Home	No			
	AYUSH Health Facility				
	sonography /ultrasound facility	No			
	If any of the above Facility is not available in village than approx. distance from village: ....5....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	YES(AAN)	✓		
	Primary School	✓ YES	✓		
	Secondary school	No			
	Higher sec. School	No			
	ITI college/ vocational Training Center	No			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	No			

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	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)				NO
	Public Library (With daily newspaper supply: Y/N)				NO
	Public Garden				No
	Village Pond				NO
	Recreation Center				NO
	Cinema/ Video Hall				No
	Assembly Polling Station	AVG.	IN VILLAGE AVG.	YES	~~YES~~
	Birth & Death Registration Office			YES	IN PANCHAYAT
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	NOT GOOD	IN VILLAGE	YES	
	Telecommunication Network/ STD booth				No
	General Market				No
	Shops (Public Distribution System)	GOOD	In VIL.	YES	
	Panchayat Building	GOOD	IN VIL.	YES	
	Pharmacy/Medical Shop				No
	Bank & ATM Facility				No
	Agriculture Co-operative Society				No
	Milk Co-operative Soc.	GOOD	IN VILL.	YES	
	Small Scale Industries				No
	Internet Cafes/ Common Service Center/Wi Fi				No
	Youth Club				No
	Mahila Mandal				No

	Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-chaupal / Mills / Small Scale Industries	MILK COPERATIVE SOCIETY	IN VILL.	YES	
	Other Facility				

Suggestions if any:

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

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources				
2.	Bio-Gas Plant Solar Street Lights Rain ✓ Water Harvesting ✓ System	IN SCHOOL		✓ ✓	
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	HARD COPY		✓	
2.	Recent Projects going on for Development of Village	YES		✓	
3.	Any NGO working for village development	No			
4.	Any natural calamity in the village during the last one year: EARTHQUAKES FLOODS CYCLONE DROUGHT LANDSLIDES AVALANCHE OTHER (SPECIFY)	No			

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VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building, Health Center, Panchayat Building, Public Toilets & any other	SCHOOL BUILDING NEED TO NEW BUILDING.	
2.	Additional Information/ Requirement	–	
3.	During the last six months how many times CLEANING DAILY……………… FOGGING……NO…………………… Drive was undertaken in the village?	VILLAGERS ONLY CLEAN THEIR STREETS.	

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

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સરપંચ,
બાવા ખાખરીયા ગ્રામ પંચાયત

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12.4 Gap analysis of the allocated village:

Table 10: Gap analysis

Village Facilities	Planning Commission/UDPFI Norms	Village	Bavakhakhariya	
		Population:	1322	
		Existing	Required as per Norms	Gap
Social Infrastructure Facilities				
Education				
Anganwadi	Each or Per 2500 population	2	0	2
Primary School	Each Per 2500 population	1	1	0
Secondary School	Per 7,500 population	0	1	-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 Centre	Per 100000 Population	0	0	0
Health Facility				
Govt/Panchyat Dispensary or Sub	Each Village	1	1	0
Primary Health & Child Health	Per 20,000 population	0	1	-1
Child Welfare and Maternity Home	Per 10,000 population	0	0	0
Multispecialty Hospital	Per 100000 Population	0	0	0
Public Latrines				
	1 for 50 families (if toilet is not there in home, especially for slum pockets &kutcha house)	0	1	-1
Physical Infrastructure Facilities				
Transportation		Adequate	Inadequate	
Pucca Village Approach Road	Each village	No	Yes	
Bus/Auto Stand provision	All Villages connected by PT (S.T.Bus or Auto)	No	Yes	
Drinking Water (Minimum 70 lpcd)	Not available	-	-	
Over Head Tank	1/3 of Total Demand	Yes	No	
U/G Sump	Not available	-	-	
Drainage Network - Open		-	-	
Drainage Network - Cover		No	Yes	
Waste Management System		-	-	
Socio Cultural Infrastructure Facilities		**Existing**	**Required as per Norms**	**Gap**
Community Hall	Per 10000 Population	0	1	-1
Community hall and Public Library	Per 15000 Population	0	1	-1
Cremation Ground	Per 20,000 population	0	1	-1
Post Office	Per 10,000 population	1	1	0
Gram Panchayat Building	Each individual/group	1	0	1
APMC	Per 100000 Population	0	1	-1

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		0	0	0

12.5 Summary detail of all village design in table form Part-1:

Table11: Summary of all village design

Sr .no	Village	Discipline	Part 1	Part 2
1	Bavakhakhariya	civil	Water butt Public garden PHC Assemble hall Plastic bottle crasher avedo	Youth club Bus stand Main gate Medical store Speaker system and CCTV Public library
2	Chadakhdi	civil	Overhead tank Public toilet Super market Rain water harvesting Gate Septic tank	Paver block pavement Bus stand Play ground Ware house Skill development center PHC
3	Devda	civil	Biogas plant Medical store Aanganvadi Bank with ATM CCTV room chabutro	Water tank Public toilet Plastic bottle crusher machine Post office Bus stand Feast of water
4	Vajdi(vaad)	civil	Soap pit Post office Public toilet E. corner Public library museum	Cyber cafe Medical store Women cottage industry Medical laboratory Public garden Veterinary hospital

12.6 Drawings:

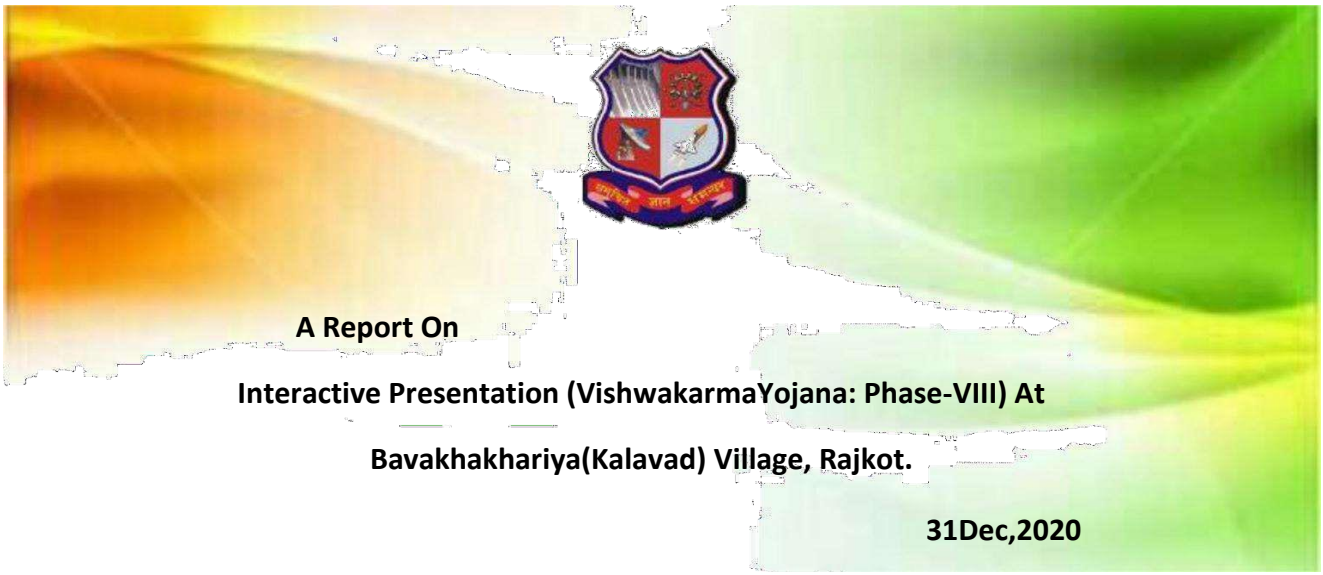
- All design is visible and clear so drawings are not required.

12.7 Summary of good photograph in table format.


Harivandana College


સ્વ. ભીમજીભાઈ સેગતીયા
હસ્તે
સેગતીયા પરિવાર
હરસુરભાઈ રામસુરભાઈ
લાભુભાઈ હરસુરભાઈ
કાયાભાઈ હરસુરભાઈ
ભાનુભાઈ હરસુરભાઈ
ગામ - મુંજકા

12.8 Village interaction with sarpanch with the photograph:



- As per vishwakarma yojna we selected the village Bavakhakhariya. We visited village and we meet and talk with village's people, aanganvadi workers and mainly we interact with sarpanch workers .We explain our project to village's sarpanch and what's main aim of vishwakarma yojna. We take some information from sarpanch and mantra to understand the village condition.
- In village we saw many infrastructures like gram panchayat, post office, temples, primary school, bus stand, overhead tank and other infrastructures. We also studies their conditions, we also study their road, agriculture details and occupational survey.
- We understand the village conditions and try to make some design for village like public garden, PHC, Avedo etc.
- We try to understand villagers problems then try to give their smart solutions. So vishwakrma yojna is very useful for villagers and students.

Figure 89: Meet with sarpanch

12.9 Sarpanch letter giving information about the village development:

SWAMI SHREEJI

ATMIYA® SARVODAY KELAVANI SAMAJ MANAGED
INSTITUTE OF TECHNOLOGY & SCIENCE FOR DIPLOMA STUDIES

Vishwakarma Yojna Phase -VIII

Village: Bavakhakhariya **District**: Jamnagar

Subject: Approval of Design proposal for Bavakhakhariya Village

To,
Sarpanch,
Bavakhakhariya Village, Jamnagar District

As per "Vishwakarma Yojna guidelines, following students of **Atmiya Institute of Technology & Science for Diploma Studies, Rajkot** are allocated **Bavakhakhariya** village as part of the project. From the actual visits and valuable information provide by you, student found the requirement of some basic facilities for **Bavakhakhariya** village. As the outcome of our project we proposed the following designs with a detailed design drawing, estimation, costing.

Kindly accept our design proposal, we assuring that project is allocated by Government of Gujarat to Gujarat technological University. So, we are proposing the design for study purpose only.

Name	Enrolment no.	Mo. No.
Badva Sharad	186030306002	9427379777
Solanki Ankit	186030306048	7043226172

Proposed design for **Bavakhakhariya** Village:

Part I	Part II
Water butt	Youth Club
Public Garden	Bus Stand
Primary Health Centre	CCTV Control room with Speaker System
Assembly Hall	Main Gate
Plastic Bottle Crusher Machine	Medical store
Avedo	Public Library

સરપંચ,
બાવા ખાખરીયા ગ્રામ પંચાયત

Mr. K.R.Dattani
Nodal officer of Project
AITS-DS, Rajkot

I sarpanch of **Bavakhakhariya** undersigned accepting your proposed design for the development of village under "Vishwakarma Yojna".

"YOGIDHAM GURUKUL", Kalawad Road, Rajkot - 360 005. (Gujarat - India)
Tel. : 0281-2563445, Tele Fax : 2563766, e-mail : diploma@aits.edu.in Web : www.aitsds.edu.in

12.10 Comprehensive report preparation as per formate:

- We are selected Bavakhakhariya village as alloated village for vishwakarmayojna.
- After the selection of village we visit village and we conduct some type of survey like techno economic and gap analysis, we talk to sarpanch and talati also and take information about village.
- After talking and understanding the villagers problem through gap analysis we compare our allocated village to ideal village and smart village.
- After the camparision we choose some designs for full fill villagers basic needs and increase facilities.
- We choose designs like,
  Water butt
  Public garden
  Community hall
  Plastic bottle crusher machine
  Avedo
- We choose this designs and give their plan and estimation for our phase-1 of project.

Figure 90: Upper view of village

Chapter 13: From the Chapter-9 designs of the aspect.

