DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII

AN APPROACH TOWARDS RURBANISATION

MANVAD(HADMATIYA) Village

BHAVNAGAR District

PREPARED BY

NAME	BRANCH NAME	ENROLLMENT NO
SHIHORA SATYAM G.	CIVIL ENGINEERING	186470306112
KEVADIYA PRINCE S.	CIVIL ENGINEERING	186470306096

TAPI DIPLOMA ENGINEERING COLLEGE,SURAT

COLLEGE NAME & LOGO

MR. NIRANT PATEL
Lecturer
Civil Engineering Department
NODAL OFFICERS NAME

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad – 382424 Gujarat

DETAIL PROJECT REPORT

ON

Vishwakarma Yojana: Phase VIII

AN APPROACH TOWARDS RURBANISATION

MANVAD(HADMATIYA) Village

BHAVNAGAR District

Prepared By

NAME	BRANCH NAME	ENROLLMENT NO
SHIHORA SATYAM G.	CIVIL ENGINEERING	186470306112
KEVADIYA PRINCE S.	CIVIL ENGINEERING	186470306096

–TAPI DIPLOMA ENGINEERING COLLEGE,SURAT

COLLEGE NAME & LOGO

MR. NIRANT PATEL
Lecturer
Civil Engineering Department
NODAL OFFICERS NAME

Year: 2020-21

Gujarat Technological University,
Chandkheda, Ahmedabad – 382424 Gujarat

CERTIFICATE

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

Detail Project Report for ,

VILLAGE:- **MANVAD(HADMATIYA)**

DISTRICT:- **BHAVNAGAR**

Under

Vishwakarma Yojana: Phase-VIII

In partial fulfillment of the project offered by
GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA
during the academic year 2020-21.

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

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
SHIHORA SATYAM G.	CIVIL ENGINEERING	186470306112
KEVADIYA PRINCE S.	CIVIL ENGINEERING	186470306096

Date of Report Submission:	**12th JUN 2021**
Principal Name and Signature:	**Prof. Y. S. Choupare**
VY-Nodal Officer Name and Signature:	**Mr. Nirant J. Patel**
Internal(Evaluator) Guide Name and Signature:	**Mr. Nirant J. Patel**
College Name:	**TAPI DIPLOMA ENGINEERING COLLEGE**
College Stamp:	

ABSTRACT

The Government of Gujarat has launched "Vishwakarma Yojana: an approach towards rurbanisation" for development of villages which is implemented by "Gujarat Technological University". Vishwakarma yojana would provide "design to delivery" solution for development of villages in 'city' areas. In this project, we describe the ecosystem for a village and then map out an integrated design procedure for building an ideal village. We define an ideal village as a bundle of services which are delivered to its residents and businesses in an effective and efficient manner. Computing, communication and information technologies play a major role in design, delivery and monitoring of the services. The selected village is surveyed, data has been analyzed for the village and an infrastructure facility has been found out by this yojana with the help of udpfi guidelines

Manvad is a village palitana taluka in bhavnagar district of gujarat state,india. It is situated 57 km away from district head quarter bhavnagar. As per stats, manvad village also gram panchayat. The native language of manvad is gujarati and allmost people speak gujarati. Manvad people use gujarati language for communication. Manvad village in 1055 population of 2011. The total geographical area of the village is 1049.19 hect. There are about houses in manvad village.

The design is to be provided in the village.There are 12 design to be provided in village. Design of Government Dispensary, Design of Public Garden, Design of Animal Water Pond, Design of Solid Waste Management,etc. The selected village is surveyed, data has been analyzed for the village and an Infrastructure facility has been found out by this Yojana with the help of UDPFI guidelines.

For future scope village will be designed as per the survey from smart village and ideal village like physical facilities, social facilities, socio-economies facilities…etc. As village will be provided with primary health center (PHC), water tank (ESR), underground sump, solar street lights, training center, bus station, pond and garden and new irrigation techniques for farmer.

By studying the current status and techno-economic survey of Manvad village in Bhavanagar district of the Gujarat state in terms of basic services, public facilities, other infrastructural facilities for the need of the people and to prepare a report on the predictable socio-economic growth of the area with the discussion of TDO, DDO and Sarpanch will help full in providing better facilities and services in village. From the gap analysis, development plans for village development will be projected and planning proposals for Physical infrastructure, Social Infrastructure and Renewable Energy Source will be suggested for the village. The study will concentrate on the development of the village.

Key Words:- Rural Development, Rurbanisation, Reduce Migration, Infrastructure Facilities, agriculture modernizing, Traditional identities

ACKNOWLEDGEMENT

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

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

We also express our gratitude to **Dr.K.N.Kher**, **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 Y. S. Choupare Principal**, faculties of our colleges for their encouragement and support to complete this project work.

