DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION
Moviya Village
Rajkot District

PREPARED BY

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
Dhvani Tank	Civil Engineering	170030106032
Shivangi Chotaliya	Civil Engineering	170030106006

COLLEGE NAME
Atmiya Institute of Science and Technology

NODAL OFFICERS NAME
Asst. prof. Devang M. Sarvaiya

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,
VILLAGE:- Moviya
DISTRICT:- Rajkot

Under

VishwakarmaYojana: Phase-VIII

In partial fulfillment of the project offered by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

During the academic year 2020-21.

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

NAME	BRANCH NAME	ENROLLMENT NO
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Internal(Evaluator) Guide Name and Signature:	**Prof. Devang M. sarvaiya**
College Name:	**Atmiya Institute of Technology and Science**
College Stamp:	

ABSTRACT

Vishwakarma yojana is provide the benefits of real work experience to engineering students and simultaneously apply their technical knowledge in the development of infrastructure in rural development. The students and faculty Members meet all the stake-holders in a village, survey the existing facilities. The students use their engineering skills to prepare detailed project report for the infrastructure as a part of their Final Year project work. Through the Yojana, the students of GTU are getting real work experience.

Our assigned village is Moviya village. Moviya village is located at 8km from Gondal. The area of the village is 6654.44 hectare. The natural language is Gujarati. Total population 11008 of the village is as per census 2011. Total households in moviya village is 2260 as per census.

Main occupation of the moviya village is farming. 70% people of moviya village depends on farming while 20% people are khet majur. And remaining 10% people are in pasupalan.

There is an underground drainage system in moviya. For transportation, there is bus stand in the main road of village. 90% of the houses are pucca while 10% of the houses are kutcha. There are 7 Primary schools, 2 Secondary schools and 1 higher secondary school. Village is connected with 24 hour electricity supply.

There are many facilities in village like lack, tube well, pond, govt. hospital, panchayat building, ATM facilities etc…

We are given to sustaible facility is bio-gas plant, social facility is hospital, socio-cultural facility is public library, smart village facility is water filtration plant, physical facility is bus stand and heritage facility is drinking water tank for animals in moviya village.

By studying the current status and techno-economic survey of moviya village in Rajkot district of Gujarat state in terms of public facilities, other infrastructure facilities for the need of the people and to prepare report on the socio-economic growth of the area with the discussion of TDO, DDO, and Sarpanch will help full in providing better facilities in village.

From the gap analysis, development plans for village development will be projected and planning proposal for Physical infrastructure, Social infrastructure will be suggested for the village. The study will concentrate on the development of the village.

Key Words: rural development, physical amenities, sustainable development, reduce migration.

ACKNOWLEDGEMENT

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

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

We also express our gratitude to **Dr. J.C.Lilani**, **Registrar Gujarat Technological University-Ahmedabad** for giving us complete support.

We express our sincere thanks to **Commissionerate of Technical Education, Gujarat State** for appreciating and acknowledging our work.

We express our sincere thanks to **DDO, TDO, Sarpanch, Talati and staff members of Ahmadabad** 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**. **Dr. G.D.Acharya** 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,
Mr. Devang M. Sarvaiya nodal officer**, Atmiya Institute of Technology and Science, 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, Prof.G.A.Patel GECPatan, Prof.Y.B.Bhavsar, VGEC, Chandkheda, Prof.K.L.Timani, VGEC, Chandkheda, Prof.Paresh Nimodiya, GEC, Patan** for providing us technical knowledgw throughout the project work.

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

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

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Chapter 1: Ideal village visit

1.1 Background & Study area location

Fig.-1: Gate of Raj Samadhiyala

i. Background:-

- Raj samadhiyala is located 22 kms away from Rajkot district.
- Nearly available village is Tramba which is 7 kms far and sardhar is around 6.5 kms.
- There are no any political parties available in the village.
- The village is located nearer to Rajkot Bhavnagar highway.
- Village has total 48 check dams in which 41 constructed by village people and 7 lakes constructed with help of ISRO.

ii. Study Area Location:-

- Name : Raj samadhiyala
- District : Rajkot
- State : Gujarat
- Language : Guajarati, Hindi, English
- Time zone : UTC/GMT +5:30hr.
- Lat/long : 22’18’N/70’48’E
- Pin Code : 360490

Fig-2: Top view of village

1.2 Concept of ideal village

- The ideal village has good system of sanitation. An ideal village has very good drain system so that the polluted water if village is properly drained away and maintained clean.
- **House:-**

  The house in an ideal village are very tidy and clean. The owners of thesw houses look to the house hygiene. The houses have sufficient windows to let in air and light.
- **Agriculture:-**

  People are well known about lasted technology for sowing and harvesting.
- **Educational facilities:-**

  There are Primary schools and High schools in an ideal village. Primary education is free and compulsory.
- **Medical facilities:-**

  In an ideal village, there are clinical facilities for villagers and animals. Hence, there are lots of dispensaries.
- **Other facilities:-**

  We can find post-office, public library, playground, garden, Skill Development Centre etc…there.
- **People:-**

  People of an ideal village are very neat and clean. They have a sense of discipline and collaboration. They have a spirit of service and let go.
- **Conclusion:-**

  An ideal village makes all possible provision for development of her people. It is our main duty that we should develop every village of India to much higher level. The idea of an ideal village will certainly help us in discharge our duty.

1.2.1 Objectives

- To make the replica village a “hub” that could attract supply for the growth of different villages in it is locality.
- To Generate & maintain a society of co-operative living for wide-ranging and swift development.
- To contribute towards social empowerment by attractive all section of group of people in the task of rural development.
- To provide easier, faster and cheaper access to urban markets for agricultural produce or other marketable commodities produced in such villages.

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

Table 1: Live Case Studies of Ideal Village

Name	**Raj Samadhiyala**
District	**Rajkot**

State	**Gujarat**
Language	**Guajarati, Hindi, English**
Time zone	**UTC/GMT +5:30hr**
Pin Code	**360490**
Lat/long	**22’18’N/70’48’E**

1.2.3 The Idea of a model/Smart Village

The ideas of “smart village” will also attention to multiple challenges such as unplanned urbanization, under development of village and smart villages. In smart village access sustainable energy services acts as a catalyst for development –enabling the provision of good education and health care, access to clean water, sanitation and nutrition, the growth of productive enterprise to boost income and enhanced security.

1.2.4 Ancient History of Civil

The discovery of urban settlements of Mohenjo-Daro and Harappa indicate existence of civil engineering & architecture, which blossomed to a highly precise science of civil engineering and architecture and found expression in innumerable monuments of ancient India.

Fig-3: Harappa

Several sumo posts and latrines built one above the other were uncovered on Mound ET at Harappa.

Fig-4:Indus Valley Civilization

Flush toilets were first used in the Indus Valley Civilization. These existed in most homes and were connected to a sophisticated sewage mechanism. The civilization was prominent in hydraulic engineering.

1.3 Detail study of Ideal village / Smart Village

- **Social scenario :-**

The population of village is record as 1758 n 2001. After 10 years it will decrease and reach 1467 in which male have 732 and 735 females. In this village, there is about ten different class of cast category.

- **Economic profile :-**

Education in raj samadhiyala is more that 95% of total population. The average annual income of village is 45 lakes. Main business of village is agriculture land. All people of village is pays regularly text to the grampachayat. In last there one shakari mandali which is give lone at low interest to farmers.

- **Physical & Demographical profile :-**
  - Total area of village is 3181.33 hectors.
  - As per 2011 census total population is 8137 which includes 4259 male and 3878 female.
  - There are about 1607 houses in the village.
- **Infrastructure detail :-**
  - Water supply
  - Bank
  - Transportation facilities
  - Hospital
  - Education facilities

Fig-5: Aganvadi

Fig-6: Water supply

Fig-7: CCTV Camera

1.4 SWOT analysis of Ideal village / Smart Village

Table 2: SWOT analysis

Strength	Weakness	Opportunities	Threats
Proper drainage facilities	No cinema hall or recreational facilities	To make whole village digital and Wi-Fi connected	**Lack of awareness of villagers about educations**
Transportation facilities	No public library	To rise the living standards of people	**Lack of funds and technical knowledge in agricultural fields**
Sanitation facilities	Layout of village	Improving in waste management	**Education awareness**
RO system	Improper disposal of waste	Increase per capita income	-
Cleanness of village	Modern technology in farms	Women empowerment	-
Communication hall	**No facilities for higher secondary education**	**To increase education facilities**	-

1.5 Future prospects of village :-

- For future prospect, the village raj samadhiyala can use more advanced technologies for agricultural prospect and for other requirements also.
- As prospects view, village can use more modern equipment and technology for agriculture point.
- Free WI-FI system improves the knowledge of people and gives result as a more awareness about all type of problems.
- It can also provide industrial area over the boundary of village.

1.6 Benefits of the visits of Ideal village / Smart Village:-

- We got an idea about an ideal village.
- We had seen much kind of new technologies which can be used in village that are being used in the urban area.
- To improvement allocated village.
- To understand allocated village condition.
- We got ideas like which terms make it ideal village, which type of facilities available and how the management system of village was working as well react on some of problems.

Chapter 2 - Literature Review

2.1 Introduction:-

- **Urban :-**

  An urban area is the region surrounding a city. Most people of urban areas have non-agricultural jobs. Urban areas are very developed, meaning there is a density of human structures such as houses, commercial buildings, roads, bridges, and railways. "Urban area" can refer to towns, cities, and suburban. According to census 2011, there are 7,935 towns, 4,041 statutory town and 3,894 census towns.

Fig.-8: Urban Area

- **Rural :-**

  All the areas which are not characterized as urban area is called rural area. In which the population is very low compared to urban areas. Mainly they depend on agricultural activities. According to cencus 2011 , there are 640867 villages in India.the area where more than 75% of male population is associated with agricultural activity is known as rural area.

Fig-9: Rural Area

2.2 Importance of the Rural development

- Rural development is important not only fir 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 has assumed greater importance in India today than in the earlier period in the process of the development of the country.
- It is a strategy package seeking to achieve enhanced rural production and productivity socio-economic equity, and aspiration, balance in social and economic development.
- The development of all aspects whthin communities is vital for the effective development of the country.
- These include, education, employment opportunities, infrastructure, housing, civic amenities and the environmental condition.

2.3 Ancient Villages / Different Definition of: Rural Urban Villages:-

➢ Rural :-

- **United states census(2000 census) :-**

  A rural areas as comprising open country and settlements with fewer than 2500 residents areas designated as rural can have population densities as high as 999 per square mile as 1 person per square mile.

- **United states development of agriculture (2002 form bill) :-**

  A rural areas as any area other than a city or town that has a population of greater than 50,000 inhabitants and the urbanized areas contiguous and adjacent to such town or a city.

- **National geographic society :-**

  A rural area is an open swath of land that has few homes or other buildings and not very many people.

➢ Urban :-

- **National geographic society :-**

  "Urban area" can refer to towns, cities, and suburbs. An urban area includes the city itself, as well as the surrounding areas. Many urban areas are called metropolitan areas, or "greater," as in Greater New York or Greater London.

- **United states census(2000 census) :-**

  An urban area as "core census block groups or blocks that have a population density of at least 1,000 people per square mile (386 per square kilometer) and surrounding census blocks that have an overall density of at least 500 people per square mile (193 per square kilometer)"

2.4 Scenario: Rural/Urban village of India population Growth

➢ INDIA

Agenda of census of India is to release of provisional population totals-Rural urban distribution. Population of Rural and Urban area. For the first in since independence, the absolute increase in population is more in urban areas that in rural areas.

Table 3: Population Of Rural And Urban Areas As Per Census 2001 And 2011

INDIA	2001	2011	DIFFERENCE
RURAL	74.3	83.3	**9.0**
URBAN	**28.6**	**37.7**	**9.1**

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

Table 4: Literacy Rates Of Rural And Urban Areas As Per Census 2001 And 2011

INDIA	2001	2011	DIFFERENCE
RURAL	58.7	68.9	**+10.2**
URBAN	**79.9**	**85.0**	**+5.1**

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

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

- Total population 60,439,692
- Total population of male: - 31,491,260
- Total population of female: 28,948,432
- Out of total population of Gujarat, 42.60% people lives in urban region and rest in rural

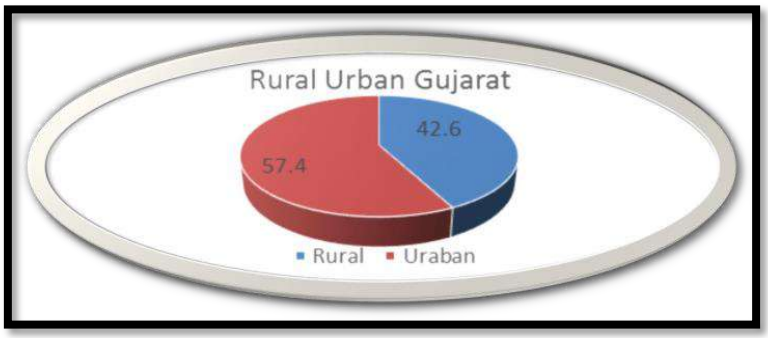


Fig-10: Population In %

Table 5: Demographic Data Of Gujarat As Per Census 2011

Description	Rural	Urban
Population	57.14	**42.60 %**
Total Population	34,694,609	**25,745,083**
Male Population	17,799,159	**13,692,101**
Female Population	6,895,450	**12,052,982**
Population Growth	9.31 %	**36.00 %**
Sex Ratio	949	**880**
Literates	21,420,842	**19,672,516**
Average Literacy	**71.71%**	**86.31%**

2.6 Rural Issues & Concerns

- People are directly or indirectly dependent on agriculture and a large number of landowners have small and medium-sized landholding.
- Economy of the people living in rural areas is low.
- The price the farmers get for their produces less than in relation to the work they put in
- People have to migrate to the urban areas due to unavailability of education.
- The other rural problems are due to the fact that since the rural people do nolive in concentrated masses, the availability of specialized service to them is minimum.
- Very less people are employed in the rural areas.
- Lack of physical facilities in rural areas.
- Lack of recreational facilities.
- Market unavailable.

2.7 Various infrastructure & guidelines for Villages for the provisions of different infrastructure facilities

Table 6: Various Infrastructure & Guidelines For Village.

Facilities	Planning commission norms	Required as per norms
Education		
Aganvadi	Each village	1
Primary School	Each village	1
Secondary School	Per 7,500 Population	2
Higher Secondary school	Per 15,000 Population	0
college	Per 125,000 Population	0
Tech. Training institute	Per 100,000 Population	0
Agriculture Research center	Per 100,000 Population	0

Medical Facility		
Gov./Panchayat Dispensary or Sub PHC or Health Centre	Each village	1
PHC & CHC	Per 20,000 Population	0
Child Welfare and Maternity Home	Per 10,000 Population	1
hospital	Per 100,000 Population	0
Pucca village Approach road	Each village	0
Bus/auto stand Provivion	All Villages connected by	1

2.8 Other Projects / Schemes

- **MGNREGA:** (Mahatma Gandhi National Rural Employment Guarantee)

  MGNREGA Launched on 2nd February 2006 as a momentous initiative towards pro-poor growth. For the first time, rural communities have been given not just a development program but also a regime of rights. The National Rural Employment Guarantee Act, 2005 (NREGA) guarantees 100 days of employment in a financial year to

- **PMGSY :** (Pradhan Mantri Gram Sadak Yojana)

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

- **IAY :** (Indira Awas Yojana)

  Housing is one of the basic requirements for human survival. For a normal citizen owning a house provides significant economic security and status in society. For a shelter less person, a house brings about a profound social change in his existence, endowing him with an identity, thus integrating him with his immediate social background.

- **PPP :** (Public-Private-Partnership)

  Public-Private-Partnership or PPP is a mode of implementing government programmes/schemes in partnership with the private sector. The term private in PPP encompasses all non-government Agencies such as the corporate sector, voluntary organizations, self-help groups, partnership firms, individuals and community based organizations, PPP, moreover, subsumes all the objectives of the service being provided earlier by the government, and is not intended to compromise on them.

Chapter 3: Smart Village Concept as per your Idea and its Visit

3.1 Concepts, Definitions and Practices

In Smart Villages access to sustainable energy services acts as a catalyst for Development enabling the provision of good education and healthcare, access to clean water, sanitation and nutrition, the growth of productive enterprises to boost Incomes, and enhanced security, gender equality and democratic engagement.

"Smart village means all the necessaries facilities is developed in the village and no need to moves in city for any kind of requirement."

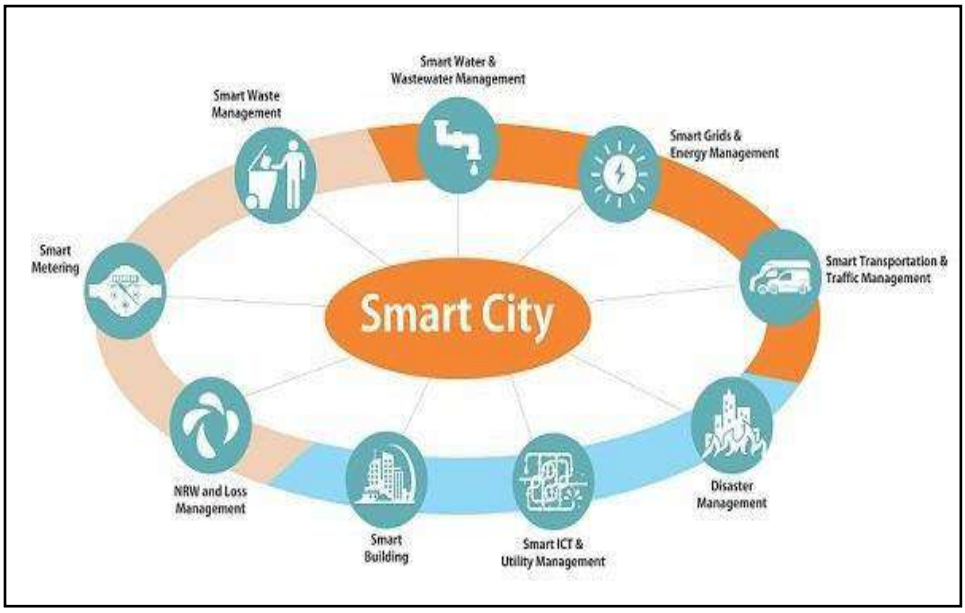


Fig-11: Concept of smart city

3.2 Bench Marks-Vision-Goals, Standards and Performance Measurement Indicators

❖ Smart Cities Bench Marks

➢ **Smart city should following the smart projects and some of the key smart features are:**

- Smart traffic light
- GPS and traffic management software
- Smart waste management systems
- Sensor technology for irrigation
- Smart solar energy systems for water heating
- Smart parking
- Free Wi-Fi access points and devices everywhere in the city
- Building automation and control solutions(security, fire safety, alarms, lighting, gas and smoke detection)

- Smart energy management(Smart grid, smart water meters, smart solar energy solutions, smart electricity meters)
- Public safety module using CCTV and real-time sensors.
- Sensors and camera for smart waste management, etc.

➢ Smart City Vision

Urbanization is a growing trend. As more and more people gather together, smart systems and their integration need to be developed, not just to provide the necessary services to the people, but to do so effectively with the minimal impact on the environment.

➢ Goals

- Provide basic amenities as well as sustainable and smart infrastructure and increasing citizen's accountability towards it.
- Identify the transport facility and need resident and business group of people and advantage technology can be used to address problems of safety and other facility.
- Improved quality of life through improved physical and social infrastructure and clean and green environment

➢ Smart Cities Standards

There are some standards activities for smart city which is kept in mind to develop any smart city and you should at least be aware of below things.

1. Strategic :-

- ISO 37120: Sustainable development of communities — Indicators for city services and quality of life.
- ISO 37101: Sustainable development & resilience of communities – Management systems– General principles & requirement.

2. Process :-

The development by the BIS of a Smart city framework standard (PAS 181) falls into the Process category: ‒It provides practical, ‗how-to' advice, reflecting current good practice as identified by a broad range of public, private and voluntary sector practitioners engaged in facilitating UK smart cities‖

❖ Smart Cities Performance Measurement Indicators

- **Information and Communication Technology:** Internet or Wi-Fi facility, mobile network, etc.
- **Environmental sustainability:** Air quality, CO2 emissions, Energy, Indoor pollution, water, soil and noise.
- **Productivity:** Capital investment, Employment, Inflation, Trade, Savings, Export/import, Household income/consumption, Innovation, Knowledge economy.
- **Quality of life:** Education, Health, Safety, Convenience and comfort
- **Equity and social inclusion:** Inequity of income/consumption, Social and gender inequity of access to services and infrastructure, Openness and public participation, Governance.

3.3Technological Options:

➢ Smart energy

Both residential and commercial buildings in smart cities are more efficient, using

less energy, and the energy used is analyzed and data collected. Smart grids are part of the development of a smart city, and smart streetlights are an easy entry point for many cities, since LED lights save money and pay for themselves within a few years.

- **Smart transportation**

  A smart city supports multi-modal transportation, smart traffic lights and smart parking. By making parking smarter, people spend less time looking for parking spots and circling city blocks. Smart traffic lights have cameras that monitor traffic flow so that it's reflected in the traffic signals.

- **Smart infrastructure**

  Having a smart infrastructure means that a city can move forward with other technologies and use the data collected to make meaningful changes in future city plans.

- **Smart mobility**

  Mobility refers to both the technology and the data which travels across the technology. The ability to seamlessly move in and out of many different municipal and private systems is essential if we are to realize the promise of smart cities. Building the smart city will never be a project that is "finished."

3.4 Road Map and Safe Guards

Table 7: Road Map And Safe Guard

1.	Develop the Smart City strategy and business
2.	Develop the project plans and quality
3.	Implement and test smart city
4.	Prepare business transition for smart city
5.	Actual operation and support of smart city

3.5 Issues & Challenges

➢ Urban Water and Sanitation Challenges

- More than 90% of the urban population has access to drinking water, and more than 60% of the population has access to basic sanitation.
- Indian city receives piped water 24 hours x 7 days a week.
- Less than 50% urban population has access to piped water.
- The Non-Revenue Water (NRW) means due to leakages, unauthorized connections, billing and collection inefficiencies, etc. is huge, estimated between 40-70% of the water distributed.
- Operations and maintenance cost recovery through user charges is hardly 30-40%.

➢ Role of Indigenous Technologies

- Businesses and governments are starting to recognize the role of technology in meeting the goals of urban infrastructure provisioning both today and in the long term.
- Dream of Smart cities can be achieved at accelerated pace with higher reliance on information and communications technology (ICT).
- The smart city transformation would be fuelled by advance technology and the deployment of intelligence & information management systems.
- Digital disruptions including social media, mobility, Machine-to-Machine, Internet of Things, Big Data, and Cloud Computing will become the backbone of next generation smart cities.

➢ Key Issues in development of Human Being

- Ecosystem services
- Access to water.
- Food security.
- Health situation.
- Access to education.
- Sustainable livelihoods.

➢ Education / Job Opportunity Development

- Education is a basic determinant of the quality of life of individuals, people with limited skills and competencies are excluded from good jobs and have fewer prospects for economic prosperity.
- Higher levels of educational attainment are generally linked to better occupational prospects and higher income for individuals, hence having a positive effect on their quality of life.
- People who have completed tertiary education improve their possibilities to secure a job: the unemployment rate decreases with the educational level.

➢ Governmental Issues

- Government and policy makers are facing challenges such as increase in urban population from rural areas and huge gaps in infrastructure.

- Smart city would be a city with facilities like smart people, smart technology, smart energy, smart transportation, smart IT and communication and above all smart governance.
- This paper is an attempt to focus on the key issues and the challenges to develop new cities or improve the infrastructure facilities in our existing cities which are over populated and not properly managed.

3.6 Smart Infrastructure

Smart infrastructure provides the foundation for all of the key themes related to a smart city, including smart people, smart mobility, smart economy, smart living, smart governance and smart environment. This section introduces some key components of smart city infrastructure and concludes by highlighting the need for an integrated approach in dealing with such infrastructure.

New developments in computer hardware, new applications and software are changing the face of the infrastructure sector, and society more generally; driving greater efficiency, increasing productivity, and greatly simplifying construction processes and life-of-asset maintaince.

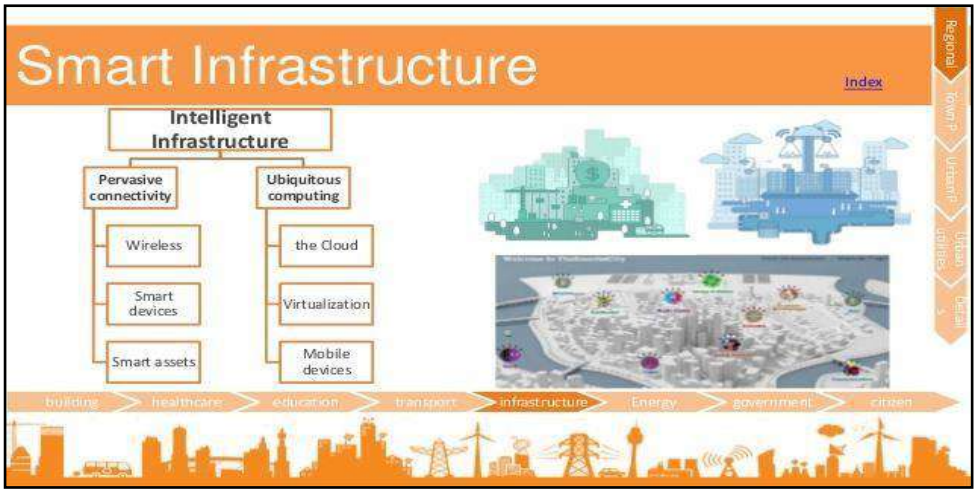


Fig-12: Smart infrastructure

➢ Smart buildings

- A smart building integrates the different physical systems present in an intelligent way to ensure that all the systems act together in an optimized and efficient manner.
- Smart building management systems can improve building energy efficiency, reduce waste and ensure an optimum usage of water, with operational effectiveness and occupant satisfaction.
- It is estimated that implementing smart building solutions could save as much as 30 per cent of water usage and 40 per cent of energy usage and reduce overall building maintenance costs by 10 to 30 per cent.

- **Smart mobility**
  - Smart mobility is best described as approaches that reduce congestion and foster faster, greener and cheaper transportation options.
  - Most smart mobility systems use data collected from a variety of sources about mobility patterns in order to help optimize traffic conditions in a holistic manner.
  - Smart mobility systems include mass transit systems as well as individual mobility systems that feature bicycle sharing, ride sharing (or carpooling), and vehicle sharing and, more recently, on-demand transportation

- **Smart energy**
  - Smart energy management systems use sensors, advanced meters, renewable energy sources, digital controls and analytic tools to automate, monitor and optimize energy distribution and usage.
  - Such systems optimize grid operation and usage by balancing the needs of the different stakeholders involved (consumers, producers and providers).
  - There are a number of innovations in smart energy infrastructure, such as distributed renewable generation, micro grids, smart grid technologies, energy storage, automated demand response, virtual power plants and demand-side innovations such as electric vehicles and smart appliances.

- **Smart waste management**
  - Waste generation is increasing at a rate faster than that of urbanization.
  - Cities are increasingly finding it difficult to source, separate and use different kinds of waste that can potentially be returned to a consumer life cycle.
  - Waste management typically includes the monitoring, collection, transport, processing, recycling and disposal of waste.
  - Smart waste management systems reduce waste and categorize the type of waste at the source, and develop methods for the proper handling of waste.

3.6 Cyber Security or any other concept

- **Cyber Security**
  - Hybrid cloud workload protection platforms (CWPP) provide information security leaders with an integrated way to protect these workloads using a single management console and a single way to express security policy, regardless of where the workload runs.
- **Smart Data Centre**
  - Smart Data Center Facilities Solution provides a modern foundation for distributed cloud applications.

3.8 District Cooling and Heating / Green Building

- **Green Buildings**
  - Using sustainable building materials like recycled glass and steel, as well as renewable materials like bamboo and rubber.

- Installing energy-efficient windows and doors
- Using lower-VOC (volatile organic compounds) like paints and others.
- Constructing green roof systems that offer many benefits, including onsite gardens, rainwater management and protection from the effects of harmful UV light.
- Adding water harvesting and purification systems that don‘t just manage, but also make the most use of rainfall.

➢ District Cooling and Heating

- District heating and Cooling Systems are a heat source plant that installs chillers and boilers for a group of neighboring buildings centrally for heating and cooling in district units.
- The cold water and hot water produced by the heat source plant is supplied to each building through regional pipes built inside the district to use for cooling and heating.

3.9 Strategic Options for Fast Development

- For developing smarter city, city and national leaders need to plan a comprehensive urbanization strategy, taking advantage of the latest developments in technology, creating employment opportunities, and supporting economic activities that will improve quality of life for citizens.
- Redevelopment will effect a replacement of the existing built-up environment and enable co-creation of a new layout with enhanced infrastructure using mixed land use and increased density.
- Greenfield development will introduce most of the Smart Solutions in a previously vacant area (more than 250 acres) using innovative planning, plan financing and plan implementation tools (e.g. land pooling/ land reconstitution) with provision for affordable housing, especially for the poor.

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

➢ Technologies

- The government has taken various steps to create awareness among the masses for keeping the area surrounding them neat and clean.
- .Swachh Bharat Abhiyaan was launched by Prime Minister of India on 2nd October 2015, which caught attention of everybody not only in India, but also in the world.
- Government is also paying special attention for cleaning of rivers, railway stations, tourist destinations and other public places.

➢ Role of Indigenous Technologies

- Bhabha Atomic Research Centre (BARC) has developed several water purification devices and desalination techniques, as a part of its research and

development efforts towards the betterment of society. These technologies or products are backed by robust design concepts and pilot plant studies, which can cover the needs of households, communities, industries and metropolis.

- A novel idea of coating polysulfide on a porous candle resulted in the development of a "Point of Use" water purifier.
- Unlike other devices available in the market which only deactivates the micro-organisms, this device physically eliminates them. This device does not require any electricity or any addition of chemicals.
- Removal of suspended particulates, colour and odour are additional benefits available in these units. A typical unit provides nearly sufficient water per day at 3 meters pressure head and can withstand up to 40 psig pressure (2.76 bar).

3.11 Initiatives in village development by local self-government

- Transforming existing Indian cities into Smart Cities or building new ones is a colossal task. Cities need to be able to assess their current situation and determine the critical capabilities needed to enable a Smart City.
- In the past "government as provider" approach, the priorities were to secure budget allocations and develop projects.
- To help cities address these issues, the All India Institute of Local Self-Government (AIILSG) is assisting Raipur, Bilaspur, Chandigarh, Karnal and Faridabad in preparing for the proposal for the nationwide City challenge‘ being contested among 100 potential Smart Cities
- The Housing Policy and the NCU statement implicitly give higher priority to two other requirements
  1. The reform of policies and regulations that now inhibit development initiatives by the people
  2. More efficient resource management and the building of institutional capacity.

3.12 Smart Initiatives by District Municipal Corporation

- Urban India faces an enormous challenge: managing its gigantic load of solid waste.
- Recently Rajkot Municipal Corporation is take a step for developing toward smart city.
- Its vision to develop Rajkot as smart, livable and iconic city of Gujarat with inclusive growth.
- Municipal incorporation occurs when such municipalities become self-governing entities under the laws of the state or region in which they are located. Frequently, this event is noticeable by the award or declaration of a municipal contract.

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

- **Sansad Adarsh Gram Yojana**

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

➢ **National Rural Health Mission**

- This mission serves health services to the poorest households in the remotest rural regions.
- The main aim of this mission provides accessible, affordable and good quality of health services to the rural household peoples.

➢ **Provision of Urban Amenities in Rural Areas**

- The mission of this scheme was the holistic and accelerated development of compact areas around a potential growth Centre in a Gram Panchayat (or a group of Gram Panchayat) through Public Private Partnership (PPP).
- Framework for providing livelihood opportunities and urban amenities to improve the quality of life in rural areas primary objective of this scheme is to provide good quality infrastructure and associate services in rural areas.

➢ **Central Rural Sanitation Programme**

- This scheme aims at improving the quality of life of rural people and to provide privacy and dignity to women in rural areas.
- It led to the formulation of _Total Sanitation Campaign' approach in 1999.

3.14 How to implement other Countries smart village projects in Indian Village

- The so-called smart development of infrastructure is hardly strictly divided into two polarized sets of frameworks, rural and urban.
- Indian smart development, it is necessary to consider both spaces simultaneously, their mutual interconnections and take into account that significant changes in one will affect the other and another way around.
- Seen in the worldwide context, there are several initiatives promoting or using the concept of the Smart Villages.
- Smart Village initiative: new thinking for off-grid communities worldwide and IEEE Smart Village: Empowering off-grid communities are both worldwide active and striving to meet the SDG 2030, especially goal 7, Affordable and Clean Energy.
- The first one promotes access to sustainable energy as a main catalyst for the development of good education and healthcare systems, access to clean water, sanitation, economic growth, enhanced security, gender equality, etc.

Chapter 4- MOVIYA

4.1 Introduction

4.1.1 Introduction About Moviya

Moviya is a village located in Gondal taluka of Rajkot district. It is one of the 54 villages in Rajkot. Sarpanch of the village is Vaghajibhai Virajibhai Padariya. It is located 7 Km away from Gondal. Total area of village is 6654.44 hectares. Total population of village is 11008 among them 5708 are male and 5300 are female as per census 2011. Total households in Moviya village is 2260s as per census. Main occupation of the Moviya village Farming.

4.1.2 Justification/ need of the study

In India there are 640 districts, (200 backward) 6,50,000 villages (1,25,000 backward.)The Government takes responsibility for uplifting rural and poorer regions. There is lot of public spending to improve the infrastructure, water and sanitation in these areas. But not much improvement achieved in most of the villages. Vishwakarma Yojana helps in better and fast development of rural areas. By providing urban facilities in rural areas, decrease this rate of migration & also increase standard of living of people of rural areas.

The basic need of this study is to provide facilities in the villages for the Rurban Development. Implement the different Physical and Social infrastructural facilities in the villages and to lessen the urban migration of people of the village. So, for this purpose information of village is to be collected like Drainage Facility, Education Facilities, Health Facilities, Transportation Facilities, Banking Facilities, and Public Toilets etc.

4.1.3 Study Area

From techno economic survey of Moviya village we observe some physical and social facilities are batter like underground drainage, cement concrete road, primary school, secondary school, and anganwadi. In the village lack of basic facilities like public toilet, community hall, hospital, general market, public library.