13.1: Design proposals:

13.1.1. Youth club:

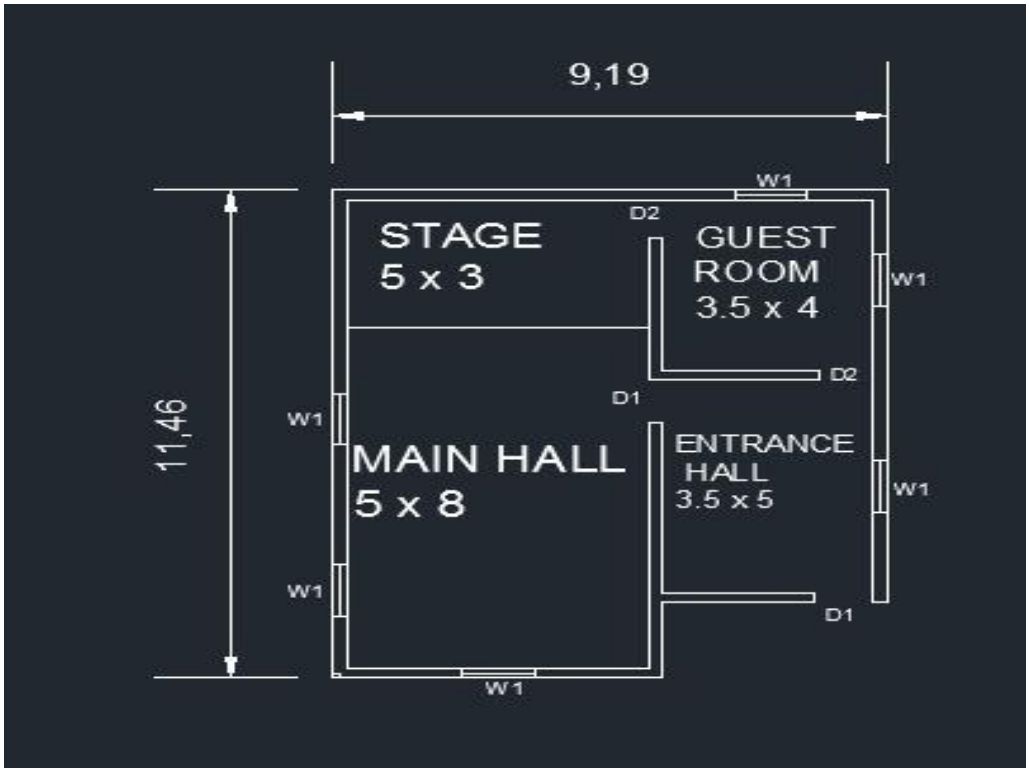


Figure 91: Plan

TYPE	SIZE
D1	1 m x 2.1 m
D2	0.9 m x 2.1 m
W1	1.2 m x 1.2 m

Figure 92: Elevation

Quantity (Measurement sheet):

Sr. No.	Description Of Item	Nos.	Length (m)	Breadth (m)	Height (m)	Quantity
1	**Excavation for foundation** Net centre line =53.57 – ( ) = 51.77 Number of junction = 4	1	51.77	0.9	1.1	51.25 m^3
2	**PCC for foundation**	1	51.77	0.9	0.3	13.98 m^3
3	**Brick Masonry upto Plinth**					
	Step 1 (Width 0.6 m) L = 53.57 -( ) = 52.37	1	52.37	0.6	0.2	6.28 m^3
	Step 2 (Width 0.5 m) L = 53.57 -( ) = 52.57	1	52.57	0.5	0.2	5.26 m^3
	Step 3 (Width 0.4 m) L = 53.57 -( ) = 52.77	1	52.77	0.4	0.2	4.22 m^3
	Step 4 (Width 0.23 m) L = 53.57 -( ) = 53.11	1	53.11	0.23	0.2	2.44 m^3
	Step 5 (Width 0.23 m) L = 53.57 -( ) = 53.11	1	53.11	0.23	0.45	5.50 m^3
				Total Brickwork		**23.7 m^3**
4	**Sand filling up to G.L.**					
	Quantity = (Excavation –PCC-Brick work upto GL) = (51.25 – 13.98 –18.2) =15.18	-	-	-	-	19.07 m^3
5	**Brick Masonry above plinth up to slab level**					
	L = 53.57 -( ) = 53.11	1	53.11	0.23	3	36.64 m^3
	Deduction for door-windows					
	D1	2	1	0.23	2.1	-0.966 m^3
	D2	2	0.9	0.23	2.1	-0.869 m^3
	Deduction for door-windows lintel					

	D1	2	1.3	0.23	0.1	-0.06 m^3
	D2	2	1.2	0.23	0.1	-0.05 m^3
				Total		**34.69 m^3**
6	**Sand filling for Plinth level**					
	For main hall with stage	1	5	11	0.33	18.15 m^3
	For guest room	1	3.5	4	0.33	4.62 m^3
	For entrance hall	1	3.5	5	0.33	5.77 m^3
				Total		**28.54 m^3**
7	**BBCC above sand filling**					
	For main hall with stage	1	5	11	0.075	4.125 m^3
	For guest room	1	3.5	4	0.075	1.05 m^3
	For entrance hall	1	3.5	5	0.075	1.312 m^3
				Total		**6.49 m^3**
8	**Marble flooring**					
	For main hall with stage	1	5	11	-	55 m^2
	For guest room	1	3.5	4	-	14 m^2
	For entrance hall	1	3.5	5	-	17.5 m^2
				Total		**86.5 m^2**
8	**Concreting for slab**	1	9.19	11.46	0.15	**15.80 m^3**
9	**Formwork for slab**	2	9.19	-	0.17	3.12 m^2
		2	11.46	-	0.17	3.90 m^2
				Total		**7.02 m^2**
10	**Inside plaster**					
	For main hall with stage	2	5	-	3	30 m^2
		2	-	11	3	66 m^2
	For guest room	2	3.5	-	3	21 m^2
		2	-	4	3	24 m^2

	For entrance hall	2	3.5	-	3	21 m^2
		2	-	5	3	30 m^2
	Deduction for door-windows					
	D1	3 –	1	-	2.1	-3.15 m^2
	D2	4 –	0.9	-	2.1	-3.78 m^2
				Total		**185.07 m^2**
11	**Outside plaster**					
	Main wall	1	41.3	-	3	99.3
	Deduction for door-windows					
	D1	1 –	1	-	2.1	-1.05 m^2
				Total		**122.85 m^2**

MATERIAL QUANTITY CALCULATION :

1. P.C.C. in foundation and space between Plinth level(1:4:8):-

- ***For 1 m^3wet concrete, 1.52 m^3 dry concrete is required.***

1 m^3 ⟶ 1.52 m^3
13.98 m^3 ⟶ ? (21.25m^3)
Proportion 1:4:8 =13
Cement = _ = 1.63 m^3 = —— 47 Bags

Sand = _ 6.54 m^3

Aggregate = _ 13.08 m^3

2. Brickwork(1:6)

- **For 1 m^3 of brickwork 500 bricks arerequired.**

1 m^3 ⟶ 500 Nos.
58.39 m^3 ⟶ ? (29195Nos.)
Proportion =1:6

- ***For 1 m^3 brickwork 0.33 m^3 mortar isrequired.***

1 m^3 ⟶ 0.33 m^3
58.39 m^3 ⟶ ? (19.27m^3)

Cement = 19.27 = 2.75 m^3 = = 79 Bags

Sand = 19.27 =16.52 m^3

3. *R.C.C work for slab(1:1.5:3)*

- **For 1 m^3wet concrete, 1.52 m^3 dry concrete is required.**

1 m^3 ⟶ 1.52 m^3
15.8 m^3 ⟶ ? (24.02m^3)
Proportion 1:1.5:3 = 5.5
Cement = __ = 4.37 m^3 = —— 125 Bags

Sand = __ 6.55 m^3

Aggregate = __ 13.1 m^3

Assume 1% steel
Volume of steel = —— = 0.158 m^3

Density of steel = 7850 kg/ m
Mass of steel = 0.158 7850 =1245 kg

- *For 100 kg of steel, 1 kg binding wire isrequired.*
- **For 1245 kg of steel, 12.5 kg binding wire isrequired.**

4. *Inside Plaster 12 mm thick (1:4)*

- **For 100 m2 Plasterwork 2 m3 mortar isrequired.**

100 m^2 ⟶ 2m^3
185.07 m^2⟶ ? (3.70m^3)

Proportion =1:4

Cement = 3.7 =0.74 m^3 = = 22 Bags

Sand = 3.7 = 2.96 m^3

5. *Outside Plaster 20 mm thick(1:3)*

- **For 100 m2 Plasterwork 2 m3 mortar isrequired.**

100 m^2 ⟶ 2m^3
122.85 m^2⟶ ? (2.46m^3)

Proportion =1:3

Cement = 2.46 =0.615 m^3 == 18 Bags

Sand = 2.46 = 1.845 m^3

6. *Brick bat cement concrete in foundation (B.B.C.C.) (1:5:10)*

- **For 6.49 m^3 BBCC work, 6.49 m^3 brick bats arerequired.**

Proportion =1:5:10
Volume of sand is one half of the volume of brick bats.

∴ Volume of sand is required = m^3

Now the volume of cement is of the volume of sand.

Cement = 3.245 = m^3 == 19 Bags

ABSTRACT SHEET:

Sr. No.	Description Of Item	Quantities	Rate	Per	Amount
1	Excavation	51.25 m^3	110	Cu. M	5640
2	PCC	13.98 m^3	965	Cu. M	13490
3	Sand Filling	28.54 m^3	90	Cu. M	2569
4	Concreting Work	15.8 m^2	130	Sq. M.	2054
5	Brick Work	58.39 m^3	1250	Cu. M.	72988
6	Inside Plaster	185.07 m^2	150	Sq. M..	27760
7	Outside Plaster	122.85 m^2	250	Sq. M..	30713
8	Steel Work	98.71 m^2	200	Sq. M..	19742
9	Shuttering	98.71 m^2	70	Sq. M..	6910
10	Marble work	98.71 m^2	600	Sq. M..	59226
11	BBCC	6.49 m^3	2700	Cu. M.	17523
12	Cement	310 bags	280	Bag	86800
13	Sand	40.90 m^3	900	Cu. M.	36810
14	Aggregate	26.18 m^3	1000	Cu. M.	26180
15	Brick	29195 nos.	4	Brick	116780
16	Steel	1245 kg	55	Kg	68475
17	Binding Wire	12.5 kg	60	Kg	750
				TOTAL	594410
		Add 1.5% water charge Rs.			8920
		Add 10% contractor profits Rs.			59441
				Total Cost	**6,62,800**

13.1.2 Bus stand:

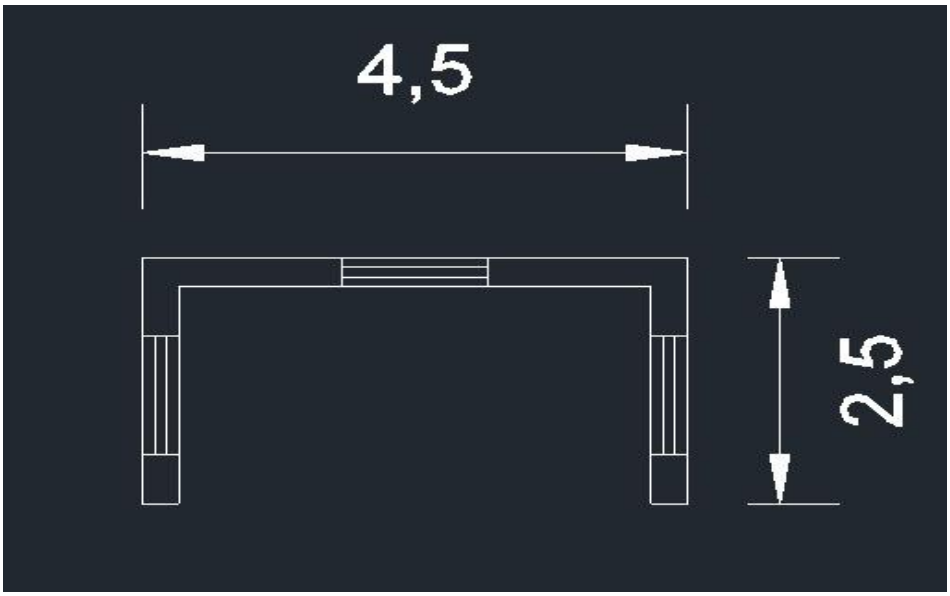


Figure 93: Plan

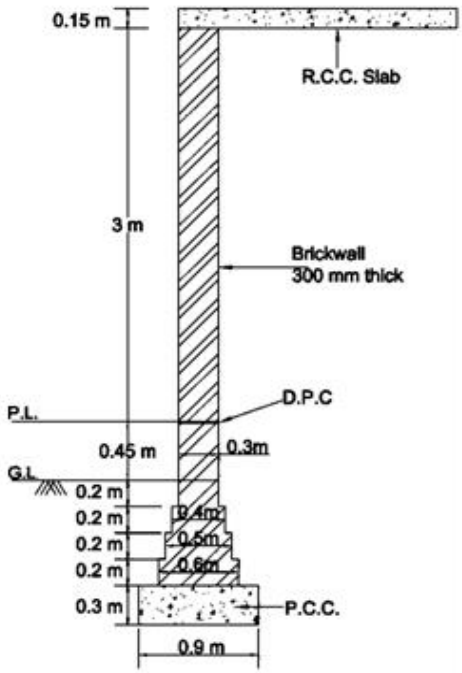


Figure 94:Section

Sr. No.	Description Of Item	Nos.	Length (m)	Breadth (m)	Height (m)	Quantity
1	**Excavation for foundation**	1	8.9	0.9	1.1	8.81 m^3
2	**PCC for foundation**	1	8.9	0.9	0.3	2.40 m^3
3	**Brick Masonry upto Plinth**					
	Step 1 (Width 0.6 m)	1	8.9	0.6	0.2	1.07 m^3
	Step 2 (Width 0.5 m)	1	8.9	0.5	0.2	0.89 m^3
	Step 3 (Width 0.4 m)	1	8.9	0.4	0.2	0.71 m^3
	Step 4 (Width 0.3 m)	1	8.9	0.3	0.2	0.53 m^3
	Step 5 (Width 0.3 m)	1	8.9	0.3	0.45	1.20 m^3
				Total Brickwork		**4.4 m^3**
4	**Sand filling up to G.L.**					
	Quantity = (Excavation –PCC-Brick work upto GL) = (8.81 – 2.40 –3.2) =3.21	-	-	-	-	3.21 m^3
5	**Brick Masonry above plinth up to slab level**	1	8.9	0.3	3	8.01 m^3
	Deduction for door-windows					
	W	3	1.2	0.3	1.2	-1.30 m^3
	Deduction for door-windows lintel					
	W	3	1.5	0.3	0.1	-0.135 m^3
				Total		**6.57 m^3**
8	**Concreting for slab**	1	4.5	2.5	0.15	1.69 m^3
9	**Formwork for slab**	2	4.5	-	0.17	1.53 m^2
		2	2.7	-	0.17	0.92 m^2
				Total		**2.45 m^2**

10	**Inside plaster**					
		1	-	3.9	3	11.7 m^2
	For passage	2	2.2	-	3	13.2 m^2
	Deduction for door-windows					
	W1	3	1.2	-	1.2	-2.16 m^2
				Total		**22.74 m^2**
11	**Outside plaster**					
		1	4.5	-	3.45	15.52
		2	2.5	-	3.45	17.25
	Deduction for door-windows					
	W1	3	1.2	-	1.2	-2.16 m^2
				Total		**30.61 m^2**

MATERIAL QUANTITY CALCULATION:

1. P.C.C. in foundation and space between Plinth level(1:4:8):-

- ***For 1 m^3wet concrete, 1.52 m^3 dry concrete isrequired.***

1 m^3 ⟶ 1.52 m^3
2.40 m^3 ⟶ ? (3.65m^3)

Proportion 1:4:8 =13

Cement = = 0.28 m^3 = —— 8 Bags

Sand = 1.12 m^3

Aggregate = 2.25 m^3

2. Brickwork (1:6)

- **For 1 m^3 of brickwork 500 bricks arerequired.**

1 m^3 ⟶ 500 Nos.