An act of gratitude is expressed to our Nodal Officer **Mr.Nirant J. Patel from Tapi Diploma Engineering Collage** for their invaluable guidance, constant inspiration and active involvement in our project work.

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

We are also thankful to **Ms. Darshana Chauhan, 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.

CONTENT

PART-I

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
SWOT	Strength weakness opportunities Threats
UDPFI	Urban and Regional Development Plans Formulation and Implementation
PHC	Public Health Center
GIFT	Gujarat International Fin
TDO	Taluka Developer Officer
DDO	District Developer Officer
RTO	Road Transport Office
NGO	Non-Government Organization
ULBs	Uraban Local Bodies
DPC	Damp Proof Course
RCC	Reinforced Cement Concrete
PCC	Plain Cement Concrete
KV	Kilowatt

Chapter-1
Ideal Village Visit From Surat District Of Gujarat State

1.1 Background & Study Area Location

Baben is a village in surat district in the state of Gujarat,India. The village is located about 32 km from the surat. Here villagers enjoy all the facilities that one living in the city does. This village is also attached by having bardoli nagar palika nearer to its boundary. This village far from bardoli is 2.1 km. Distance between sub district (bardoli) to baben is 2.1km. To reach its destination, there is railway station only 1 kms in baben. There has been use of advanced technology in primary and higher education system.

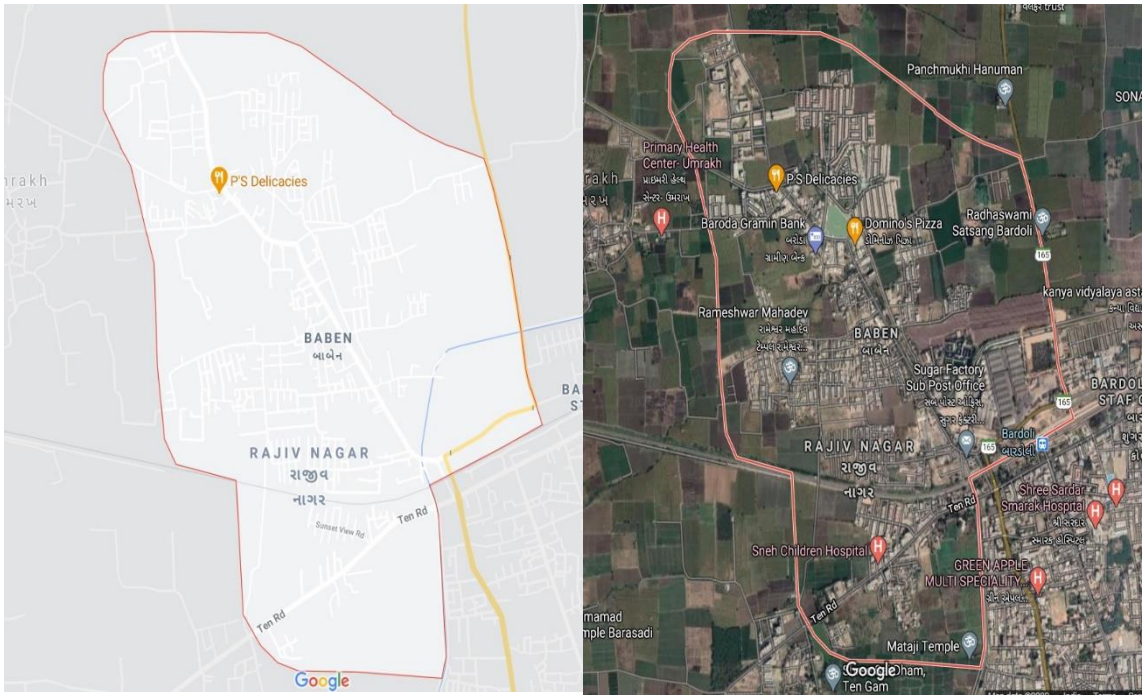


Fig 1.1 Map Of Baben Village

Study Area Location

- Name: Baben
- District: Surat
- Taluka: Bardoli
- Distance From Surat: 32 Km
- Pin Code: 394601
- Language: Gujarati, Hindi, English, Marathi.
- Time Zone: IST (UTC+5:30)
- Elevation/Altitude**:** 34 Meters. Above-Sea Level
- STD Code: 02622

1.2 Concept: Ideal Village, Normal Village

1.2.1 Objectives

- To study the existing growth, characteristics and development of villages.
- To study the existing infrastructure facilities and its management issues phasing by villages.
- To analyze all feasibility parameters and relevant factors for sustainable development of villages.
- To study strategic planning proposal in the form of physical, social and renewable infrastructure facilities for the development of villages.
- To study the future growth and future scenario of village.
- To study and analyses how to sustainable facilities like water treatment plant, solar system, bio electric plant can be used in village.
- To study how to improve a drainage facility of rural areas.