4.1.4 Objectives of the study

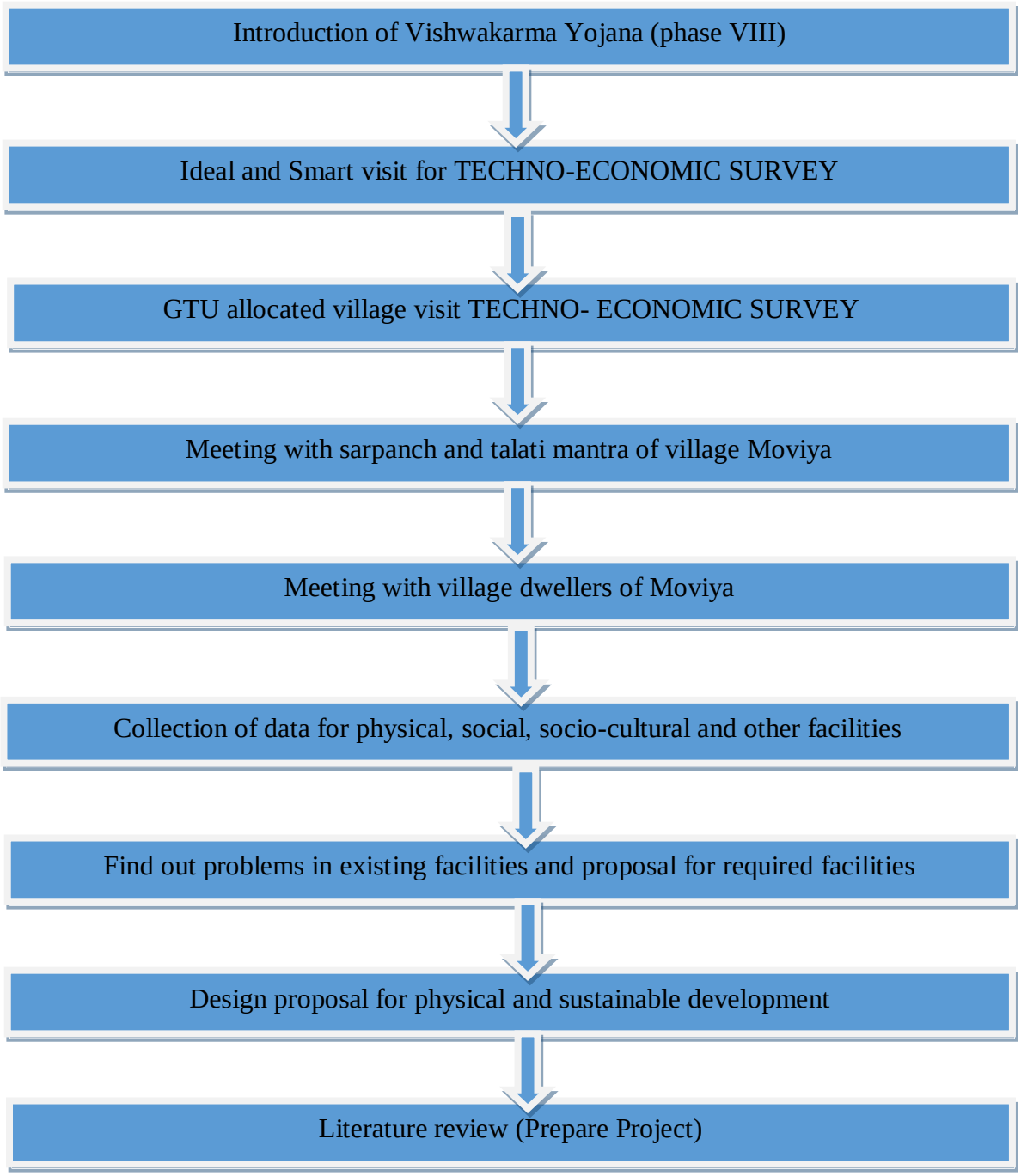
- To study the existing facilities and parameters of village.
- To identify the issues and problems of the –village.
- To analyze existing social and physical utilities as well as infrastructure.
- To Design and planning for village basic facilities and needs.
- To collect socio-economic data through techno-economic survey.
- To propose the inclusive planning suited for ideal village.

4.1.5 Scope of the Study

- To reduce urban city pressure and lower the migration rate

- Due to providing urban facilities development of village will be possible.
- To improve health and livelihood of people.
- To improve education facility.

4.1.6 Methodology Frame Work for development of your village



4.1.7 List of Objects Available related to Civil methodology

- Primary school
- Cement concrete road
- Anganwadi
- Underground drainage
- Clock tower
- Water tank facility
- Pond
- Village map
- Protected well

4.2 MOVIYA Study Area Profile

4.2.1 Study Area Location

- Moviya village is situated on 21 54’0”N latitude and 70 50’0”longitudes.
- Nearest town from Moviya village is Gondal and it is 7 km away from Moviya.
- Moviya village is situated at Gondal Taluka in Rajkot District of Gujarat State, India.
- The current sarpanch of Vajdi (virda) is Vaghajibhai Virijibhai Padariya.
- The village follows the Panchayat raj system.
- The surrounding nearby villages from Moviya are Choradi, Gomata, Vorakotada, etc. Indian village code of Vajdi (virda) is 684200.

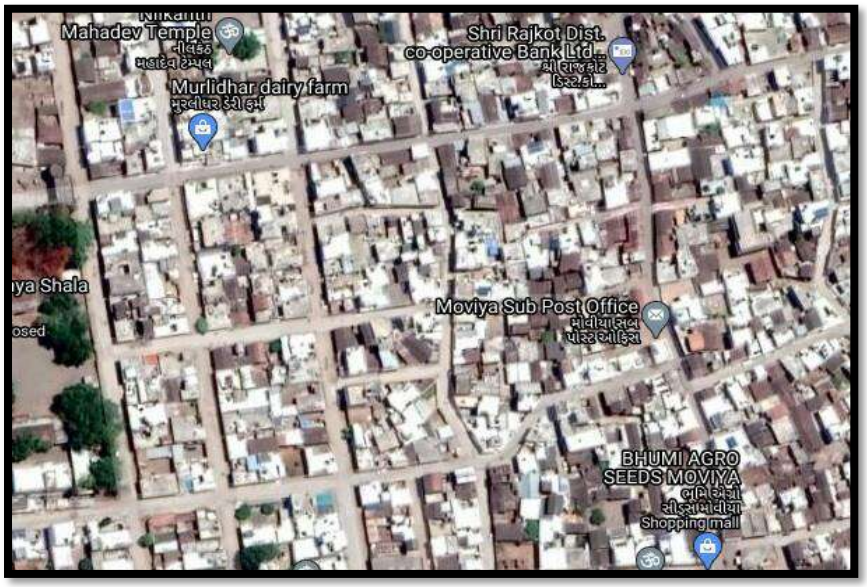


Fig-13: Satellite Map

4.2.2 Physical & Demographical Growth

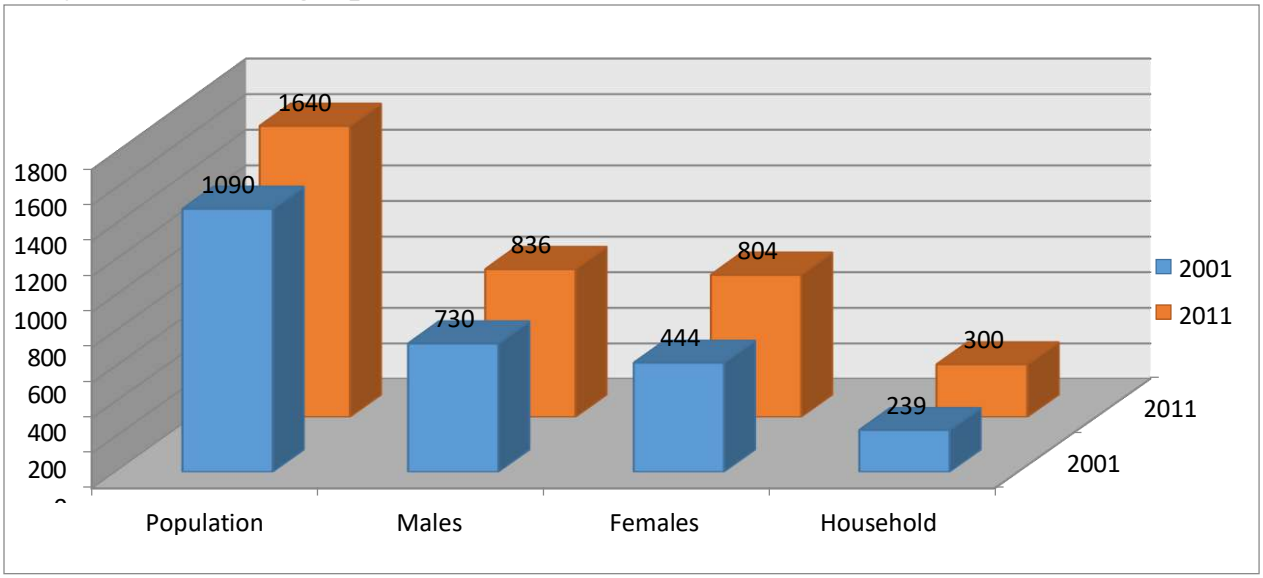


Fig-14: Physical & Demographical Growth Graph

4.2.3 Economic profile / Banks

- The major population of Moviya village is engaged with Farming activities and Pasupalan, other some people is doing business and services.
- Some people are engaged with Khet Majuri.
- Some people also have in Agriculture.

4.2.4 Actual Problem faced by Villagers and smart solution

- In Moviya village many problem are there which in mention below

Table 8: Problem Faced By Villagers And Smart Solution

Sr.no.	PROBLEM	SMART SOLUTION
1.	Many times in summer season in this village does have a sufficient water so water problem are rise.	Water harvesting is best solution for this type of problem.
2.	In village mant time electricity gone because of electrical problems.	Solar cell system use to increase electricity.
3.	Many house in village which can't effort gas cylinder.	Biogas plant is best solution .
4.	Some times drinking water is not available for animals.	Provide drinking water tank for animals.

4.2.5 Social scenario

Moviya village total population is 11008 among them 5708 are males and 5300 are females as per census 2011. The population of children with age 0-6 is 961. There are about 2260 houses in Moviya village and average family size is 5 members. Literacy rate of village was 73.7% as per census 2011. The geographical are of village is 6654.44 hector.

4.2.6 Base Location map, Land Map, Gram Tal Map

Fig-15: Land Map

4.2.7 Preservation of traditions, Festivals, Cuisine

- **Preservation of traditions**
  - In this village all people are engaged to preservation of tradition because all people are connect to nature by profession like their occupation is farming so people are daily connect with nature.
- **Festivals**
  - In this village all people are enjoying all festivals like Diwali, janmastmi, ide, Dhuleti etc……
- **Cuisine**
  - Generally people of village are cuisine their food in old type of stove with to burn a wooden material etc….
  - We gave the design of biogas plant so people have use morden stove

4.2.8 To know the reasons of migration / trends of migration / problems and potentials of migrants

- Now a days people are migrate due to low facility of people.

- Unable to provide Morden lifestyle.
- Now a days Unemployment is big problem for migrate.
- The main problem of migration is poor education facility.

4.3 Data Collection of Moviya

4.3.1 Methods for data collection

We are conducted techno economic survey for data collection of Moviya village. We are met with sarpanch, Talati mantra and dweller of village and understand village actual situation, condition and existing structure of village. Available facilities are listed as below:

- ❖ Demographical details.
- ❖ Geographical details.
- ❖ Occupational details.
- ❖ Physical Infrastructure facilities like sources of water, road network, transportation facility, sanitation facility, housing condition, etc.
- ❖ Social Infrastructure facilities like Primary health center, primary and secondary school, etc.
- ❖ Socio culture facilities like public garden, village pond, etc.
- ❖ Other facilities like post office, telecommunication network, Panchayat building, youth club, etc.

4.3.2 Primary survey details

- ❖ Moviya village is located in Rajkot district of Gujarat state. It is a small village with population of 11008 people.
- ❖ Sarpanch of the village Moviya is Vaghajibhai virajibhai padariya. Total area of the village is 6654.44 hectares.
- ❖ The nearest town to the Moviya is Gondal which is 8 km away from village.
- ❖ The village has bus station, Gram Panchayat, Primary and Secondary School, Water tank, cement concrete road, Anganwadi, Post office, etc.
- ❖ The nearest village of Moviya is Choradi, Gomata, Vorakotada, etc…..

4.3.3 Average size of the House

- The population of Moviya village is 11008 among them 5708 males and 5300 females. Total number of households is 2260.

4.3.4 No of Human being in One House

- Average size of family in houses is 5 person.

4.3.5 Material available locally in the village and Material Out Sourced by the Villagers.

- In Moviya village only metal is locally available. Another all materials are not available in the village.
- No sourced materials.

4.3.6 Geographical Detail

- Moviya is the 45th smallest village by area in the Rajkot district. The total Geographical area of village is 6654.44 hector.

4.3.7 Demographical Detail

- Moviya is 20th most populous village which is located in Rajkot district.
- The village population is 11008, among them 5708 (51.9%) are male and 5300 (48.1%) are female.. Child (aged under 6 years) population of Moviya village is 961 among them 558 are boys and 403 are girls. There are 2260 families in the village and an average 5 persons live in every family.
- Village literacy rate is 73.7% and the Female literacy rate is 33.3%.

Table 9: Cast Wise Population Details

	Total	OBC	SC/ST	General
Total	11008	95%	4%	**1%**
Male	5708	93%	5%	**2%**
Female	**5300**	**96%**	**3%**	**1%**

4.3.8 Occupational Detail

- Main occupation of Moviya people is farming and some person is engaged with pasupan and labor work.
- In Moviya village out of total population, 820 were engaged in work activities. 87.8% of workers describe their work as Main work, while 12.2% were involved in Marginal activity providing livelihood for less than 6 months. Of 820 workers engaged in Main work, 439 were cultivators, while 52 were Agricultural labour.

4.3.9 Agricultural Details / Organic Farming / Fishery

- In Moviya village 5959 hector agricultural land is available for farming. The number of employed persons of Moviya village is 4115 whereas 6893 are non-working. And out of 4115 employed person 1946 are fully dependent on agriculture.

4.3.10 Physical Infrastructure Facilities – Manufacturing HUB/ Ware House

- Cement concrete Road Network
- Transportation facility
- Electric facility

- Underground drainage
- Overhead tank
- Irrigation facility
- There is no ware house and manufacturing hub in Moviya.

4.3.11 Tourism development available in the village for attracting the tourist

- In the moviya the religious place is available (1) Bavaji Bapuni Deri (2)santoshi mata nu mandir.
- There is one public garden.
- There is picnic space is also available.

4.4 Infrastructure Details

4.4.1 Drinking Water

Fig-16: Water Tank

- In Moviya village drinking is distributed throuth pipe line which is arrive from bhadar dam. Which is also use for public tap and irrigation purpose.
- Other source of water is bore well and lack or pond. There are 2 Overhead tank is available.

4.4.2 Drainage Network/ Sanitation Facilities

Fig-17: Elevated Water tank

- In village well maintain underground drainage facility is available.
- All drainage are fully covered with R.C.C. cap
- There is one public toilet is available.

4.3.3 Transportation & Road Network

Fig-18: R.R.C Road Network

- All the internal street and main road of village is constructed by cement concrete.
- One bus stand is available for easy transportation and private vehicles also available like private vehicles, auto, etc..

4.4.4 Housing condition

- House in Moviya village has good condition, near about 90% pucca house and 10% kutchha houses in village.

4.4.5 Social Infrastructure Facilities

➢ **Health Facilities**

- There is Government hospital and some small private Clinic is available.

Fig-19: Health Facility

➢ **Education Facilities**

- In village has well maintain Primary school, Secondary school, Higher secondary school. Village has also Anganwadi.

Fig-20: Aanganvadi

Fig-21: Primary School

- **Community Hall**
  - There is one community hall in village

- **Public Library**
  - There is no public library in village.

4.4.6 Existing Condition of Public Buildings

- Condition of primary school is very good.
- Condition of Anganwadi is good.
- Condition of bus stand is not good. Renovation is necessary.
- Condition of Panchayat building good.

4.4.7 Technology Mobile / WIFI/Internet Usage Details.

- All most 80% peoples have smart phone and they use internet, but there is no WiFi facility in village.

4.4.8 Sports Activity as Gram Panchayat

- There is no sport activity as Gram Panchayat

4.4.9 Socio-Cultural Facilities

- **Public Garden /Park/Playground**
  - There is one public garden in village, but one Anganwadi(Playground) is available
- **Village Pond/Lake**
  - Village has one small pond and one Nyari River.
- **Other Recreation Facilities**
  - In Moviya village 5 temples are there.

4.4.10 Other facilities

- **Footpath development**
  - Condition of footpath is good, renovation is necessary.

- **Smart toilets**
  - There is no smart toilets are in Moviya.
- **Coin operated entry**
  - In Moviya village gate is available, but no coin entry is there.
- **Public bulding**
  - Public bulding is available for social activities**.**

4.4.11 Any other details

- There is no cyber cafe .

4.5 Electrical concept

4.5.1 Renewable energy source planning particularly for villages

- There is no renewable source is available.

4.5.2 Irrigation facilities

- Main source of irrigation facilities is well, tube well, pond, etc…

4.5.3 Electricity facilities

- In Moviya village electricity facilities is available.
- Power supply for domestic use, agricultural use, commercial use, government buldings, schools, hospitals and also LED facilities is available.

4.6 Existing Institution like - Village Administration – Detail Profile

- There are no any type of institute

4.6.1 Bachat Mandali

- In this village no any type of bachat mandali.

4.6.2 Dudh Mandali

- In moviya village one dudh mandli are there.

4.6.3 Mahila forum

- In this village one mahila mandal are there.

4.6.4 Plantation for the Air Pollution

- In moviya village has no type of plantation foe the air pollution.

4.6.5 Rain Water Harvesting

- In this village people are not collect rain water for future purpose.

4.6.6 Agricultural Development

- No in this village don’t have a any agriculture development.

4.6.7 Any Other

- It has a gram Panchayat for many working purpose

Chapter 5: Technical Options with case Studies

5.1 Concept

5.1.1 Advance Sustainable construction techniques

Sustainable construction is the practice of creating a healthy environment that's based on ecological principles. The goal to reduce the industry's impact on the environment by utilizing sustainable development practices, employing energy efficiency, and taking advantage of green technology.

Fig-22: ASC Techniques

❖ **Materials**

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

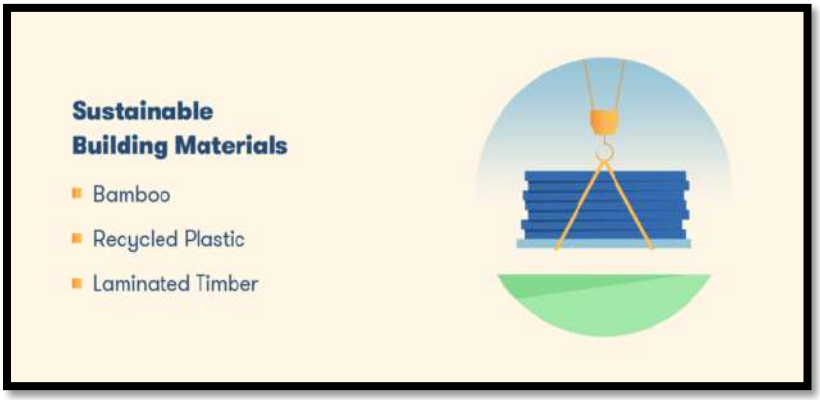


Fig-23: Sustainable Building Materials

❖ Methods

- Cutting materials precisely in order to reduce waste.
- Controlling waste management, such as separating and recycling waste.
- Constructing green buildings.
- Managing construction sites to improve the environment.
- Conserving energy.
- Selecting sustainable and recycle materials.

Fig-24: Sustainable construction methods

❖ Importance of sustainable construction

- Whether it's the price tag for the materials, the training that goes behind it, or resistance to adapting to new methods, there is some pushback on green construction.
- Despite that pushback, however, more owners and development, both public and private, are turning to a greener and sustainable form of construction.
- Sustainability is important for a variety of reasons, including a better quality of life and environmental quality.
- In order to have thriving and healthy communities, we need to have clean air, natural resources, and a non-toxic environment, and the construction industry can lead the way for greener projects.

Fig-25: Importance of sustainable construction

5.1.2 Soil Liquefaction

- Soil liquefaction, also called earthquake liquefaction, ground failure or loss of strength that causes otherwise solid soil to behave temporarily as viscous liquid.
- The phenomenon occurs in water-saturated unconsolidated soils affected by seismic s-waves, which cause ground vibration during earthquake.
- Although earthquake shock is the best known cause of liquefaction, certain construction practices, including blasting and soil compaction and vibration.

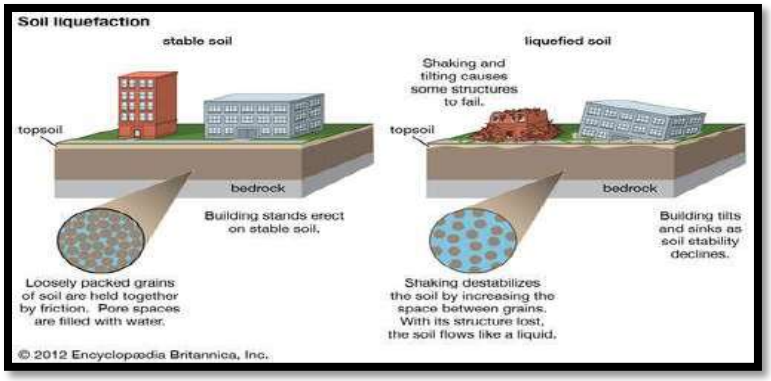


Fig-26: Soil liquefaction

❖ Importance of soil liquefaction

- Earthquake or seismic events cause number of disturbance 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.

❖ Effects of soil liquefaction

- The effects of soil liquefaction on the built environment can be extremely damaging.
- Building whose foundations stand directly on the sand, which liquefies, will experience a sudden loss of support.
- The irregular settlement of ground may also break underground utility lines.

5.1.3 Sustainable Sanitation

- Sustainable sanitation is a sanitation system designed to meet certain criteria and to work well over the long-term.
- Sustainable sanitation system 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 includes five features in its definition of "sustainable sanitation": system need to be economically and socially acceptable, technically and institutionally appropriate and protect the environment and natural resources.
- The purpose of sustainable sanitation is the same as sanitation in general: to protect human health.

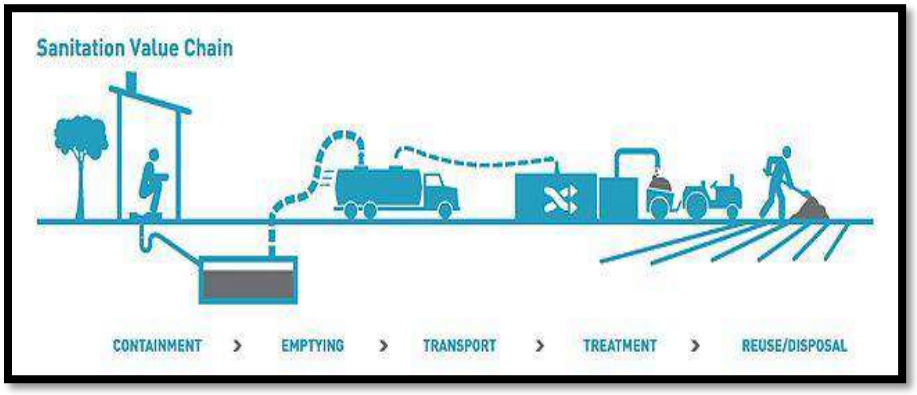


Fig-27: Sustainable sanitation

❖ Planning of sustainable sanitation

Some basic principles to be observed when planning and implementing a sustainable sanitation system.

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

5.1.4 Transport Infrastructure

- Transport or transportation is the movement of people and goods from one place to another. The term is derived from the Latin trans("across") and porter (" to carry")
- Transport infrastructure is composed of the fixed installations of canals, waterways, railway, airway, roads, and terminals, as well as pipelines such as seaports, refueling depots, trucking terminals, warehouses, bus station, railway station, and airports.

❖ Menes of transport:

The means of transport are classified on the basis of the way, the vehicle, the motive power used and terminals.

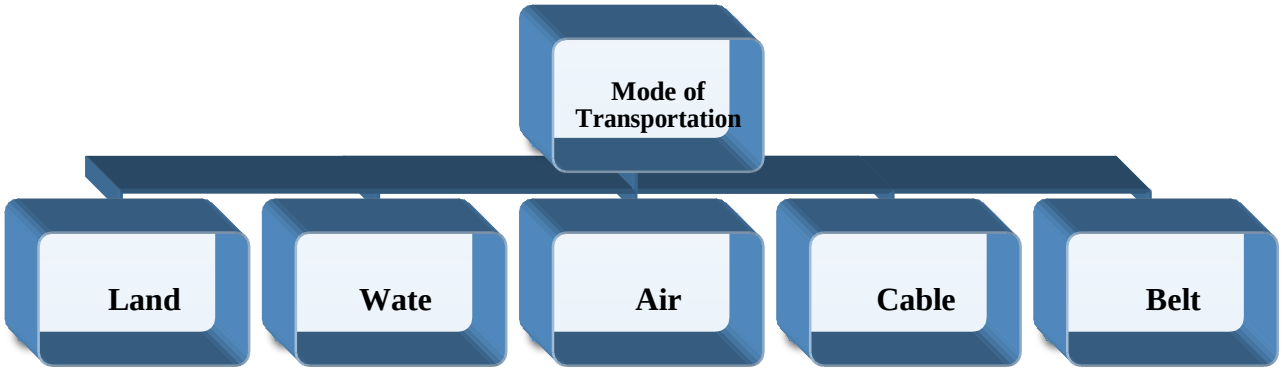


Fig.-28: Means of transport

1. Land Transport:

Land Transport may be classified as

❖ Pathways:

In remote villages, forest and hilly areas pathways are still an important amongst the different modes of transport. It further be subdivided into Head loads (is also known as human transport. It is used in the hilly areas where even animals cannot reach) and Pack animals (is also known as animal transport. It is used in the backward areas. The animals like horse, pony, donkey, ass, buffaloes, camel, elephant, yak, sheep etc. are used for this purpose.

❖ Roadways:

Road Transport is one of the most important modes of transport. The history of Road Transport started from ancient civilizations. Gradually it becomes more and more popular means of transport. Road Transport further subdivided into Vehicular Transport (Cars, Trucks, Buses, Lorries, Auto rickshaw, Bullock Carts, Tonga's, and Hand Carts etc.) and Non-vehicular Transport (Hamals, Animals like Camel, Dogs, Elephant, Horse, Mules etc.)

Fig-29: Road Transportation

❖ Tramways:

Tramway is one of the cheaper, longer, quicker and safer modes of Land Transport which is suitable in large cities. However due to certain limitations like slowly ness, huge investment, inflexibility etc. gradually it replaced by other means of Land Transport.

❖ Railways:

Railway has been the pioneer of modern mechanical transport. It has brought the greatest revolution in transport. It accelerated commercial and industrial development of various countries. Until the introduction of Motor Transport, Railway had the monopoly as the Land Transport. In India, it is the principal means of transport. It carries over 80 per cent of goods traffic and over 70 per cent of passenger traffic. It provides for more than 60000 kilometers of railways all over the country

Fig-30: Rail Transportation

2. Water Transport:

Water transport is the cheapest and the oldest form of transport for heavy goods and bulk cargoes. Waterways are the natural gifts, hence it does not required large amount of capital expenditure for the construction of road and railway tracks, except canal transport, as in the case of land transport. In addition to that the cost of running is also very less. Water transport may be classified as under:

Fig-31: Water Transportation

❖ Inland Water ways:

Inland waterways may be subdivided into

➢ River Transport:

Rivers are the water highways given by nature. River Transport is suitable for small boats and steamers. It was highly developed in the pre-railway days. But with the development of railways, river transport was neglected and decayed gradually.

- **Canal Transport:**

  Canals are the artificial waterways constructed for the purpose of navigation and irrigation.

❖ **Ocean Transport:**

Ocean Transport or shipping may be subdivided into

- **Coastal Shipping:**

  Coastal shipping is a cheaper, speedy, flexible and economical form of transport for the movement of bulky and heavy cargoes. Usually coastal shipping trade is reserved for the national shipping. In India also from 1951 and onwards the coastal shipping trade is extremely reserved for the national ships.

- **Overseas Shipping:**

  On the basis of their working, overseas shipping may be divided into The Liner (those ships which follow defined routes with fixed places and fixed time table), The Tramps (those ships which have no set routes or fixed time table) and The Oil Tanker (special sea carriers of crude oil in very large quantity). The Liners may again be subdivided into Passenger Liners and the Cargo Liners.

3. Air Transport

Air transport is the gift of twentieth century to the word. It is the latest means of transport. The first flight in the air was made in 1903.Only for twelve seconds. Successfully it was used as a means of transport after the First World War (1914-1918). The first air service was started in 1919 between London and Paris. Since then it has made notable progress and provide tough competition to Railways. Air Transport can again be subdivided into passenger and cargo.

Fig-32: Air Transportation

5.1.5 Vertical Farming

- Vertical farming is the practice of growing crops in vertically stacked layers.
- It often incorporates controlled-environment agriculture, which aims to optimize plant growth, and soilless farming techniques such as hydroponics, aquaponics, and aeroponics.
- Some include buildings, containers, tunnels, and abandoned mine shafts.

Fig-33: Vertical Farming

- The main advantage of utilizing vertical farming technologies is the increased crop yield that comes with a smaller unit area of land requirement.
- The increased ability to cultivate a larger variety of crops at once because crops do not share the same plots of land while growing is another sought-after advantage.
- Vertical farming technologies face economic challenges with large start-up costs compared to traditional farms.

❖ Techniques of Vertical Farming

1. Hydroponics

- Hydroponics refers to the technique of growing plants without soil.
- In hydroponic system, the roots of plants are submerged in liquid solutions containing macronutrients, such as nitrogen, phosphorus, sulphur, potassium, calcium, and magnesium, as well as trace elements, including iron, chlorine, manganese, boron, zinc, copper, and molybdenum.
- Additionally, inert mediums such as gravel, sand, and sawdust are used as soil substitutes to provide to provide supports for the roots.
- The advantage of hydroponic include the ability to increase yield per area and reduce water usage.

Fig-34: Hydroponics

2. Aquaponics

- The term aquaponics is coined by combining two words: aquaculture, which refers to fish farming, and hydroponics-the technique of growing plants without soil.
- Aquaponics takes hydroponics one step further by integrating the production of terrestrial plants with the production of aquatic organisms in a closed-loop system that minics nature itself.
- Nutrient-rich wastewater from the fish tanks is filtered by a solid removal unit and then led to a bio-filter, where toxic ammonia is converted to nutritious nitrate.

Fig-35: Aquaponic

3. Aeroponic

- The invention of aeroponics was motivated by the initiative of NSA to find an efficient way to grow plants inspace in the 1990s.
- Unlike conventional hydroponics and aquaponics, aeroponics does not require any liquid or solid medium to grow plants in. instead, a liquid solution with nutrients is misted in air chambers where the plants are suspended.

Fig-36: Aeroponic

- By far, aeroponics is the most sustainable soil-less growing techniques, as it use up to 90% less water than the most efficient conventional hydroponic system and requires no replacement of growing medium.

❖ **Types of Vertical farming**

- Building-based vertical farming
- Shipping-container vertical farming
- Deep farming

5.1.6 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure

➢ **Corrosion mechanism**

- Reinforced concrete uses steel to provide the tensile properties that are needed in structural concrete. It prevents the failure of concrete structures which are subjected to tensile and flexural stresses due to traffic, winds, dead loads, and thermal cycling.
- Standard terminology defines corrosion as "the chemical or electrochemical reaction between a material, usually a metal, and its environment that produces a deterioration of the material and its properties."
- When reinforcement corrodes, the formation of rust leads to a loss of bond between the steel and the concrete and subsequently delamination and swelling.
- If left unchecked, the integrity of the structure can be affected. Reduction in the cross sectional area of steel reduces its strength capacity.

➢ **Prevention**

There are a variety of methods for preventing corrosion or at least to slow down the corrosion process. The most common are listed below.

- **Galvanization**

Galvanized reinforcing steel is effectively and economically used in concrete where unprotected reinforcement will not have adequate durability. The susceptibility of concrete structures to the intrusion of chlorides is the primary incentive for using galvanized steel reinforcement. Galvanized reinforcing steel is especially useful when the reinforcement will be exposed to the weather before construction begins.

- **Catholic protection (CP)**

In this process the anodes, power supply and control systems are permanent, and a range of anodes can be used. The aggressive anodic reaction is isolated to a corrosion resistant anode while the harmless catholic reaction occurs at the surface of the steel reinforcement. This process creates additional hydroxyl ions, rebuilds the passive alkaline layer and repels chloride ions.

- **Re-alkalization**

This system is the equivalent of desalination for carbonated structures. It relies on the principle that the hydroxyl ions produced at the cathode re-alkalize the concrete from the reinforcement outwards. This is linked with a wet anode at the surface that contains calcium carbonate, which moves under electro-osmotic pressure and re-alkalizes the concrete from the surface inwards

❖ Repair Measures

- **Patch Repair**

By far the most common repair technique is the application of concrete patches to damaged or deteriorated concrete. Furthermore, when other remediation techniques are being applied in order to limit the extent of on-going corrosion mechanisms or to prevent their re-occurrence. Patch repairs are also used to reinstate the spalled or delaminated areas of concrete.

- **Corrosion Inhibitors**

Corrosion Inhibitors are one of a variety of techniques that can be employed in an effort to suppress and control the rate of steel corrosion in concrete structures particularly in the case of hidden or latent damage, although their long-term effectiveness in reinforced concrete is still open to debate and the subject of detailed research. Due to the large number of commercially available concrete corrosion inhibitors, which vary widely in their respective formulations and inhibitive properties, categorization is difficult. However, it is possible to divide concrete corrosion inhibitors into two generic categories.

- **Surface Treatments**

Three generic types of Surface Treatment are available for the decoration and protection of concrete surfaces, designed to control chemical ingress as well

as moisture movement.

They are described as follows:

- **Pore-liners**

  These are hydrophobic impregnation treatments such as silicone impregnated, which line the pores of the concrete.

- **Pore blockers**

  These are materials that partially or completely block the in concrete. They may accomplish this by either reacting with the concrete to produce pore-blocking products or by physically blocking the pores.

- **Film-formers**

  These are coating systems based on either organic resins such as styrene butadiene and acrylic copolymers or inorganic resins such as potassium silicate, which form a protective/decorative film on the surface of the concrete.

5.1.7 Sewage Treatment Plant

- The term “sewage treatment plant” is nowadays often replaced with the term wastewater treatment plant or wastewater treatment station.
- Sewage can be treated close to where the sewage is created, which may be called a "decentralized" system or even an "on-site" system. Alternatively, sewage can be collected and transported by a network of pipes and pump stations to a municipal treatment plant. This is called a "centralized" system.

❖ **Process**

Sewage treatment generally involves three stages, called primary, secondary and tertiary treatment.

- Primary treatment consists of temporarily holding the sewage in a quiescent basin where heavy solids can settle to the bottom while oil, grease and lighter solids float to the surface. The settled and floating materials are removed and the remaining liquid may be discharged or subjected to secondary treatment. Some sewage treatment plants that are connected to a combined sewer system have a bypass arrangement after the primary treatment unit. This means that during very heavy rainfall events, the secondary and tertiary treatment systems can be bypassed to protect them from hydraulic overloading, and the mixture of sewage and stormwater only receives primary treatment.
- Secondary treatment removes dissolved and suspended biological matter. Secondary treatment is typically performed by indigenous, water-borne micro-organisms in a managed habitat. Secondary treatment may require a separation process to remove the micro-organisms from the treated water prior to discharge or tertiary treatment.

- Tertiary treatment is sometimes defined as anything more than primary and secondary treatment in order to allow ejection into a highly sensitive or fragile ecosystem (estuaries, low-flow rivers, coral reefs...). Treated water is sometimes disinfected chemically or physically (for example, by lagoons and microfiltration) prior to discharge into a stream, river, bay, lagoon or wetland, or it can be used for the irrigation of a golf course, greenway or park. If it is sufficiently clean, it can also be used for groundwater recharge or agricultural purposes.

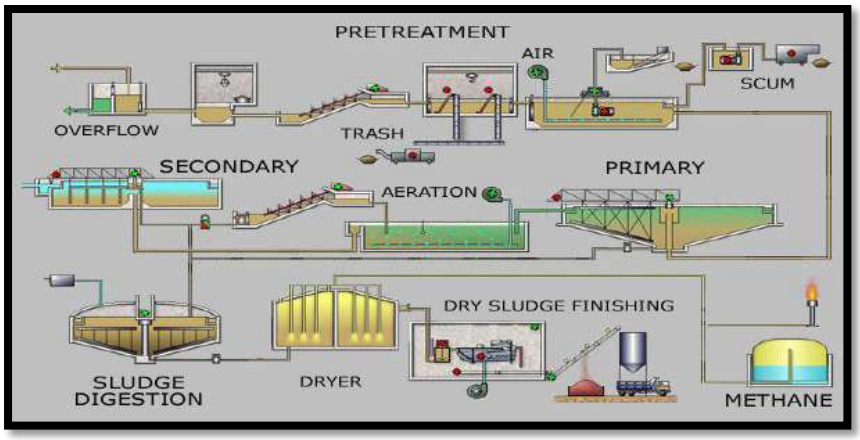


Fig-37: Sewage Treatment Plant

➢ Energy Requirements

- For conventional sewage treatment plants, around 30 percent of the annual operating costs is usually required for energy. The energy requirements vary with type of treatment process as well as wastewater load.
- For example, constructed wetlands have a lower energy requirement than activated sludge plants, as less energy is required for the aeration step. Sewage treatment plants that produce biogas in their sewage sludge treatment process with anaerobic digestion can produce enough energy to meet most of the energy needs of the sewage treatment plant itself.