10.97 m^3 ⟶ ? (5485Nos.)

Proportion =1:6

- *For 1 m³ brickwork 0.33 m³ mortar isrequired.*

1 m^3 ⟶ 0.33 m^3

10.97 m^3 ⟶ ? (3.62m^3)

Cement = 3.62 =0.52 m^3 = = 15 Bags

Sand = 3.62 =3.10 m^3

3. *R.C.C work for slab(1:1.5:3)*

- **For 1 m^3wet concrete, 1.52 m^3 dry concrete is required.**

1 m^3 ⟶ 1.52 m^3
1.69 m^3 ⟶ ? (2.57m^3)

Proportion 1:1.5:3 = 5.5

Cement = = 0.47 m^3 = 14 Bags

Sand = 0.7 m^3

Aggregate = 1.40 m^3

Assume 1% steel

Volume of steel = = 0.0169 m^3

Density of steel = 7850 kg/ m
Mass of steel = 0.0169 7850 =132.66 kg

- *For 100 kg of steel, 1 kg binding wire isrequired.*
- **For 133 kg of steel, 1.5 kg binding wire isrequired.**

4. *Inside Plaster 12 mm thick (1:4)*

- **For 100 m2 Plasterwork 2 m3 mortar isrequired.**

100 m^2 ⟶ 2m^3
22.74 m^2 ⟶ ? (0.45m^3)

Proportion =1:4

Cement = 0.45 =0.09 m^3 = = 3 Bags

Sand = 0.45.= 0.36 m^3

5. Outside Plaster 20 mm thick(1:3)

- **For 100 m2 Plasterwork 2 m3 mortar isrequired.**

  100 m^2 $\longrightarrow$ 2m^3

  30.61 m^2 $\longrightarrow$? (0.61m^3)

  Proportion =1:3

  Cement = 0.61 =0.15 m^3 = = 5 Bags

  Sand = 0.61 = 0.46 m^3

ABSTRACT SHEET:

Abstract sheet for Bas Stand Maintenance

Sr. No.	Description Of Item	Quantities	Rate	Per	Amount
1	Excavation	8.81 m^3	110	Cu. M	970
2	PCC	2.40m^3	965	Cu. M.	2316
3	Sand Filling	3.21 m^3	90	Cu. M	290
4	Concreting Work	1.69 m^3	130	Sq. M.	220
5	Brick Work	10.97 m^3	1250	Cu. M	13715
6	Inside Plaster	22.74 m^2	150	Sq. M.	3411
7	Outside Plaster	30.61 m^2	250	Sq. M.	7655
8	Steel Work	1.69	200	Sq. M..	340
	Shuttering	1.69	70	Sq. M..	120
9	Cement	45 bags	280	Bag	12600
10	Sand	5.74 m^3	900	Cu. M	5166
11	Aggregate	3.65 m^3	1000	Cu. M	3650
12	Brick	5485 nos.	4	Brick	21940
13	Steel	133 kg	5	Kg	665
14	Binding Wire	1.5 kg	60	Kg	90
				TOTAL	73,148
		Add 1.5% water charge Rs.			1,100
		Add 10% contractor profits Rs.			7,315
				Total Cost	**81,563 Rs.**

13.1.3 Main gate:

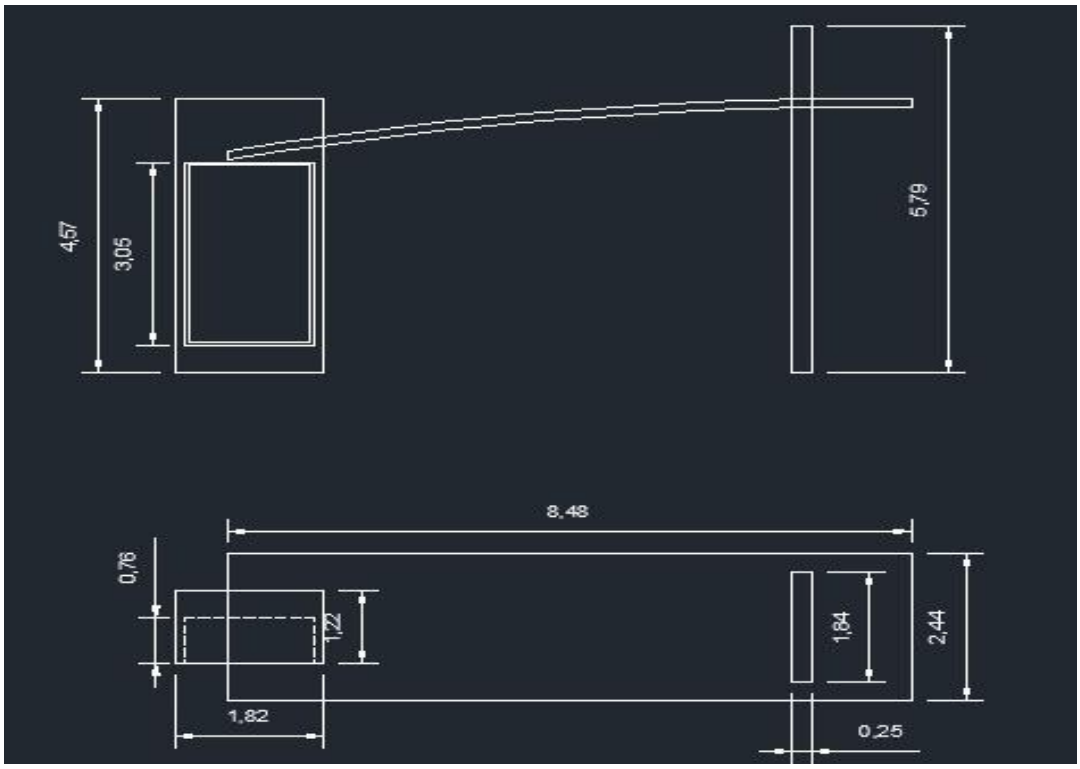


Figure 95: Plan and elevation

Measurement sheet ofgate

Sr. no.	Description Of Item	Nos.	Length (m)	Breadth (m)	Height (m)	Quantity
1	**Excavation For Foundation**	1	1.83	0.76	0.8	1.11 m^3
					TOTAL	**1.11 m^3**
2	**P.C.C For Foundation**	1	1.83	0.76	0.3	0.42 m^3
					TOTAL	**0.42 m^3**
3	**1 Step Brick Work**	1	1.83	0.5	0.3	0.2745 m^3
					TOTAL	**0.2745 m^3**
4	**2 step brick work**	1	1.83	0.38	0.2	0.14 m^3
					TOTAL	**0.14 m^3**
6	**Column (right side)**	1	1.83	0.25	5.79	2.65 m^3
					TOTAL	**2.65 m^3**
7	**Column (left side)**	1	1.83	1.22	4.57	10.21 m^3
					TOTAL	**10.21 m^3**
8	**Slab**	1	8.48	2.44	0.15	3.10 m^3
					TOTAL	**3.10 m^3**
9	**Deduction**	1	1.62	0.76	3.048	3.75 m^3
					TOTAL	**3.75 m^3**

- **Abstract sheet ofgate**

Sr. no.	Description Of Item	Quantities	Rate	Unit	Amount
1	Excavation	1.11	85	m^3	94.35
2	PCC	0.42	3200	m^3	1,344
3	Brick Work in foundation	0.41	3200	m^3	1,312
4	Brick Work in super structure	2.65	3500	m^3	9,272
5	Cement	4	350	Bag	1,400
6	Sand	0.17	800	m^3	136
7	Aggregate	0.34	1000	m^3	340
8	Bricks	415	4	Item	1,660
9	Steel	147	50	Kg	7,350
10	Binding wire	1.5	20	Kg	30
				TOTAL	**22,938.35**
				Add 3% Contingencies	688.15
				Add 2% Water charge	345
				Add 5% Plumbing charge	1,146.92
				Add 10% Electric charge	2,293.835
				Grand Total	**27,450 /-**

13.1.4 Medical store:

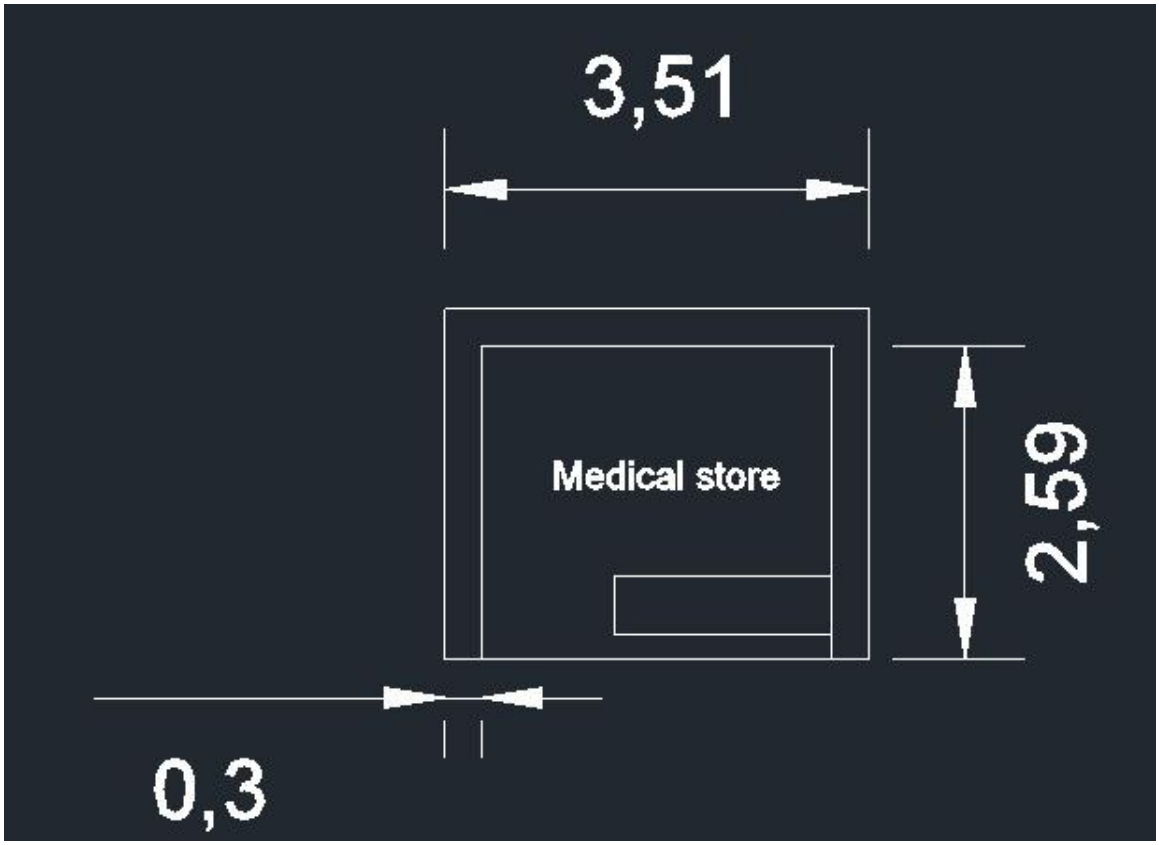


Figure 96: Plan

Figure 97: Elevation

SRNO	ITEMDESCRIPTION	NO	LENGTH	BREADTH	HEIGHT	QUANTITY	
1	**Excavation in foundation**						
	Long wall=3.51m	1	3.51	0.9	1.5	4.7385	
	Short wall=2.59m	2	2.59	0.9	1.5	6.993	
				Total quantity=		**11.7315Cu.m**	
2	**Plain cement concrete**						
	In foundation(1:2:4)						
	Long wall=3.51m	1	3.51	0.9	0.3	0.9477	
	Short wall=2.59m	2	2.59	0.9	0.3	1.3986	
				Total quantity=		**2.3463Cu.m**	
3	**Brick work in foundation**						
	And plinth in C. M(1:6)						
	Long wall:						
STEP:1	3.51+0.6=4.11m	1	4.11	0.6	0.2	0.4932	
STEP:2	3.51+0.5=4.01m	1	4.01	0.5	0.2	0.401	
STEP:3	3.51+0.4=3.91m	1	3.91	0.4	0.2	0.3128	
STEP:4	3.51+0.3=3.81m	1	3.81	0.3	0.6	0.6858	
						1.8928	
	Short wall						
STEP:1	2.59-0.6=1.99m	2	1.99	0.6	0.2	0.4776	
STEP:2	2.59-0.5=2.09m	2	2.09	0.5	0.2	0.418	
STEP:3	2.59-0.4=2.19m	2	2.19	0.4	0.2	0.3504	
STEP:4	2.59-0.3=2.29m	2	2.29	0.3	0.6	0.8244	
				Total quantity=		**5.856Cu.m**	
4	**Brickwork**						
	superstructure						
	Long wall=3.51	1	3.51	0.3	3	3.159	
	Short wall=2.59	2	2.59	0.3	3	4.662	
				Total quantity=		**7.821Cu.m**	
5	**R.C.C slab, chajja, and lintel**						
	R.C.C slab:						
	Breadth=2.59m	1	3.51	2.59	0.12	1.09091	
	Length=3.51m						

6	**2Cmmarbleflooring**						
	Room	1	3.05	2.59		7.8995m.sq	
7	**Earth filling in plinth**	1	3.05	2.59	0.48	3.79176Cu.m	
8	**Smooth plaster in side**						
	The room in cm (1:3)						
	ROOM	1	3.05		3	9.15	
		2	2.59		3	15.54	
				Total quantity=		24.69Sq.m	
9	**Smooth plaster outside**						
	The room in cm (1:3)						
	ROOM	1	3.51		3	10.53	
		2	2.59		3	15.54	
				Total quantity=		26.07Sq.m	
10	**Painting in inside**						
	ROOM	1	3.05		3	9.15	
		2	2.59		3	15.54	
				Total quantity=		24.69Sq.m	
11	**Painting in outside**						
	ROOM	1	3.51		3	10.53	
		2	2.59		3	15.54	
				Total quantity=		26.07Sq.m	
12	**Rolling Shutter**	1	2.59		2.6	6.734	Sq.m

Abstract Sheet of Medical Shop

SRNO	PATICULAR OFITEM	QUANTITY	PER	RATE	AMOUNTRs.
1	Excavation in foundation	11.73	Cu. m	180	2111.4
2	Plain cement concrete in	2.346	Cu. m	4300	10087.8
	foundation				
3	Brick work in foundation	5.846	Cu. m	3500	20461
4	Brick work in superstructure	7.821	Cu. m	3800	29719.8
5	R.C.C work in slab, chajja. And lintel	1.09	Cu. m	6300	6867
6	2cm marble flooring	7.899	Sq. m	700	5529.3
7	Earth filling	3.791	Cu. m	50	189.55
8	Smooth plaster inside the room in	24.69	Sq. m	260	6419.4
	cm(1:3)				
9	Smooth plaster outside the room	26.07	Sq. m	350	9124.5
	In cm (1:3)				
10	Paint in gin inside	24.69	Sq. m	230	5678.7
11	Paint in gin outside	26.07	Sq. m	320	8342.4
12	Rolling Shutter	6.734	Sq. m	1210	8148.14
13	Switch board and Wiring of Electricity	2	nos.	450	900
14	CCTV Camera	1	nos.	7999	7999
				Rs.	**121577.99**
		ADD5%contingencies .		**Rs**	**61505**
			Total Rs.		**183082.99**
			Total Rs. Say=		**18310**

13.1.5 Speaker system and CCTV control room:

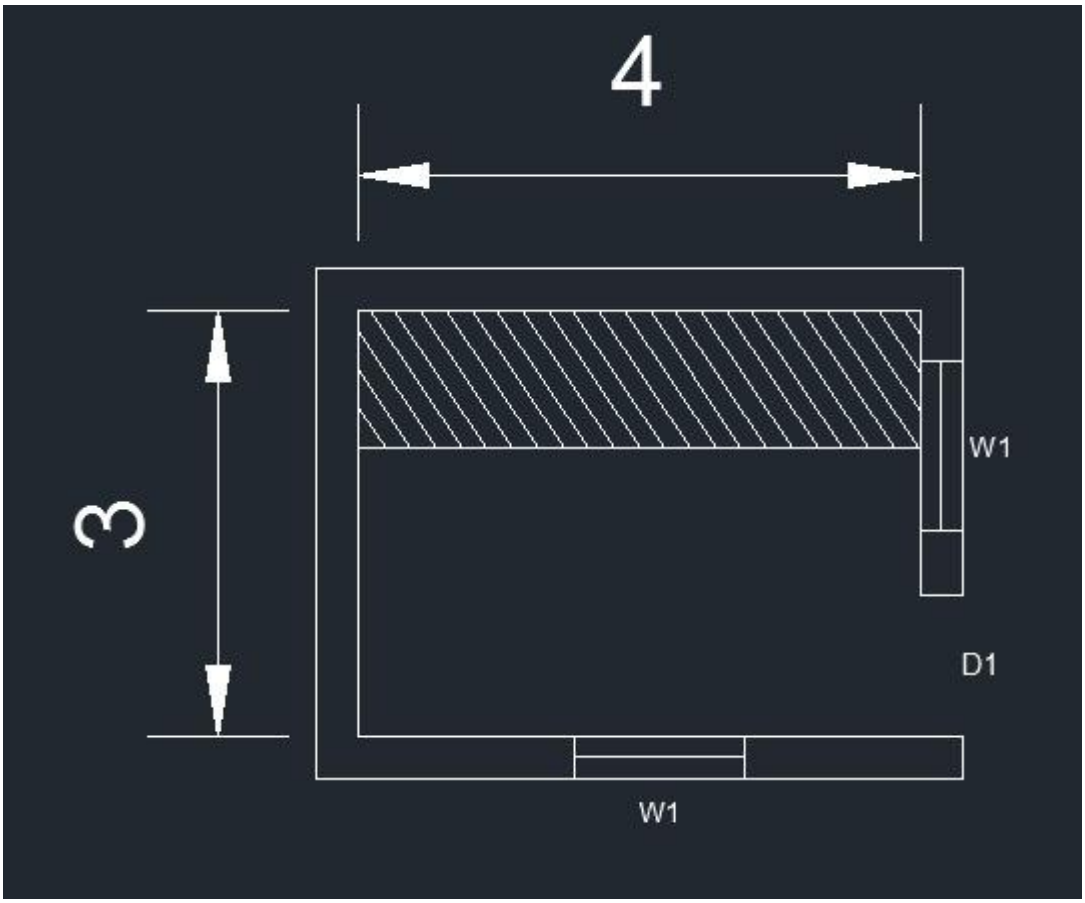


Figure 98: Plan

TYPE	SIZE
D1	1 m x 2.1 m
W1	1.2 m x 1.2 m

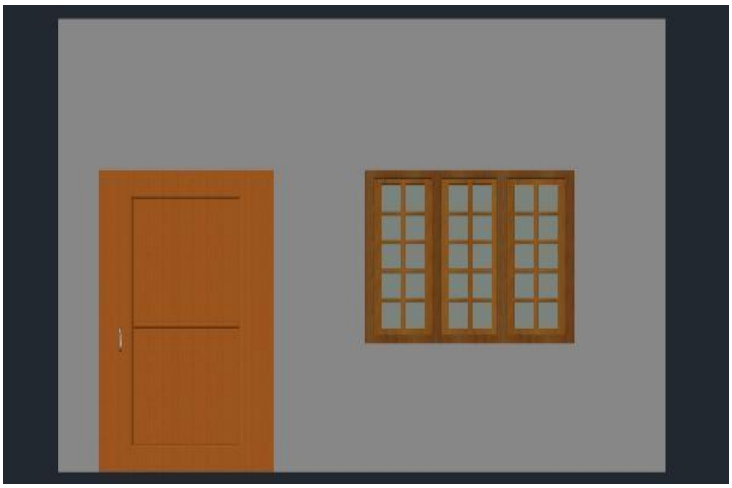


Figure 99: Elevation

Quantity (Measurement sheet):

Measurement Sheet for Speaker System and CCTV Camera

Sr. No.	Description Of Item	Nos.	Length (m)	Breadth (m)	Height (m)	Quantity
1	**Excavation for foundation** Net center line =15.2 m	1	15.2	0.9	1.1	15.05 m^3
2	**PCC for foundation**	1	15.2	0.9	0.3	4.10 m^3
3	**Brick Masonry upto Plinth**					
	Step 1 (Width 0.6 m) L = 15.2 m	1	15.2	0.6	0.2	1.82 m^3
	Step 2 (Width 0.5 m) L = 15.2 m	1	15.2	0.5	0.2	1.52 m^3
	Step 3 (Width 0.4 m) L = 15.2 m	1	15.2	0.4	0.2	1.22 m^3
	Step 4 (Width 0.23 m) L = 15.2 m	1	15.2	0.3	0.2	0.91 m^3
	Step 5 (Width 0.23 m) L = 15.2 m	1	15.2	0.3	0.45	2.05 m^3
				Total Brickwork		**7.52 m^3**
4	**Sand filling up to G.L.**					
	Quantity = (Excavation –PCC-Brick work upto GL) = (15.05 – 4.10 –5.47) = 5.48	-	-	-	-	5.48 m^3
5	**Brick Masonry above plinth up to slab level**					
	L = 15.2 m	1	15.2	0. 3	3	13.68 m^3
	Deduction for door-windows					
	D1	1	1	0.3	2.1	-0.63 m^3
	W1	2	1.2	0.3	1.2	-0.86 m^3
	Deduction for door-windows lintel					
	D1	1	1.3	0.3	0.1	-0.04 m^3
	W1	2	1.5	0.3	0.1	-0.09 m^3

				Total		**12.06 m^3**
6	**Sand filling for Plinth level**	1	3	4	0.33	3.96 m^3
7	**BBCC above sand filling**	1	3	4	0.075	0.9 m^3
8	**Marbal flooring**	1	3	4	-	12 m^2
9	**Concreting for slab**	1	3	4	0.15	**15.80 m^3**
10	**Formwork for slab**	2	3.6	-	0.17	3.12 m^2
		2	4.6	-	0.17	3.90 m^2
		-	3	6		12 m^2
				Total		**19.02 m^2**
11	**Inside plaster**					
	For main hall with stage	2	3	-	3	18 m^2
		2	-	4	3	24 m^2
	Deduction for door-windows					
	D1	1	1	-	2.1	-1.05 m^2
	W1	2	1.2	-	1.2	-1.44 m^2
				Total		**39.51 m^2**
12	**Outside plaster**					
	Main wall	1	16.4	-	3	49.2 m^2
	Deduction for door-windows					
	D1	1	1	-	2.1	-1.05 m^2
	W1	2	1.2	-	1.2	-1.44 m^2
				Total		**46.71 m^2**

ABSTRACT SHEET:

Abstract sheet for Speaker System and CCTV Camera

Sr. No.	Description Of Item	Quantities	Rate	Per	Amount
1	Excavation	15.05 m^3	110	Cu. M	1655
2	PCC	4.10 m^3	965	Cu. M	3956
3	Sand Filling	9.44 m^3	90	Cu. M	850
4	Concreting Work	15.8 m^2	130	Sq. M.	2054
5	Brick Work	19.58 m^3	1250	Cu. M.	24475
6	Inside Plaster	39.51m^2	150	Sq. M..	5926
7	Outside Plaster	46.71m^2	250	Sq. M..	11677
8	Steel Work	8.2 m^2	200	Sq. M..	1640
9	Shuttering	8.2 m^2	70	Sq. M..	574
10	Marble work	8.2 m^2	600	Sq. M..	4920
11	BBCC	0.9 m^3	2700	Cu. M.	2430
12	Cement	180 bags	280	Bag	50400
13	Sand	15.28 m^3	900	Cu. M.	13752
14	Aggregate	16.93 m^3	1000	Cu. M.	16930
15	Brick	9790 nos.	4	Brick	39160
16	Steel	1245 kg	55	Kg	68475
17	Binding Wire	12.5 kg	60	Kg	750
18	CCTV Camera	32	1500	Nos.	48000
19	Speaker	32	1800	Nos.	57600
				TOTAL	3,55,224
		Add 1.5% water charge Rs.			5330
		Add 10% contractor profits Rs.			35523
				Total Cost	**3,96,077 /-**