Chapter 6: Swatchh Bharat Abhiyan (Clean India)

6.1 Swatchhta needed in Moviya

Fig-38: Moviya Road

- In this village proper road network provide because many roads are R.C.C.
- During rainy season people can travel easily.
- Road drainage system is properly.

Fig-39: Water Distribution System

- In this village there are not cover well properly so many types of wastage are fall in well.
- So people are not directly use water.
- There are required to be clean well.
- Otherwise well cover are provided.

6.2 Guidelines for the process of the implementation in Moviya

- Arrange the program related to clean village.
- Keep supporting who are engaged with SBM (Swachh Bharat mission).

- Public awareness is necessary for clean village.
- Provide technical support for clean village.
- Provide sufficient grant for public toilet.
- Coverage of Piped Water Supply with at least 40 LPCD in ODF verified villages.
- Arranging for regular cleaning of school toilets and proper disposal of solid and liquid waste.
- Prioritization of construction and maintenance of anganwadi toilets.
- These activities can be undertaken as part of Swachh Bharat through SBM (G) or in convergence with other schemes.

6.3 Actual Activity Done by village people for making your village

Fig-40: Meeting with people

- We are go to our allocated village and meeting with people in their village.
- We have advice related to clean India.

Fig-41: People Cleaning Village

- Then village people are clean their village.
- People are cleaning their village protected them Covid-19.

Chapter 7: Village Condition due to Covid-19

7.1 Taken steps in Moviya

- The COVID-19 pandemic has brought the entire nation to a halt.
- Health officials and medical professionals are struggling with containing the disease, and testing and treating affected people.
- Sarpanch and other community members are provide masks and sanitizer door to door.
- They are also provide tablet of corona virus.

7.2 Activity done by students for Moviya

- We have advice to awareness from Covid-19.
- We advised them to wear mask whenever they go out in public.
- We advised them to keep sanitizer along them whenever they go out in public or meet anyone.

7.3 Any other steps taken by villagers

- In current situation there are 30 cases of Covid-19 in Moviya village.
- Out of 30 cases 4 people are die due to Covid-19.

Chapter 8: Sustainable Design Planning Proposal

8.1 Design Proposals

Different facilities in moviya village which we observed as below,

- Physical Infrastructure facility:
  - Piped water supply to dweller and plot/yard
  - Water tank
  - Underground drainage
  - Cement concrete road
  - Transportation facility
  - Electricity distribution

- Social Infrastructure facility:
  - Anganwadi
  - Primary school
  - Secondary school
  - Higher secondary school

- Socio-culture Infrastructure facility:
  - Community Hall
  - Public garden
  - Temples

8.1.1 Sustainable Design

- In this part we have to decide to design a Bio-gas plant as sustainable design.
- Biogas typically refers to a mixture of different gases produced by the breakdown of organic matter in the absence of oxygen. Biogas can be produced from raw materials such as agricultural waste, manure, municipal waste, plant material, sewage, green waste or food waste. Biogas is a renewable energy source.

- **Construction of gas pipe line**
  - The gas pipe conveying the gas from the plant to users point is vulnerable for damages by people, domestic animals and rodents.
  - Therefore only heavy quality galvanized iron pipe should be used which must be, where possible buried 30m below ground level.
  - Fittings in the pipeline must be sealed with zinc putty and Teflon.
  - Any other sealing agent , like grease , paint only , soap etc must be avoided.

- **Bio-gas plant**
  - The detailed drawing of Bio-gas plant is below.

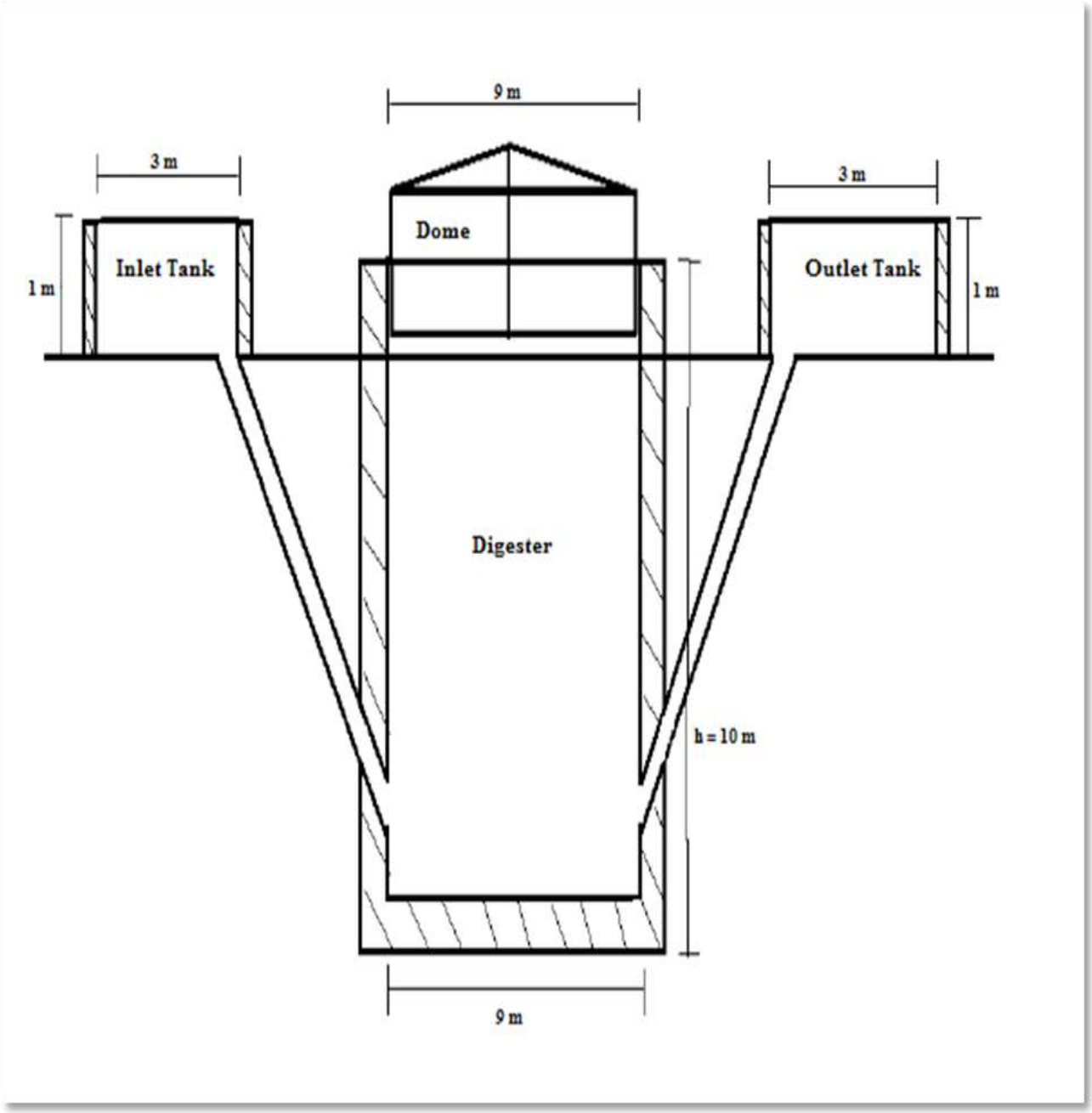


Fig-42: Bio-gas Plant

Measurement Sheet of Bio-gas Plant

Sr. no.	Description of Items	No	L (m)	B (m)	H (m)	Quantity
1	**Excavation of ground as digester is inside ground**	1	9	2	10	180m3
2	**Brickwork of digester the wall is 0.3m thick mortar used should be (1:4)**	1	9	0.3	10	27m3
3	**Brickwork of inlet tank mortar used should be (1:4)**	1	3	0.3	1	0.9
4	**Brickwork of outlet tank mortar used should be (1:4)**	1	3	0.3	1	0.9

Abstract Sheet of Bio-gas Plant

Sr. no.	Description of Items	Quantity	Unit	Rs	Amount
1	**Excavation for digester as it is below ground**	180	m 3	85	15300
2	**Brickwork of digester the wall is 0.3m thick mortar used should be (1:4)**	27	m 3	3200	86600
3	**Brickwork of inlet tank the wall is 0.3m thick mortar used should be (1:4)**	0.9	m 3	3200	2880
4	**Brickwork of outlet tank the wall is 0.3m thick mortar uses should be (1:4)**	0.9	m 3	3200	2880
5	**Galvanized iron pipe connecting inlet and outlet to digester**	16	m	880	14080
				Total	118860

- The total cost of providing gas pipe line to each houses should be collected from the village or houses owner. Thus the total cost is one lakh eighteen thousand and sixty Rs only.

8.1.2 Physical Design

- As a physical design we have to decide to design a Bus-stand.
- The bus-stand of village in damaged condition, and the roof of bus-stand is in damaged condition and seating arrangement is also not available so we try to give new design of bus-stand.
- Passenger will attain the advantage of new bus-stand and seating arrangement which is not available in the existing bus-stand.

➢ **Bus-stand**

- The detailed drawing of Bus-stand is below.

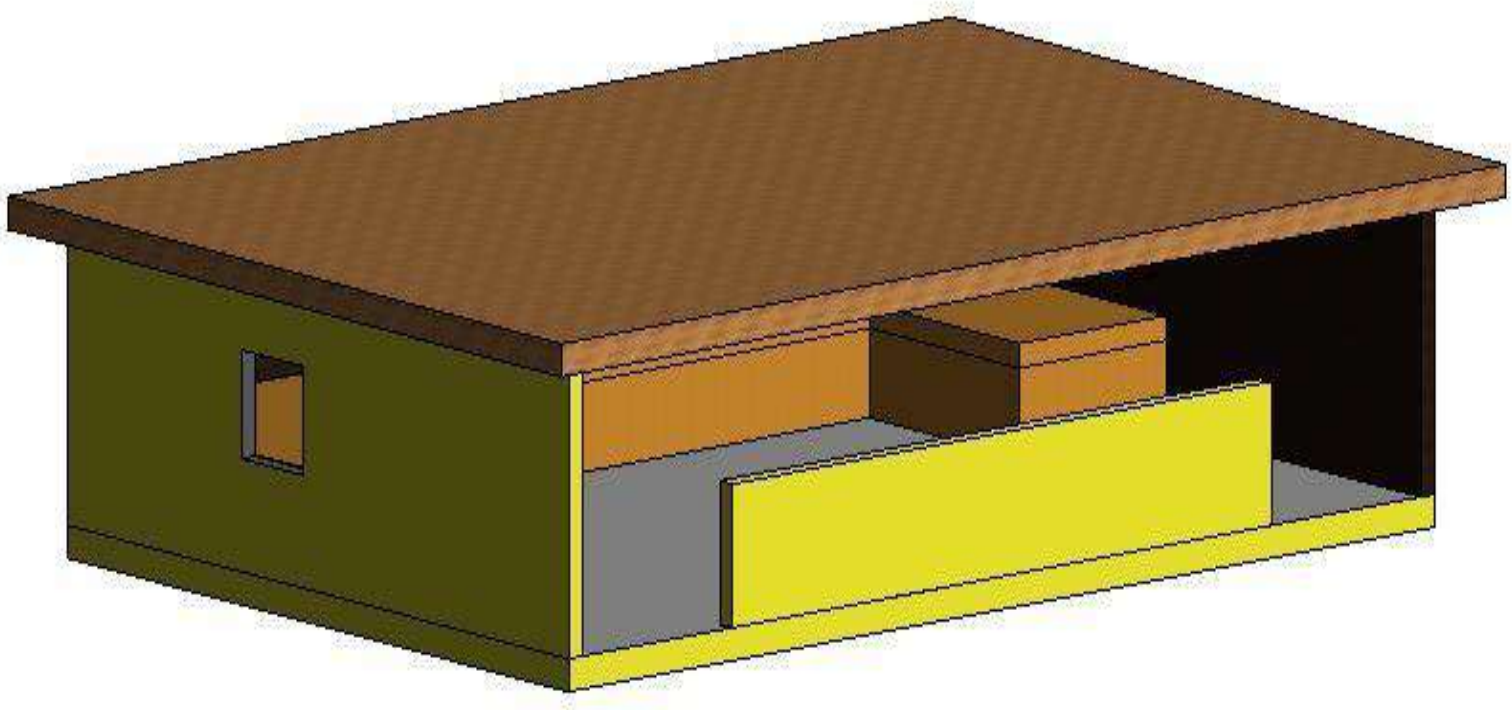


Fig-43: 3D view of bus-stand

Measurement Sheet of Bus-stand

Sr.no.	Description of Items	No	L (m)	B (m)	H (m)	Quantity
	Total length =2[6-(2*0.15)]-2[4-(2*0.15)] =11.4+7.4 =18.8m					
1	**Excavation in foundation**	1	18.8	0.70	0.70	9.212m3
2	**P.C.C. in foundation**	1	18.8	0.70	0.30	3.94m3
3	**Brick masonry in foundation up to plinth**					
	Step 1	1	18.8	0.50	0.20	1.88m3
	Step 2	1	18.8	0.40	0.20	1.504m3
	Up to plinth	1	18.8	0.30	0.60	3.384m3
						6.768m3
4	**Sand filling in foundation and plinth**					
	=9.212-(3.948-1.88-1.504)					1.88m3
5	**Brick work in super structure**	1	18.8	0.30	3	16.92m3
	sand	1	7.7	0.61	1	4.697m3
						21.617m3
	Deduction					
	Window	4	1.52	0.30	1.524	2.787m3
	Partition wall	1	3.7	0.30	1.85	2.053m3
						4.84m3
	Total=21.617-4.84					16.777m3
6	**12 mm thick inside plaster**					
	=2[6-(2*0.15)]-[4-(2*0.15)]	1	18.8	-	2.90	54.52m2

	Add sand	1	7.7	-	1	7.7m2
	Add ceiling	1	5.7	3.7	-	21.09
	deduction					
	window	4	1.524	-	1.524	9.290m2
	Partition wall	1	3.7	-	1.85	6.845m2
						16.135m2
	Total=83.31-16.135					67.175m2
7	**15 mm thick outside plaster**					
	=12+8	1	20	-	3.6	72m2
	deduction					
	window	4	1.524	-	1.524	9.290m2
	Partition wall	1	3.7	-	1.85	6.845m2
						16.135m2
	Total=72-16.135					55.865m2

Abstract sheet of Bus-stand

Sr.no.	Description of Items	Quantity	Unit	Rs	Amount
1	**Earthwork in foundation up to 1.5m depth for 9.212m3**				
	Labour				
	Male coolie	2	Day	200	400
	Female coolie	2	Day	180	360
	Sundries				20
				Labour cost Rs.780	
2	**P.C.C(1:4:8) in foundation for 3.94m3**				
	Materials				
	Cement	14Bag	Bag	280	3920
	Sand	1.85m3	M3	800	1480
	Aggregate	3.70m3	M3	1000	3700
	Sundries				50
				Material cost Rs.9150	
	Labour				

	Main mason	0.25	Day	400	100
	Mason	1	Day	300	300
	Male coolie	4	Day	200	800
	Female coolie	6	Day	180	1080
	Bhistie	2	Day	200	400
	Sundries				50
				Labour cost Rs.2730	
3	**Sand filling in foundation and plinth for 1.88m3**				
	Materials				
	Sand	1.88	M3	800	1504
	Sundries				50
				Material cost Rs.1554	
	Labour				
	Male coolie	1	Day	200	200
	Female coolie	1	Day	180	180
	Bhistie	0.5	Day	200	100
	Sundries				20
				Labour cost Rs.500	
4	**Brick bat cement concrete in foundation (1:4:8)for 6.768m3**				
	Materials				
	Brick bats	6.768	M3	800	5415
	Sand	3.384	M3	800	2708
	Cement	25	Bags	280	7000
	Sundries				50
				Material cost Rs.15173	
	Labour				
	Male coolie	2	Day	200	400
	Female coolie	5	Day	180	900
	Bhistie	1	Day	200	200
	Sundries				50
				Labour cost Rs.1550	
5	**First class brick work in C.M. 1:6 in superstructure for 16.777m3**				
	Materials				
	Brick(19cn*9cm*9cm)	8390			
	Add 5%wastage	420			
	Total brick	8810 Nos	1000Nos	4000	35240
	Cement	23	Bag	280	6440
	Sand	4.75	M3	800	3800
	sundries				50
				Material cost Rs.45530	
	Labour				

	Main mason	1	Day	400	400
	Mason	10	Day	300	3000
	Male coolie	10	Day	200	2000
	Female coolie	10	Day	180	1800
	bhistie	3	Day	200	600
	Sundries				50
				Labour cost Rs.7850	
6	**12mm thick Inside plaster in C.M. 1:4 for 67.175m2**				
	Materials				
	Cement	8	Bags	280	2240
	Sand	1.047	M3	800	838
	Sundries				50
				Material cost Rs.3128	
	Labour				
	Main mason	0.25	Day	400	100
	Mason	8	Day	300	2400
	Male coolie	8	Day	200	1600
	Female coolie	8	Day	180	1440
	Bhistie	2	Day	200	400
	Sundries				25
				Labour cost Rs.5965	
7	**15mm thick outside plaster in C.M. 1:3 for 55.865m3**				
	Materials				
	Cement	10	Bags	280	2800
	Sand	1.02	M3	800	816
	Sundries				50
				Material cost Rs.3666	
	Labour				
	Main mason	0.25	Day	400	100
	Mason	5	Day	300	1500
	Male coolie	5	Day	200	1000
	Female coolie	5	Day	180	900
	Bhistie	2	Day	200	400
	Sundries				50
				Labour cost Rs.3950	
8	**RCC Work for slab and lintel 1:1.5:5 for 3.6m3**				
	Materials				
	Cement	29	Bags	280	8120
	Sand	1.642	M3	800	1314
	Aggregate	2.985	M3	1000	2985
	Steel	432	Kg	45	19940
	Binding wires	5	Kg	50	250
	Sundries				50

				Material cost Rs.32159	
	Labour				
	(i)labour for mixing, transporting and placing concrete, including curing	3.6	M3	300	1080
	(ii)cost of hiring mixture and vibrator	-	-	L.S.	1000
	(iii)labour for bending, cutting, placing reinforcement steel	432	Kg	5	2160
	(iv)labour for centering and shuttering	-	-	L.S.	2500
	(v)sundries				50
				Labour cost Rs.6790	

8.1.3 Social Design

- As a social design we design a hospital

➢ **Hospital**

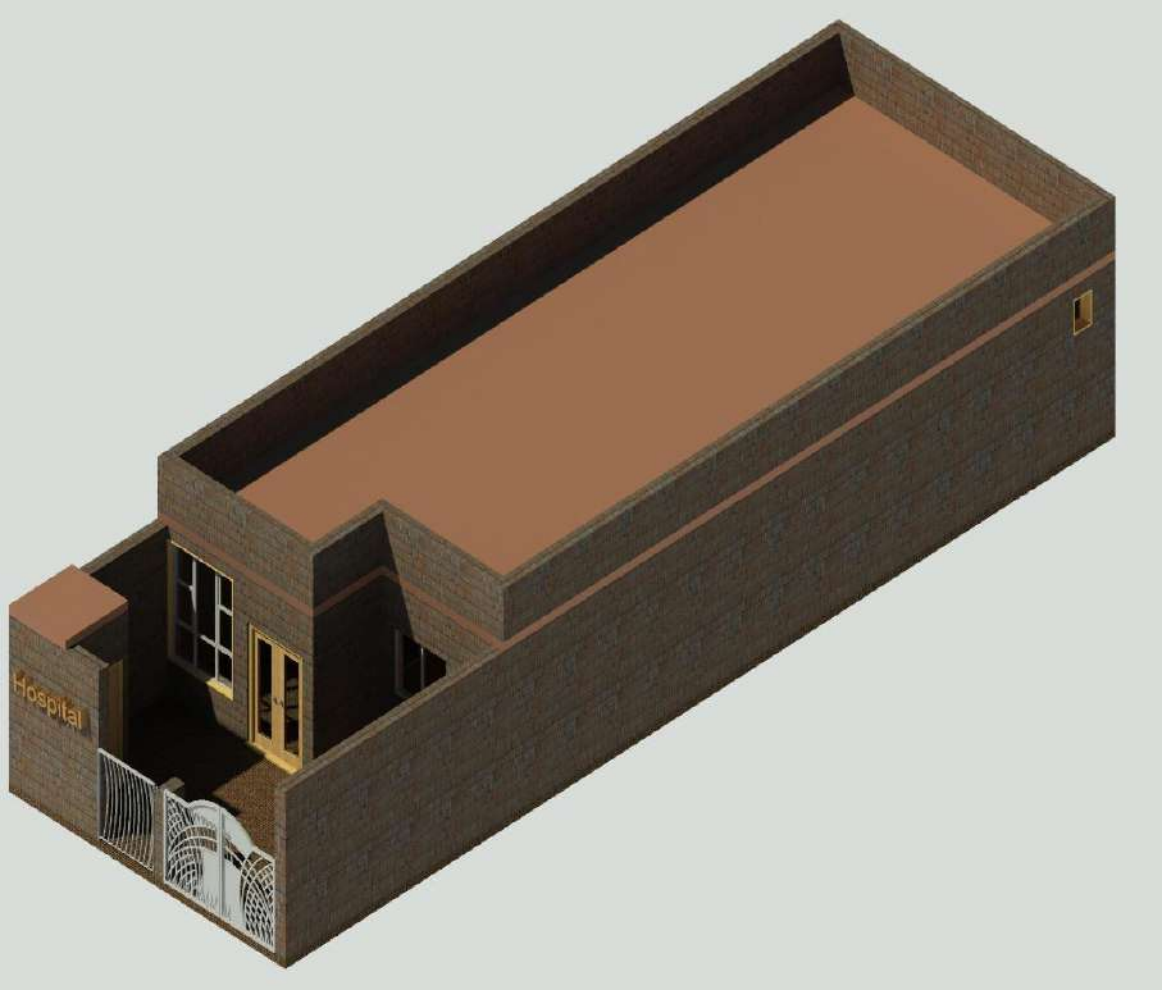


Fig-44: 3D view of Hospital

Measurement sheet of Hospital

Sr.no.	Description of Item	No	L (m)	B (m)	H (m)	Quantity
1	**Excavation in foundation**					
	Long wall-1	2	18.30	0.60	1.0	21.96
	Long wall -2	1	8.38	0.60	1.0	5.028
	Short wall -1	4	4.3	0.60	1.0	10.32
	Short wall-2	3	2.07	0.60	1.0	3.73
	Short wall-3	2	1.69	0.60	1.0	2.028
	Short wall-4	2	0.55	0.60	1.0	0.66
						43.72m3
2	**P.C.C. in foundation**					
	Long wall-1	2	18.30	0.60	0.20	4.39
	Long wall -2	1	8.38	0.60	0.20	1.0
	Short wall -1	4	4.3	0.60	0.20	2.06
	Short wall-2	3	2.07	0.60	0.20	0.74
	Short wall-3	2	1.69	0.60	0.20	0.40
	Short wall-4	2	0.55	0.60	0.20	0.13
						8.72m3
3	**Brick masonry in foundation**					
	Step - 1					
	Long wall-1	2	18.30	0.45	0.80	13.17
	Long wall -2	1	8.38	0.45	0.80	3.01
	Short wall -1	4	5.20	0.45	0.80	7.48
	Short wall-2	3	2.29	0.45	0.80	2.47

	Short wall-3	2	1.91	0.45	0.80	1.37
	Short wall-4	2	0.55	0.45	0.80	0.39
						27.89m3
	Step - 2					
	Long wall-1	2	18.30	0.37	0.60	8.12
	Long wall -2	1	8.38	0.37	0.60	1.86
	Short wall -1	4	5.36	0.37	0.60	4.75
	Short wall-2	3	2.37	0.37	0.60	1.57
	Short wall-3	2	2.03	0.37	0.60	0.90
	Short wall-4	2	0.55	0.37	0.60	0.24
						17.44m3
4	**Earth filling**	1	17.56	5.36	0.60	**56.47m3**
5	**Brick masonry above plinth level**					
	Side wall	2	18.30	0.23	3.0	25.25
	Toilet wall	2	1.75	0.23	3.0	2.41
	Patient room	2	5.64	0.23	3.0	7.78
	Chamber room	2	2.03	0.23	3.0	2.80
	Front wall-1	1	2.97	0.23	3.0	2.04
	Front wall-2	2	2.59	0.23	3.0	3.57
	Chamber room	2	1.22	0.23	3.0	1.68
	Middle wall	1	8.38	0.23	3.0	5.78
	Parapet wall	2	15.30	0.23	0.90	21.11
		2	5.84	0.23	0.90	8.06
	Compound wall	1	4.0	0.23	2.0	2.76
						83.24m3
	Deduction					
	Main door	1	1.10	2.10	0.23	0.53

	Door	7	0.90	2.10	0.23	3.04
	Gap	1	1.10	3.0	0.23	0.75
	Window	3	1.20	1.40	0.23	1.15
	Fixed window	2	0.50	1.40	0.23	0.32
	Door -1	2	0.75	2.10	0.23	0.72
						6.51m3
	Lintels					
	Main door	1	1.40	0.23	0.15	0.048
	Door	7	1.20	0.23	0.15	0.28
	Window	3	1.50	0.23	0.15	0.15
	Fixed window	2	0.80	0.23	0.15	0.055
	Door-1	2	1.05	0.23	0.15	0.072
						0.605m3
	Total = 83.24-6.51-0.605 = 76.125m3					
6	**R.C.C. slab**	1	15.30	6.10	0.12	**11.19m3**
	Lintels					
	Main door	1	1.40	0.23	0.15	0.048
	Door	7	1.20	0.23	0.15	0.28
	Window	3	1.50	0.23	0.15	0.15
	Fixed window	2	0.80	0.23	0.15	0.055
	Door-1	2	1.05	0.23	0.15	0.072
						0.605m3
	Total = 11.19+0.605 =11.795m3					
7	**Inside plaster**					
	Waiting room	2	2.97		3.0	17.82
		2	3.96		3.0	23.76

Ceiling	1	2.97	3.96		11.76
Doctor chamber	2	4.88		3.0	29.28
	2	2.59		3.0	15.54
Ceiling	1	4.88	2.59		13.63
Chamber room	4	2.59		3.0	31.08
Ceiling	1	2.59	2.59		6.70
	2	1.80		3.0	10.8
	2	2.40		3.0	14.4
Ceiling	1	1.80	2.40		4.32
Patient room	2	3.81		3.0	22.86
	2	5.64		3.0	33.84
Ceiling	1	3.81	5.64		21.48
Passage	2	4.42		3.0	26.52
Ceiling	1	4.42	1.06		4.68
Toilet	4	1.52		3.0	18.24
	4	1.22		3.0	14.64
Ceiling	2	1.52	1.22		3.70
Passage	2	1.80		3.0	10.8
Ceiling	1	1.80	1.80		3.24
					339.39m2
Deduction					
Main door	1	1.10	-	2.10	2.31
Door	7	0.90	-	2.10	13.23
Door-1	2	0.75	-	2.10	3.15
Window	3	1.20	-	1.40	5.04

	Fixed window	2	0.50	-	1.40	1.4
						25.13m2
	Total = 339.39-25.13 = 314.26m2					
8	**Outer plaster**					
	Compound wall	2	4.0	-	2.0	16
	Front wall	1	6.10	-	4.60	28.06
	Side wall	2	3.05	-	2.0	12.2
						56.26m2
9	**Flooring**					
	Waiting room	1	2.97	3.96	-	11.76
	Doctor chamber	1	4.88	2.59	-	12.63
	Chamber room	4	2.59	1.0	-	13.06
	Check-up room	1	2.59	2.59	-	6.70
	Chamber	1	1.80	2.40	-	4.32
	Patient room	1	3.81	5.64	-	21.48
	passage	1	4.42	1.06	-	4.68
	Toilet	2	1.52	1.22	-	3.70
	Passage	1	1.80	1.80	-	3.24
						81.57m2

Abstract sheet of Hospital

Sr. No.	Description of Items	Quantity	Units	Rs	Amount
1	**Excavation in foundation**	43.72	M3	140	6120.8
2	**P.C.C. in foundation**	8.72	M3	3500	30520
3	**Brick masonry in foundation**	45.33	M3	4200	190386
4	**Earth filling**	56.47	M3	175	9882.25
5	**Brick masonry above plinth level**	76.125	M3	4400	334950
6	**R.C.C. slab**	11.795	M3	5800	68411
7	**Inside plaster**	314.26	M2	200	62852
8	**Outer plaster**	56.26	M2	200	11252
9	**Flooring**	81.57	M2	700	57099

8.1.4 Socio-cultural design

- As a social-cultural design we have to decide a library.

➢ **Library**

- The detailed drawing of library is below.

Fig-45: 3D view of library

Measurement Sheet of Library

Sr.no.	Description of Items	No	L (m)	B (m)	H (m)	Quantity
	Total length =2[10-(2*15)]+2[10-(2*15)] =19.4+19.4 =38.8m					
1	**Excavation in foundation**	1	38.8	0.90	1.2	41.904m3
2	**P.C.C. in foundation**	1	38.8	0.90	0.30	10.476m3
3	**Brick masonry in foundation up to plinth**					
	Step 1	1	38.8	0.60	0.20	40656m3
	Step 2	1	38.8	0.50	0.20	3.88m3
	Step 3	1	38.8	0.40	0.20	3.104m3
	Up to plinth	1	38.8	0.30	0.70	6.984m3
						18.624m3
4	**Sand filling in foundation and plinth**					
	41.904-(10.476+4.656+3.88+3.104)					19.788m3
5	**Brick work in super structure**	1	38.8	0.30	3	34.92m3
	Deduction					
	Window	8	1	0.30	1.2	2.88m3
	Doors	1	2	0.30	2.1	1.26m3
						4.14m3
	Lintel					
	Window	8	1.2	0.30	0.15	0.432m3
	Doors	1	2.2	0.30	0.15	0.099m3

						0.531m3
	Total=34.92-(4.14+0.531)					30.249m3
6	**12mm thick inside plaster**					
	=2[10-(2*0.15)]+2[10-(2*0.15)]	1	38.8	-	2.90	112.52m3
	Add ceiling	1	9.7	9.7	-	94.09m3
						206.61m3
	Deduction					
	Window	0.5*8	1	-	1.2	4.8m3
	Doors	0.5*1	2	-	2.1	2.1m3
						6.9m3
	Total=206.61					196.71m3
7	**15mm thick outside plaster**					
	=20+20	1	40	-	3.6	144m3
	Deduction					
	Window	8	1	-	1.2	9.6m3
	Doors	1	2	-	2.1	4.2m3
						13.8m3
	Total=144-13.8					130.2m3
8	**No of tiles required**	1	9.7	-	9.7	94.09m3
	Tiles size=25cm*25cm					
	94.09/0.0625=1505.44=say 1506					
	Add 5%wastage 1506+76=1582 tiles required					

Abstract sheet of Library

Sr.no.	Description of Items	quantity	Unit	Rs	Amount
1	**Earthwork in foundation up to 1.5m depth for 41.904m3**				
	Labour				
	Male coolie	8	Day	200	1600
	Female coolie	8	Day	180	1440
	Sundries				20
				Labour cost Rs.3060	
2	**P.C.C(1:4:8)in foundation for 10.476m3**				
	Materials				
	Cement	35	Bags	280	9800
	Sand	4.90	M3	800	3920
	Aggregate	9.80	M3	1000	9800
	Sundries				50
				Material cost Rs.23570	
	Labour				
	Main mason	0.50	Day	400	200
	Mason	1	Day	300	300
	Male coolie	7	Day	200	1400
	Female coolie	11	Day	180	1980
	Bhistie	2	Day	200	400
	Sundries				50
				Labour cost Rs.4330	
3	**Sand filling in foundation and plinth for 19.788m3**				
	Materials				
	Sand	19.788	M3	800	15830
	Sundries				50
				Material cost Rs.15880	
	Labour				
	Male coolie	2	Day	200	400
	Female coolie	2	Day	180	360
	Bhistie	1	Day	200	200
	Sundries				20
				Labour cost Rs.980	
4	**Brick bat cement concrete in foundation (1:4:8) for 18.624m3**				
	Material				
	Brick bats	18.624	M3	800	14900
	Sand	9.312	M3	800	7450
	Cement	67	Bags	280	18760
	Sundries				50
				Material cost Rs.41160	
	Labour				
	Male coolie	6	Day	200	1200
	Female coolie	12	Day	180	2160

	Bhistie	3	Day	200	600
	Sundries				50
				Labour cost Rs.4010	
5	**First class brick work in C.M. 1:6 in superstructure 30.249m3**				
	Materials				
	Brick(19cm*9cm*9cm)	15125			
	Add 5% wastage	750			
	Total brick	15785Nos	1000Nos	4000	63500
	Cement	41	Bag	280	11480
	Sand	80556	M3	800	6844.8m3
	sundries				50
				Material cost Rs.81875	
	Labour				
	Main mason	1.5	Day	400	600
	Mason	20	Day	300	6000
	Male coolie	20	Day	200	4000
	Female coolie	20	Day	180	3600
	Bhistie	5	Day	200	1100
	Sundries				50
				Labour cost Rs.15350	
6	**12mm thick inside plaster in C.M. 1:4 for 196.71m3**				
	Materials				
	Cement	22	Bags	280	6160
	Sand	3.068	M3	800	2455
	Sundries				50
				Material cost Rs.8665	
	Labour				
	Main mason	0.50	Day	400	200
	Mason	20	Day	300	6000
	Male coolie	20	Day	200	4000
	Female coolie	20	Day	180	3600
	Bhistie	4	Day	200	800
	Sundries				50
				Labour cost Rs.14650	
7	**15mm thick outside plater in C.M. 1;3 for 130.2m3**				
	Materials				
	Cement	23	Bags	280	6440
	Sand	2.380	M3	800	1904
	Sundries				50
				Material cost Rs.8394	

	Labour				
	Main mason	0.50	Day	400	200
	Mason	20	Day	300	6000
	Male coolie	20	Day	200	4000
	Female coolie	20	Day	180	3600
	Bhistie	4	Day	200	800
	Sundries				50
				Labour cost	Rs.14650
8	**RCC work for slab and lintel 1:1.5:3 for 15m3**				
	Materials				
	Cement	119	Bags	280	33320
	Sand	4.090	M3	800	3272
	Aggregate	8.812	M3	1000	8182
	Steel	1178	Kg	45	53010
	Binding wire	12	Kg	50	600
	Sundries				50
				Material cost	Rs.98434
	Labour				
	(i)Labour for mixing, transporting and placing concrete, including curing	15	M3	300	4500
	(ii)cost of hiring mixture and vibrator	-	-	L.S.	1500
	(iii)Labour for bendidng, cutting placing reinforcement steel	1178	Kg	5	5890
	(iv)labour for centring and shuttering	-	-	L.S.	5000
	(v)sundries				50
				Labour cost	Rs.16940

8.1.5 Smart village design

- As a smart village design we have to decide water filtration plant

➢ Water filtration plant

Sewage treatment is the process of removing contaminants from wastewater and household sewage, both effluents and domestic. It includes physical, chemical, and biological processes to remove physical, chemical and biological contaminants. Its objective is to produce an environmentally safe fluid waste stream and a solid waste suitable for disposal or reuse.

➢ Sources of waste water

- Human waste
- Washing water
- Rainfall collected on roofs
- Domestic sources
- Direct ingress of river water
- Highway drainage
- Industrial waste

The project cover the area of 6654.44 hectors, of Virngar moviya, the Gondal is 8km from Moviya village. The soil of the area is being gravel, rocky ad a large proportion of sand and gravel.by the execution of the project the entire sewage of the city can be treated effectively and efficiently.