13.1.6 Public library:

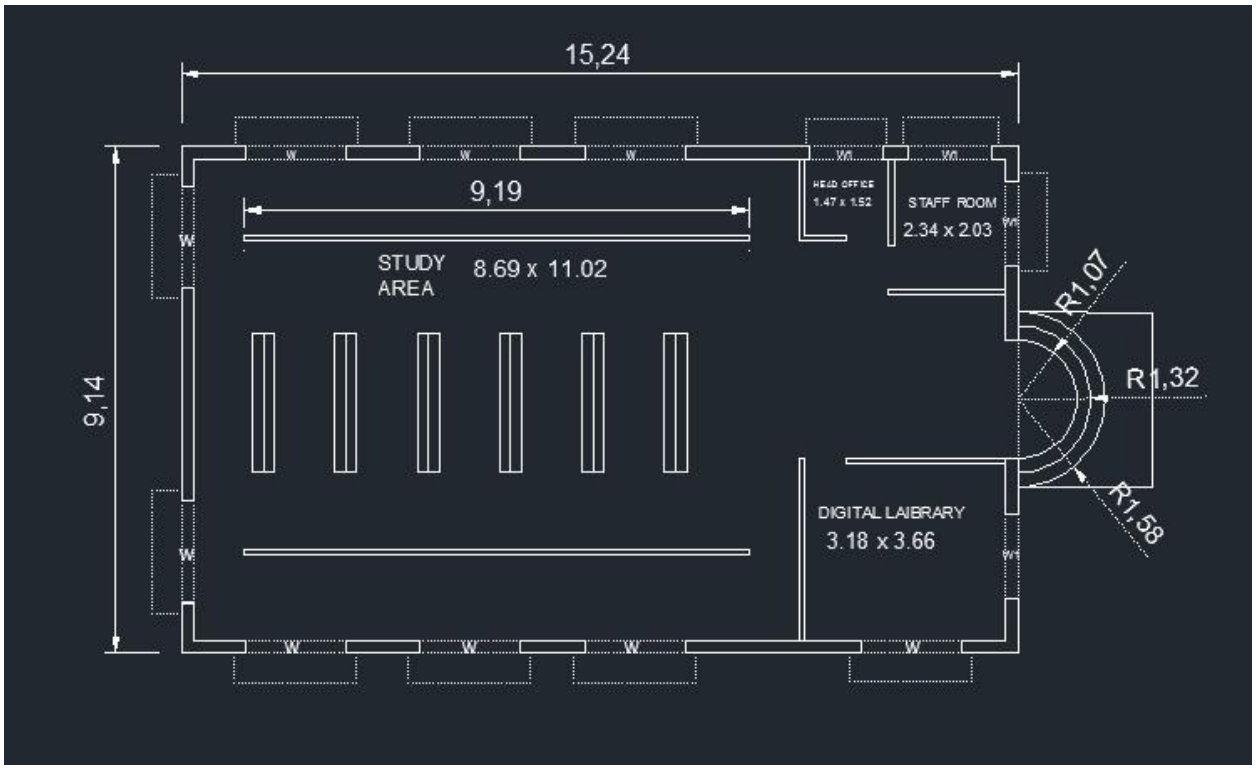


Figure 100: Plan

DATA TABLE	
DOOR & WNDOW	SIZE
D	2.16 x 2.31
D1	0.77 x 2.16
W	1.54 x 1.38
W1	1.23 x 1.38

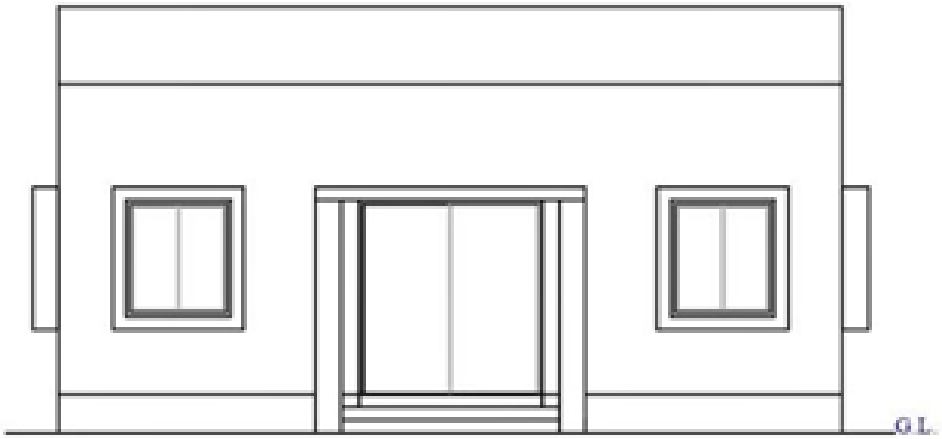


Figure 101: Elevation

➢ Measurement sheet for library

Sr.no.	Description Of Item	Nos.	Length (m)	Breadth (m)	Height (m)	Quantity
1	**Excavation in foundation**	1	47.85	0.91	0.81	35.27 m^3
					TOTAL	**35.27 m^3**
2	**P.C.C.**	1	47.85	0.91	0.30	13.06 m^3
					TOTAL	**13.06 m^3**
3	**Brick work in foundation**					
1	Step 1	1	47.85	0.61	0.30	8.76 m^3
2	Step 2	1	47.85	0.51	0.20	4.88 m^3
3	Step 3	1	47.85	0.41	0.46	9.02 m^3
					TOTAL	**22.66 m^3**
4	**Brick work in wall**					
1	For 9”	1	47.85	0.23	3.5	38.52 m^3
2	For 4”	1	25.96	0.10	3.5	9.086 m^3
					TOTAL	**47.6 m^3**
5	**Deduction**					
1	D	1	2.16	0.23	2.31	1.15 m^3
2	D1	2	0.77	0.10	2.16	0.33 m^3
3	Glass	1	0.77	-	2.16	1.66 m^3
4	W	9	1.54	0.23	1.32	4.40 m^3
5	W1	4	1.23	0.23	1.38	1.56 m^3
					TOTAL	**9.1 m^3**
6	**Lintel**					
1	D	1	2.46	0.23	0.15	0.085 m^3
2	D1	2	1.07	0.10	0.15	0.032 m^3
3	W	9	1.84	0.23	0.15	0.57 m^3
4	W1	4	1.53	0.23	0.15	0.211 m^3
					TOTAL	**0.898 m^3**
7	**Chhajja**					
1	D	1	3.15	2.44	0.15	1.15 m^3
2	W	9	1.84	0.30	0.15	0.74 m^3
3	W1	4	1.53	0.30	0.15	0.27 m^3
					TOTAL	**2.16 m^3**
8	**Parapet wall**	1	47.85	0.23	0.91	10.02 m^3
					TOTAL	**10.02 m^3**
9	**Outside plaster**	1	48.77	-	4.57	222.88 m^2

10	**Deduction from outside**				**TOTAL**	**222.88 m²**
1	D	1	2.16	-	2.31	4.99 m²
2	W	9	1.54	-	1.38	19.13 m²
3	W1	4	1.23	-	1.38	6.79 m²
					TOTAL	**30.91 m²**
11	Inside plaster					
1	Staff room	2	2.34	-	3.5	16.38 m²
		2	2.03	-	3.5	14.22 m²
2	Head office	2	1.47	-	3.5	10.29 m²
		2	1.52	-	3.5	10.64 m²
		1	17.37	-	3.5	60.80 m²
		1	29.57	-	3.5	103.5 m²
3	Celling plaster		8.68	14.78	-	128.40 m²
					TOTAL	**344.23 m²**

➢ Abstract sheet for library

Sr. no.	Description Of Item	Quantities	Rate	Unit	Amount
1	Excavation	35.57	85	m^3	2,997.95
2	PCC	13.06	3200	m^3	41,792
3	Brick Work in foundation	22.66	3200	m^3	72,512
4	Brick Work in super structure	48.52	3500	m^3	1,69,820
5	R.C.C. work in slab, chhajja, lintel	23.96	8800	m^3	2,10,848
6	Plaster work in c.m.(1:3) for inside & outside & celling	536.21	150	m^2	80,430
8	Marble flooring	128.40	500	m^2	64,200
9	Cement	101	350	Bag	66,500
10	Sand	5.28	800	m^3	7,944
11	Aggregate	10.56	1000	m^3	19,860
12	Bricks	31320	4	Item	1,42,360
13	Steel (HYSD)	525	50	Kg	62,800
14	Binding wire	5.25	20	Kg	260
				TOTAL	9,42,323/-
				Add 3% of contingencies	14,134.86
				Add 2% of water charge	28,269.72
				Add 5% of plumbing charge	47,116.15
				Add 10% of electric charge	94,232.3
					11,26,080 /-

13.2 Reason for student recommending this design:

- There is no main gate for village welcome and beauty so we choose main gate design.
- Medical store is 6 km ahead so choose medical store design.
- For new generation youth club is very useful so we choose it.
- There is no any library for knowledge in village so we choose design of it.
- For satisfaction of traveller good bus stand is needed.
- These are some design we recommended to villagers for development of village.

13.3 About design suggestion / benefits of the villagers:

- For increasing knowledge and skills of youth, youth club is important.
- Bavakhakhariya village bus stand has in very poor condition, so we choose bus design.
- For meeting arrangement and alerting people and village become safe, so we choose CCTV control room.
- For beauty and culture vibes we gave main gate design.
- Improvement village condition in health department, so we gave medical store design.
- For increase knowledge of villagers and comfort reading for student library.

Chapter 14: Technical option with case studies.

14.1 Civil Engineering:

14.1.1 Advanced earthquake resistant:

- The science of structural and Earthquake Engineering helps enhance the seismic flexibility of civil structures and critical infrastructure through advanced engineering and management tools. While natural forces are extremely useful to mankind, natural disasters can wreak a havoc with hurricanes, earthquakes, tsunamis posing threat to life and infrastructure worth billions of dollars.

- **Techniques For Earthquake Resistant Design of Structures:**
  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 by the engineers world over to minimize the damage to structures due to earthquakes:

- 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 reduces 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, elastomeric 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.

- 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**

- Finally

Seismic Engineering is a very complex and constantly evolving. Seismic structural assessment is a powerful tool in **Earthquake Engineering** that uses detailed modelling of the structure in conjunction with structural analysis to get a better understanding of the building's resistance. Retrofitting older structures with enhanced designs or materials is as important as rebuilding new structures from scratch. The ultimate goal of **Earthquake Civil Engineering** is to save lives so that the buildings don't collapse and allow inhabitants to escape in a timely manner.

14.1.2 Seismic retrofitting of buildings:

Seismic retrofitting is the modification of existing structures to make them more resistant to seismic activity, ground motion, or soil failure due to earthquakes. With better understanding of seismic demand on structures and with our recent experiences with large earthquakes near urban centers, the need of seismic retrofitting is well acknowledged. Prior to the introduction of modern seismic codes in the late 1960s for developed countries (US, Japan etc.) and late 1970s for many other parts of the world (Turkey, China etc.), many structures were designed without adequate detailing and reinforcement for seismic protection. In view of the imminent problem, various research work has been carried out. State-of-the-art technical guidelines for seismic assessment, retrofit and rehabilitation have been published around the world – such as

Figure 102: Retroffing

the ASCE-SEI 41and the New Zealand Society for Earthquake Engineering (NZSEE)'s guidelines. These codes must be regularly updated; the 1994 Northridge earthquake brought to light the brittleness of welded steel frames, for example.

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

14.1.3. Advance practices in construction field in modern material, techniques and equipment's:

The Indian advanced construction techniques industry is experiencing a period of fast growth. Aiming to overcome the housing problem, it also has to face the dual challenge of fulfilling the needs of the client and maintain the quality standards.

At the same time, the up-gradation of technology through the adoption of new techniques has become necessary to survive in a tough competitive environment.

The traditional methods of construction are inadequate in executing the work speedily with economy and quality. The construction industry in India must switch over to advanced construction techniques to achieve its goal in "minimum time with maximum efficiency".

- EQUIPMENT USED FOR SMALL AND MEDIUM CONSTRUCTION WORK:

The equipment with proven utility in building construction may be as listed below:

- Chain and pulley block.
- Grouting pumps.
- Sprayers for painting work.
- Tile cutters.
- Portable hand drilling machines.
- Horizontal trolleys, wheelbarrows.
- Pumps.
- Vibrators for compaction of concrete, surface vibrators.
- Auto ramming concrete block machine.
- Sand washing machine.
- Vertical lifts, hoists, winches.
- M.S. tubular scaffolding and formwork.
- Concrete mixers.
- Cranes.
- Earth excavators.
- Earthmovers.

1. The engineer in charge should study, develop, and implement the advanced techniques, to improve the quality of work, with speed and economy. Some of the techniques are listed below
2. The different work stages through which basic material is converted into the finished product may be studied.
3. The relation between different work stages are established as a flowchart.
4. Works are planned and executed according to the work and time study.

5. Planning and execution of the activities ís done according to bar charts, C.P.M., and P.E.R.T.
6. Suggestions are put forth, discussed, and implemented to improve quality.
7. Prefabricated and precast units are utilized, wherever possible.
8. Admixtures and plasticizers are used for concreting and water-proofing.
9. 'Design mix and weigh batching' are used for mass concreting.
10. Easily detachable lightweight tubular structures are used.
11. Modern methods of curing are adopted.
12. Advanced adhesives and chemicals are used.
13. Simultaneous execution of the activities is arranged.
14. Work is executed in shifts.
15. Activities are crashed.
16. Task work is delegated to the labourers along with incentives.