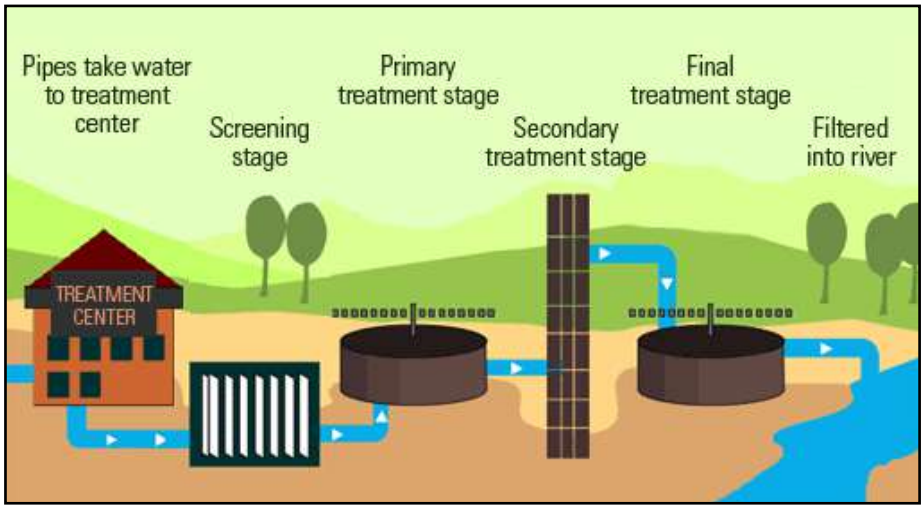


Fig-46: Water filtration plant

➢ Component Bar screening

- The influent sewage water passes through a bar screen to remove all large objects like cans, rags, sticks, plastic packets etc. carried in the sewage stream.
- This is most commonly done with an automated mechanically raked bar screen in modern plants serving large populations, whilst in smaller or less modern plants, a manually cleaned screen may be used.

Fig-47: Bar- Screen

➢ Grit removal process

Pre-treatment may include a sand or grit channel or chamber, where the velocity of the incoming sewage is adjusted to allow the settlement of sand, grit, stones, and broken glass. These particles are removed because they may damage pumps and other equipment.

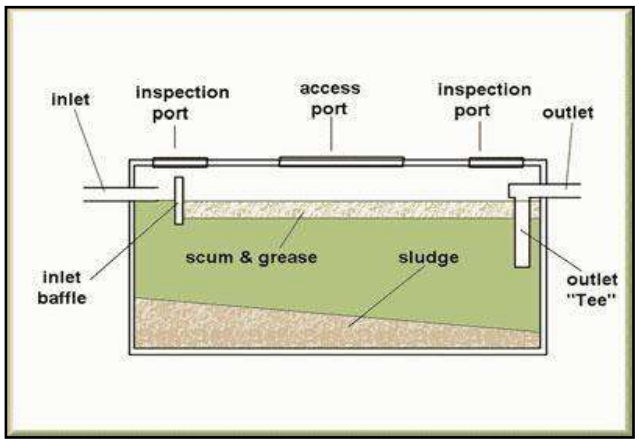


Fig-48: Grit Chamber

- **Sedimentation Tank**

After grit removal in grit chamber, the wastewater containing mainly lightweight organic matter is settled in the primary sedimentation tank (PST). Due to involvement of many unknown parameters under settling of light weight, sticky, and non-regular shaped particles, the classical laws of sedimentation as applicable in grit removal are not valid and this settling is called as flocculant settling. The primary sedimentation tank generally removes 30 to 40% of the total BOD and 50 to 70% of suspended solids from the raw sewage. The flow through velocity of 1 cm/sec at average flow is used for design with detention period in the range of 90 to 150 minutes. This horizontal velocity will be generally effective for removal of organic suspended solids of size above 0.1 mm

- **Population Forecast**

Table:- 10 Population Forecast

Year	Population	Increment in population
1991	10700	-
2001	10903	**203**
2011	**11008**	**105**

$Pn=P+Nc$ where, n = No of decade

C=average of increment in population

=(203+105)/2=154

P2021=11008+(1×154)

=11162

P2031=11008+(2×154)

=11316

Calculation of sewage generation

Ultimate design period = 20years

Population in 2011 = 11008

Forecasted population at 2031 = 11316

Per capita water supply = 135 lpcd

Average water supply per day = 11316*135

= 1493712 = 1.49mld

Average sewage generation per day = 80% of supply water

= 0.8*1.49

= 1.19mld

In cumec,

Average sewage generation per day = 1.19/ (24*60*60) = 0.014cumec

Maximum discharge = 3*average discharge= 3*0.014

=0.042cumec

Design of receiving chamber

Design flow = 0.042cumec

Detention time = 60sec

Volume required = flow*detention time

=0.042*60

Vreq=2.52m3

Provide depth = 3m

Area = 2.52/3 = 0.84m2

Length = 2:1

L*B = 2B*B

= 1.638

B = 0.91m

L = 1.8m

Design of bar screen

Peak discharge of sewage = 0.042m3/s

Assume velocity at average flow is not allowed to exceed 0.8m/s

The net area screen opening required = 0.042/0.8 = 0.053m2

Clear opening between bars = 10mm = 0.01m

Size of bars = 75mm*10mm

Assume width of channel = 1m

The screen bar are placed at 60 degree to the horizontal,

Velocity through screen at peak flow = 1.6m/s

Clear area = 0.053/1.6sin60 = 0.038m2

No. of clear opening = 0.038/0.01 = 4Nos.

Width of channel = (4*10)+(3*10)

=70mm

Provide width of 0.7m

Design of grit chamber

Design a grit chamber for population 11316 with water consumption of 135 LPCD

Average quantity of sewage, considering sewage generation 80% of water supply is

= 135*11316*0.8 = 1222128m3/day = 0.0706m3/sec

Maximum flow = 3*average flow = 3*0.0706 = 0.2118m3/sec

Keeping the horizontal velocity as 0.2m/sec (<0.228m/sec) and detention time period as 30 seconds.

Length of the grit chamber = velocity*detention time = 0.2*30 6m

Volume of the grit chamber = discharge*detention time = 0.2118*60 = 12.708m3

Cross section area of flow 'A' = volume/length

=12.708/6 = 2.118m2

Provide with of the chamber = 1m, hence depth = 0.27m

Provide 25% additional length to accommodate inlet and outlet zones.

Hence, the length of the grit chamber = 6x 1.25 = 7.5 m

Provide 0.3 m free board and 0.25 m grit accumulation zone depth, hence total depth

= 0.27 + 0.3 + 0.25 = 0.82m provide 0.90m

Width = 1.0 m

Design of sedimentation tank

Design the primary sedimentation tank to treat wastewater with average flow rate of 1.19 MLD and peak flow of 2.347 MLD

Assume surface settling rate = 80m3/m2d

Therefore, the surface area of the tank = 10*106/80*103 = 125m3

Check for peak flow condition:

The SOR at peak flow = 22.5*103/125 = 180m3/m2d
This is less than the recommended value at peak flow.

Assume width = 3.0m Therefore theoretical length = 125/3 = 41.66 > 40m

Hence, provide two tanks in parallel.

Total length of each tank = 41.66/2 + 2 (inlet) + 2 (outlet) = 24.83 say 24.85m

Now,

Flow rate x detention time = depth x surface area = volume of tank

Or

Flow / Surface area = depth / detention time = Surface settling rate

Provide detention time of 1.5 h

Therefore, liquid depth required = 40 x 1.5 / 24 = 2.5 m

Provide total depth = 2.5 + 0.5 (free board) + 0.25 (space for sludge) = 3.25 m

8.1.6 Heritage village design

- As a heritage design we have to decide drinking water tank for animals

➢ Drinking water tank

- The detail drawing of water tank is below.
- In our village we have provide Drinking Water tank for animal because there is no available so, people used to pond water to make water pollution. It is a very useful for the all animals.

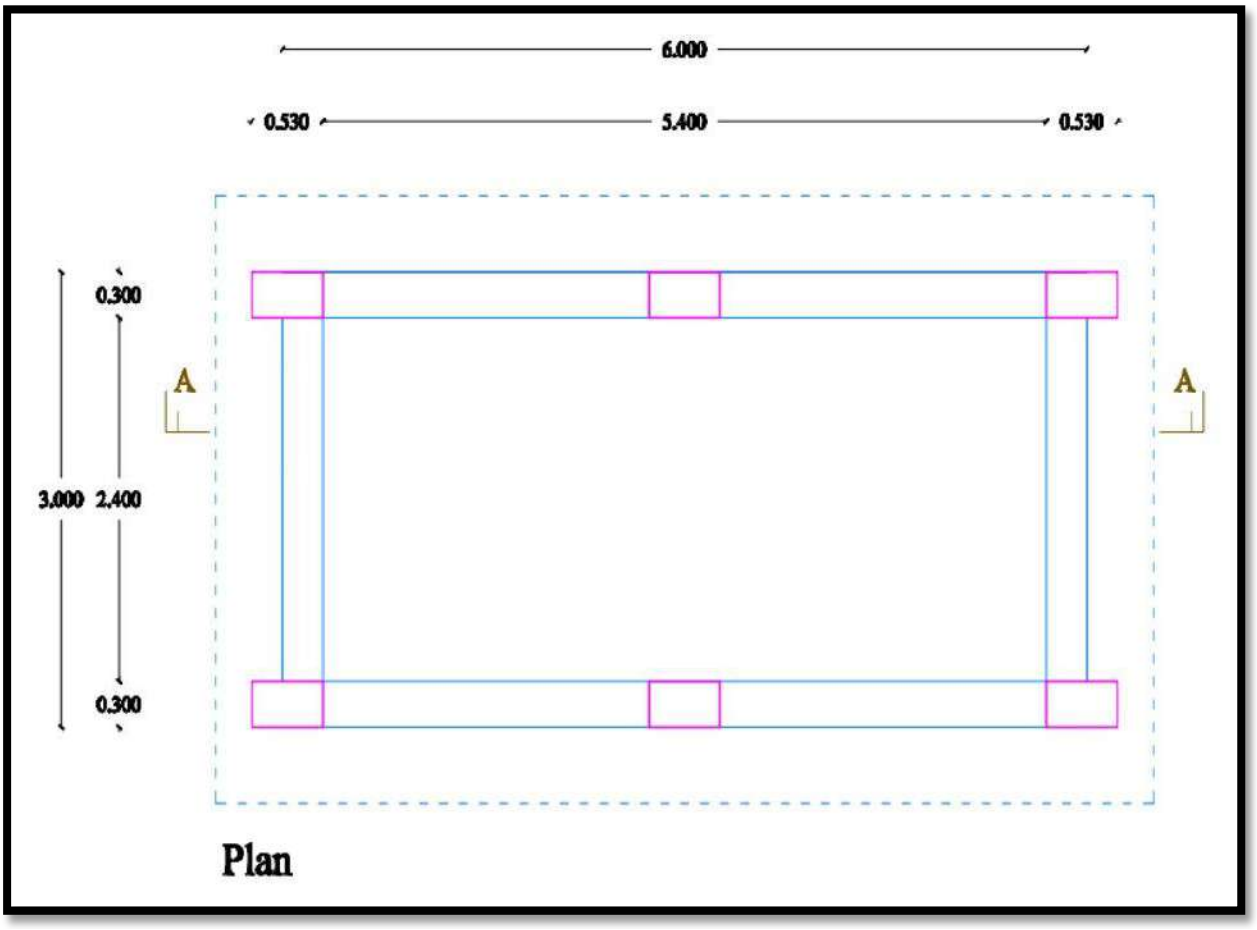


Fig-49: Drinking water tank

➢ Component of Water Tank:

1) Column: 0.53 × 0.3 × 2.5 m
2) Beam: 6 × 0.23 × 0.23 m
3 × 0.23 × 0.23 m
3) Wall: 6 × 0.3 × 0.5 m
3 × 0.3 × 0.5 m

Measurement sheet of water tank

Sr.no.	Description of Items	No	L (m)	B (m)	H (m)	Quantity
1	**Bottom slab**	1	6	3	0.15	**2.7m3**
2	**Top slab**	1	7	4	0.125	**3.5m3**
3	**Column**	6	0.53	0.3	2.5	**2.39m3**
4	**Beam**					
	Long beam	2	6	0.23	0.23	**0.32m3**
	Short beam	2	3	0.23	0.23	**0.32m3**
5	**Wall (tank)**					
	Long side	2	6	0.3	0.5	**1.8m3**
	Short side	2	3	0.3	0.5	**0.9m3**
6	Excavation for earth	**6**	**0.7**	**0.7**	**0.99**	**2.91m3**

- **Construction materials:**

Concrete grade- M25 (1 : 1 : 2)

(1) Cement:

1/4 × 18.61 = 4.65 m3

Total cement bags = 4.65/0.035 =133 Nos.

(2) Fine aggregate:

1/4 × 18.61 = 4.65 m3

Volume of fine aggregate = 4.65 m3

(3) Coarse aggregate:

2/4 × 18.61 = 9.31 m3

Volume of coarse aggregate= 9.31 m3

(4) Reinforcement for Beam, Column & Slab

Beam:

Minimum 2% steel of the wet volume of concrete in beams.

Volume of steel = 2/100 * 0.96 = 0.0192m3

Density of steel = 7850 kg/m3

Mass of steel = 0.0192 * 7850 = 151kg

Column:

Minimum 8% steel of wet volume of concrete in column.

Volume of steel = 8/100 * 2.4 = 0.19m3

Density of steel = 7850 kg/m3

Mass of steel = 0.19 * 7850 = 1492 kg

Slab:

Minimum 12% steel of wet volume of concrete in slab.

Volume of steel = 10/100 * 3.5 = 0.42m3

Density of steel = 7850 kg/m3

Mass of steel = 0.42 * 7850 = 3297 kg

Abstract sheet of water tank

Sr. no.	Description of Items	Quantity	Unit	Rs	Amount
1	**Cement**	133	Bags	280	37240
2	**Sand**	4.65	M3	800	3720
3	**Aggregate**	9.31	M3	1000	9310
4	**Grill**	22	m	4306	94732
5	**Steel**				
	Beam	151	Kg	5	755
	Column	1492	Kg	5	7460
	Slab	3297	Kg	5	16485
				Total Amount=169702 Rs	

8.2 Reason for students Recommending this design

- There is no bus stand in the village so people can go to Gondal bus stand for your necessity.
- There is no hospital in the village. Many private clinic is available in the village but big hospital is not there so people can go to nearest village.
- There is no library in this village. Student of this village are not read a book what they want to read. So we design a library as social cultural design.

- In this village water problem are there people of this village are not using water harvesting, water filtration plant etc... System so we are decided to design a water filtration plant.
- In this people are not use sustainable energy source like solar cell, bio-gas plant etc… so we are decided to design a bio- gas plant.
- There is no any type of heritage like statue, chabutra etc… so we can decided to design a drinking water tank for animals.

8.3About design Suggestions / Benefit of the villagers

- For improving education facility we give design of library. So student are easily issue a book.
- In summer season water related problem are increase so we give design of water filtration plant for good water.
- People are not use sustainable energy source. So we give to design a bio-gas plant.
- There is no any type of heritage like statue, chabutra etc… so we can decided to design a drinking water tank for animals so animals can enjoy the water in summer season.

Chapter 9: Future Development of the village for the PART-II design

- After completion of visit & data collection the project carried out in the current semester by the group members which includes the design of a sustainable facilities for Moviya Village, Gondal Taluka, Rajkot. Gujarat.
- Future scope would be study over other different urban amenities that would be sustainable in rural areas of saurashtra.
- The village still lacks in maintenance of the building and various structures. Taking this into consideration the estimation of its rehabilitation with other necessary amenities will be designed in the next semester.

Chapter 10: Conclusion of the entire village activities

We discuss with Raj samadhiyala , Sardhar and Moviya village authoristies and dwellers of village and filled different types of survey form and analyze it. Using techno-economic survey we get existing condition of village like demographical details, geographical details, occupational details, physical details, social infrastructure details, socio- cultural facilities, sustainable facilities, and other facilities.

By use of gap Analysis we compare all the available facilities in the sardhar. We also observe which facilities are required for batter growth of village by interaction which different authorities of ideal village and smart village.

- Bio-gas Plant (sustainable design)
- Hospital (social design)
- Library (socio-cultutal design)
- Water filtration plant (smart design)
- Bus stand (physical design)
- Drinking water tank for animals (heritage design)

By providing this required facility to village, development and growth of village can be possible. So ultimately migration rate and urban city pressure can be reduce and livehood of village dwellers will increase.

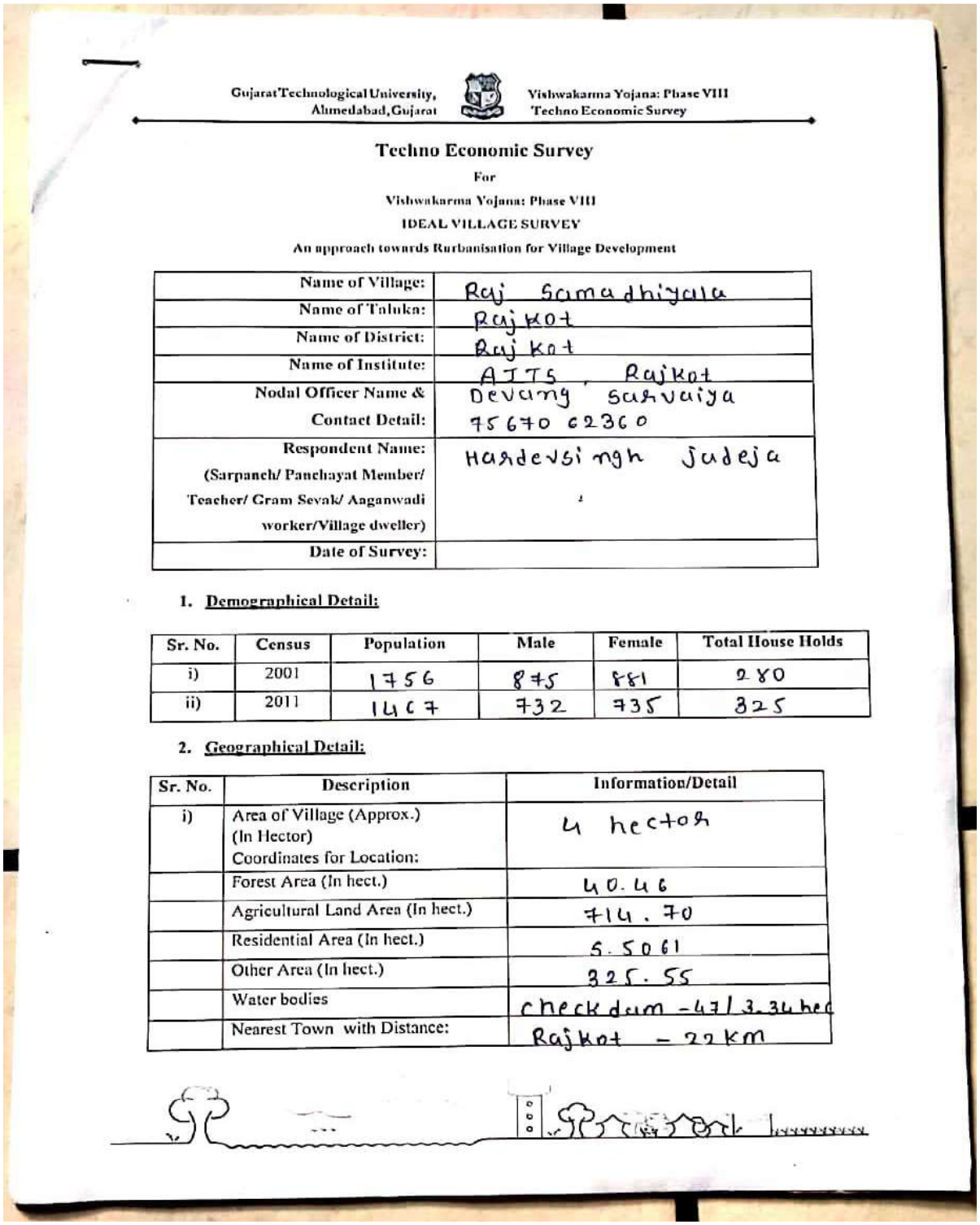
And lastly this project is helped us to understand our skills and make it even batter. We got deep knowledge about development of village and various infrastructure facility design of village. Lastly we enjoyed the informational as well as practical journey of civil work.

Chapter 11: References refereed for this project

- UDPFI (urban development plans formulation and implementation) norms 2014
- Census of India
- Schedule of Rate for Rajkot 2016
- Google Maps
- B. N. Dutta (2016), ―Estimation and Costing In Civil Engineering Theory and Practice‖, UBS Publisher.
- Adele kenneally (2003) – "public libraries in learning communities" research paper.
- G.J. Ashworth & J.E Tunbridge (2016) – multiple approaches to heritage in urban regeneration: the case study of gate.
- Expo DUBAI UAE (2018) – solar energy and lots of it.
- Barkley, D. (1995). "The Economics of Change In Rural America." American Journal of Agricultural Economics 77: (5): 1252-58 (1995).
- Howarth, W. Land and Word. In The Changing American Countryside: Rural People and Places, E.N. Castle (ed.). Lawrence, KS: University Press of Kansas 1995.
- Winters, W. F. "The Rural South: From Shadows to Sunshine." The Rural South: Preparing for the Challenges of the Millennium Series, No. 2. Southern Rural Development Center, Mississippi State, January 2000.

Chapter 12: annexure attachment

12.1SCANNED COPY FOR IDEAL VILLAGE



Gujarat Technological University, Ahmedabad, Gujarat

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:	Raj Samadhiyala
Name of Taluka:	Rajkot
Name of District:	Rajkot
Name of Institute:	AITS, Rajkot
Nodal Officer Name & Contact Detail:	Devang Sarvaiya 75670 62360
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Hardevsingh Judeja
Date of Survey:	

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	1756	875	881	280
ii)	2011	1467	732	735	325

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	4 hector
	Forest Area (In hect.)	40.46
	Agricultural Land Area (In hect.)	714.70
	Residential Area (In hect.)	5.5061
	Other Area (In hect.)	325.55
	Water bodies	checkdam - 47/3.34 hec
	Nearest Town with Distance:	Rajkot - 22 km

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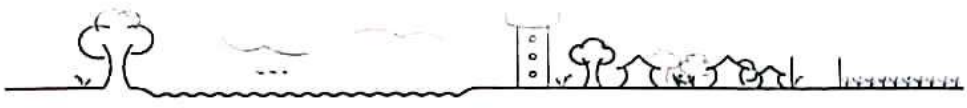
Vishwakarma Yojana: Phase VIII
Techno Economic Survey

3. **Occupational Details:**

Name of Three Major Occupation groups in Village	1. Farmer 2. dairy 3. spinning mill

4. **Physical Infrastructure Facilities:**

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated)	✓			
	• RO Water	✓	✓		
	• Well (Covered/ Uncovered)	✓			
	• Hand pumps	✓			
	• Tube well/ Borehole	✓	✓		
	• River/ Canal/ Spring/ Lake/ Pond		✓		
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	-		
	Underground Sump	Capacity:	100000		
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	yes	✓		
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	closed	✓		
	If Open than Pucca / Kutchcha				
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	NO	✓		
Suggestions if any:					



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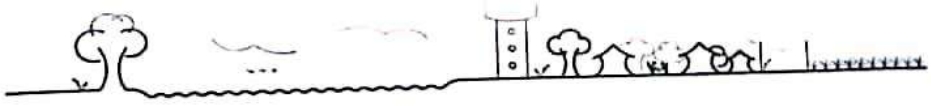
Techno Economic Survey

E.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	All weather	✓		
	Main road	C.C. Road	✓		
	Internal streets	C.C. Road	✓		
	Nearest NH/SH/MDR/ODR Dist. in kms.	S.H. Rajkot-Bhavnagar highway (flexible)	✓		
Suggestions if any:					

F.	Transport Facility				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No 22 km - bhaktinagar			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	yes			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	All type of transportation available on S.H.			
Suggestions if any:					

G.	Electricity Distribution				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	yes govt. more than 6 hr.			
	Power supply for Domestic Use	✓			
	Power supply for Agricultural Use	✓			
	Power supply for Commercial Use	✓			
	Road/ Street Lights	✓	✓		



	Electrification in Government Buildings/ Schools/ Hospitals	yes			
	Renewable Energy Source Facilities (Y/ N)	✓			
	LED Facilities	✓			
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	✓ 5			
	Location Condition	New gamtal - 2 Visitor centre - 1 Harijan vas - 2			
	Community Toilet (With bath/ without bath facilities)	cricket ground - 1 community bath at smashan			
	Solid & liquid waste Disposal system available	yes			
	Any facility for Waste collection from road	yes gram panchayat employes			
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	well tube well Bore well - 2			
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	5195			

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

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K.	Health Facilities:				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	PHC Sub center Sub center No			
	Private Clinic/Private Hospital/ Nursing Home	No			
	If any of the above Facility is not available in village than approx. distance from village: ...7....kms. Sardhar & Kasturbadham				
Suggestions if any:					

L.	Education Facilities:				
	Aaganwadi/ Play group	✓			
	Primary School	✓			
	Secondary school	✓			
	Higher sec. School	✓	Sardhar & Kasturbadham		
	ITI college/ vocational Training Center	22 Km -	Rajkot		
	Art. Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	-	R.K. university Thamba - 7 Km		
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					

M.	Socio- Culture Facilities				
	Community Hall (With or without TV) Location:	yes with T.V.			

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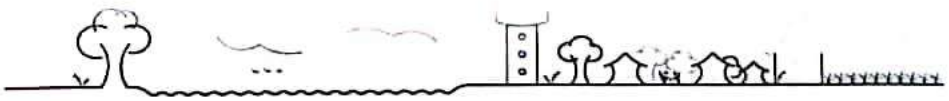
	Condition:				
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	NO			
	Public Garden Location: Condition:	yes good			
	Village Pond Location: Condition:	yes			
	Recreation Center Location: Condition:	NO			
	Cinema/ Video Hall Location: Condition:	yes good			
	Assembly Polling Station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



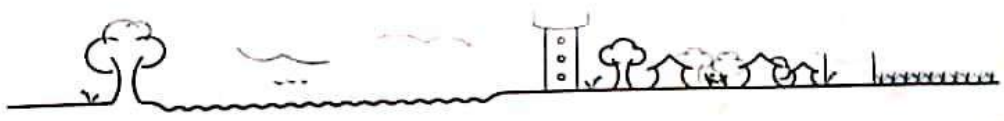
	General Market	NO			
	Shops (Public Distribution System)	yes			
	Panchayat Building	yes			
	Pharmacy/Medical Shop	No			
	Bank & ATM Facility	NO			
	Agriculture Co-operative Society	NO			
	Milk Co-operative Soc.	yes			
	Small Scale Industries	yes - 2	-big industries		
	Internet Cafes/ Common Service Center/Wi Fi	wifi yes			
	Other Facility	CCTV camera			
Suggestions if any:					

6. Sustainable /Green Infrastructure Facilities:

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

7. Data Collection From Village

Village Base Map Available: Hard Copy/Soft Copy	yes



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Recent Projects going on for Development of Village	Paving block near visitor center
Any NGO working for village development	No

8. **Additional Information/ Requirement:**

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities(School Building, Health Center, Panchayat Building, Public Toilets & any other)	- Secondary school building vented by gram Panchayat. - 42 checkdam & lack free Wifi - Mahila gram Panchayat. - ~~Cricket ground~~	
2.	Additional Information/ Requirement		

9. **Smart Village Proposal Design**

Sr. No.	Descriptions	Information/ Detail	Remarks
1.			

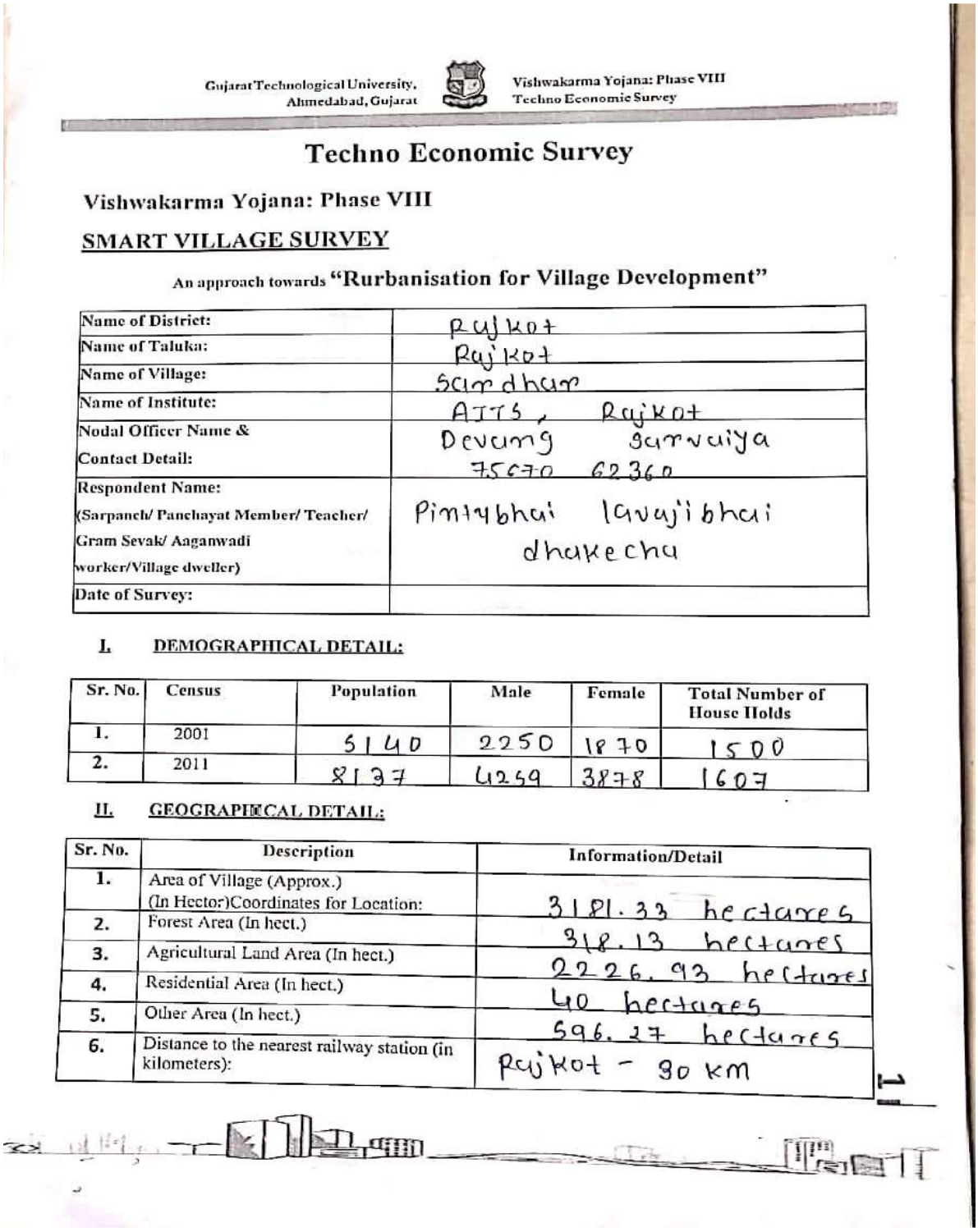
Note: Photographs/ Video/ Drawings of all existing Infrastructure facilities & conditions should be taken by students of respective villages for their record and information.

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

તલાટી-કમ-મંત્રી,
રાજસમઢીયાળા ગ્રામ પંચાયત

તા. 21. 12. 21
સરપંચ,
રાજસમઢીયાળા ગ્રામ પંચાયત

12.2 SCANNED COPY FOR SMART VILLAGE



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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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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:	Rajkot
Name of Village:	Sardhar
Name of Institute:	AITS, Rajkot
Nodal Officer Name & Contact Detail:	Devang Sarvaiya 75670 62360
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Pintubhai Lavajibhai dhakecha
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	5140	2250	1870	1500
2.	2011	8137	4259	3878	1607

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	3181.33 hectares
2.	Forest Area (In hect.)	318.13 hectares
3.	Agricultural Land Area (In hect.)	2226.93 hectares
4.	Residential Area (In hect.)	40 hectares
5.	Other Area (In hect.)	596.27 hectares
6.	Distance to the nearest railway station (in kilometers):	Rajkot - 90 km

7.	Name of Nearest Town with Distance:	Rajkot - 30 km
8.	Distance to the nearest bus station (in kilometers):	Gardhar Bus - Stand
9.	Whether village is connected to all road for the any facility or town or City?	yes

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Agriculture
	2.	Business
	3.	Labour work

Major crops grown in the village:	1.	wheat
	2.	cotton
	3.	groundnut

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	✓ (6 nos.)			
2.	**DUG WELL**				
	Protected Well				
	Un Protected Well				
3.	**WATER FROM SPRING**				
	Protected Spring				
	Unprotected Spring				
	Rainwater				
	Tanker Truck				
	Cart With Small Tank				
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/**	pond			
	Irrigation Channel				
	Bottled Water				
	Hand Pump	✓ (3 nos.)			
	Other(Specify)**Lake/ Pond**				

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Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:			
	Underground Sump ✓(1)	Capacity:	1.15 lakh		
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	✓			
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	RCC			
	Main road	RCC			
	Internal streets	RCC			
	Nearest NH/SH/MDR/ODR Dist. in kms.	SH Rajkot – Bhavanagar			
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Rajkot 30 KM			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto Private vehicles			
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Govt. >6hrs			

3

	Power supply for Domestic Use	✓			
	Power supply for Agricultural Use	✓			
	Power supply for Commercial Use	✓			
	Road/ Street Lights	✓			
	Electrification in Government Buildings/ Schools/ Hospitals	✓			
	Renewable Energy Source Facilities (Y/ N)	✓			
	LED Facilities	✓			
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	✓ (1)			
	Location Condition	good			
	Community Toilet (With bath/ without bath facilities)	X			
	Solid & liquid waste Disposal system available	X			
	Any facility for Waste collection from road	✓	door to door		
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL OTHER (SPECIFY)	River ✓ ✓			
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	90%. Pucca 10%. Kutchha			

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	✓			
	Sub-Centre	✓			
	PHC	✓			
	BLOCK PHC	—			
	CHC/RH	—			
	District/ Govt. Hospital	—			
	Govt. Dispensary	—			
	Private Clinic	✓			
	Private Hospital/	—			
	Nursing Home	✓			
	AYUSH Health Facility	—			
	sonography /ultrasound facility	✓			
	If any of the above Facility is not available in village than approx. distance from village: ..30..kms. Rajkot				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	✓	(7)		
	Primary School	✓	(4)		
	Secondary school	✓	(1)		
	Higher sec. School	—			
	ITI college/ vocational Training Center	—			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	—			
	If any of the above Facility is not available in village than approx. distance from village: ...30.kms. Rajkot				

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Suggestions if any:

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

If any of the above Facility is not available in village than approx. distance from village: 30....kms. Rajkot

Suggestions if any:

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

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

Suggestions if any:

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

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	NO			
2.	Bio-Gas Plant X Solar Street Lights Rain ✓ Water Harvesting X 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	Yes			
2.	Recent Projects going on for Development of Village				
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

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

IX. Smart Village / Heritage Details

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

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

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

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12.3 SCANNED COPY FOR ALLOCATED VILLAGE

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

Name of District:	Rajkot
Name of Taluka:	Gondal
Name of Village:	Moviya
Name of Institute:	ATTS, Rajkot
Nodal Officer Name & Contact Detail:	Devang Suvaiya 75670 62360
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aanganwadi worker/Village dweller)	Vaghajibhai Virajibhai Pardariya
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	10903	5659	5244	3120
2.	2011	11008	5708	5300	2260

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	6656.46 hectares
2.	Forest Area (In hect.)	8.1 hectares
3.	Agricultural Land Area (In hect.)	5959 hectares
4.	Residential Area (In hect.)	39-43 hectares
5.	Other Area (In hect.)	47-99 hectares
6.	Distance to the nearest railway station (in kilometers):	Gondal - 8 KM

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

III. OCCUPATIONAL DETAILS:

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

Major crops grown in the village:	1.	peanuts
	2.	millet
	3.	rice

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	✓			
2.	**DUG WELL**				
	Protected Well	✓			
	Un Protected Well				
3.	**WATER FROM SPRING**				
	Protected Spring				
	Unprotected Spring	✓			
	Rainwater				
	Tanker Truck				
	Cart With Small Tank				
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/**	✓			
	Irrigation Channel				
	Bottled Water				
	Hand Pump	✓			

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Other(Specify)Lake/ Pond	✓			
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank – 2	Capacity:	✓ ✗ ✓		
	Underground Sump	Capacity:	✗	5,00,000	litre
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A UNDERGROUND DRAINAGE 1	yes			
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	yes	all	weather	
	Main road	yes	C.C. road		
	Internal streets	yes	C.C. road		
	Nearest NH/SH/MDR/ODR Dist. in kms.	SH Gondal – Vasavad			
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NO	Gondal (8 km)		
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	~~NO~~ yes	renovation is necessary		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	All type of transportation (Auto)			
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Govt. >6 hrs.			