- USE OF COMPUTERS IN BUILDING CONSTRUCTION TECHNOLOGY:
  With the evolution of computer technology, the dimensions of the computer have shrunk while increasing its power and speed. The advanced technology of computers has valuable applications in building construction. They are

- Construction management.
- Structural design.
- Estimation and costing
- Architects and interior designers in pune.
- Financial management.

- COMPUTER FOR CONTRUCTION MANEGMENT:

1. By simplifying his job, a person can implement the technique of management. The manual methods of preparing bar charts; C.P.M., P.E.R.T., etc. have limitations. As the complexity of the project increases, computers prove advantageous.
2. Computers can depict the entire network graphically and simultaneously provide a labor report of the progress of each task. Modifications and alterations can be incorporated and the effect on the remaining activities is automatically computed. This income a very useful option in time crashing. Computers provide a quick and easy reference to study the change in time estimate of one or more activities.
3. P.E.R.T. involves statistical calculation for estimated times. Computers are useful in providing a guideline framework. It is useful in accurate computations, quick response, and the ability to react to modifications. This helps in saving time and money.

- COMPUTER FOR STRUCTURAL DESIGN:

  Structural design is an engineering science and is most suited for computing. The designs of beams and slabs can be computerized. On keying in the various loads, sizes of steel, and other parameters are ready for implementation. The designs are accurate and quick. Appropriate drawings can also be plotted through computer programs.

- **ESTIMATION AND COSTING:**

  It involves simple calculations like multiplication and addition. But whereas manual calculations might be faulty, the computer calculates with great speed and accuracy.

- **Prototype Model for Work Flow Management System in Construction Field.**

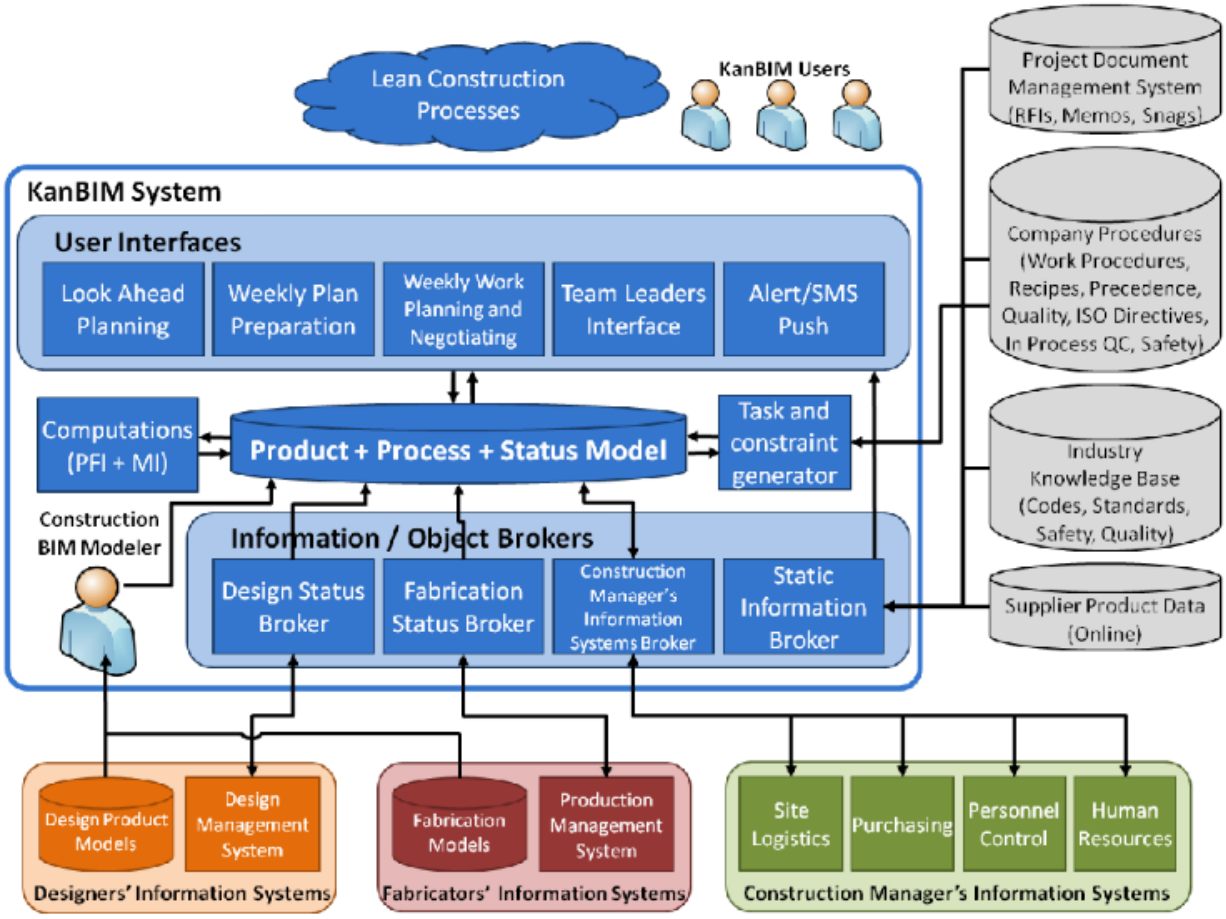


Figure 103: Sewerage system

- COMPUTER FOR ARCHITECTURAL AND INTIRIOR DESIGNS:

The working drawings, electrical layouts, furniture drawings, etc. can be prepared with a computer. It develops a dimensional perspective and helps in better visualization. Any minor error is easily detected and can be modified before the actual work begins. The color scheme of the project or interior decoration can also be finalized with the help of computers.

- COMPUTER FOR FINANCIAL MANAGEMENT:

Financial management can be controlled through computerized financial and material schedules. Updated programs specify the monthly financial requirements. Work is never held up for lack of funds if computer technology is properly implemented.

14.1.4 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 centres.

Objectives of Environmental Impact Assessment

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

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

The alignment of the road may require that certain lands have to be levelled or new embankments created. Cutting of the land and the new embankments would affect the geography of the area and probably upset its drainage pattern. This would require re-planning existing methods of treating the run-off and could cause existing watercourses to be modified. The new road may require the removal of existing green cover and this could affect the living conditions in that area. The traffic going through that area can cause pollution problems from vehicles which also includes an increase in sound pollution. The emissions from the vehicles can affect already existing atmospheric pollutants which in turn could affect human health, animal health and affect greenery in the area. The road may affect existing structures in the area which may have to be removed and can cause changes in the economic wellbeing of the persons who are using those structures.

A positive impact of the new road may mean a reduction in traffic congestion, its positive effect on pollution, and the economic advantage of these two aspects.

For any environmental impact assessment, complete data on all these aspects as they are at present has to be made so that any changes can be reasonably judged to existing standards required for good living. The deterioration or increase in these living standards has then to be highlighted by the EIA before any final decision on the project can be undertaken.

14.1.5 Water supply-sewerage system-waste water-sustainable development:

- Water supply:

A water supply network or water supply system is a system of engineered hydrologic and hydraulic components that provide water supply. A water supply system typically includes the following:

1. A drainage basin (see water purification – sources of drinking water)
2. A raw water collection point (above or below ground) where the water accumulates, such as a lake, a river, or groundwater from an underground aquifer. Raw water may be transferred using

uncovered ground-level aqueducts, covered tunnels, or underground water pipes to water purification facilities.

3. Water purification facilities. Treated water is transferred using water pipes (usually underground).
4. Water storage facilities such as reservoirs, water tanks, or water towers. Smaller water systems may store the water in cisterns or pressure vessels. Tall buildings may also need to store water locally in pressure vessels in order for the water to reach the upper floors.
5. Additional water pressurizing components such as pumping stations may need to be situated at the outlet of underground or aboveground reservoirs or cisterns (if gravity flow is impractical).
6. A pipe network for distribution of water to consumers (which may be private houses or industrial, commercial, or institution establishments) and other usage points (such as fire hydrants)
7. Connections to the sewers (underground pipes, or aboveground ditches in some developing countries) are generally found downstream of the water consumers, but the sewer system is considered to be a separate system, rather than part of the water supply system.

Water supply networks are often run by public utilities of the water industry.

- Sewerage system:

Sewerage system consists of pipes, pumps for collection of wastewater, or sewage, from a community. Modern sewerage systems fall under two categories: domestic and industrial sewers and storm sewers.

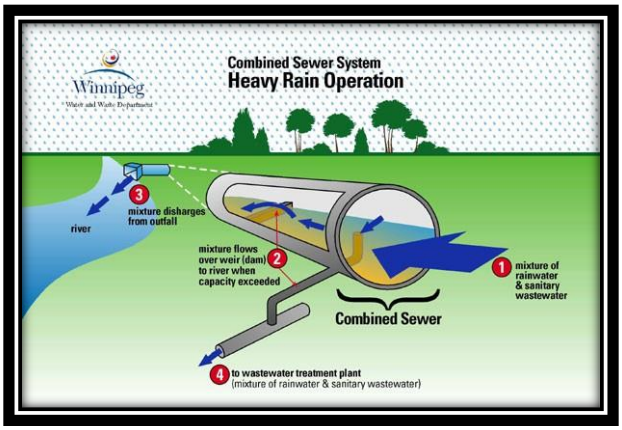


Figure 104: Sewerage system

TYPES OF SEWERAGE SYSTEM:

1. COMBINED SEWERAGE SYSTEM:

A combined sewer system is a sewer that accepts storm water, sanitary water/sewage, then the sewage is treated in STP (sewerage treatment plant). This system is mainly used in the towns where streets are narrow and rain fall is less than the moderate.

2. SEPARATE SEWERAGE SYSTEM:

In this system the sanitary sewage and storm water are carried separately in two sets of sewers. The sewage is conveyed to waste water treatment plant (WWTP) and the storm water is discharges into rivers without treatment.

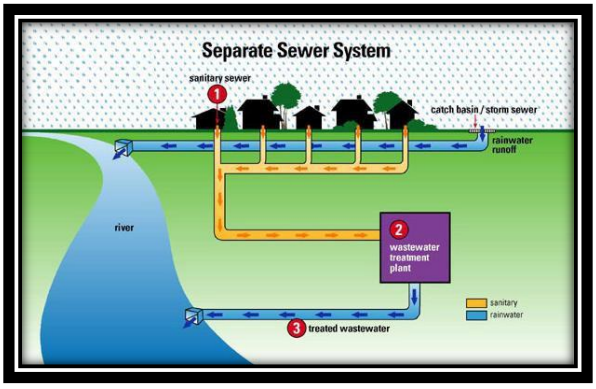


Figure 105: Separate sewerage system

- **PARTIALLY COMBINED OR PARTIALLY SEPARATE SYSTEM:**

A partially separate system is a combination of a combined sewerage system and separate sewerage systems. This type of sewerage system helps decrease the load from a combined sewerage system because only the water from initial rain falls(water from acid rain) is added to sewage water and after than this system work as separate system.

- Waste water:

Wastewater is any water used to transport waste, and is most commonly a synonym for:

- Sewage (also called domestic wastewater, municipal wastewater) - this is wastewater that is produced by a community of people
- Black water (waste), household wastewater that only contains the discharge from toilets
- Grey water, household wastewater excluding the discharge from toilets
- Fecal sludge, household wastewater generated from certain types of onsite sanitation systems

The generic term may be used to describe water containing differing contaminants from other uses, including:

- Industrial wastewater, water-borne waste from power generation, manufacturing operations and mineral extraction, including
- Backwashing (water treatment), flushing accumulated particles from filter beds
- Boiler blow down, impurities concentrated by steam generation
- Brine, waste streams from water softening, ion exchange, reverse osmosis, or desalination
- Wet scrubber effluent, containing pollutants removed from smokestack combustion gases to meet air quality goals
- Acid mine drainage, from dewatering coal and metal mines
- Produced water, a by product extracted with petroleum or natural gas
- Leach ate, precipitation containing pollutants dissolved while percolating through ores, raw materials, products, or solid waste
- Return flow, carrying suspended soil, pesticide residues, or dissolved minerals and nutrients from irrigated cropland
- Surface runoff, precipitation carrying dissolved or suspended materials potential damaging to aquatic habitats, including
- Urban runoff, water used for outdoor cleaning activity and landscape irrigation in densely populated areas
- Cooling water, released with potential thermal pollution after use to condense steam or reduce machinery temperatures by conduction or evaporation.

- Sustainable development techniques:

What is sustainable development?

Sustainable development can be defined as an approach to the economic development of a country without compromising with the quality of the environment for future generations. In the name of economic development, the price of environmental damage is paid in the form of land degradation, soil erosion, air and water pollution, deforestation, etc. This damage may surpass the advantages of having more quality output of goods and services.

Sustainable Development Goals

- To promote the kind of development that minimises environmental problems.
- To meet the needs of the existing generation without compromising with the quality of the environment for future generations.