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Vishwakarma Yojana: Phase VIII
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	Power supply for Domestic Use		✓		
	Power supply for Agricultural Use		✓		
	Power supply for Commercial Use		✓		
	Road/ Street Lights		✓		
	Electrification in Government Buildings/ Schools/ Hospitals		✓		
	Renewable Energy Source Facilities (Y/ N)		✓		
	LED Facilities		✓		
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	yes 1			
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	yes (2) with bath			
	Solid & liquid waste Disposal system available	NO			
	Any facility for Waste collection from road	yes door to door		Collection	
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND	✓			
	STREAM/RIVER	✓			
	CANAL				
	WELL	✓			
	TUBE WELL	✓			
	OTHER (SPECIFY)				
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	2304 Pucca 226 Kutchha			

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	✓			
	Sub-Centre	✓			
	PHC	~			
	BLOCK PHC	—			
	CHC/RH	—			
	District/ Govt. Hospital	X			
	Govt. Dispensary				
	Private Clinic	✓			
	Private Hospital/ Nursing Home	X			
	AYUSH Health Facility	✓			
	sonography /ultrasound facility				
	If any of the above Facility is not available in village than approx. distance from village: ....8...kms. Gondal				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	✓			
	Primary School	✓			
	Secondary school	✓			
	Higher sec. School	✓			
	ITI college/ vocational Training Center	—			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	-	Govt. Arts & commerce college		

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Vishwakarma Yojana: Phase VIII
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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)	yes			NO
	Public Library (With daily newspaper supply: Y/N)				NO
	Public Garden	good		yes	
	Village Pond	good		yes	
	Recreation Center	-			
	Cinema/ Video Hall	-			NO
	Assembly Polling Station	good		yes	
	Birth & Death Registration Office	yes	GP.	yes	-

If any of the above Facility is not available in village than approx. distance from village: ....8...kms. Gondal

Suggestions if any:

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

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

Suggestions if any:

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

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	NO			
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	Yes			
2.	Recent Projects going on for Development of Village	Yes			
3.	Any NGO working for village development	yes			
4.	Any natural calamity in the village during the last one year: EARTHQUAKES FLOODS CYCLONE DROUGHT LANDSLIDES AVALANCHE OTHER (SPECIFY)	NO			

8

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VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

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

IX. Smart Village / Heritage Details

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

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

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

તલાટી કમ મંત્રી-૨
મોવિયા ગ્રામ પંચાયત

સરપંચ
મોવિયા ગ્રામ પંચાયત

12.4 Gap analysis of the allocated village

Table 11: Summary of allocated design

VILLAGE GAP Analysis					
Village Facilities	**Planning Commission/UDPFI Norms**	**Village Name:**	**Moviya**		
		Population:	**11008**		
		Existing	**Required as per Norms**	**Smart Village/ Cities/ Heritage Future Project Design**	**Gap**
Social Infrastructure Facilities					
Education					
Anganwadi	Each or per 2500 population	9	2	0	7
Primary school	Each per 2500 population	3	0	0	3
Secondary school	Per 7500 population	2	0	0	2
Higher secondary school	Per 15000 population	4	0	0	4
College	Per 125000 population	1	1	1	0
Tech. Training institute	Per 100000 population	0	1	0	-1
Agriculture Research Centre	Per 100000 population	0	1	0	-1
Skill Development Centre	Per 100000 population	0	1	0	-1
Health Facility					
Govt/Panchayat Dispensary or Sub PHC OR Health Centre	Each village	1	1	0	0
Primary Health & Children Health Centre	Per 20000 population	1	0	1	1
Child Welfare and Maternity Centre	Per 10000 population	1	0	1	1
Multispeciality Hospital	Per 100000 population	0	1	0	-1
Public Latrines	1 for 50 families (if toilet is not there in homes, specially for slum pockets & kutcha house)	1	1	1	0
Physical Infrastructure Facilities					
Transportation		Adequate	Inadequate		
Pucca Village Approach Road	Each village	Yes	No		
Bus/Auto Stand provision	All villages connected by PT(ST Bus or Auto)	Yes	No		
Drinking Water (Minimum 70lpcd)		Yes	No		
Over Head Tank	1/3 of Total Demand	Yes	No		
U/G Sump	2/3 of Total Demand	Yes	No		

Drainage Network – open		Yes	No		
Drainage Network – Cover		Yes	No		
Waste Management System		Yes	No		
Socio – Cultural Infrastructure Facilities					
Community Hall	Per 10000 population	1	0	1	1
Community Hall and Public Library	Per 15000 population	0	0	1	0
Cremation Ground	Per 20000 population	0	0	0	0
Post Office	Per 10000 population	1	0	0	1
Gram Panchayat Buildidng	Each individual/group panchayat	1	0	0	1
APMC	Per 100000 population	0	0	0	0
Fire Station	Per 100000 population	0	0	1	0
Public Garden	Per village	1	0	1	1
Police post	Per 400000 population	0	0	0	0
Shopping Mall		0	0	1	0

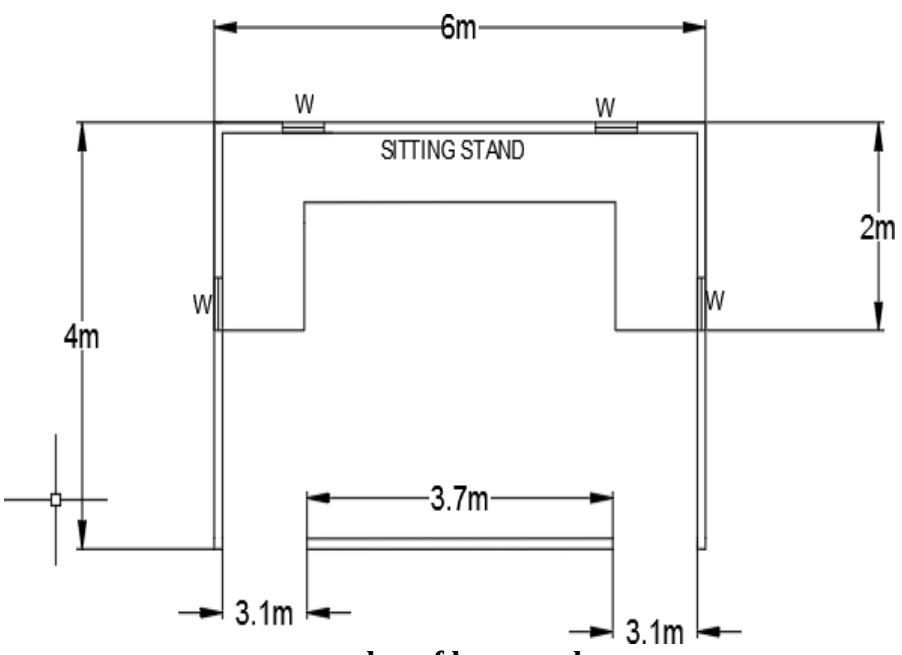
12.5 Summary Details of all the Villages Design as part-I and part-II

Table 12: Summary of all villages Design

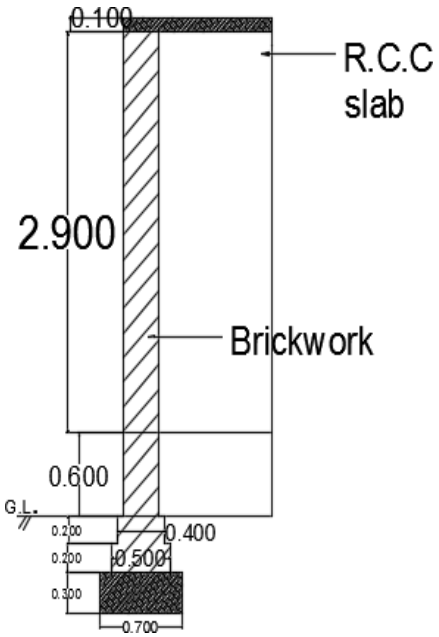
Sr. no.	Village	Discipline	Part - 1	Part - 2
1	Moviya	Civil	Bio-Gas Plant	Soak pit
			Bus Stand	Children Amusement Park
			Hospital	2nd inning Home
			Library	Shopping Center
			Water Filtration Plant	Govt. grocery Shop
			Drinking Water Tank For Animals	Renovation of Chabutara
2	Nyara	Civil	Honeybee Breeding Centre	Open air theatre
			Anganwadi	Supermarket
			High School	Eco building
			Garden	Shed
			CCTV Camera and Speaker	Youth club
			Entrance gate of village	Women's club
3	Vagudad	Civil	Green House	Rain Water Harvesting
			Bore Well	Post Office
			Overhead RCC Tank	Septic Tank
			Renovation of Gram Panchayat	Bank
			Community Hall	RO Plant
			Vending Machine	Clock Tower

12.6 Drawings

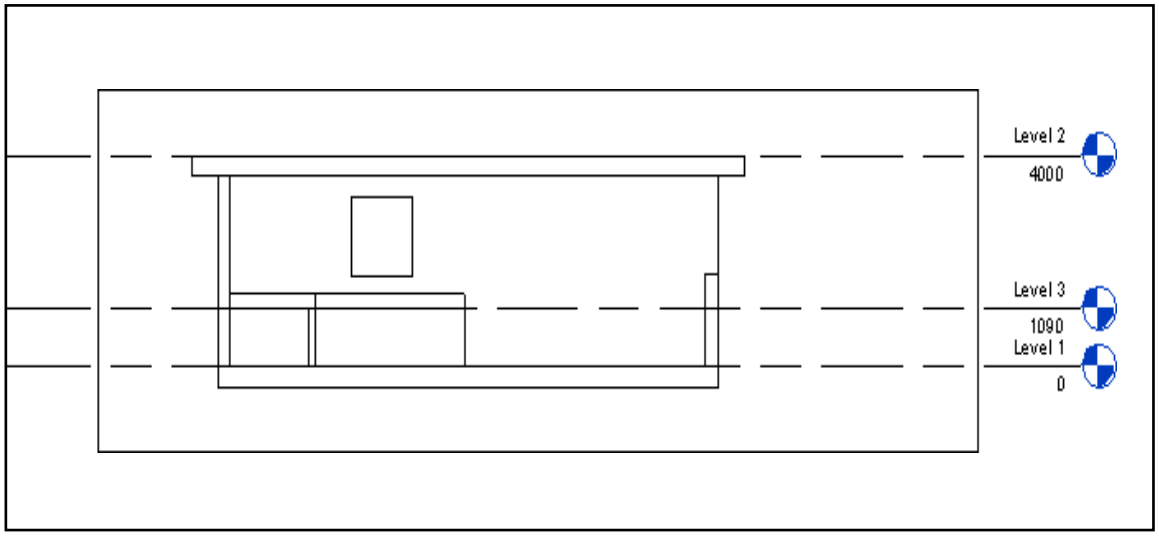
- **Drawing of Bus Stand**



plan of bus stand



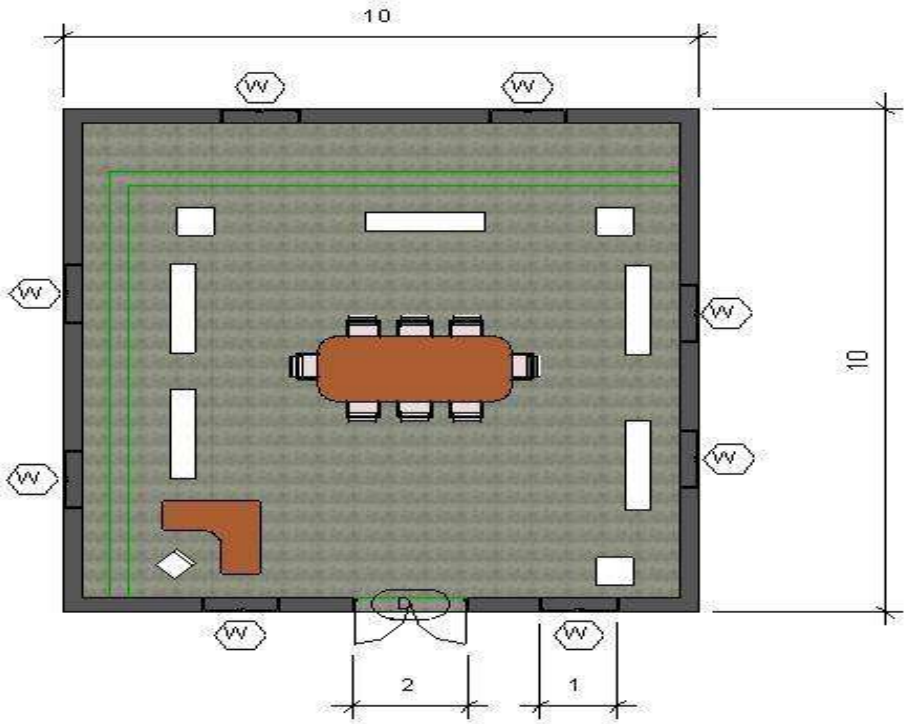
Footing



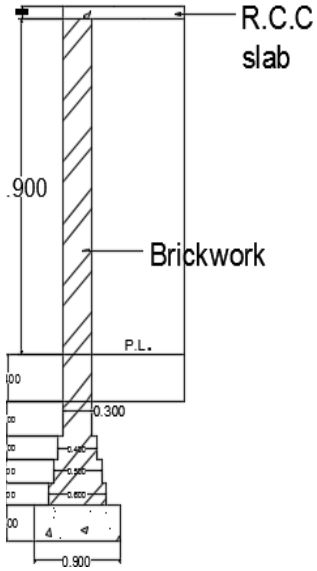
Elevation of bus stand

Fig-50: Drawing of bus stand

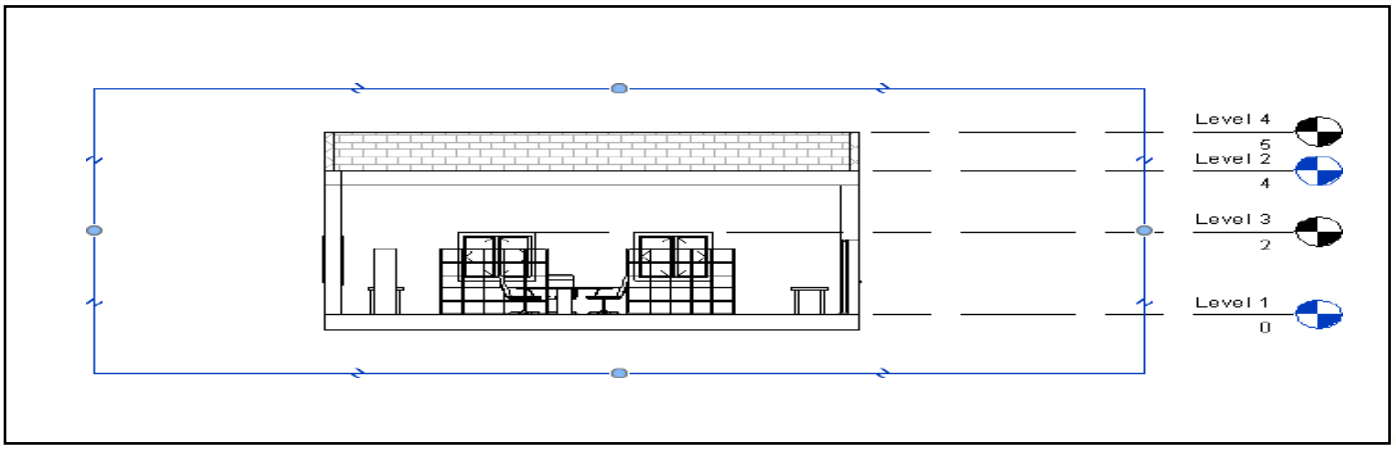
- **Drawing of Library**



Plan of Library



Footing



Section of Library

Fig-51: Drawing of library

- **Drawing of Hospital**

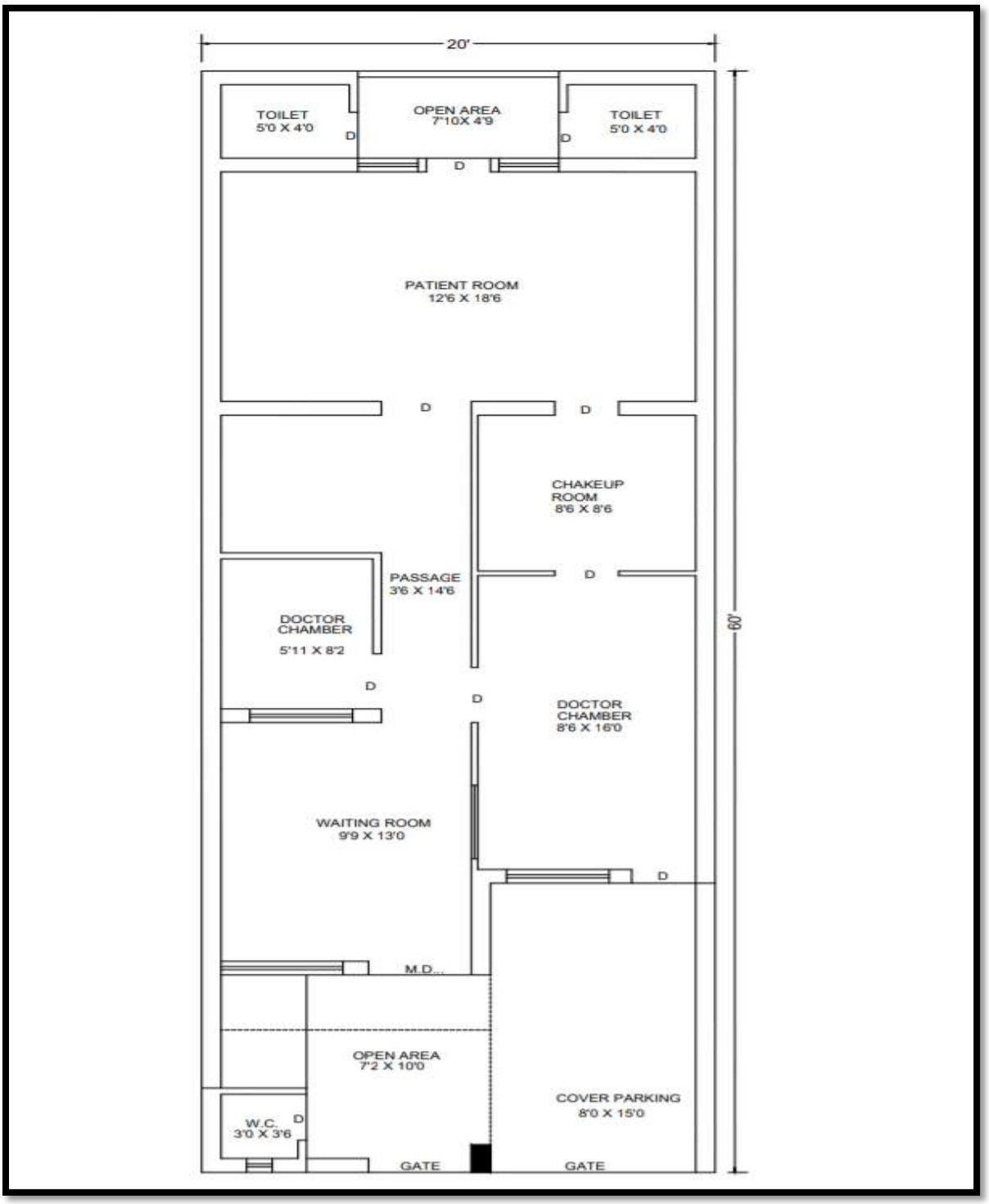
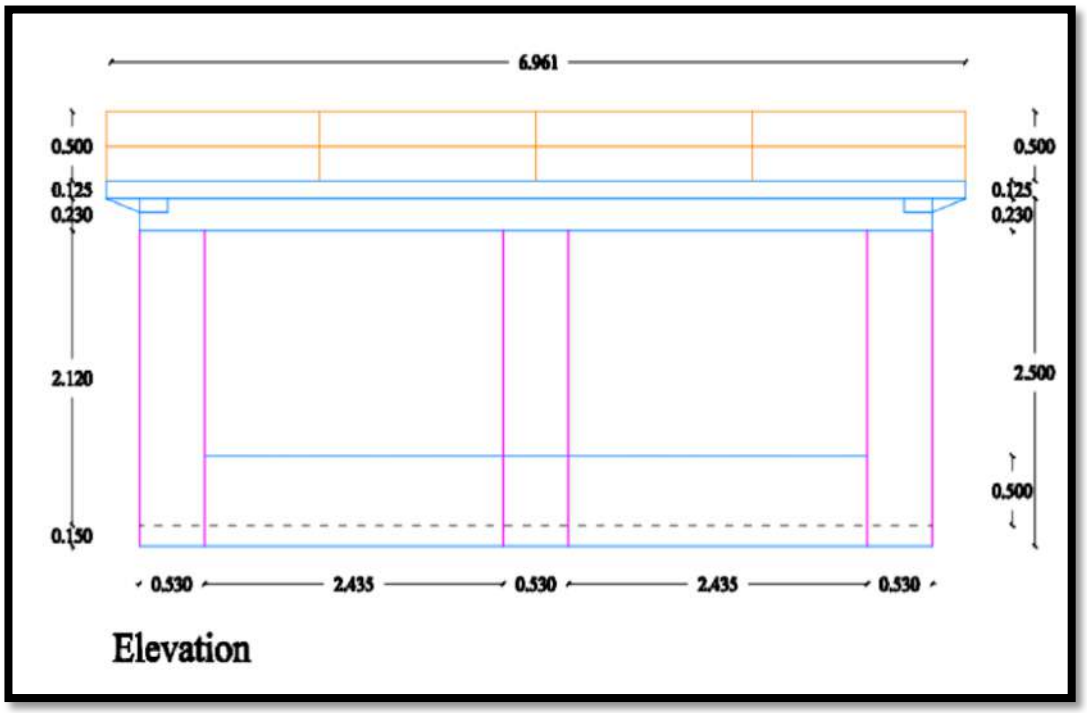


Fig-52: Drawing of hospital

- **Drawing of Water Tank**



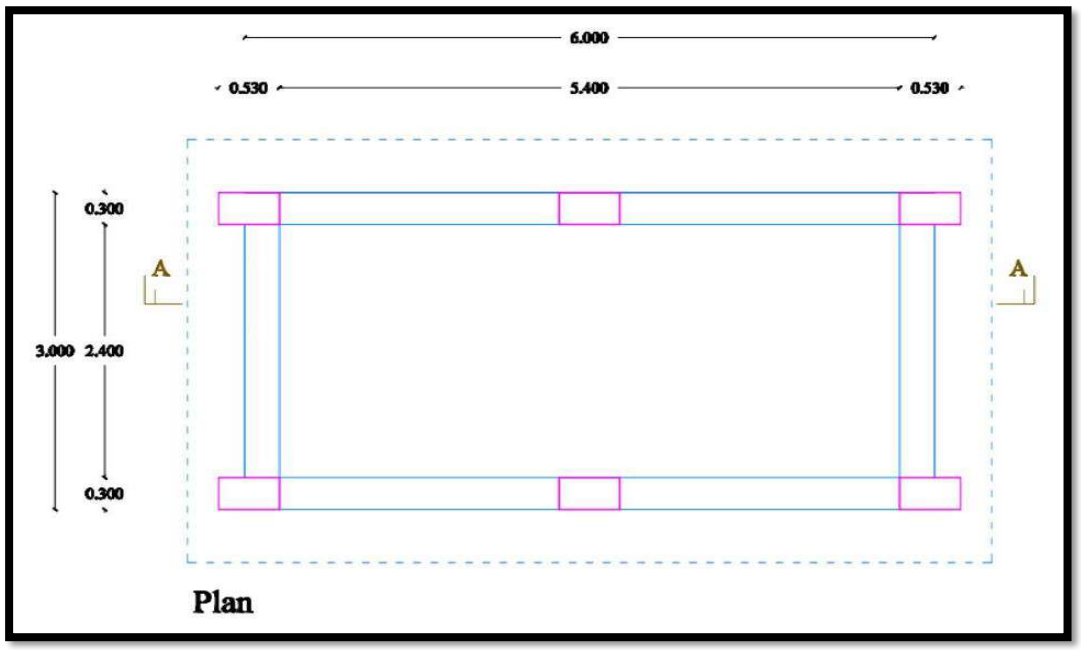


Fig-53: Drawing of water tank

12.7 Summary of Google Photographs

Fig-54: interaction with Sarpanch

Fig-55: Solar light

Fig-56: Rules of village

Fig-57: Tample

Fig-58: Base map of ideal village

Fig-59: Road of ideal village

12.8 Village interaction with sarpanch with photograph

A Report
On
Interactive Presentation (Vishwakarma Yojana:PhaseVIII
At)
Moviya Village, Rajkot.

25th Nov. 2019

We was visit moviya village and interact with various authorities of village like sarpanch, Talati mantri as well as people of village. We was explain what is Vishwakarma Yojana and main aim of vishwakarma project. We conduct techno-economic survey of village to identify various existing facilities.

We have also visited various places like gram-panchyat, bus stands, temples, Primary school and other amenities. Existing condition of various amenities as well as various infrastructure was examined by us like. road condition, housing condition, drainage system, etc.

We explain various design of our project under different infrastructure such as Bio-gas plant (sustainable design), bus stand (physical design), hospital (social design), public library (socio cultural design), water filtration plant (smart village design)and drinking water tank for animals(heritage design).

Fig-60: Interaction with Sarpanch

Chapter 13: From the chapter-9 future designs of the aspects (feasibility, construction, operation and maintenance of various design options in rural areas along with cost with autoCAD designs/ planning with any software

13.1 Design Proposals

Different facilities in moviya village which we observed as below,

- Physical Infrastructure facility:
  - Piped water supply to dweller and plot/yard
  - Water tank
  - Underground drainage
  - Cement concrete road
  - Transportation facility
  - Electricity distribution

- Social Infrastructure facility:
  - Anganwadi
  - Primary school
  - Secondary school
  - Higher secondary school

- Socio-culture Infrastructure facility:
  - Community Hall
  - Public garden
  - Temples

13.1.1 Sustainable design

- As a sustainable design we have to decide to design a Soak pit.
- A soak pit is useful for treatment for wastewater which is produces from houses. It contains gravels and small rubbles by which the water is filtered and the ground water does not pollute.
- A soak pit can be individual in the houses or can be general for village.

- **Soak pit**
  - The detailed drawing of Sock pit is below.

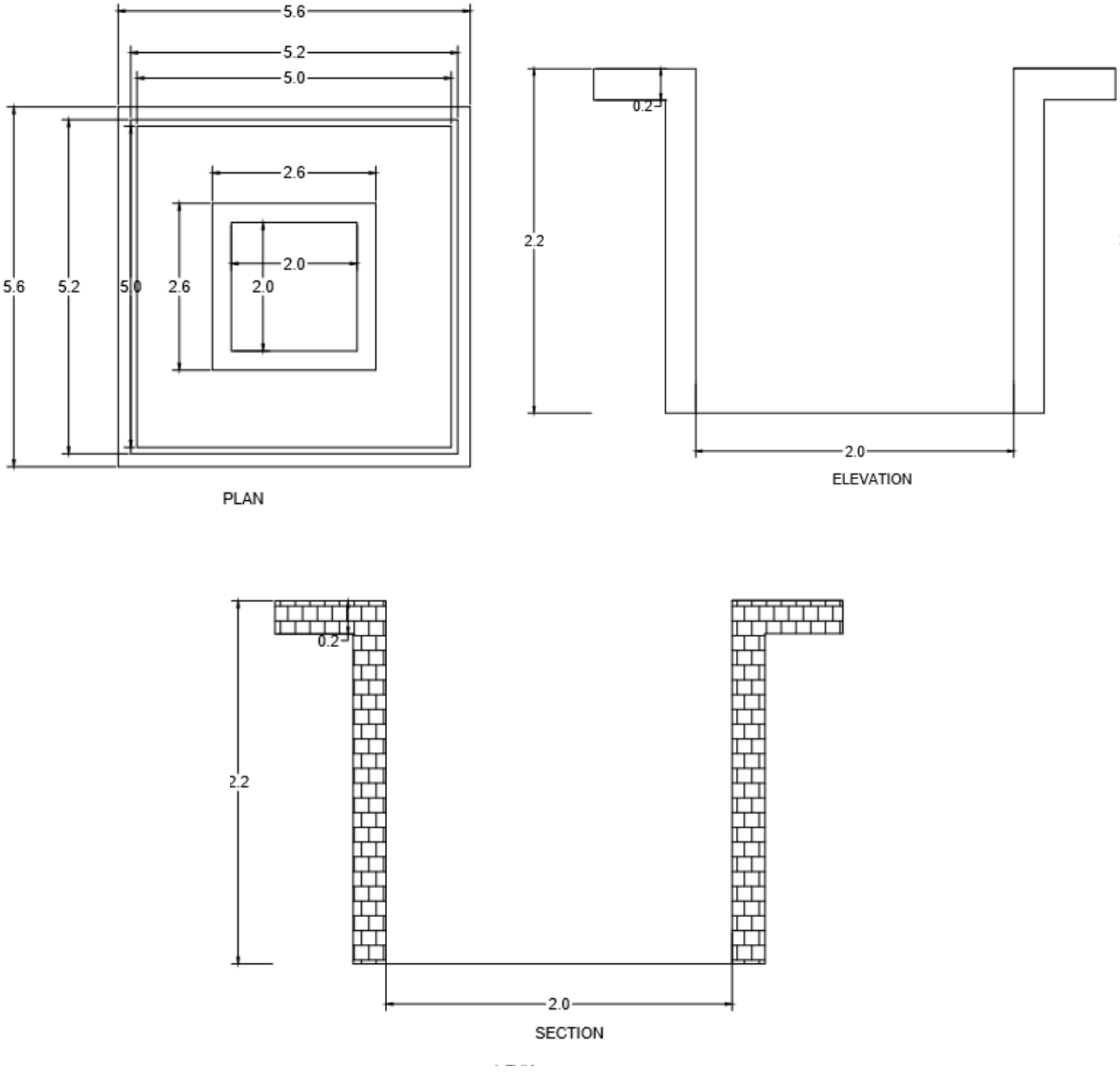


Fig-61: Plan, Section, Elevation of soak pit

Measurement Sheet of Soak Pit

Sr.no.	Description of items	No	L (m)	B (m)	H (m)	Quantity
1	Excavation in ground	1	4	2	2	16m3
2	P.C.C.	1	4	2	0.2	1.6m3
3	BRICK MASONRY	1	1	2	2	4m3

Brick Masonry for 4m3 2000 nos.

Abstract Sheet of Soak Pit

Sr.no	Description of items	Quantity	Unit	Rs	Amount
1	Excavation for ground	16	M3	86	1376
2	Brickwork	2000	No	4	8000
3	PCC	1.6	M3	2100	3360
					Cost=12736Rs

Water charges = 0.015*12736
= 191.5Rs

Construction profit = 0.1*12736
= 1273.6Rs

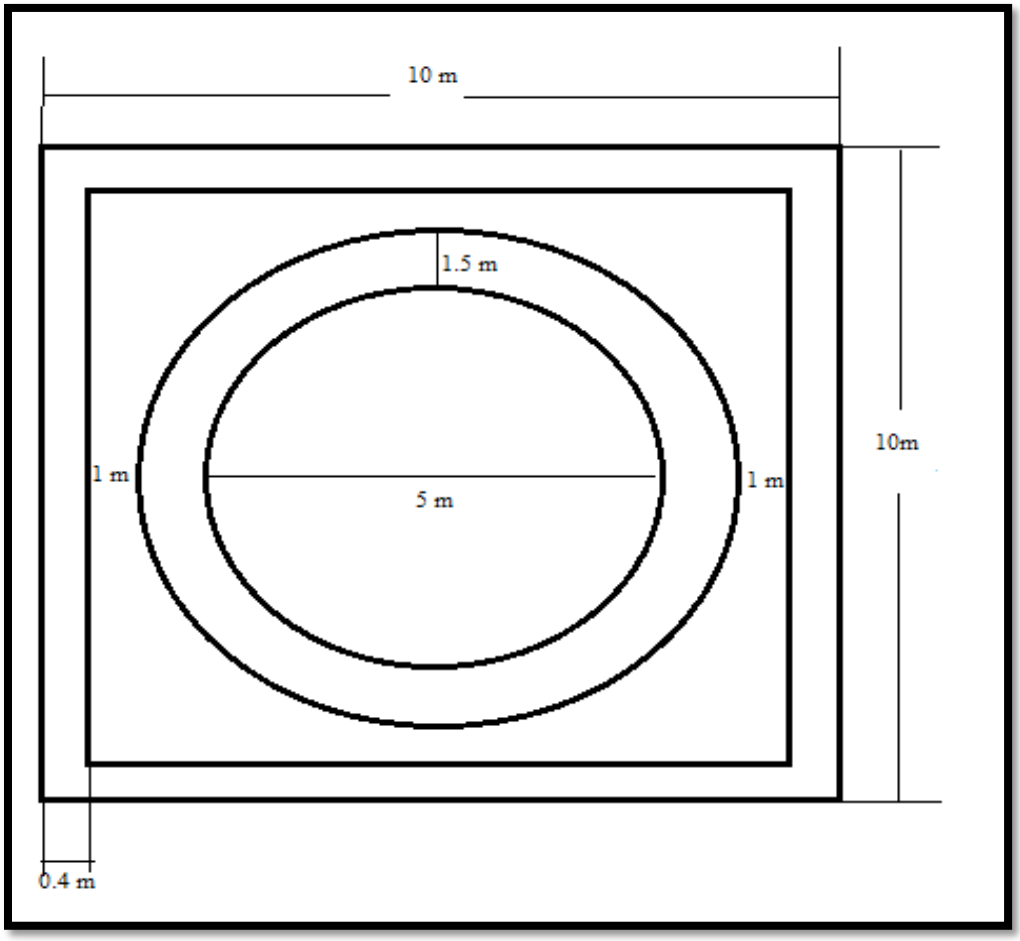
Total cost of Soak Pit = 14201.6Rs

13.1.2 Physical design

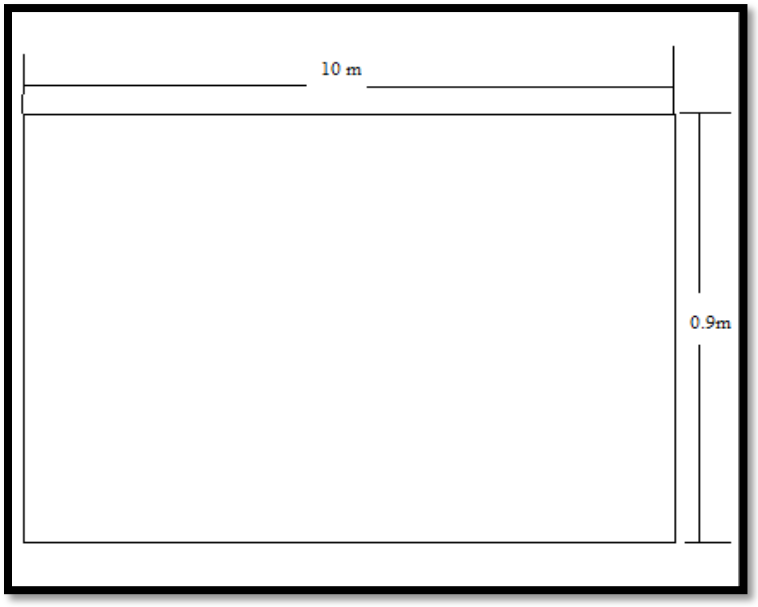
- Children's play areas are far from being the simple provision most people believe.
- A swing, a slide and a climbing frame are not, on their own, of great benefit to the growing child. To provide fully for children requires a sophisticated approach to siting, design and selection of equipment and surfacing.
- There is not proper facilities for children playground so we proposal for playground

➢ **Children amusement park**

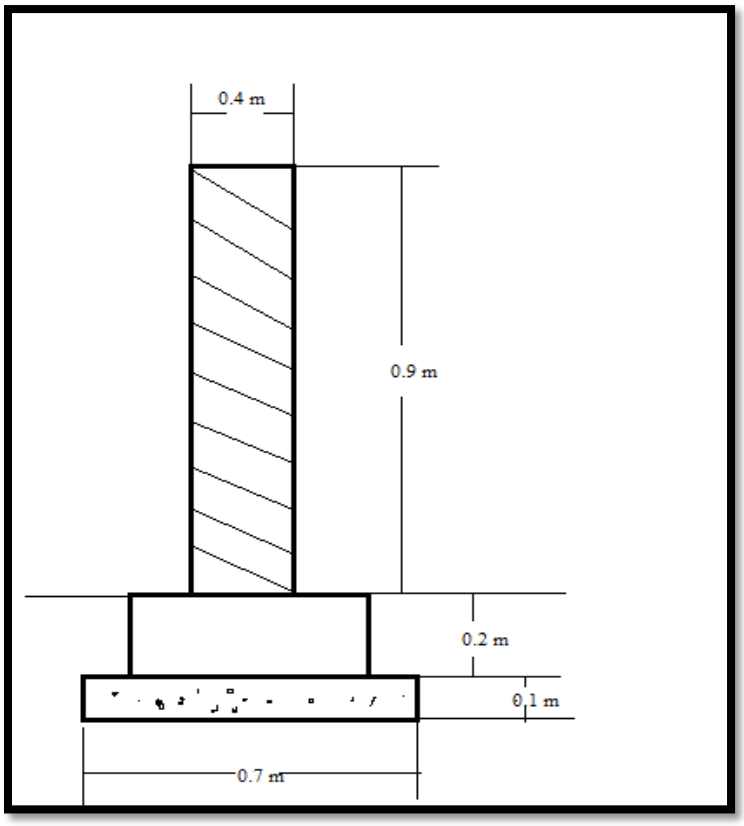
- The detailed drawing of Children Amusement park is below.



Plan



Elevation



Section

Fig-62: Plan, Elevation, Section of Children Amusement Park

Fig-63: 3D view of Children Amusement Park

Measurement sheet of Children Amusement Park

Total Centerline length
=2*10.4 + 2*10.4
=41.6m

Sr.no.	Description of items	No	L (m)	B (m)	H (m)	Quantity
1	Excavation in ground	1	41.6	0.7	0.3	8.736m3
2	P.C.C.	1	41.6	0.7	0.1	2.912m3
3	First step	1	41.6	0.5	0.2	1.16m3
4	Wall	1	41.6	0.4	0.9	14.976m3
	Deduction					
	Gate	1	1	0.4	0.9	0.36m3
	Total = 18.77m3					

Abstract sheet of Children Amusement Park

Sr.no	Description of items	Quantity	Unit	Rs	Amount
1	Materials				
	Bricks	9385	no	4	37540
	Sand	5.31	M3	800	4248
	Cement	25	Bag	280	7000
					Material cost = 48788Rs
2	Labour				
	Male coolie	2	Day	200	400
	Female coolie	2	Day	200	400
	Bhistie	1	Day	180	360
					Labour cost = 1160Rs
	Total cost = 49948rs				

Water charges = 0.015*49948
= 749.22Rs

Contractor profit = 0.1*49948
= 4994.8Rs

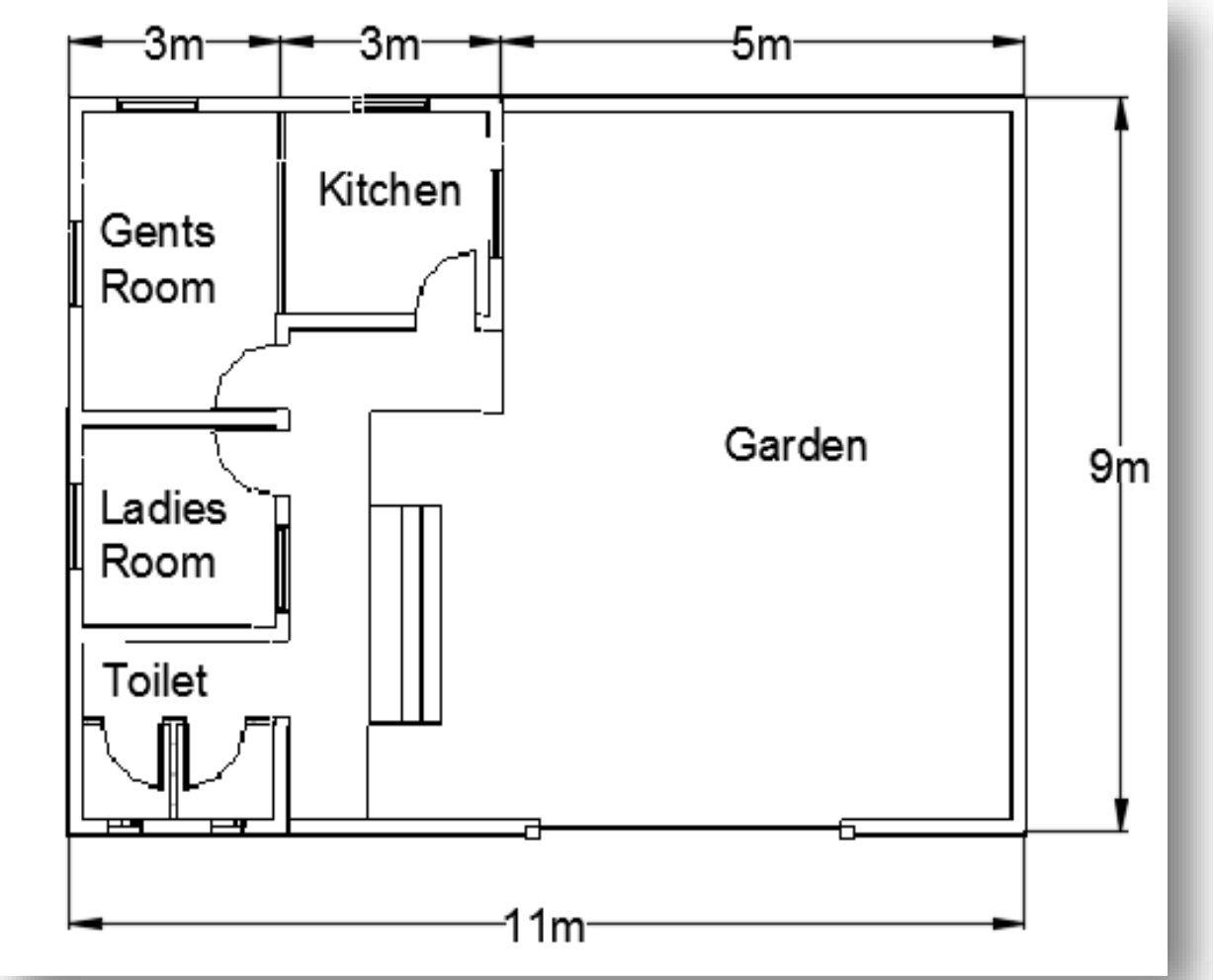
Total cost = 5744.02Rs

13.1.3 Social design

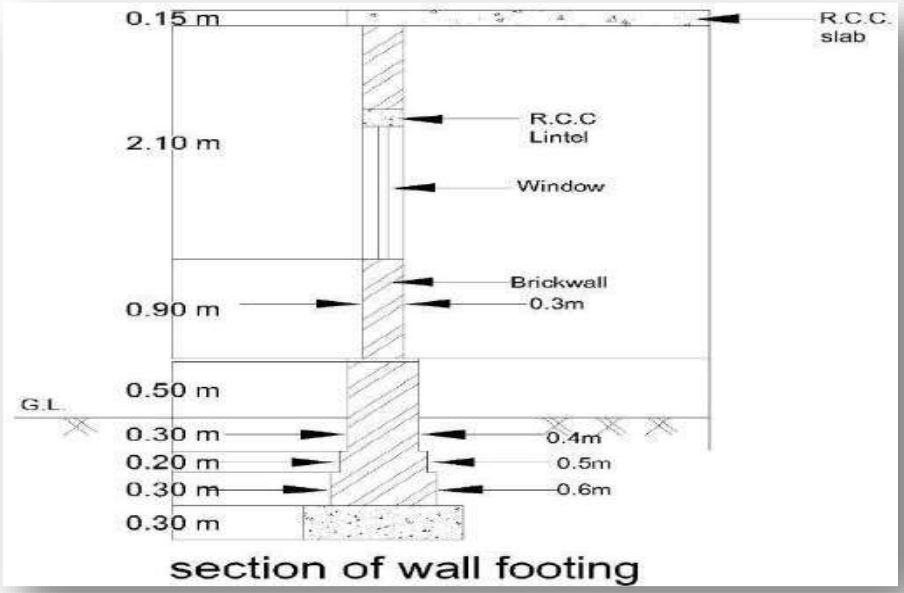
- An old parent staying in an old age home is a common enough phenomenon. But is it desirable? Most elderly people cannot reconcile themselves to the idea of living in old age homes.
- We, their children, want them to live happily, in peace and preferably in the one place where they have always lived – their own homes.

➢ **2nd inning home**

- The detailed drawing of 2nd inning home is below.



Plan



Section

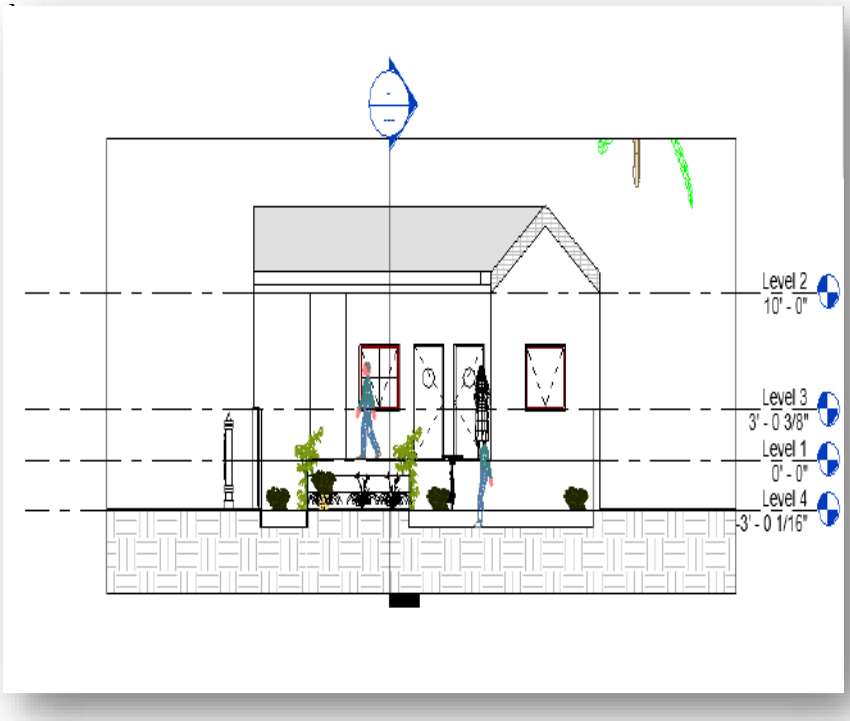


Fig-64: Plan, Section of 2nd inning home

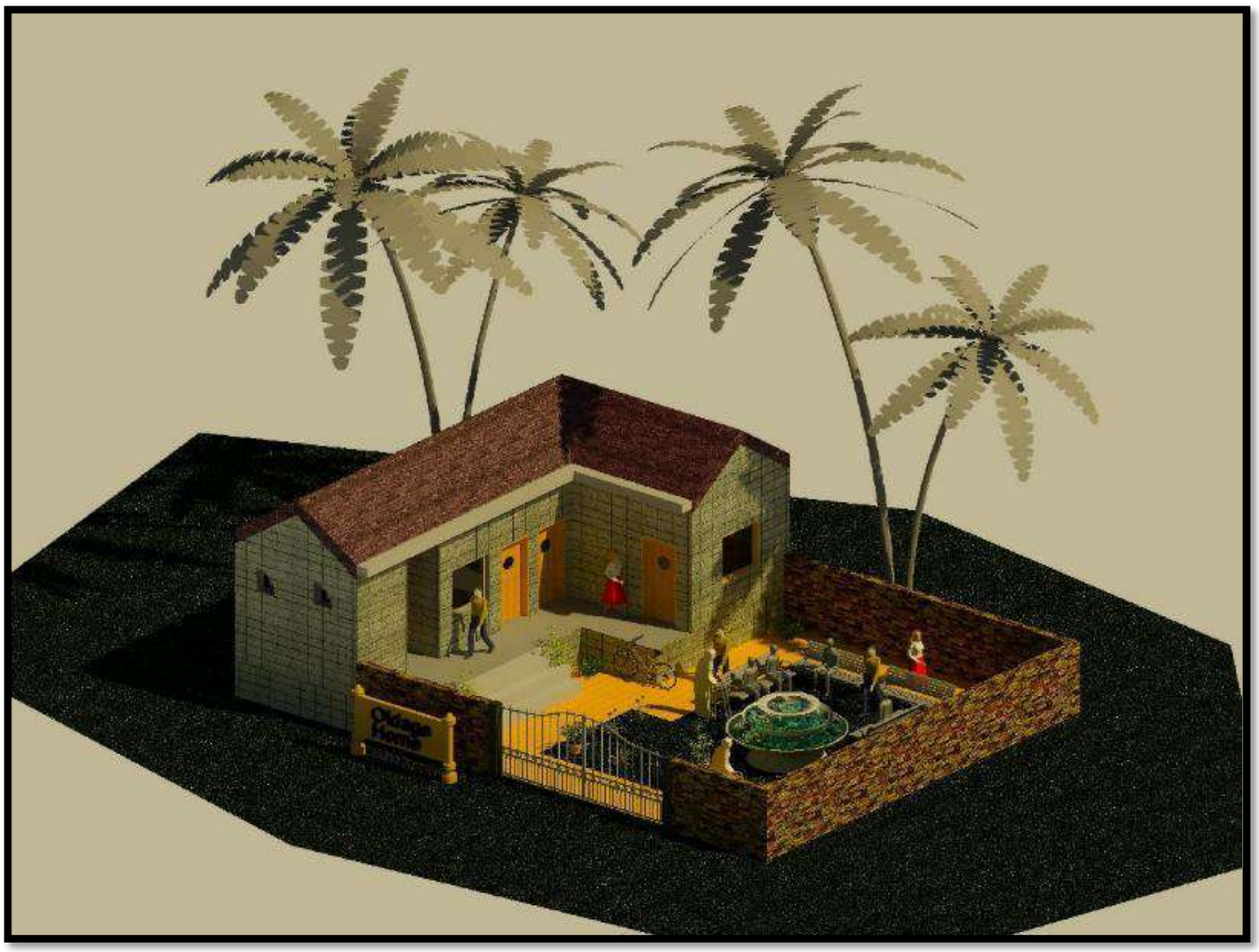


Fig -65: 3D view of 2nd inning home

Measurement sheet of 2nd inning home

Sr.no.	Description of items	No	L (m)	B (m)	H (m)	Quantity
1	Excavation in foundation	1	50.1	0.9	1.1	49.60m3
2	PCC	1	50.1	0.9	0.3	13.53m3
3	Brick masonry in foundation and plinth					
	Step - 1	1	49.5	0.6	0.3	8.91m3
	Step - 2	1	49	0.5	0.2	4.9m3
	Step - 3	1	48.6	0.4	0.775	15.07m3
					Total cost	= 28.88m3
4	Sand filling in foundation	1			Total cost	= 8032m3
5	Brickwork in super superstructure	1	48.37	0.23	3	33.37m3
6	Deduction for door and window					
	D1	3	1	0.23	2.1	1.45m3
	D2	2	0.75	0.23	2.1	0.72m3
	W	6	1	0.23	1.2	1.66m3
	V	2	0.6	0.23	0.6	0.16m3
					Deduction = 3.99m3	
	Deduction for lintels above door & windows with 15 cm bearing each side					
	D1	3	1.3	0.23	0.15	0.13m3
	D2	2	1.05	0.23	0.15	0.07m3
	W	6	1.3	0.23	0.15	0.27m3
	V	1	0.9	0.23	0.15	0.03m3
					Deduction = 0.5m3	
	Net quality = 33.37 -3.99-0.5=28.88m3					
7	Inside plaster 12 mm thick					
	Long wall	2	9		3	54m2
	Short wall – 1	2	11		3	66m2
	Short wall – 2	16	3		3	144m2
				Total cost = 264m3		
	Deduction					
	D1	3	1	2.1		6.3m2
	D2	2	0.75	2.1		3.15m2
	W	6	1	1.2		7.2m2
	V	2	0.6	0.6		0.72m2
					Deduction = 17.37m2	
	Net quantity = 264-17037=246.63m2					
8	Outside plaster 20 mm thick					
	Long wall	2	9		3.5	63m2
	Short wall	2	11		3.5	77m2
				Total cost = 140m2		
	Deduction					

	W	6	1	1.2	7.2m2
	V	2	0.6	0.6	0.72m2
				Deduction = 7.92m2	
	Net quantity = 140-7092=132.08m2				

Abstract sheet of 2nd inning home

Sr.no	Description of items	Quantity	Unit	Rs	Amount
1	Earthwork in excavation up to 1.5m depth				
	Labour				
	Male coolie	4	Day	200	800
	Female coolie	2	Day	180	360
	Sundries				20
				Total cost=1180Rs	
2	Sand filling in foundation and plinth				
	Materials				
	Sand	8.32	M3	800	6656
	Sundries				20
				Material cost = 6676Rs	
	Labour				
	Male coolie	2	Day	200	400
	Female coolie	1	Day	180	180
	Bhistie	0.5	Day	200	100
	Sundries				20
				Labour cost = 700Rs	
				Total cost = 7376Rs	
3	PCC in foundation				
	Materials				
	Cement	46	Bag	280	12880
	Sand	6.33	M3	800	5064
	Aggregate	12.56	M3	1000	12560
	Sundries				50
				Material cost = 30554Rs	
	Labour				
	Mistry	0.5	Day	400	200
	Mason	1	Day	300	300
	Male coolie	7	Day	200	1400
	Female coolie	11	Day	180	1980
	Bhistie	2.5	Day	200	500
	Sundries				50
				Labour cost = 4430Rs	
				Total cost = 34984Rs	
4	Brick masonary in foundation				
	Materials				

	Bricks(19*9*9cm)	14440	Nos	1000nos	57760
	Cement	39	Bag	280	10920
	Sand	8.17	M3	800	6536
	Sundries				50
				Material cost = 75266Rs	
	Labour				
	Mason	2	Day	300	600
	Male coolie	3	Day	200	600
	Female coolie	2	Day	180	360
	Bhistie	1	Day	200	200
	Sundries				50
				Labour cost = 1810Rs	
				Total cost = 77076Rs	
5	Brickwork in superstructure				
	Materials				
	Bricks(19*9*9cm)	16685	Nos	1000nos	66740
	Cement	49	Bag	280	13720
	Sand	9044	M3	800	7552
	Sundries				50
				Material cost = 88062Rs	
	Labours				
	Mistry	0.5	Day	400	200
	Mason	7	Day	300	2100
	Male coolie	7	Day	200	1400
	Female coolie	7	Day	180	1260
	Sundries				50
				Labour cost = 5410Rs	
				Total cost = 93472Rs	
6	12mm thick cement plaster in C.M. 1:4				
	Materials				
	Cement	29	Bag	280	8120
	Sand	3.94	M3	800	3152
	Sundries				50
				Materials cost = 11322Rs	
	Labour				
	Mistry	0.25	Day	400	100
	Mason	10	Day	300	3000
	Male coolie	10	Day	200	2000
	Female coolie	10	Day	180	1800
	Bhistie	2	Day	200	400
	Sundries				50
				Labour cost = 7350Rs	
				Total cost = 18672Rs	
7	20mm thick plaster in C.M. 1:3				
	Material				
	Cement	29	Bag	280	8120

	Sand	2.97	M3	800	2376
	Sundries				50
				Material cost = 10546Rs	
	Labour				
	Mistry	0.25	Day	400	100
	Mason	10	Day	300	3000
	Male coolie	10	Day	200	2000
	Female coolie	10	Day	180	1800
	Bhistie	2	Day	200	400
	Sundries				50
				Labour cost = 7350Rs	
				Total cost = 17896Rs	
8	R.C.C. work for slab and lintel				
	Material				
	Cement	43	Bag	280	12040
	Sand	2.24	M3	800	1792
	Aggregate	1.59	M3	1000	1590
	Steel (1%)	644	Kg	45	28980
	Binding wire	7	Kg	50	350
	Sundries				50
				Material cost = 44802Rs	
	Labour				
	Labour for mixing, transporting and placing concrete including curing	8.21	M3	300	2463
	Cost of hiring mixture and vibrator			L.S.	1000
	Labour for bending, cutting and placing reinforcement steel	644	Kg	5	3220
	Labour for centering and shuttering			L.S.	3000
	Sundries				50
				Labour cost = 9733Rs	
				Total cost = 54535Rs	

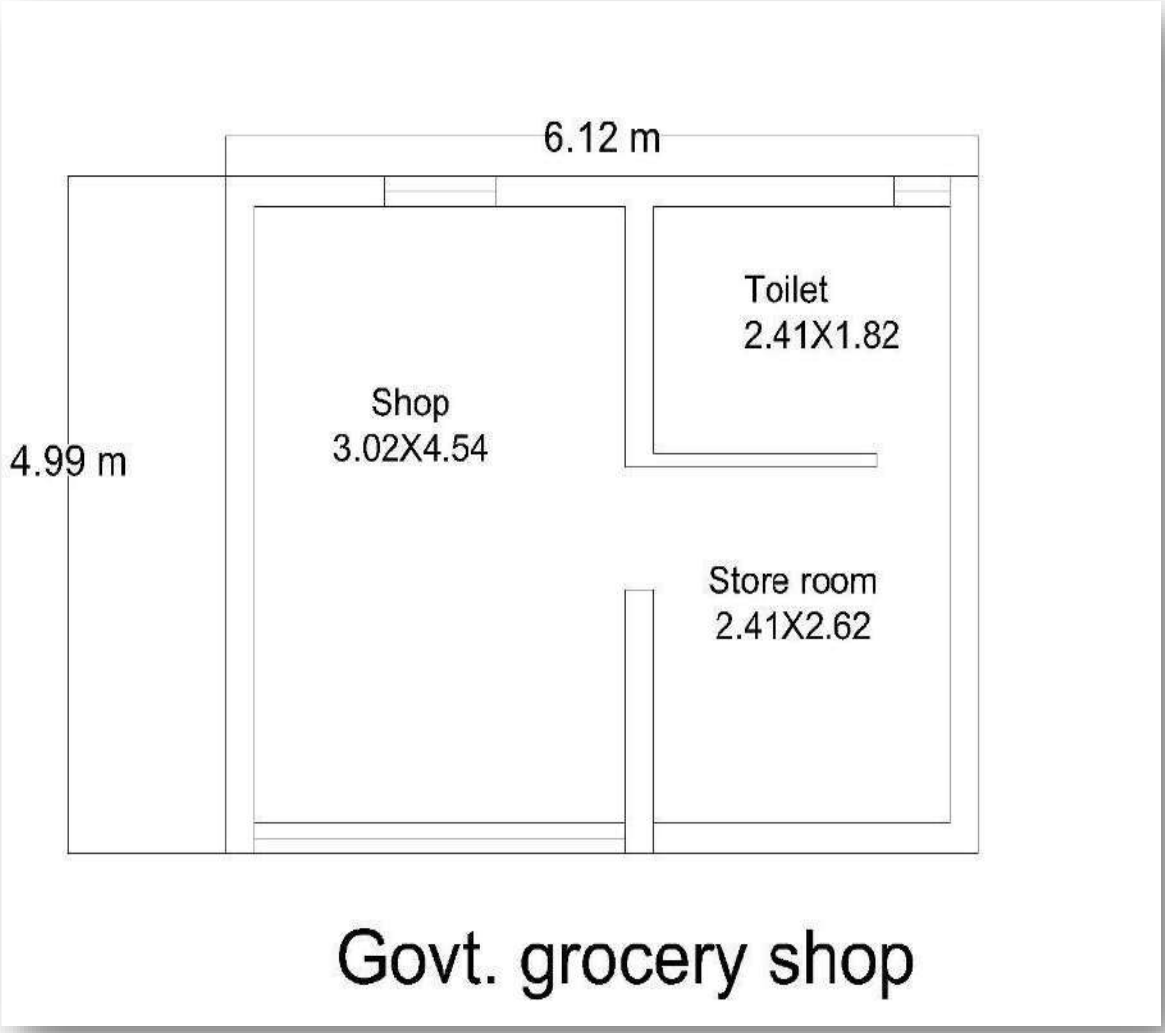
Total cost = 305191Rs
1.5% water charge = 4578Rs
10% contractor's profit = 30519Rs
Total cost = 340288Rs

13.1.4 Socio-cultural design

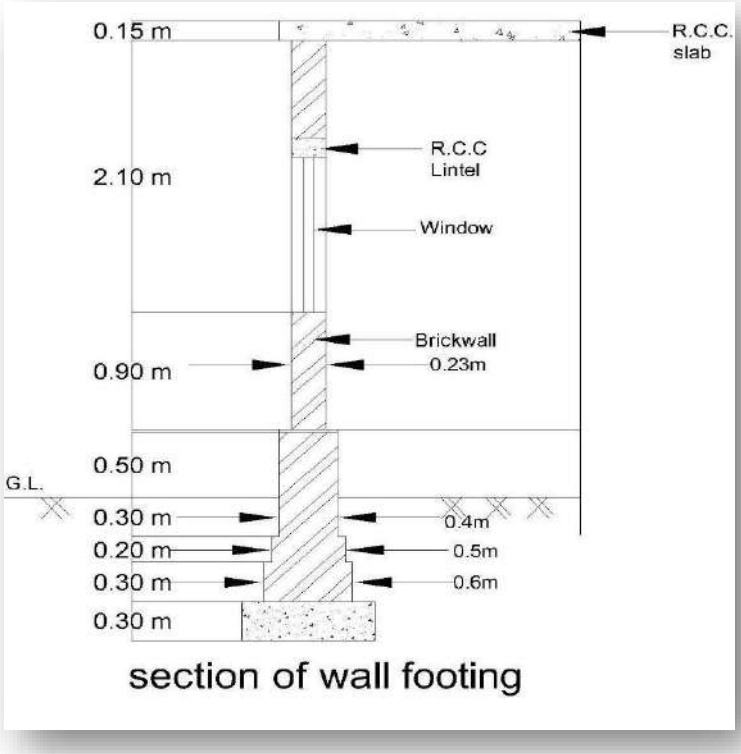
- In this village, there are no govt. grocery shop.
- so we decided to give this small govt. grocery shop.so the people of this village can get grocery in their village area in very fair price.

➢ **Govt. grocery shop**

- The detailed drawing of govt. grocery shop is below.



Plan



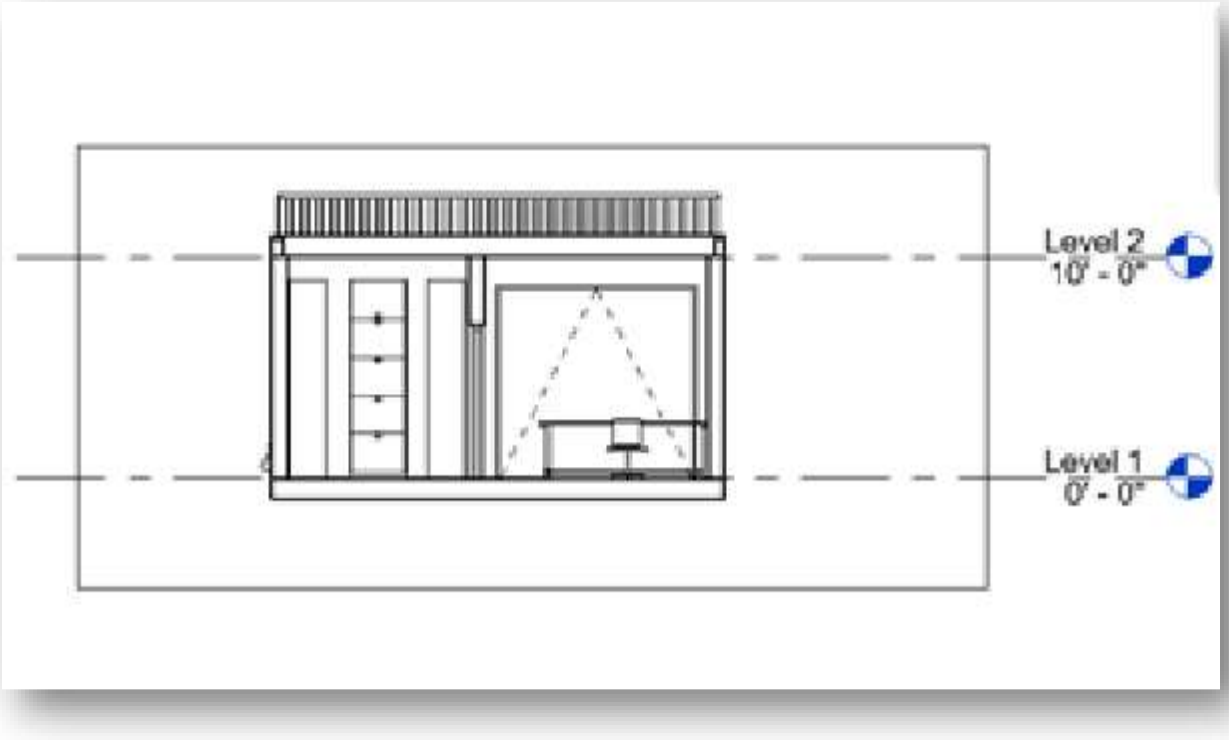


Fig-66: Plan, Section of Govt. grocery shop

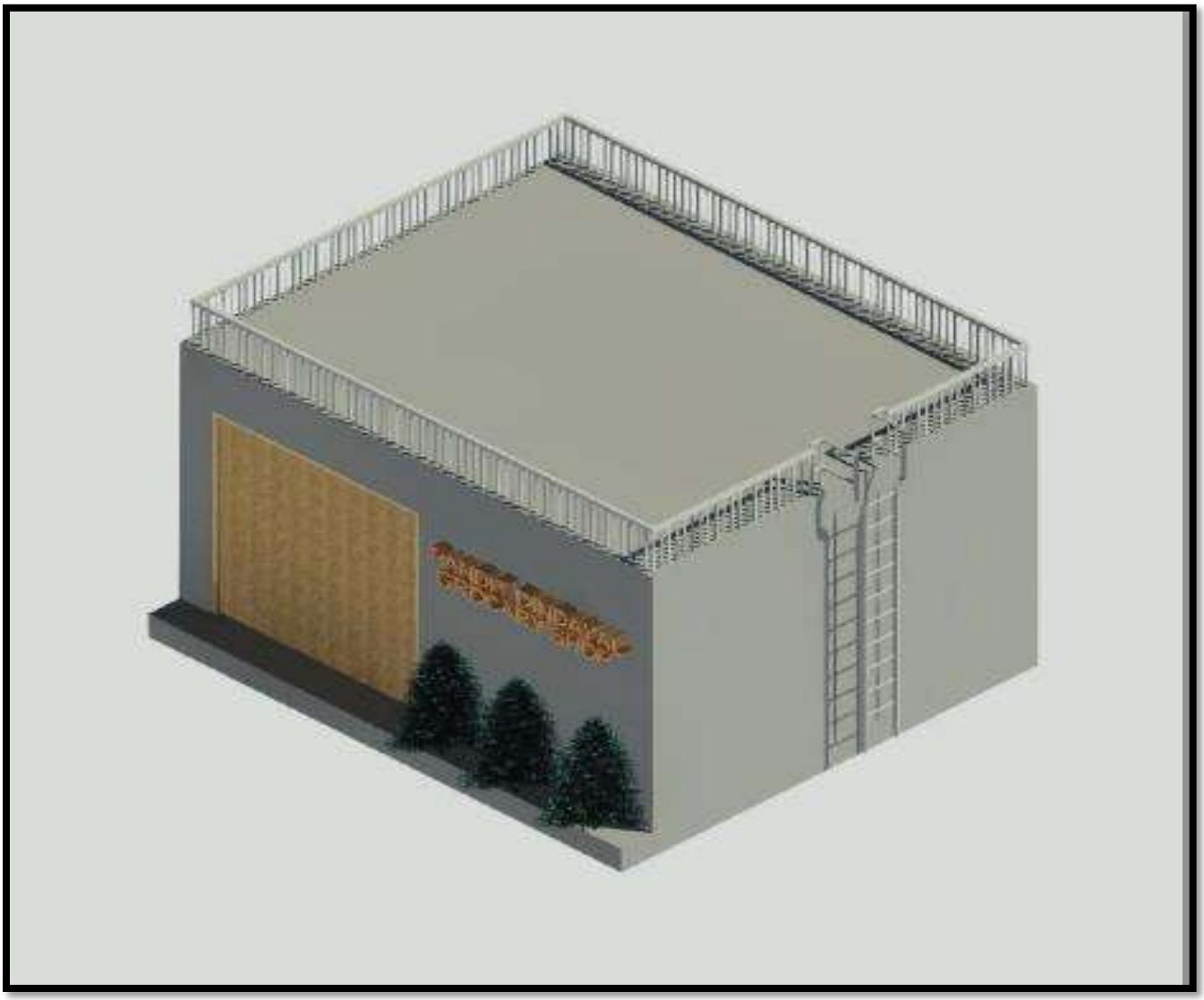


Fig-67: 3D view of Govt. grocery shop

Measurement sheet of Govt. grocery shop

Sr.no.	Description of items	No	L (m)	B (m)	H (m)	Quantity
1	Excavation in foundation	1	26.96	0.9	1.1	26.69m3
2	P.C.C.	1	26.96	0.9	0.3	7.28m3
3	Brick masonry in foundation and plinth					
	Step - 1	1	27.56	0.6	0.3	4.96m3
	Step - 2	1	27076	0.5	0.2	2.78m3
	Step - 3	1	27.96	0.4	0.775	8.67m3
					Total = 16.41m3	
4	Sand filling in foundation	1			Total cost = 8.32m3	
5	Brickwork in super superstructure	1	28.3	0.23	3	19.53m3
6	Deduction for door and window					
	D1	1	1	0.23	2.1	0.483m3
	D2	1	0.75	0.23	2.1	0.362m3
	W	1	1	0.23	1.2	0.276m3
	V	1	0.6	0.23	0.6	0.083m3
	Shutter	1	3.02	0.23	3	2.084m3
					Deduction = 3.288m3	
	Deduction for lintels above door & windows with 15 cm bearing each side					
	D1	1	1.3	0.23	0.15	0.045m3
	D2	1	1.05	0.23	0.15	0.036m3
	W	1	1.3	0.23	0.15	0.045m3
	V	1	0.9	0.23	0.15	0.031m3
					Deduction = 0.157m3	
	Net quality = 19.53-3.28-0.157 = 16.09m3					
7	Inside plaster 12 mm thick					
	Shop	1	3.02		3	9.06m2
		2	4.54		3	27.24m2
	Toilet	2	2.42		3	14.52m2
		2	1.82		3	10.92m2
	Store room	2	2.42		3	14.52m2
		2	2.62		3	15.72m2
	Ceiling plaster					
	Shop	1	3.02	4.54		13.71m2
	Toilet	1	2.42	1.82		4.40m2
	Store room	1	2.42	2.62		6.34m2
					Total = 116.43m2	
	Deduction					
	D1	1	1	2.1		2.1m2
	D2	1	0.75	2.1		1.575m2