Achieving Sustainable Development

Sustainable development can be achieved if we follow the following points:

- It can be achieved by restricting human activities.
- Technological development should be input effective and not input utilising.
- The rate of consumption should not surpass the rate of salvation.
- For renewable resources, the rate of consumption should not surpass the rate of production of renewable substitutes.
- All types of pollution should be minimised.
- It can be achieved by sensible use of natural resources.

Examples of Sustainable Development

- Wind energy
- Solar energy
- Crop rotation
- Sustainable construction
- Efficient water fixtures
- Green space
- Sustainable forestry

Chapter 15: Smart and sustainable feature designs, impact assessment.

- In chapter 8 & 13 we gave some basics & advanced design for village.
- This design is important for village development.
- As per smart village concept this design give some level of comfort to village in his/her life and village become more smart/ or ideal with this design.
- Below we give list of design table with amount expenditure and benefits of village and villagers.

Table 12: Estimation and Benefits of Designs

Sr no.	Design name	Period	Amount expenditure	Benefits
1	Water butt	Immediately	11,260/-	➢ Reduce water waste ➢ Rain water is good for plant in village ➢ Water butt are durable ➢ Water butt support recycling industry
2	Public garden	Long term	1890800/-	➢ Children use playground to improve fitness ➢ For fresh and positive nature ➢ Provide walking ➢ Promote relaxation
3	PHC	Within 1 year	1636500/-	➢ No need to go outside for health issue ➢ Provides awareness and increase health facilities with modern technology
4	Assembly hall	Long term	Around 20 lakhs	➢ Village solution ➢ Social programme ➢ Awareness camps ➢ Villagers know gov. Scheme from assembly ➢ Social interaction
5	Plastic bottle crusher machine	Immediately	2 to 5 lakhs	➢ Reduce village waste ➢ Village become smart ➢ Support recycling and environment.
6	Avedo	Within 1 year	1,77,726/-	➢ Provide water for animals ➢ Reduce river pollution
7	Youth club	Within 1 year		➢ Improve skills and knowledge ➢ Increged and time management
8	Bus stand	Within 1 year	81563/-	➢ Provide comfort who wait bus ➢ Bus facilities is importance for village
9	Speaker system with CCTN camera	Immediately	3,96,077/-	➢ For alerting people ➢ For arrange meeting ➢ Village become safe ➢ Easy announcement
10	Main gate	Within 1 year	27,450/-	➢ Good welcome for other people ➢ Village become beautiful and cultural
11	Medical store	Within 1 year	183100/-	➢ Villagers don't need to go outside for medicines ➢ Improve village condition
12	Public library	Within 1 year	11,26,080/-	➢ For villagers and student ➢ Increase knowledge with books and technology ➢ People can read with peace

Chapter 16: Survey by interviewing with Talati/ or sarpanch.

Gujarat Technological University,
Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

CHAPTER- 16

Sr.	Questions	Yes/ No	Remarks
1	What are the sources of income in village?	Yes	Farming, Mason Work
2	What are the chances of employment in village?	No	Required
3	What are the special technical facilities in village?	Yes	Telecome
4	Is any debt on village dwellers?	No	—
5	Are village people getting agricultural help?	Yes	—
6	Is women health awareness Program organized in village?	Yes	In Month
7	Are women having opportunity to work and income?	Yes	Wages, Tailor
8	Child girl education is appreciated in village?	Yes	
9	Facility of vaccination to child is available in village?	Yes	AAnganVadi (SHS)
10	Are village people aware about child vaccination and done to each and every child as per norms?	NO	—
11	Women help line number information is provided to village people?	No	Required
12	Is water scarcity in village? How many days per year?	NO	—
13	Is village under any debt?	NO	—
14	Is any serious issue due to debt from bank or any person happened in village?	No	—
15	Is any suicide like incident observed in village due to government policy, debt or threatening?	NO	—
16	Is any death of patient occurred due to unavailability of medical facility in village?	NO	—
17	How many disabled (physically challenged) is observed in village? Provide list with Male/female/girl/boy with age and type of disability and reason of disability.	Yes	Male – 20 Female – 15
18	Is village improvement is observed in comparative scenario from past to present?	Yes	Temple, ground, Road Smashan, bridges.
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?	NO	Some People do it, but many don't

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

ગામના વિકાસના કામોમાં
સરપંચ,
બાવા ખાખરીયા ગ્રામ પંચાયત

Chapter 17: Agriculture activities and agro industry, alternate techniques and solution.

- What is Agriculture

Agriculture is the art of growing food and cash crops for the basic requirement for every living being. This is practised through a series of phases. In ancient times they used to cultivate in a very small field by using certain procedures for their management and improvement but today the agricultural practices and technologies are growing very rapidly as it includes a set of procedures to be followed to raise crops. The different agricultural practices followed includes :

- Preparation of soil,
- Sowing of seeds,
- Removal of weeds and other unwanted plants from the field,
- Manuring, and irrigation of crops,
- Harvesting and storing of yielded crops.

For the higher technology in farming, agriculture and agricultural practice requires the knowledge of harvesting and methods of storing and protection of the harvested crops.

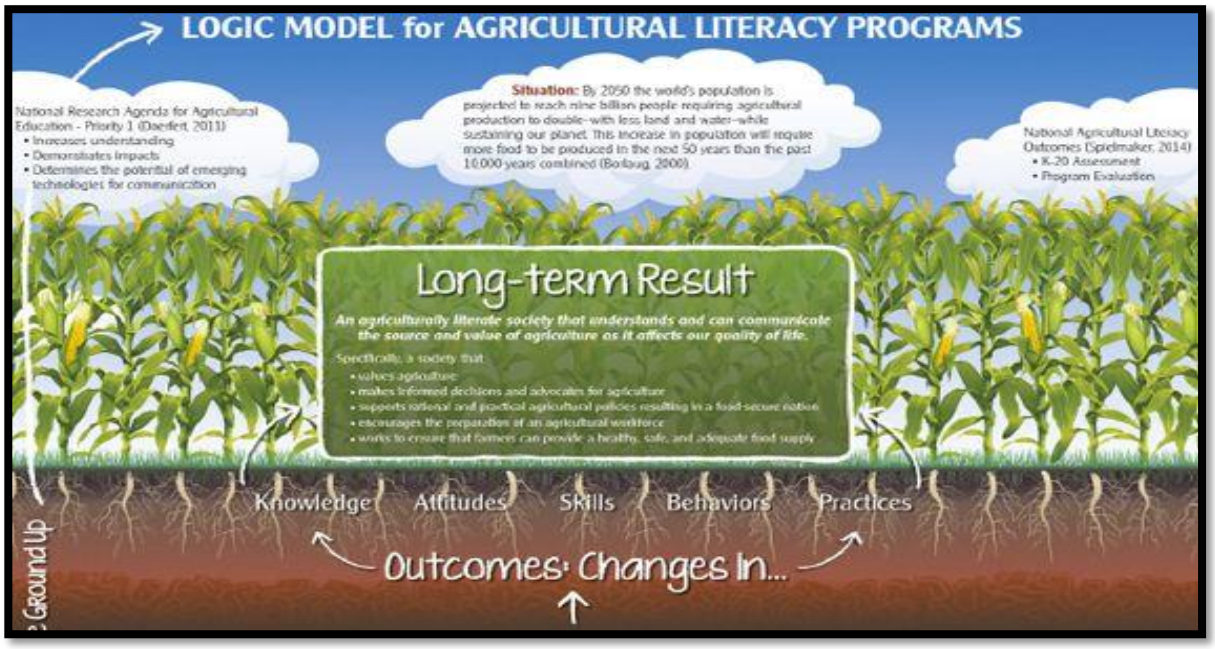


Figure 105: Agricultural literacy programs

Types of Agriculture

Agriculture is divided into three main types:

- Arable farming is a farming system of growing crops in fields. Paddy, wheat, barley are the main crops grown by the Arable farming system.
- Pastoral farming is a farming system for producing livestock and raising animals. Beef, cattle's, sheep's, hens and other animals are examples of Pastoral farming animals.

- Mixed farming is the farming system which is the combination of both arable farming and pastoral farming.

➢ What are the types of agriculture?

Agriculture is one of the most widespread activities in the world and is mainly based on the primarily on nature of the land, climatic characteristics and available irrigational facilities. The different types of farming practiced by the farmers in India are:

- Dry farming
- Wet farming
- Terrace Agriculture
- Subsistence farming
- Shifting Agriculture
- Intensive Agriculture
- Extensive Agriculture
- Commercial Agriculture
- Plantation Agriculture.

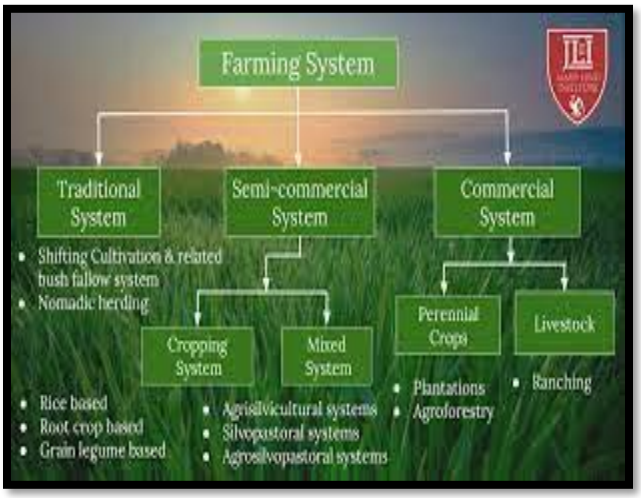


Figure 106: Types of Farming system

➢ **Agro-based industries are those that ,**

(a) Provides inputs to farmers
(b) Use agricultural products as raw materials
(c) Produce goods consumed in the villages
(d) Carry on industrial activity in rural areas
Agro-based industries are those that use agricultural products as raw materials.

Definition:

Famine Enquiry Commission (India), 1994 defined an agro-based industry as the industries that are involved in supplying the farm with agricultural inputs besides handling the product of the farm, maybe termed as agro-based industries. Agro-based industries comprises of processing, preservation, and preparation of agricultural produce for the intermediate and final consumption. The government has undertaken the implementation of various schemes and policies to promote the Agro-based industries across the country to help the farmers in raising their income.

Benefits of Agro-based Industries:

- Provides competitive advantage both within and outside the country
- Absorption of the surplus rural labour and address the problem of large-scale unemployment in rural areas
- This industry is labour-intensive, hence turning it into a major export industry will create vast employment opportunities
- Employment opportunities in rural areas increases where the industries are located (to be near the source of raw materials, especially perishable agricultural produce)
- Provides profitable diversification in the rural areas which ensures an all-round industrial growth in the rural areas
- It has the propensity to stabilize and make agriculture a lucrative option to take up
- They have a high potential as foreign exchange-earners too

Chapter 18: Social activities – Any activities planned by students

- Social health awareness for villagers:

  - In village we conduct social health awareness in streets by holding posters by help of Anganwadi workers and Asha workers.
  - From Asha worker and Anganwadi worker we manage to get poster indicate about health awareness.
  - In streets we were holding poster about 30 min.
  - We were holding poster of social health awareness such as,
    Poster of (Drops of polio)
    Poster of (knowledge about pregnancy)
    Poster of (Mental condition of Humans)
    Poster of (Awareness of Corona) etc.....

Figure 108: Awaring people

Chapter 19: (ALLOCATED VILLAGE) SAGY Questionnaire survey form with sarpanch signature.

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: Bavakhukhariya

b. Block: -

c. District: Jamnagar

d. State: Gujarat

e. Lok Sabha Constituency: Jamnagar

f. Number of Wards in the Gram Panchayat: 1 to 5

g. Number of Villages in the Gram Panchayat: 1

h. Names of Villages: Bavakhukhariya

Demographic Information

Number of Households 255 Total Population 1322 Male 662 Female 660.

SC HHs 90 ST HHs 0 OBC HHs 40 Other HHs 125

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	In Village
b.	Nearest Primary Health Centre (PHC)	No	6km.
c.	Nearest Community Health Centre (CHC)	No	6km.
d.	Nearest Post Office	Yes	In Village.
e.	Nearest Bank Branch (Any)	No	6 km
f.	Nearest Bank with CBS Facility	No	6 km.
g.	Nearest ATM	No	6km.
h.	Nearest Primary School	Yes	In village
i.	Nearest Middle School	No	6 km
j.	Nearest Secondary School	No	6 km
k.	Nearest Higher Secondary School / +2 College	No	6 km.
l.	Nearest Graduate College	No	6 km.
m	Nearest ITI / Polytechnic Centre	No	6 km.
n	Kisan Seva Kendra	No	6 km

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	6km
p	MSP based Government Procurement Centre	NO	6km.
q	Milk Cooperative /Collection Centre	Yes	
r	Veterinary Care Centre	~~No~~ Yes	
s	Ayurveda Centre	No	6km.
t	E – Seva Kendra	NO	6km
u	Bus Stop	Yes	
v	Railway Station	No	50km.
w	Library	No	6km.
x	Common Service Centre	No	6km.