	W	1	1	1.2		1.2m2
	V	1	0.6	0.6		0.36m2
					Deduction = 5.235m2	
	Net quantity = 116.43-5.235 = 111.12m2					
8	Outside plaster 20mm thick					
	Long wall	2	5		3.5	35m2
	Short wall – 1	1	6.13		3.5	21.45n2
	Short wall -2	1	2.88		3.5	10.08m2
					Total = 66.53m2	
	Deduction					
	W	1	1		1.2	1.2m2
	V	1	0.6		0.6	0.36m2
					Deduction = 1.56m2	
	Net quantity = 66.53-1.56 = 64.97m2					

Abstract sheet of Govt. grocery shop

Sr.no	Description of items	Quantity	Unit	Rs	Amount
1	Earthwork in excavation up to 1.5m depth				
	Labour				
	Male coolie	4	Day	200	800
	Female coolie	2	Day	180	360
	Sundries				20
				Total cost=1180Rs	
2	Sand filling in foundation and plinth				
	Materials				
	Sand	8.32	M3	800	6656
	Sundries				20
				Material cost = 6676Rs	
	Labour				
	Male coolie	2	Day	200	400
	Female coolie	1	Day	180	180
	Bhistie	0.5	Day	200	100
	Sundries				20
				Labour cost = 700Rs	
				Total cost = 7376Rs	
3	PCC in foundation				
	Materials				
	Cement	25	Bag	280	7000
	Sand	3.40	M3	800	2720
	Aggregate	10.21	M3	1000	10210
	Sundries				50
				Material cost = 19980Rs	

	Labour				
	Mistry	0.5	Day	400	200
	Mason	1	Day	300	300
	Male coolie	7	Day	200	1400
	Female coolie	11	Day	180	1980
	Bhistie	2.5	Day	200	500
	Sundries				50
				Labour cost = 4430Rs	
				Total cost = 24410Rs	
4	Brick masonary in foundation				
	Materials				
	Bricks(19*9*9cm)	8205	Nos	1000nos	32820
	Cement	22	Bag	280	6160
	Sand	4.64	M3	800	3712
	Sundries				50
				Material cost = 42742Rs	
	Labour				
	Mason	2	Day	300	600
	Male coolie	3	Day	200	600
	Female coolie	2	Day	180	360
	Bhistie	1	Day	200	200
	Sundries				50
				Labour cost = 1810Rs	
				Total cost = 44452Rs	
5	Brickwork in superstructure				
	Materials				
	Bricks(19*9*9cm)	8045	Nos	1000nos	32180
	Cement	22	Bag	280	6160
	Sand	4.55	M3	800	3640
	Sundries				50
				Material cost = 42030Rs	
	Labours				
	Mistry	0.5	Day	400	200
	Mason	7	Day	300	2100
	Male coolie	7	Day	200	1400
	Female coolie	7	Day	180	1260
	Bhisti	2	Day	200	400
	Sundries				50
				Labour cost = 5410Rs	
				Total cost = 47440Rs	
6	12mm thick cement plaster in C.M. 1:4				
	Materials				
	Cement	13	Bag	280	3640
	Sand	1.776	M3	800	1420
	Sundries				50
				Materials cost = 5110Rs	

	Labour				
	Mistry	0.25	Day	400	100
	Mason	10	Day	300	3000
	Male coolie	10	Day	200	2000
	Female coolie	10	Day	180	1800
	Bhistie	2	Day	200	400
	Sundries				50
				Labour cost = 7350Rs	
				Total cost = 12460Rs	
7	20mm thick plaster in C.M. 1:3				
	Material				
	Cement	14	Bag	280	3920
	Sand	1.46	M3	800	1168
	Sundries				50
				Material cost = 5138Rs	
	Labour				
	Mistry	0.25	Day	400	100
	Mason	10	Day	300	3000
	Male coolie	10	Day	200	2000
	Female coolie	10	Day	180	1800
	Bhistie	2	Day	200	400
	Sundries				50
				Labour cost = 7350Rs	
				Total cost = 12488Rs	
8	R.C.C. work for slab and lintel				
	Material				
	Cement	38	Bag	280	10640
	Sand	1.96	M3	800	1568
	Aggregate	3.93	M3	1000	3930
	Steel (1%)	565	Kg	45	25425
	Binding wire	6	Kg	50	300
	Sundries				50
				Material cost = 41913Rs	
	Labour				
	Labour for mixing, transporting and placing concrete including curing	7.20	M3	300	2160
	Cost of hiring mixture and vibrator			L.S.	1000
	Labour for bending, cutting and placing reinforcement steel	565	Kg	5	2825
	Labour for centering and shuttering			L.S.	3000
	Sundries				50

	Labour cost = 9035Rs
	Total cost = 50948Rs

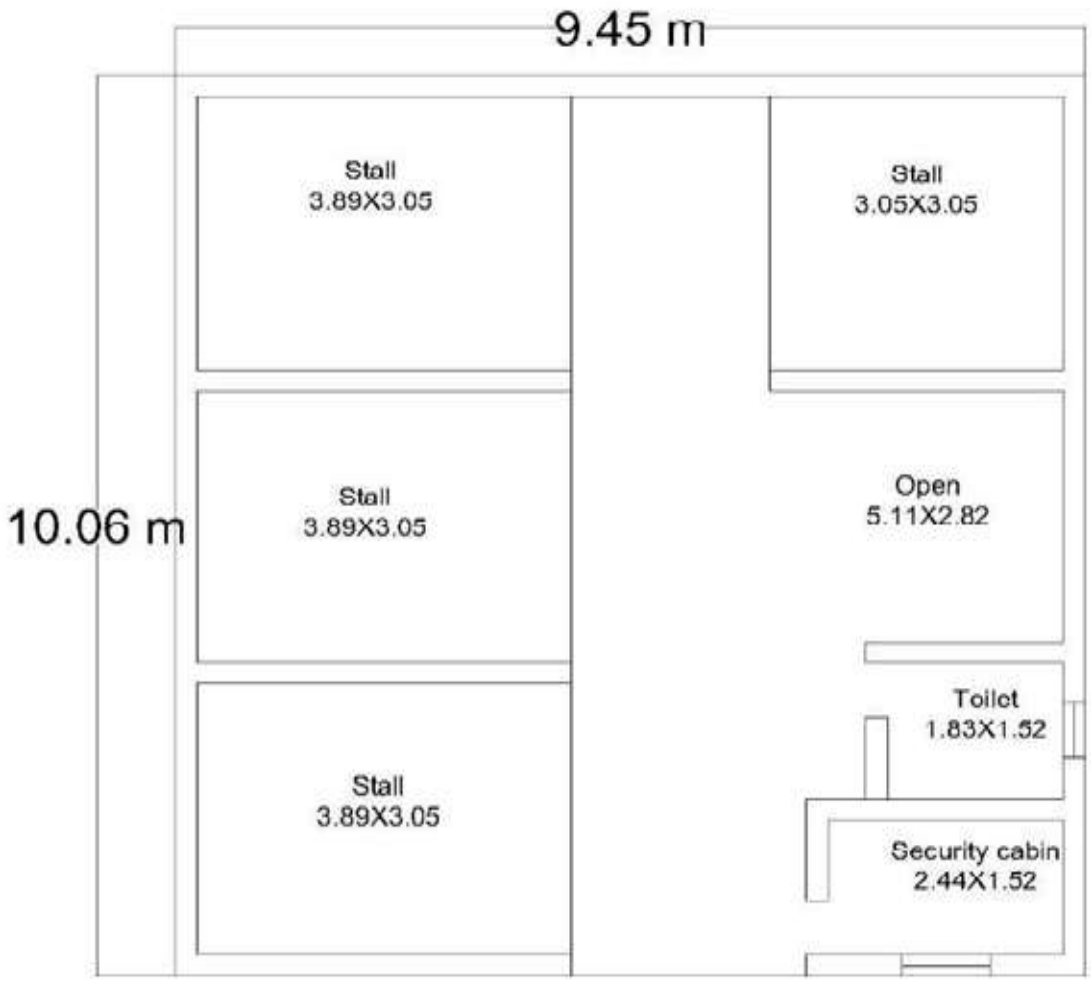
Total cost = 195854Rs
1.5% water charge = 2937Rs
10% contractor profit = 19585Rs
Total cost = 218376Rs

13.1.5 Smart village design

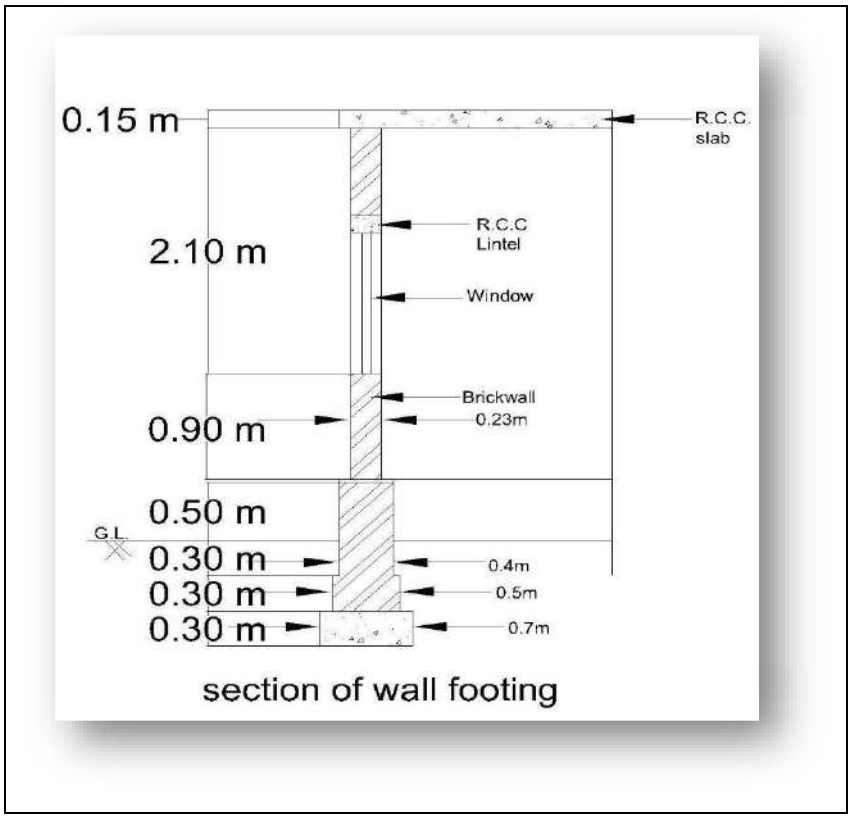
- As technology improved and consumer incomes increased, it became possible to provide fresh produce year-round. American consumers now expect fresh tomatoes, strawberries, and sweet corn every month of the year. In addition, a strong demand remains for processed fruits and vegetables.

➢ **General Market**

- The detailed drawing of shopping center is below.



Plan



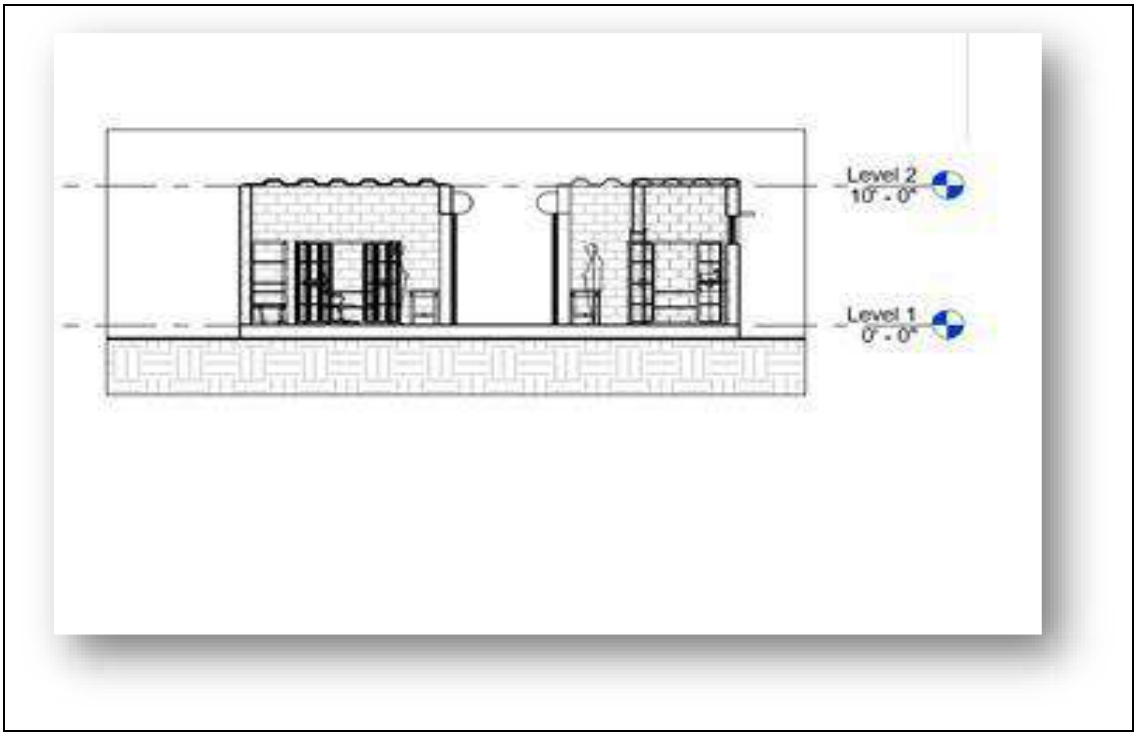


Fig-68: Plan, Section of General Market

Fig-69: 3D view of general market

Measurement sheet of general market

Sr.no.	Description of items	No	L (m)	B (m)	H (m)	Quantity
1	Excavation in foundation	1	52.53	0.7	0.9	33.10m3
2	P.C.C.	1	52.53	0.7	0.3	11.03m3
3	Brick masonry in foundation and plinth					
	Step - 1	1	53.23	0.5	0.3	7.98m3
	Step - 2	1	53.58	0.4	0.3	6.43m3
	Step - 3	1	54.93	0.3	0.875	14.42m3
					Total = 28.83m3	
4	Sand filling in foundation 33.10-28.83-11.03 = 2.716m3	1			Total cost = 2.716m3	
5	Brickwork in super superstructure	1	54.175	0.23	3	37.38m3
6	Deduction for door and window					
	D	2	0.6	0.23	2.1	0.58m3
	W	1	1	0.23	1.2	0.276m3
	V	1	0.4	0.23	0.4	0.037m3
					Deduction = 0.893m3	
	Deduction for lintels above door & windows with 15 cm bearing each side					
	D	1	0.9	0.23	0.15	0.0621m3
	W	1	1.3	0.23	0.15	0.045m3
	V	1	0.7	0.23	0.15	0.024m3
					Deduction = 0.131m3	
	Net quality = 37.38-0.893-0.131 = 36.35m3					
7	Inside plaster 12 mm thick					
	Stall-1	2	3.89		3	23.34m2
		1	3.05		3	9.15m2
	Stall-2	2	3.89		3	23.34m2
		1	3.05		3	9.15m2
	Stall-3	2	3.89		3	23.54m2
		1	3.05		3	9.15m2
	Stall-4	2	3.05		3	18.3m2
		1	3.05		3	9.15m2
	Open space	1	3.05		3	9.15m2
		1	2.82		3	8.46m2
		1	2.06		3	6.18m2
	Toilet	2	1.83		3	10.98m2
		2	1.52		3	9.12m2
	Security cabin	2	2.44		3	14.64m2
		2	1.52		3	9.12m2
	Ceiling plaster					

	Toilet	1	1.83	1.52		2.78m2
	Store room	1	2.44	1.52		3.71m2
					Total = 199.06m2	
	Deduction					
	D	1	0.6		2.1	1.26m2
	W	0.5	1		1.2	0.6m2
	V	0.5	0.4		0.4	0.08m2
					Deduction = 1.94m2	
	Net quantity = 199.06-1.94 = 197.06m2					
8	Outside plaster 20mm thick					
	Long wall					
	Long side	2	10.06		3.5	70.42m2
	Short side	1	9.45		3.5	33.075m2
	Short wall – 1	1	4.12		3.5	14.42m2
	Short wall -2	1	2.9		3.5	10.15m2
					Total = 128.06m2m2	
	Deduction					
	W	0.5	1		1.2	0.6m2
	V	0.5	0.4		0.4	0.08m2
					Deduction = 0.68m2	
	Net quantity = 128.06-0.68 = 127.38m2					

Abstract sheet of general market

Sr.no	Description of items	Quantity	Unit	Rs	Amount
1	Earthwork in excavation up to 1.5m depth				
	Labour				
	Male coolie	4	Day	200	800
	Female coolie	2	Day	180	360
	Sundries				20
				Total cost=1180Rs	
2	Sand filling in foundation and plinth				
	Materials				
	Sand	16.76	M3	800	13408
	Sundries				20
				Material cost = 13428Rs	
	Labour				
	Male coolie	2	Day	200	400
	Female coolie	1	Day	180	180
	Bhistie	0.5	Day	200	100
	Sundries				20
				Labour cost = 700Rs	
				Total cost = 14128Rs	

3	PCC in foundation				
	Materials				
	Cement	25	Bag	280	7000
	Sand	3.40	M3	800	2720
	Aggregate	10.21	M3	1000	10210
	Sundries				50
				Material cost = 19980Rs	
	Labour				
	Mistry	0.5	Day	400	200
	Mason	1	Day	300	300
	Male coolie	7	Day	200	1400
	Female coolie	11	Day	180	1980
	Bhistie	2.5	Day	200	500
	Sundries				50
				Labour cost = 4430Rs	
				Total cost = 29280Rs	
4	Brick masonry in foundation				
	Materials				
	Bricks(19*9*9cm)	14415	Nos	1000nos	57660
	Cement	39	Bag	280	10920
	Sand	8.115	M3	800	6524
	Sundries				50
				Material cost = 75172Rs	
	Labour				
	Mason	2	Day	300	600
	Male coolie	3	Day	200	600
	Female coolie	2	Day	180	360
	Bhistie	1	Day	200	200
	Sundries				50
				Labour cost = 1810Rs	
				Total cost = 76782Rs	
5	Brickwork in superstructure				
	Materials				
	Bricks(19*9*9cm)	18175	Nos	1000nos	72700
	Cement	49	Bag	280	13720
	Sand	10.286	M3	800	82288
	Sundries				50
				Material cost = 168758Rs	
	Labours				
	Mistry	0.5	Day	400	200
	Mason	7	Day	300	2100
	Male coolie	7	Day	200	1400
	Female coolie	7	Day	180	1260
	Bhisti	2	Day	200	400
	Sundries				50
				Labour cost = 5410Rs	

				Total cost = 174168Rs	
6	12mm thick cement plaster in C.M. 1:4				
	Materials				
	Cement	13	Bag	280	3640
	Sand	1.776	M3	800	1420
	Sundries				50
				Materials cost = 5110Rs	
	Labour				
	Mistry	0.25	Day	400	100
	Mason	10	Day	300	3000
	Male coolie	10	Day	200	2000
	Female coolie	10	Day	180	1800
	Bhistie	2	Day	200	400
	Sundries				50
				Labour cost = 7350Rs	
				Total cost = 16362Rs	
7	20mm thick plaster in C.M. 1:3				
	Material				
	Cement	28	Bag	280	7840
	Sand	2.865	M3	800	2292
	Sundries				50
				Material cost = 10182Rs	
	Labour				
	Mistry	0.25	Day	400	100
	Mason	10	Day	300	3000
	Male coolie	10	Day	200	2000
	Female coolie	10	Day	180	1800
	Bhistie	2	Day	200	400
	Sundries				50
				Labour cost = 7350Rs	
				Total cost = 17532Rs	
8	R.C.C. work for slab and lintel				
	Material				
	Cement	12	Bag	280	3360
	Sand	0.64	M3	800	512
	Aggregate	3.93	M3	1000	3930
	Steel (1%)	117	Kg	45	5265
	Binding wire	2	Kg	50	100
	Sundries				50
				Material cost = 13217Rs	
	Labour				
	Labour for mixing, transporting and placing concrete including curing	1.53	M3	300	459

	Cost of hiring mixture and vibrator			L.S.	1000
	Labour for bending, cutting and placing reinforcement steel	118	Kg	5	590
	Labour for centering and shuttering			L.S.	2000
	Sundries				50
				Labour cost = 4099Rs	
				Total cost = 17316Rs	

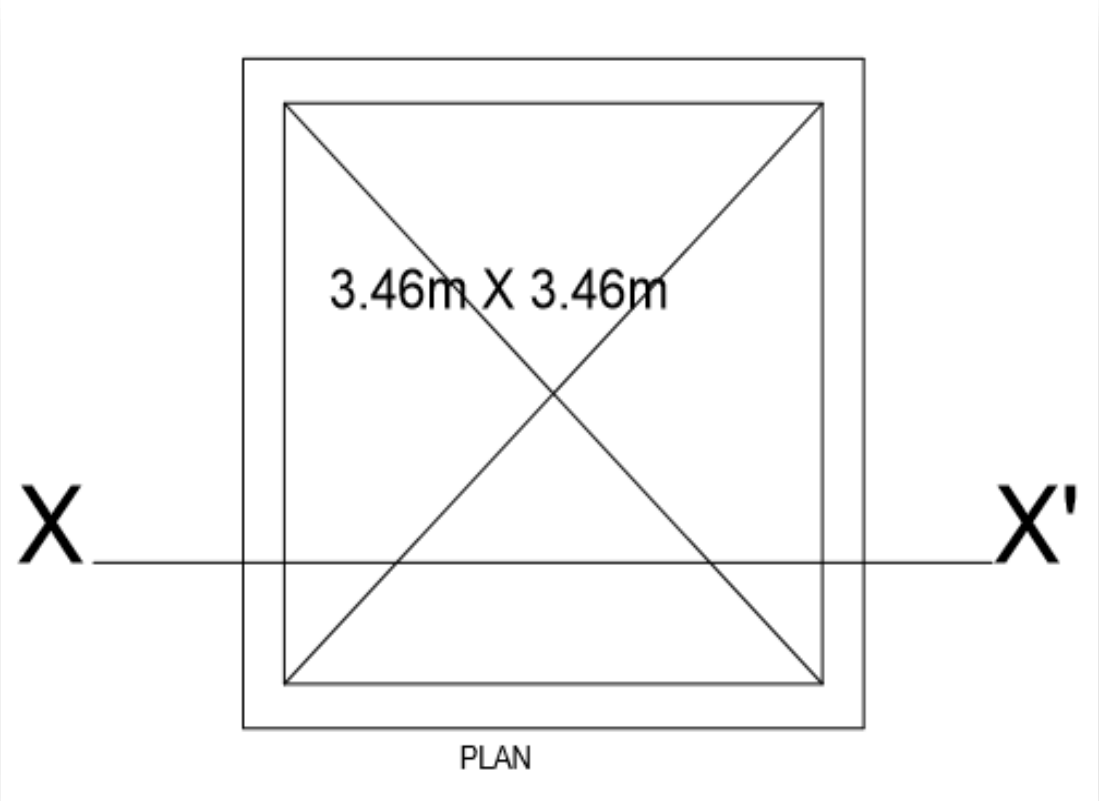
Total cost = 346748rs
1.5% water charge = 5201rs
10% contractor profit = 34674rs
Total cost = 386623rs

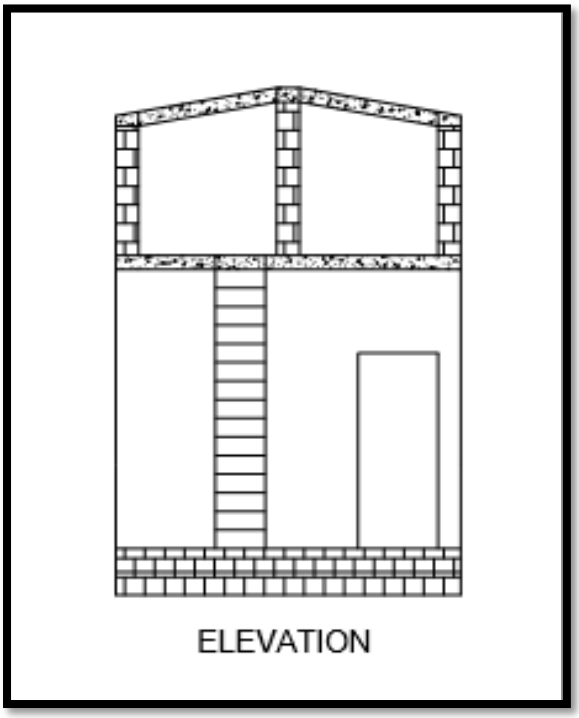
13.1.6 Heritage design

- A heritage structure is make good appearance on the people and its preserve our culture

➢ **Chabutaro**

- The detailed drawing of chabutaro is below.





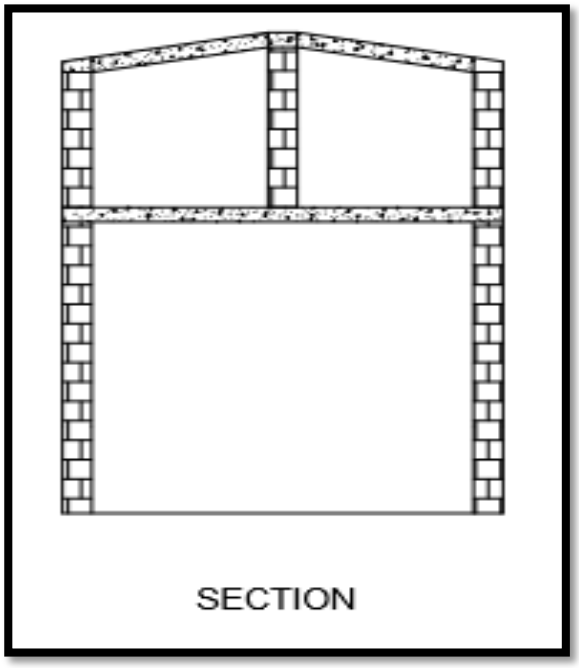


Fig-70: Plan, Section, Elevation of Chabutara

Measurement sheet of chabutara

Sr.no.	Description of items	No	L (m)	B (m)	H (m)	Quantity
1	Excavation in foundation Total length = 13.2m	1	13.2	0.9	1.1	13.068m3
2	P.C.C.	1	13.2	0.9	0.3	3.564m3
3	Brick masonry in foundation and plinth					
	Step - 1	1	13.2	0.6	0.3	2.367m3
	Step - 2	1	13.2	0.5	0.2	1.32m3
	Step - 3	1	13.2	0.4	0.3	1.584m3
	To plinth	1	13.2	0.4	0.5	2.64m3
					Total = 7.911m3	
4	Sand filling foundation	1			Total cost = 1.593m3	
	13.068-7.911-3.564 = 1.593m3					
5	Brickwork in super structure	1	13.2	0.3	3	11.88m3
	Deduction					
	D	1	0.8	0.3	2.1	0.504m3
	Brick masonry 1st slab to 2nd slab	5	0.3	0.3	1.5	0.675m3
					Total = 12.042m3	
6	R.C.C. for 1st slab	1	3	3	0.15	1.35m3
	R.C.C. for 2nd slab	1	3.48	3.482	0.15	1.81m3
	R.C.C. for chajja	1	0.95	0.6	0.15	0.086m3
					Total = 3.246m3	
7	Inside plaster	5	3	3		45m2
	Deduction					
	D	1	0.8		2.1	0.252m2
					Total = 45.79m2	
8	Outside plaster	4	3.65		3	43.8m2
	Plaster for brick masonry column up to 1st to 2nd slab	5	0.3		1.5	2.25m2
	Deduction					
	D	1	0.8		2.1	0.252m2
					Total = 45.79m2	
9	Flooring	1	3	3		9m2

Abstract sheet of chabutara

Sr.no	Description of items	Quantity	Unit	Rs	Amount
1	Excavation in foundation	13.068	M3	90	1123.84m3
2	P.C.C.	3.564	M3	3000	10692m3
3	Brick masonry in foundation and plinth	7.911	M3	900	7119.9m3

4	Sand filling	1.593	M3	110	175.23m3
5	Brickwork in super structure	12.042	M3	3600	433512m3
6	R.C.C. for slab	3.246	M3	9000	28512m3
7	Inside plaster	45.79	M2	200	9158m2
8	Outside plaster	45.79	M2	200	9158m2
9	Flooring	9	M2	700	5400m2

Total cost = 114689.97Rs
10% contractor profit = 11468.997Rs
1.5% water charges = 1720.34Rs
Total = 127879.307Rs.

13.2 Recommendation of the Design

- As sustainable design we gate provide soak pit. There is no ant soak pit in the moviya village. It is useful for treatment for wastewater which is produces from houses.
- As physical design we gate provide the children amunsement park. There is no any park for children for playing games.
- As social design we gate provide the 2nd inning home. Most elderly people reconcile themselves to the idea of village of living in this home.
- As socio-cultural design we gate provide the govt. grocery shop. So people can get grocery in their village area in very fair price.
- As a smart design we gate provide the shopping center. There is no any shopping center in this village. So people can go outside for shopping.
- As heritage design we gate provide the renovation of chabutara. Heritage structure is make good appearance on the people and its preserve our culture.

13.3 Suggestions / Benefit of the villagers

There are many important structures are required to fulfill daily basic requirement and it's also include proposed design by us.

- Physical infrastructure facility like sanitation facility, drinking water facility, good road network and banking facility are required.
- Social infrastructure facility like education facility, health facility, and youth club facility are required.
- Socio-cultural infrastructure facility like community hall, public library, recreational facility are required
- Sustainable infrastructure facility like bio gas plant, soak pit, solar street light, rain water harvesting and passive solar energy facility are required.

Chapter 14: Technical Options with Case Study

14.1 Concept

14.1.1 Advanced Earthquake Resistant

- Earthquake-resistant or aseismic structures are designed to protect buildings to some or greater extent from earthquakes.
- While no structure can be entirely immune to damage from earthquakes, the goal of earthquake-resistant construction is to erect structures that fare better during Seismic activity than their conventional counterparts. According to building codes, earthquake-resistant structures are intended to withstand the largest earthquake of a certain probability that is likely to occur at their location.
- This means the loss of life should be minimized by preventing collapse of the buildings for rare earthquakes while the loss of the functionality should be limited for more frequent ones.
- To combat earthquake destruction, the only method available to ancient architects was to build their landmark structures to last, often by making them excessively stiff and strong.
- Currently, there are several design philosophies in earthquake engineering, making use of experimental results, computer simulations and observations from past earthquakes to offer the required performance for the seismic threat at the site of interest.
- These range from appropriately sizing the structure to be strong and ductile enough to survive the shaking with an acceptable damage, to equipping it with base isolation or using structural vibration control technologies to minimize any forces and deformations.
- While the former is the method typically applied in most earthquake-resistant structures, important facilities, landmarks and cultural heritage buildings use the more advanced (and expensive) techniques of isolation or control to survive strong shaking with minimal damage.

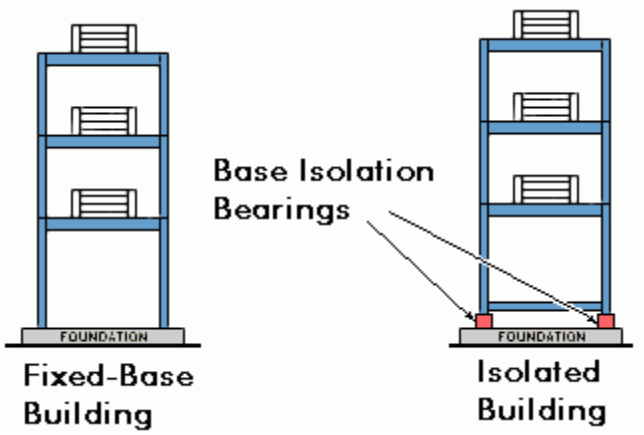
➢ **Earthquake Resistant Design Techniques for Buildings and Structures**

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

1. Base Isolation
2. Energy Dissipation Devices

1. **Base Isolation Method**

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



2. **Energy Dissipation Devices**

- The second of the major new techniques for improving the earthquake resistance of buildings also relies upon damping and energy dissipation, but it greatly extends the damping and energy dissipation provided by lead-rubber bearings.
- As we've said, a certain amount of vibration energy is transferred to the building by earthquake ground motion. Buildings themselves do possess an inherent ability to dissipate, or damp, this energy.
- However, the capacity of buildings to dissipate energy before they begin to suffer deformation and damage is quite limited.

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.
- 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.

- **Retrofitting refers to the addition of new technology or features to older systems, for example:**
  - power plant retrofit, improving power plant efficiency / increasing output / reducing emissions the improving of existing buildings with energy efficiency equipment
  - seismic retrofit, the process of strengthening older buildings in order to make them earthquake-resistant
  - Naval vessels often undergo retrofitting in dry dock to incorporate new technologies, change their operational designation, or compensate for perceived weaknesses in their design or gun plan.

- **Benefits of retrofit**
  - Optimization of existing plant components
  - Adaptation of the plant for new or changed products
  - Increase in piece number and cycle time
  - Guaranteed spare parts availability
  - Reduced maintenance costs and increased reliability

- **Environmental management**
  - The term is also used in the field of environmental engineering, particularly to describe construction or renovation projects on previously built sites, to improve water quality in nearby streams, rivers or lakes.
  - The concept has also been applied to changing the output mix of energy from power plants to cogeneration in urban areas with a potential for district heating.
  - Sites with extensive impervious surfaces (such as parking lots and rooftops) can generate high levels of stormwater runoff during rainstorms, and this can damage nearby water bodies.
  - These problems can often be addressed by installing new stormwater management features on the site, a process that practitioners refer to as stormwater retrofitting. Stormwater management practices used in retrofit projects include rain gardens, permeable paving and green roofs.

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

- The construction industry is repeatedly criticised for being inefficient and slow to innovate. The basic methods of construction, techniques and technologies have changed little since Roman times. But the application of innovation in the construction industry is not straight forward
- Every construction project is different, every site is a singular prototype, construction works are located in different places, and involve the constant movement of personnel

and machinery. In addition, the weather and other factors can prevent the application of previous experience effectively.

- **Types of Modern Methods of Construction**

Modern construction methods (MMC) are methods that are developed in construction industry with proper planning and design so that each project reduces the construction time, cost and maintain overall sustainability. There are many methods followed and constructed in the present scenario widespread. Most famous and highly applied methods of modern construction are listed and explained below.

The different MMC used in construction field includes:

- Precast Flat Panel System
- 3D Volumetric Modules
- Flat Slab Construction
- Precast Cladding Panels
- Concrete Wall and Floors
- Twin Wall Technology
- Precast Concrete Foundation
- Concrete Formwork Insulation

- **Advance construction materials**

- Durable Concrete. Concrete Design and Construction Practices today are strength driven.
- High Performance Concrete.
- Self–compacting Concrete
- The Use of Mineral Admixtures
- Fly Ash.
- High Volume Fly Ash Concrete
- Ground Granulated Blast Furnace Slag
- Condensed Silica Fume

14.1.4 Engineering Aspects of Soil mechanics – Environmental Impact Assessment

- **Engineering aspects of soil mechanics**

- Soil mechanics is a branch of soil physics and applied mechanics that describes the behavior of soils. It differs from fluid mechanics and solid mechanics in the sense that soils consist of a heterogeneous mixture of fluids and particles (usually clay, silt, sand, and gravel) but soil may also contain organic solids and other matter.

- Along with rock mechanics, soil mechanics provides the theoretical basis for analysis in geotechnical engineering, a subdiscipline of civil engineering, and engineering geology, a subdiscipline of geology.