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: 2

b. Number of villages without Angan Wadi Centres 0

Names of such villages: –

c. Schools (Number)

Primary Private: 0 Primary Govt.: 1

Middle Private: 0 Middle Govt.: 0

Secondary Private: 0 Secondary Govt.: 0

Higher Secondary Private: 0 Higher Secondary Govt: 0

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)	–	–	–	–	govt	–	–
b.	Kerosene	–	–	–	–	govt	–	–
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	Bavakhakhariya	–
b.	Hand Pump Coverage in Villages:	Covered ✓ / Not Covered	Bavakhakhariya	–
c.	Coverage under Covered Drains:	Covered ✓ / Not Covered	Bavakhakhariya	–
d.	Coverage under Open Drains:	Covered / Not Covered ✓		Bavakhakhariya
e.	Villages with Household Electricity Connection (Numbers)	Connected ✓ / Not Connected	Bavakhakhariya	–

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	352	d.	Pasture / Grazing Land	–	g.	Check Dam	5
b.	Irrigated Land	215	e.	Forests/ Plantations	–	h.	Wells/Bore Wells	2
c.	Un-irrigated Land	–	f.	Other Common Land	–	i	Tanks /Ponds	1

[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)	40-50
b)	Number of Households receiving pension (old age, widow, disability)	10-15
c)	Number of eligible Households who are not receiving pension	20-30
d)	Number of Households eligible for Ration Card	255
e)	Number of eligible HHs having ration cards	255
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	90-100
i)	Number of Job Card holders who completed 100 days of work during 2013-14	60
j)	Number of shops selling alcohol	–
k)	Number of BPL families	96
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	15
q)	Number of Households headed by physically handicapped persons	20
r)	Total number of Persons with Disability in the village	35
s)	Number of SHGs	–
t)	Number of active SHGs	–
u)	Number of SHG Federations	–
v)	Number of Youth Clubs	–
w)	Number of Bharat Nirman Volunteers	–

Name and Signature of Surveyor and Respondent'

Solunki Ankit M.	[illegible] સરપંચ, બાવા ખાખરીયા ગ્રામ પંચાયત		20/5/21
Surveyor	PRI Respondent (Preferably Gram Panchayat Chairperson)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey

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

4

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: Bavakhakhariya
b. Ward Number: 1 to 8
c. Gram Panchayat: Bavakhakhariya
d. Block: –
e. District: Jamnagar
f. State: Gujrat
g. Lok Sabha Constituency: Jamnagar.
h. Number of Habitations / Hamlets in the Gram Panchayat: –

i. Names of Habitations / Hamlets:

Demographic Information

Number of Households 255 Total Population 1322 Male 662 Female 660

SC HHs 90 ST HHs 0 OBC HHs 40 Other HHs 125

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	In Village.
b.	Nearest Middle School	No	6 km
c.	Nearest Secondary School	No	6 km
d.	Kisan Seva Kendra	No	6 km
e.	Milk Cooperative /Collection Centre	Yes	–
g.	Health Sub Centre	Yes	In Village
h.	Bank	No	6 km
i.	ATM	No	6 km
j.	Bus Stop	Yes	In Village
k.	Railway Station	No	50 km

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

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	6 km.
m	Common Service Centre	Nr	6 km.
n	Veterinary Care Centre	Yes	

ii. Road Connectivity

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

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

iii. Drinking Water Facilities

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

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

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

If 3 mention the name of the habitations not covered: In Small Streets of village

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: Nopic

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: All

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

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

vi. Sports Facilities in the Village

a.Number of Play Grounds in the Village (minimum size 200 square meters): 0

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

vii. Education, ICDS

a. Number of Anganwadi Centres: 2

c. Schools (Number)

Primary Private: – Primary Govt.: I

Middle Private: 0 Middle Govt.: 0

Secondary Private: 0 Secondary Govt.: 0

Higher Secondary Private: 0 Higher Secondary Govt: 0

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	352	d.	Pasture / Grazing Land	–	g.	Check Dam	5
b.	Irrigated Land	215	e.	Forests/ Plnatations	–	h.	Wells/Bore Wells	2
c.	Un-irrigated Land	–	f.	Other Common Land	–	I	Tanks /Ponds	1

ix. Entitlement Related Parameters		
1	Number of active Job Card holders under MGNREGA	90-100.
2	Number of active Job Card holders who have completed 100 days of work	60
3	Number of shops selling alcohol	0
4	Number of BPL families	96
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	–
10	Number of active SHGs	–
11	Existence of SHG Federation in the Village (Yes / No)	–
12	Number of Youth Clubs	–
13	Number of Bharat Nirman Volunteers	–

Name and Signature of Surveyor and Respondent'

Solanki Ankit M Surveyor	સરપચ, બાવા ખાખરીયા ગ્રામ પંચાયત 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)	20/5/21 Date of Survey

3

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Bavakhakhariya Gram Panchayat: Bavakhakhariya Ward No: 1 to 8

Block: — District: Jamnagar

State: Gujarat L S Constituency: Jamnagar

1. Family Identity and Size

Name of Head of Household	Pankajbhai N. Gondaliya.							Male/ Female	M.
SECC Survey ID:	-	Family Size	4	Over 18	3	6 to 18	1	Under 6	0.

2. Category & Entitlement Details (Tick as appropriate)

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

2. Adults (above 18 years)

Name	Age	Sex M/F/O	Disability Status Y/N	Marital Status[3]	Education Status[4]	Adhaar Card (Y/N)	Bank A/C (Y/N)	Social Security Pension[5]
Pankajbhai	44	M	No	2	05	Yes	Yes	—
Rekhuben	39	F	No	2	05	Yes	Yes	—
Ashishkumar	19	M	No	1	05	Yes	Yes	—

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
Meetkumar	16	M	No	01	05	NO	8th	No

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: 2
Type: Kutcha / ~~Semi Pucca~~ / Pucca	
Toilet: ~~Private~~ / Community / Open Defecation	
Drainage linked to House: ~~Covered~~ / Open / None	
Waste Collection System	Door Step / Common Point / ~~No~~ Collection System
Homestead Land: Yes / ~~No~~	Kitchen Garden : Yes / ~~No~~
Compost Pit: Individual/ Group/ ~~None~~	Biogas Plant: Individual/ Group/ ~~None~~

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

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

11. Source of Lighting and Power

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

12. Landholding (Acres)

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

13. Principal Occupations in the Household

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

14. Migration Status

Does any member of the household migrate for Work: Yes / ~~No~~ If Yes Entire Year / Seasonal

Does anyone below 18 years migrate for work: Y/N

15. Agriculture Inputs

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

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

Name	Unit	Quantity
—	—	—
—	—	—
—	—	—

17. Livestock Numbers

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

18. What games do Children Play

Simple

19. Do children play musical instrument (mention)

No

Schedule Filled By: Ankit Solanki

Principal Respondent: K.R. Dattani

Date of Survey:

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Bavakhakhariya Gram Panchayat: Bavakhakhariya Ward No. 1 to 5

Block: – District: Jamnagar

State: Gujarat L S Constituency: Jamnagar

1. Family Identity and Size

Name of Head of Household	Manjibhai khimji bhai Solanki							Male/ Female	M
SECC Survey ID:		Family Size	4	Over 18	3	6 to 18	1	Under 6	0

2. Category & Entitlement Details (Tick as appropriate)

Social Category[1]	SC	Life Insurance	1. All Adults 2. ✓ Some Adults 3. None	AABY	1. Yes 2. No	Kisan Credit Card	Yes ~~No~~
Poverty Status Year[2]:	1. BPL 2. ~~APL~~	Health Insurance	1. All Adults 2. Some Adults 3. ~~✓ None~~	RSBY	1. Yes 2. No	MGNREGS Job Card Number	Yes
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]
Manjibhai	42	M	No	02	04	Yes	Yes	–
Divaliben	41	F	No	02	04	Yes	Yes	–
Ankitkumar	19	M	No	01	07	Yes	Yes	–

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
Sunilkumar	17	M	No	01	06	Y	12th	NO

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

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

Source of Water		Distance
Piped Water at Home	~~Yes~~ ✓ / No	
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	0	2. Cultivable Area	0
3. Irrigated Area	0	4. Uncultivable Area	0

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
—	—	—
—	—	—
—	—	—

17. Livestock Numbers

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

18. What games do Children Play
Sports & mobile

19. Do children play musical instrument (mention)
No

Schedule Filled By: Ankit Solanki
Principal Respondent: K.R. Dattani
Date of Survey:

Chapter 20: TDO-DDO- Collector email sending soft copy attachment in the report

Gmail

Solanki Ankit <solankiankit9712@gmail.com>

Development scenario of Bavakhakhariya Village, Kalavad Taluka, Jamnagar District
2 messages

Solanki Ankit <solankiankit9712@gmail.com> Tue, Aug 3, 2021 at 3:11 PM
To: kalavad-tdo-jam@gujarat.gov.in
Cc: rurban@gtu.edu.in, dcivil.hod@aits.edu.in

Respected Sir/Madam,

We are students of Atmiya Institute of Technology & Science for Diploma Studies, Rajkot affiliated to Gujarat Technological University(GTU). GTU has been assigned to Vishwakarma Yojana-VIII in which students survey various village facilities and Design various amenities to deliver it to them ideal for living a better life as per requirements and village problem statements.

As a part of Vishwakarma Yojana's guidelines, we have been asked to inform all the respected officers about the our project in which we will shortly notify about design work for Bavakhakhariya Village with its benefit and estimated cost, which is as below,

Sr no.	Design name	Period	Amount expenditure	Benefits
1	Water butt	Immediately	11,260/-	➢ Reduce water waste ➢ Rain water is good for plant in village ➢ Water butt are durable ➢ Water butt support recycling industry
2	Public garden	Long term	1890800/-	➢ Children use playground to improve fitness ➢ For fresh and positive nature ➢ Provide walking ➢ Promote relaxation
3	PHC	Within 1 year	1636500/-	➢ No need to go outside for health issue ➢ Provides awareness and increase health facilities with modern technology
4	Assembly hall	Long term	Around 20 lakhs	➢ Village solution ➢ Social programme ➢ Awareness camps ➢ Villagers know gov. Scheme from assembly ➢ Social interaction
5	Plastic bottle crusher machine	Immediately	2 to 5 lakhs	➢ Reduce village waste ➢ Village become smart ➢ Support recycling and environment.
6	Avedo	Within 1 year	1,77,726/-	➢ Provide water for animals ➢ Reduce river pollution
7	Youth club	Within 1 year		➢ Improve skills and knowledge ➢ Increged and time management
8	Bus stand	Within	81563/-	➢ Provide comfort who wait bus

		1 year		➢ Bus facilities is importance for village
9	Speaker system with CCTN camera	Immediately	3,96,077/-	➢ For alerting people ➢ For arrange meeting ➢ Village become safe ➢ Easy announcement
10	Main gate	Within 1 year	27,450/-	➢ Good welcome for other people ➢ Village become beautiful and cultural
11	Medical store	Within 1 year	183100/-	➢ Villagers don't need to go outside for medicines ➢ Improve village condition
12	Public library	Within 1 year	11,26,080/-	➢ For villagers and student ➢ Increase knowledge with books and technology ➢ People can read with peace

Please find herewith attached,
1. Detailed Project Report of Bavakhakhariya Village.

Thanks & Regards,
Sharad Badva & Ankit Solanki
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Atmiya Institute of Technology & Science For Diploma Studies, Rajkot
Gujarat Technological University.
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Bavakhakhariya_ Jamnagar.pdf
19571K

Chapter 21: Comprehensive Report for the entire village.

- In Vishwakarma yojna we need to select one allocated village for project, we select allocated village, Bavakhakhariya village located at kalavad taluka in Jamnagar district.
- This village is small and want to be development so we selected this village and visit this village for our project.
- In 1st phase of project we visit Bavakhakhariya village for understand village condition, village people, village basic amenities, infrastructure availability and understand to what's basic needs of villagers.
- We conduct techno economic survey for more details and we also compare our details and we also compare our allocated village basic facilities with smart and ideal village.
- In project basis of this survey we decided basis of this survey we decided 6 designs for first phase for project like.
  1. Water butt
  2. Public garden
  3. PHC
  4. Assembly hall
  5. Plastic bottle crusher machine
  6. Avedo.

- After give this 6 deigns and their estimate our first phase complete.
- In Vishwakarma yojna project phase-2 we again visit village for SAGY questionnaire survey and for decided our phase-2 designs for village development.
- We talk with sarpanch and particular houses for SAGY survey and we decided our phase-2 designs.
- We also click lots of pictures of village condition and facilities.
- In phase-2 we decided design like
  1. Youth club
  2. Bus stand
  3. Main gate
  4. Medical control
  5. Speaker system and CCTV control room.
  6. Public library.

- This are some basics designs of phase-1 and phase-2 of our Vishwakarma yojna project so this designs fulfil their some level needs and migration rate will be decreased.
- The aim of Vishwakarma yojna is decreased migration rate and village become smart and ideal to fulfil villager's basic needs, we think this project gave us lost of knowledge and experience and very useful to village.
- Also, so much thanks to GTU for giving us such an opportunities to make project like this.