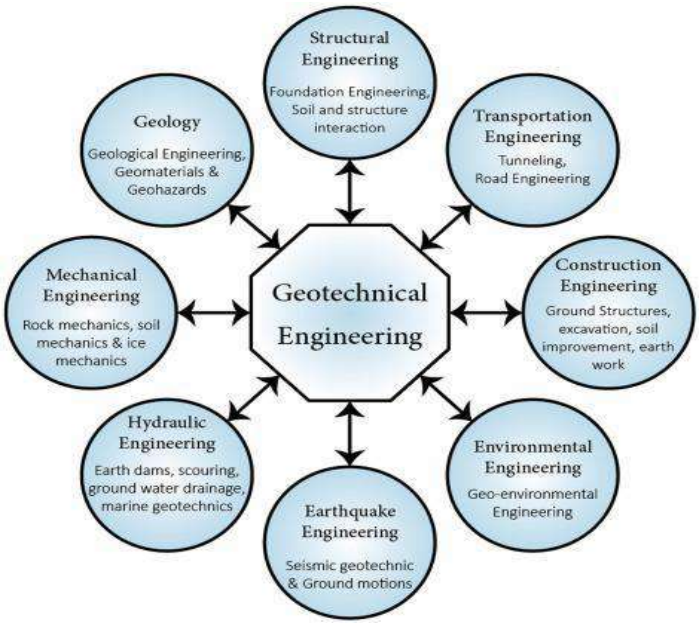


Fig-71: Engineering aspect of soil

- Soil mechanics is used to analyze the deformations of and flow of fluids within natural and man-made structures that are supported on or made of soil, or structures that are buried in soils. Example applications are building and bridge foundations, retaining walls, dams, and buried pipeline systems.
- Principles of soil mechanics are also used in related disciplines such as geophysical engineering, coastal engineering, agricultural engineering, hydrology and soil physics.

➢ Importance of Soil Mechanics

- Once it is accepted that soil is a structural material, its importance in Civil Engineering becomes paramount. A Geotechnical Engineer should have thorough knowledge of this material of structure as in the case of any other structural material.
- Study of Soil Engineering is particularly important in respect of infrastructure development and constructions, viz., highway and airport pavements, foundations and underground structures, retaining walls and embankments and multistorey buildings.
- Foundation is considered the most critical part of any structure and it is on its soundness that the stability of the entire structure depends. Since the load bearing capacity of the foundation has a direct relationship with the soil characteristics, the importance of soil investigation should not be underestimated.

➢ **Environmental impact assessment**

- Environmental assessment (EA) is the assessment of the environmental consequences of a plan, policy, program, or actual projects prior to the decision to move forward with the proposed action. In this context, the term "environmental impact assessment" (EIA) is usually used when applied to actual projects by individuals or companies and the term "strategic environmental assessment" (SEA) applies to policies, plans and programmes most often proposed by organs of state.
- It is a tool of environmental management forming a part of project approval and decision-making.[3] Environmental assessments may be governed by rules of administrative procedure regarding public participation and documentation of decision making, and may be subject to judicial review.
- The purpose of the assessment is to ensure that decision makers consider the environmental impacts when deciding whether or not to proceed with a project. The International Association for Impact Assessment (IAIA) defines an environmental impact assessment as "the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made".

➢ **Objectives of the Environmental Impact Assessment**

- To promote environmentally sound and sustainable development through the identification of appropriate alternatives and mitigation measures.
- To provide information on the environmental impact of decision making
- To identify, predict and evaluate the economic, ecological and social impact of development activities

14.1.5 Water Supply – Sewerage system – Waste water – Sustainable development techniques

1. Water supply

- Water supply and distribution facilities are critical infrastructure for the environment. ... The use of water except for drinking purpose generates the wastewater which when discharged for the domestic use generates sewage. The sewage collection is carried out through sewer collection system.
- Wastewater is any water that has been contaminated by human use. Wastewater is "used water from any combination of domestic, industrial, commercial or agricultural activities, surface runoff or storm water, and any sewer inflow or sewer infiltration".
- Therefore, wastewater is a byproduct of domestic, industrial, commercial or agricultural activities. The characteristics of wastewater vary depending on the source.

- Types of wastewater include: domestic wastewater from households, municipal wastewater from communities (also called sewage) and industrial wastewater. Wastewater can contain physical, chemical and biological pollutants.

➢ Water treatment

- Water in rivers or lakes is rarely clean enough for human consumption if it is not first treated or purified. Groundwater, too, often needs some level of treatment to render it potable.

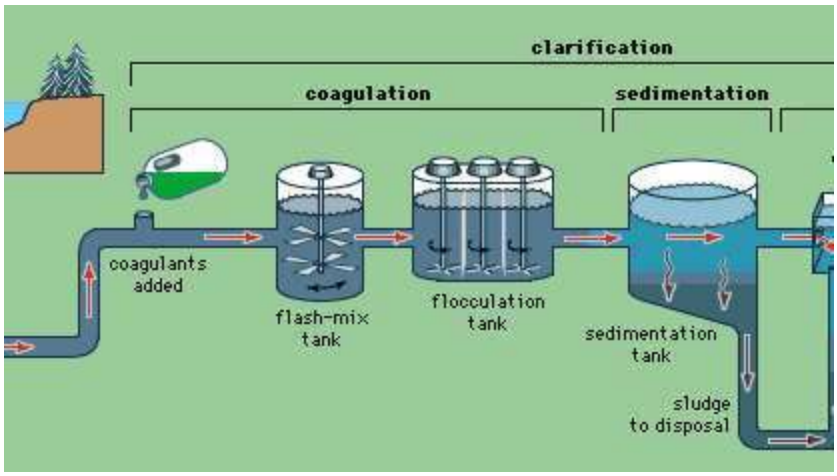


Fig-72: Water treatment

- The primary objective of water treatment is to protect the health of the community. Potable water must, of course, be free of harmful microorganisms and chemicals, but public supplies should also be aesthetically desirable so that consumers will not be tempted to use water from another, more attractive but unprotected source.
- The water should be crystal clear, with almost no turbidity, and it should be free of objectionable color, odor, and taste.
- For domestic supplies, water should not be corrosive, nor should it deposit troublesome amounts of scale and stains on plumbing fixtures.
- Industrial requirements may be even more stringent; many industries provide special treatment on their own premises.

➢ Sources

- Human excreta (feces, urine, blood and other bodily fluids) often mixed with used toilet paper or wet wipes; this is known as black water if it is collected from flush toilets
- Washing water (personal hygiene, clothes, floors, dishes, cars, etc.), also known as grey water or sullage
- Surplus manufactured liquids from domestic sources (drinks, cooking oil, pesticides, lubricating oil, paint, cleaning detergents, etc.)

2. Sewerage system

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

➢ Types of Sewerage System

❖ Combined 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.

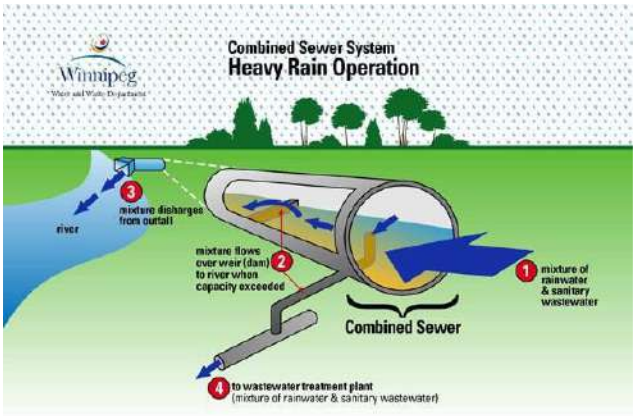


Fig-73: Combined system

❖ Separate 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.

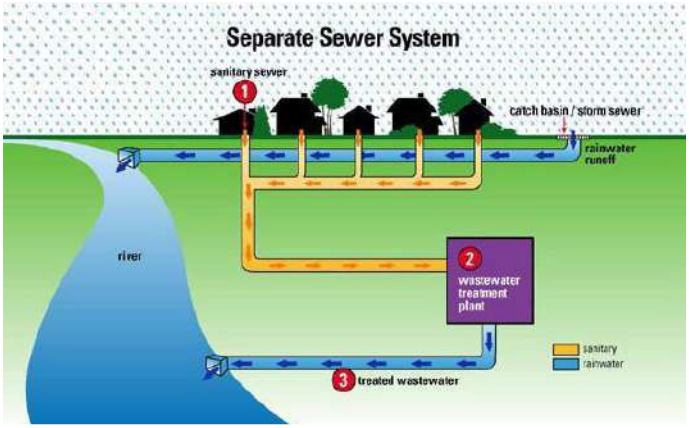


Fig-74: Separate system

❖ **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.

3. Waste water

- Wastewater (or waste water) is any water that has been contaminated by human use. Wastewater is "used water from any combination of domestic, industrial, commercial or agricultural activities, surface runoff or storm water, and any sewer inflow or sewer infiltration".
- Therefore, wastewater is a byproduct of domestic, industrial, commercial or agricultural activities. The characteristics of wastewater vary depending on the source. Types of wastewater include: domestic wastewater from households, municipal wastewater from communities (also called sewage) and industrial wastewater. Wastewater can contain physical, chemical and biological pollutants.
- Households may produce wastewater from flush toilets, sinks, dishwashers, washing machines, bath tubs, and showers. Households that use dry toilets produce less wastewater than those that use flush toilets.
- In developing countries and in rural areas with low population densities, wastewater is often treated by various on-site sanitation systems and not conveyed in sewers. These systems include septic tanks connected to drain fields, on-site sewage systems.

➢ **Sources**

- Human excreta (feces, urine, blood and other bodily fluids) often mixed with used toilet paper or wet wipes; this is known as blackwater if it is collected from flush toilets

- Washing water (personal hygiene, clothes, floors, dishes, cars, etc.), also known as greywater or sullage
- Surplus manufactured liquids from domestic sources (drinks, cooking oil, pesticides, lubricating oil, paint, cleaning detergents, etc.)

4. Sustainable development techniques

- Sustainable development focuses on sustainable agricultural methods such as effective seeding techniques and crop rotation to promote high yields while maintaining the integrity of the soil, which produces food for a large population.
- Sustainable development is the organizing principle for meeting human development goals while simultaneously sustaining the ability of natural systems to provide the natural resources and ecosystem services on which the economy and society depend.
- The desired result is a state of society where living conditions and resources are used to continue to meet human needs without undermining the integrity and stability of the natural system. Sustainable development can be defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
- The concept of sustainable development has been, and still is, subject to criticism, including the question of what is to be sustained in sustainable development. It has been argued that there is no such thing as a sustainable use of a non-renewable resource, since any positive rate of exploitation will eventually lead to the exhaustion of earth's finite stock; this perspective renders the Industrial Revolution as a whole unsustainable.

➢ Principles of sustainable development.

- Conservation of ecosystem.
- Development of sustainable society.
- Conservation of biodiversity.
- Control of population growth.
- Development of human resources.
- Promotion of public participation.

Chapter 15: Smart and/ or Sustainable features of Chapter 8 & 13 designs, impact on society. (with the smart village development concept as per your idea and village visit, modern technology with innovation).With doing small changes, period, amount expenditure and benefit

Sr. No.	Proposed Design Name	Period	Amount Expenditure	Benefit
1	**Bio – Gas Plant**	Long term	1,18,860/-	1.Use of energy source 2.Produces a clean fuel – helps in controlling air pollution 3.Economical
2	**Bus Stand**	Within 1 year	1,40,475/-	1.You do not need to look for a place to park your card 2.Reduce pollution and road congestion
3	**Hospital**	Within 1 year	7,71,474/-	1.People can not go to other village for hospital 2.Improved productivity 3.Lower long term costs
4	**Library**	1 year	3,51,948/-	1. Increase education facility 2. Use of modern technology 3.Availibility of all kinds of books
5	**Water Filtration Plant**	1 year	4,50,000	1. Increase reuse of water 2. Increase health facility 3. Make clean and pollution free village
6	**Drinking Water Tank For Animals**	Within 1 year	1,69,702/-	1. Increasing use of renewable facility 2. Improve health of people
7	**Soak Pit**	1 year	12,736/-	1.Low capital costs 2.Low operating costs 3.Small land area required
8	**Children Amusement Park**	Within 1 year	49,948/-	1.You can burn calories 2.Bonding time and memories with family and friends

9	**2nd Inning Home**	1 year	3,40,288/-	1.Attractive to elders is the companionship
10	**General Market**	Within 1 year	1,95,854/-	1.There are food courts 2.They have gaming zones
11	**Govt. Grocery Shop**	Within 1 year	3,86,623/-	1. People can get grocery easily 2. No any difficulty for people
12	**Renovation Of Chabutara**	1 year	1,27,880/-	1.Increasing renewable source of energy

- **List the sources of the funding available with the Village Authority**
  - Fourteenth Finance Commission Grant
  - Jilla Panchayat Sadasya Grant
  - MLA(Member of legislative Assembly) Grant
  - MGNREGA(Mahatma Gandhi National Rural Employment Act) Grant
  - ATVT(Apno Taluko Vibrant Taliko) Grant
  - Gram Panchyat Grant, etc.

Chapter 16: Survey by interviewing With Talati And Sarpanch

Sr.	Questions	Yes/No	Remarks
1	What are the sources of income in village ?	Yes	Agriculture
2	What are the chances of employment in village?	Yes	-
3	What are the special technical facilities in village?	Yes	-
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	-
7	Are women having opportunity to work and income?	Yes	-
8	Child girl education is appreciated in village?	Yes	There are 2 girls school in the village and all girls going there
9	Facility of vaccination to child is available in village?	Yes	-
10	Are village people aware about child vaccination and done to each and every child as per norms?	Yes	-
11	Women helpline number information is provided to village people?	Yes	-
12	Is water scarcity in village? How many days per year?	Yes	-
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 is observed in village? Provide list with Male/female/girl/boy with age and type of disability and reason of disability.	Yes	-
18	Is village improvement is observed in comparative scenario from past to present?	Yes	-
19	Is any unavoidable difficulty village people are facing? Any natural calamity is there?	No	-
20	Life Living standard of girls and women is appreciated and uplifted in village?	Yes	-

Chapter 17: Irrigation / Agriculture Activities And Agro Industry, altenate Technics And Solution

➢ What is Irrigation?

- **I**rrigation is the process of applying water to the crops artificially to fulfil their water requirements. Nutrients may also be provided to the crops through irrigation.
- The various sources of water for irrigation are wells, ponds, lakes, canals, tube-wells and even dams. Irrigation offers moisture required for growth and development, germination and other related functions.

➢ Types of Irrigation:-

- There are different types of irrigation practised for improving crop yield. These types of irrigation systems are practised based on the different types of soils, climates, crops and resources. The main types of irrigation followed by farmers include

❖ **Surface Irrigation:**- In this system, no irrigation pump is involved. Here, water is distributed across the land by gravity.

Fig-75: Surface irrigation

❖ **Localized Irrigation:-**In this system, water is applied to each plant through a network of pipes under low pressure.

Fig-76: Localized irrigation

- **Drip Irrigation:-**In this type, drops of water are delivered near the roots of the plants. This type of irrigation is rarely used as it requires more maintenance. Reduce the impact of drought and climate change on food production.

Fig-77: Drip irrigation

- **Centre Pivot Irrigation:-**In this, the water is distributed by a sprinkler system moving in a circular pattern.

Fig-78: Centre pivot irrigation

- **Manual Irrigation**:-This a labour intensive and time-consuming system of irrigation. Here, the water is distributed through watering cans by manual labour.

Fig-79: Manual irrigation

➢ Agro industry

- Agro-industries provide a means of converting raw agricultural materials into value added products while generating income and employment and contributing to overall economic development in both developed and developing countries.

- Food processing converts relatively bulky, perishable and typically inedible raw materials into more useful, shelf-stable and palatable foods or potable beverages.
- Processing contributes to food security by minimizing waste and loss in the food chain and by increasing food availability and marketability. Food is also processed to improve its quality and safety.

➢ Importance of irrigation

- Insufficient and uncertain rainfall adversely affects agriculture. Droughts and famines are caused due to low rainfall. Irrigation helps to increase productivity even in low rainfall.
- The productivity on irrigated land is higher as compared to the un-irrigated land.
- Multiple cropping is not possible in India because the rainy season is specific in most of the regions. However, the climate supports cultivation throughout the year. Irrigation facilities make it possible to grow more than one crop in most of the areas of the country.
- Irrigation has helped to bring most of the fallow land under cultivation.
- Irrigation has stabilized the output and yield levels.
- Irrigation increases the availability of water supply, which in turn increases the income of the farmers.

➢ Agriculture in Moviya village

- The main occupation of the Moviya villagers is agricultural activity.
- They grow various crops such as cotton, Peanut and wheat.
- They are also aware about various irrigation systems.

Table:-13 Agriculture Input

Use of chemical fertilizers	Yes
Use of chemical insecticides	Yes
Use of chemical weedicide	Yes
Soil health card	No
Irrigation :canal/tank/bore well/other	Other
Drip of sprinkler irrigation : drip/sprinkler/none	Drip

Chapter 18: Social Activities – Any Activities Planned By Students

- We are go to our allocated village and meeting with people in their village
- We have advice related to clean India
- Social awareness to people of village about health and cleanliness around the

Fig-80: Cleaning activity

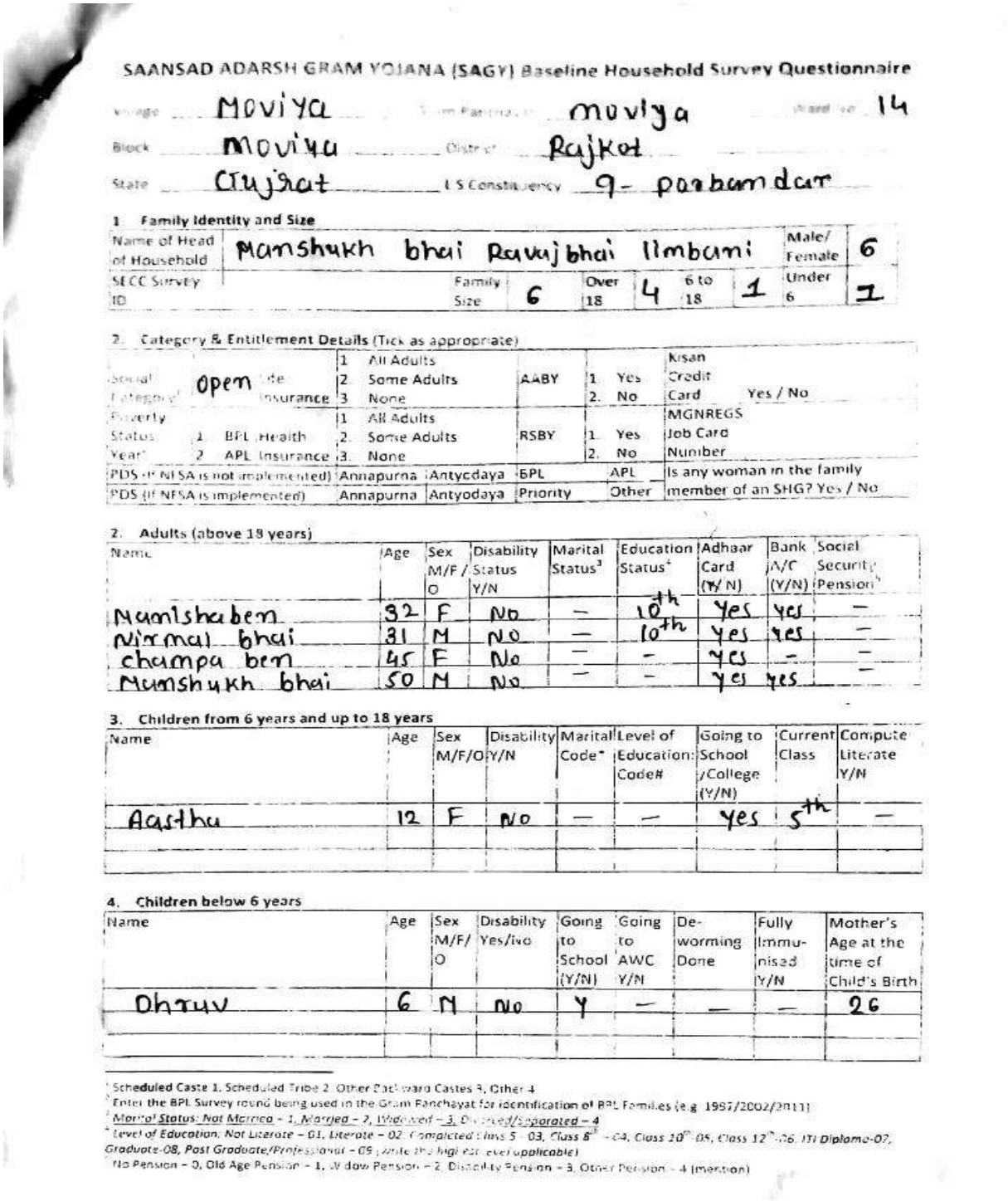
- Awareness talk in the classroom of school by students about Covid-19 and its precautions.
- Also a talk on awareness and importance of education especially for a girl child.
- They also give us information about their education system and subjects which they are study.

Fig-81: Awarness talk with student

- Awareness talk in the village about Covid-19 and its precautions.
- Sarpanch and other community members are provide mask and sanitizer door to door.

Fig-82: Awarness talk with people

Chapter 19: Moviya SAGY Questionnaire survey form with the Sarpanch Signature



SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village Moviya Town/Panchayat moviya Ward no 14

Block Moviya District Rajkot

State Gujrat LS Constituency 9- porbandar

1 Family Identity and Size

Name of Head of Household	Manshukh bhai Ravajbhai Ilmbani						Male/ Female	6
SECC Survey ID		Family Size	6	Over 18	4	6 to 18	1	Under 6	1

2 Category & Entitlement Details (Tick as appropriate)

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

2. Adults (above 18 years)

Name	Age	Sex M/F/O	Disability Status Y/N	Marital Status[3]	Education Status[4]	Adhaar Card (Y/N)	Bank A/C (Y/N)	Social Security Pension[5]
Mamlshaben	32	F	No	—	10th	Yes	Yes	—
Nirmal bhai	31	M	No	—	10th	Yes	Yes	—
champa ben	45	F	No	—	—	Yes	—	—
Mumshukh bhai	50	M	No	—	—	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	Compute Literate Y/N
Aasthu	12	F	No	—	—	Yes	5th	—

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
Dhruv	6	M	No	Y	—	—	—	26

[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 : Ins 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	—	—
Children	—	—

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 kitchen
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	150 vigha	2. Cultivable Area	
3. Irrigated Area	80 vigha	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
wheat		

17. **Livestock Numbers**

Cows: 1	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**
Cricket, Badminton

19. **Do children play musical instrument** (mention)
No

Schedule Filled By: Dhvani Tank
Principal Respondent: Mansukh bhai. limbani
Date of Survey: 19-3-21

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

(Please provide information from village level questionnaires wherever relevant)

I. Basic Information

a. Gram Panchayat: moviya

b. Block: moviya

c. District: Rajkot

d. State: Gujrat

e. Lok Sabha Constituency: 9- Porbundar

f. Number of Wards in the Gram Panchayat: 14

g. Number of Villages in the Gram Panchayat: 1

h. Names of Villages: moviya

Demographic Information

Number of Households 2260 Total Population 11008 Male 5708 Female 5300

SC HHs 726 ST HHs 5 OBC HHs 2042 Other HHs 8235

I. Access to Infrastructure / Facilities / Services

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
a.	ANM/ Health Sub Centre	yes	
b.	Nearest Primary Health Centre (PHC)	yes	
c.	Nearest Community Health Centre (CHC)	Gondal	8 km
d.	Nearest Post Office	yes	
e.	Nearest Bank Branch (Any)	yes - 3	
f.	Nearest Bank with CBS Facility	yes	
g.	Nearest ATM	yes	
h.	Nearest Primary School	yes	
i.	Nearest Middle School	yes	
j.	Nearest Secondary School	yes	
k.	Nearest Higher Secondary School / +2 College	yes - 1	
l.	Nearest Graduate College	yes - 1	
m	Nearest ITI / Polytechnic Centre	NO	
n	Kisan Seva Kendra	NO	

1

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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	yes	
p	Nearest Agro Service Centre	yes	
p	MSP based Government Procurement Centre	NO	
q	Milk Cooperative /Collection Centre	yes - 2	
r	Veterinary Care Centre	NO	
s	Ayurveda Centre	yes	
t	E – Seva Kendra	yes	
u	Bus Stop	NO	Gondal - 8KM
v	Railway Station	NO	Gondal - 8KM
w	Library	NO	
x	Common Service Centre	NO	

IV. Sports Facilities in the Gram Panchayat

a. Number of Play Grounds in the GP: Total 1 Public ✓ Private

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 9

b. Number of villages without Angan Wadi Centres 0

Names of such villages:

c. Schools (Number)

Primary Private: 3 Primary Govt.: 5

Middle Private: 2 Middle Govt.: 2

Secondary Private: 3 Secondary Govt.: 1

Higher Secondary Private: 2 Higher Secondary Govt: 1

VI. Public Distribution System

	Item	Private Contractor	Women's SHG	Gram Panchayat	Cooperative	Other (Mention)	Location in GP (mention Location)	If outside GP, Location & distance from GP HQrs)
a.	Cereal (Rice/ Wheat/ Millets)	3				1	yes	
b.	Kerosene	3				1	yes	
c.	Other (mention)							

2

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

VII. Coverage of Villages under different Facilities & Services

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

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	5959 hec.	d.	Pasture / Grazing Land	550 hec.	g.	Check Dam	32
b.	Irrigated Land	3369 hec	e.	Forests Plantations	26 hec.	h.	Wells/Bore Wells	2
c.	Un-irrigated Land	2590 hec.	f.	Other Common Land		i	Tanks /Ponds	2

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

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

IX. Parameters relating to Households & Institutions

		Number
a)	Number of eligible Households for pension (old age, widow, disability)	150
b)	Number of Households receiving pension (old age, widow, disability)	150 up
c)	Number of eligible Households who are not receiving pension	–
d)	Number of Households eligible for Ration Card	80 %
e)	Number of eligible HHs having ration cards	100
f)	Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	500
g)	Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	200
h)	Number of active Job Card holders under MGNREGA	200
i)	Number of Job Card holders who completed 100 days of work during 2013-14	0
j)	Number of shops selling alcohol	–
k)	Number of BPL families	95
l)	Number of landless households	300
m)	Number of IAY beneficiaries	–
n)	Number of FRA[2] beneficiaries	–
o)	Number of Community Sanitary Complexes	1
p)	Number of Households headed by single women	50
q)	Number of Households headed by physically handicapped persons	2
r)	Total number of Persons with Disability in the village	–
s)	Number of SHGs	13
t)	Number of active SHGs	10
u)	Number of SHG Federations	–
v)	Number of Youth Clubs	–
w)	Number of Bharat Nirman Volunteers	–

Name and Signature of Surveyor and Respondent'

Dhvani Tank Shivangi Chotaliya Surveyor	સરપંચ મોવિયા ગ્રામ પંચાયત PRI Respondent (Preferably Gram Panchayat Chairperson)	તલાટી કમ મંત્રી-૨ મોવિયા ગ્રામ પંચાયત Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	19-3-21 Date of Survey

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

4

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: moviya
b. Ward Number: 14
c. Gram Panchayat: moviya
d. Block: moviya
e. District: Rajkot
f. State: Gujrat
g. Lok Sabha Constituency: 9- porbandar
h. Number of Habitations / Hamlets in the Gram Panchayat: _____
i. Names of Habitations / Hamlets:

Demographic Information

Number of Households 2260 Total Population 11008 Male 5708 Female 5300

SC HHs 726 ST HHs 5 OBC HHs 2042 Other HHs 8235

II. Access to Infrastructure/Amenities etc.

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

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

1

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

ii. Road Connectivity

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

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

iii. Drinking Water Facilities

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

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

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

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

iv. Coverage of Habitations under Waste Management System

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

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

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

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

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

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

v. Coverage of Habitations under Electrification

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

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

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

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

vi. Sports Facilities in the Village

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

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

vii. Education, ICDS

a. Number of Anganwadi Centres: 9

c. Schools (Number)

Primary Private: 3 Primary Govt.: 5

Middle Private: 2 Middle Govt.: 2

Secondary Private: 3 Secondary Govt.: 1

Higher Secondary Private: 2 Higher Secondary Govt: 1

2

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

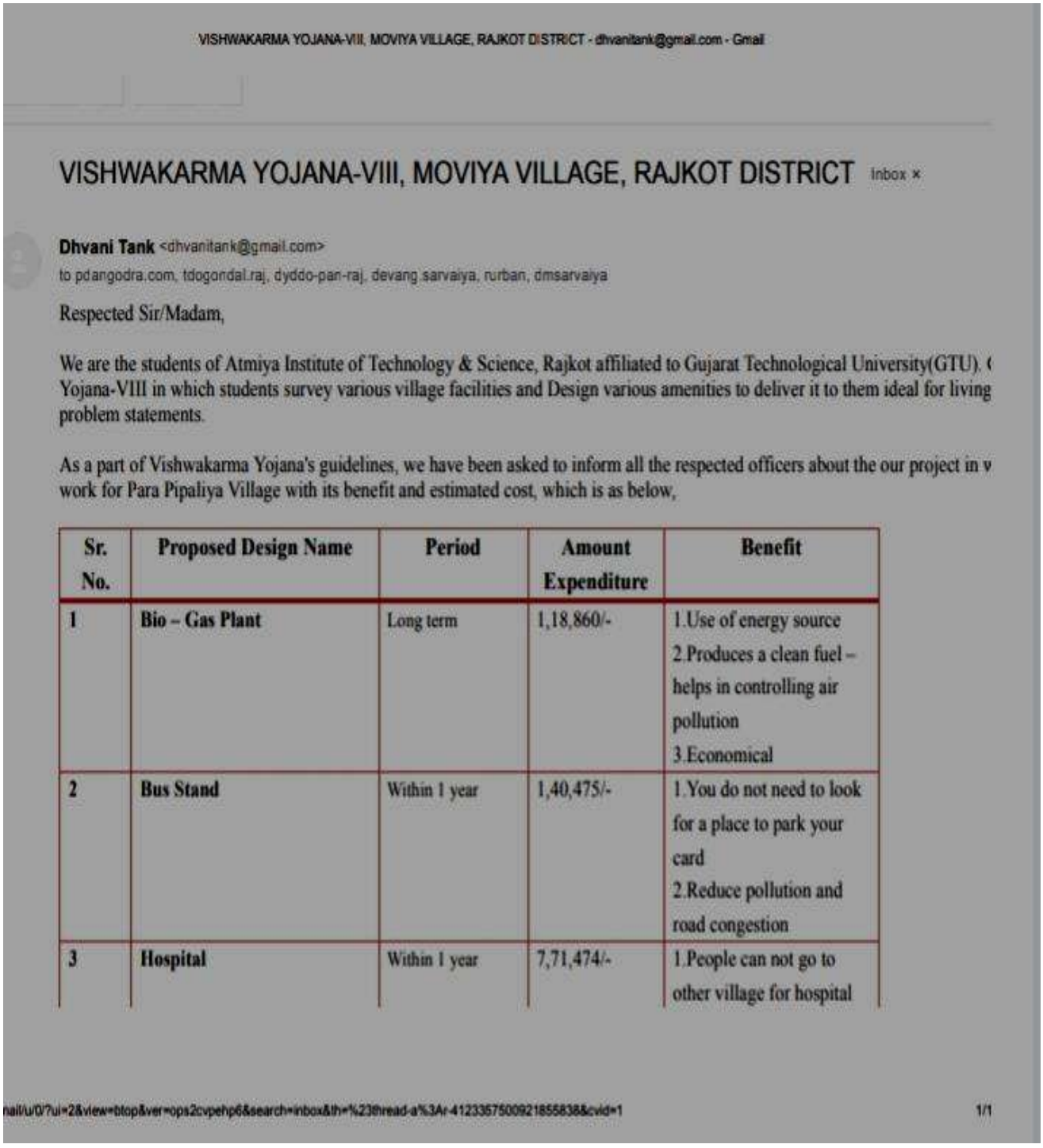
viii. Land Category		Area in Acres		Land Category	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	5959 hec	d.	Pasture / Grazing Land	550 hec	g.	Check Dam	92
b.	Irrigated Land	3369 hec	e.	Forests/ Plnatations	26 hec	h.	Wells/Bore Wells	2
c.	Un-irrigated Land	2590 hec	f.	Other Common Land	-	i.	Tanks /Ponds	2

ix. Entitlement Related Parameters		
1	Number of active Job Card holders under MGNREGA	200
2	Number of active Job Card holders who have completed 100 days of work	0
3	Number of shops selling alcohol	-
4	Number of BPL families	45
5	Number of landless households	300
6	Number of IAY beneficiaries	-
7	Number of FRA beneficiaries	-
8	Number of common sanitation complexes	1
9	Number of SHGs	13
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:

Dhumi Tank Shivangi Chotaliya	સરપંચ મોવિયા ગ્રામ પંચાયત	તલાટી કમ મંત્રી-૨ મોવિયા ગ્રામ પંચાયત	19-3-21
Surveyor	PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	Official Respondent (Preferauly seniormost Government official in the Gram Panchayat)	Date of Survey

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



VISHWAKARMA YOJANA-VIII, MOVIYA VILLAGE, RAJKOT DISTRICT - dhvanitank@gmail.com - Gmail

VISHWAKARMA YOJANA-VIII, MOVIYA VILLAGE, RAJKOT DISTRICT Inbox ×

Dhvani Tank <dhvanitank@gmail.com>
to pdangodra.com, tdogondal.raj, dyddo-pan-raj, devang.sarvaiya, rurban, dmsarvaiya

Respected Sir/Madam,

We are the students of Atmiya Institute of Technology & Science, Rajkot affiliated to Gujarat Technological University(GTU). (Yojana-VIII in which students survey various village facilities and Design various amenities to deliver it to them ideal for living 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 v work for Para Pipaliya Village with its benefit and estimated cost, which is as below,

Sr. No.	Proposed Design Name	Period	Amount Expenditure	Benefit
1	Bio – Gas Plant	Long term	1,18,860/-	1.Use of energy source 2.Produces a clean fuel – helps in controlling air pollution 3.Economical
2	Bus Stand	Within 1 year	1,40,475/-	1.You do not need to look for a place to park your card 2.Reduce pollution and road congestion
3	Hospital	Within 1 year	7,71,474/-	1.People can not go to other village for hospital

nail/u/0/?ui=2&view=btop&ver=ops2cvpehp6&search=inbox&th=%23thread-a%3Ar-4123357500921855838&cvid=1 1/1

Chapter 21: Comprehensive report for the entire village

- We have visited Moviya village and interact with various authorities of village like sarpanch, Talati mantri as well as people of village. We explain them what is Vishwakarma Yojana and main aim of vishwakarma project.
- We conduct techno-economic survey of village to identify various existing facilities. We have also visited various places like gram-panchyat, bus stands, temples, Primary school and other amenities. Existing condition of various amenities as well as various infrastructures was examined by us like. road condition, housing condition, drainage system, etc.
- We explain various design of our project under different infrastructure such as Sock Pit (sustainable design), Children amusement park (physical design), 2nd Inning home (social design), Govt. Grocery Shop (socio cultural design),General Marekt (smart village design) and Chabutaro (Heritage design).
- We discuss with Raj Samadhiyala, Sardhar and Moviya Village authorities and dwellers of village and filled different types of survey form and analyze it. Using Techno-economic survey we get existing condition of village like demographical details, geographical details, occupational detail, physical infrastructure details, social infrastructure details, socio-cultural facilities, sustainable infrastructure facilities, and other facilities.
- By use of Gap Analysis we compare all the available facilities and required facilities in Lodhika village. We observe available amenities in village like, road network, drinking water facility, educational facility, health facility, sanitation facility, transportation facility, and renewable source facility.
- We also observe which facilities are required for batter growth of village by interaction with different authorities of ideal village and smart village.

    - Chabutaro (Heritage design)
    - Sock Pit(Sustainable Design)
    - Children Amusement Park (Physical Design)
    - 2nd Inning Home (Social Design)
    - Govt. Grocery Shop (Socio Cultural Design)
    - General Market(Smart Village Design)

- By providing this required facility to village, development and growth of village can be possible. So ultimately migration rate and urban city pressure can be reduce and livelihood of village dweller will increase.
- And lastly this project is helped us to understand our skills and make it even batter. We got deep knowledge about development of village and various infrastructure facility design of village. Lastly we enjoyed the informational as well as practical journey of civil work.