1.2.2 Example/LIVE CASE STUDIES OF IDEAL VILLAGE OF India / Gujarat

1. Punsari (Gujarat):

Punsari is a village located in Sabarkantha district in the state of Gujarat, India. Punsari is considered as India's smartest village. The village is located at about 80km from the state capital, Gandhinagar. Punsari is 20km from Parvati Hills. Parvati Hills is the largest table top land of India.

2.Mawlynnong (Meghalaya) Asia's cleanest village:

Mawlynnong, a small village in meghalaya, was awarded the prestigious tag of 'cleanest village in asia' in 2003 by discover india magazine. Located at about 90 km from shillong, the village offers a sky walk for you to take in the beauty as you explore it. According to visitors, you cannot find a single cigarette butt/plastic bag lying around there.

3. Dharnai (bihar) first fully solar powered village:

Dharnai, a village in bihar, beat 30 years of darkness by developing its own solar-powered system for electricity. With the aid of greenpeace, dharnai declared itself an energyindependent village in july. Students no long need to limit their studies to the day time, women no longer limit themselves to stepping out in the day in this village of 2400 residents.

1.2.3 The Idea Of A Model/Smart Village

- It was the dream of mahatma gandhi to make the indian villages smarter and ideal/model by improving them in all aspects like physical, economic and social etc.
- The social, economic and scientific developments in these communities helped in the growth of such villages and also have become the building block of civilizations.
- Education is critical for promoting sustainable development and improving the capacity of the people to address the environment and development issue.
- Public awareness should be recognized as a process by which human beings and societies can teach their fullest potential.

Fig 1.2 Concept of Smart city

1.2.4 Ancient History Civil/Electrical Concept About Indian Village

- In India there are 6, 00, 000 villages out of them 1, 25,000 villages are backward so there is a need for designing and building the village as a smart village.
- With modernization and urbanization people migrate from one place to another place for different facilities such as education, employment and affinity of people towards the locality or city. Village is main criteria for development of nation.
- So, develop the village in such a way that which is self-dependent in providing the services, employment and well connected to the rest of the world i.e. smart village.
- The smart village corrects the social oversight by providing accommodations for sustainable family relationships without disturbing the lifestyle of different generations.
- The vision of smart village is that modern energy access can act as catalyst for development in education, health, productive enterprise, clean water, sanitation, environmental sustainability and participatory democracy which helps to support further improvement in access to energy.
- Initially the concept of development of village is of Mahatma Gandhi i.e. swaraj and Suraj village. But now days it is newly termed as smart village.
- We know that, India is a developing nation, with the help of smart village we can make India as a SS nation. Now days, our government also gives strong focus on smart village.Government implements so many schemes on smart village.

- The Indus Valley civilization is so far known to be the ancient civilization in India and it mainly comprised two cities of Harappa and Mohenjo-Daro.
- The history of Indian villages, in fact, goes back to the Vedic era when the kingdoms comprised a major city and several villages.
- Apart from all these factors, the general condition of the Indian villages has improved a lot in the contemporary period.
- The electricity has already reached in most of the Indian villages and the villagers are enjoying the other modern technological advancements, as well.
- As a whole, it can be said that most of the changes that occurred in the history of Indian villages have yielded positive results for the villagers.
- They have also aided India to become more and more civilized and developed.

1.3 Detail Study(Socio Economic,Physical,Demographic And Infrastructure Details)Of Ideal Village/Smart Village With Photograph

- These facilities are essential for economic as well as social growth of any area. These facilities include proper road network, water supply, drainage, electricity etc. Any village which needs to be economically developed must contain the above-mentioned facilities.
- Baben is a village facilitated with bitumen and R.C.C. roads for main village roads as well as society streets. The roads are facilitated with sign boards, markings and signals for proper functioning of the vehicular traffic as well as pedestrian's traffic. The village is facilitated with 32 CCTV cameras for proper monitoring and protection from thefts, damages etc.
- The roads are also facilitated with proper street lights for night travel.
- Pure Drinking Water for morning and evening peak hours is also provided door to door with the help of 6 over head water tanks which range from 15000L to 25000L which are cleaned at regular intervals to maintain hygienic conditions.
- Along with the facility of pure drinking water, the facility for the removal of waste water is also provided. Drainage network for the whole town is constructed from door to door and is connected to the main sewage line at Bardoli Taluka. Along with sewage disposal, solid waste management is also given a wide importance and is collected from door to door with the help of 3 collecting vans and is given to the Bardoli Nagarpalika for disposal and treatment.

Fig 1.3 Education Building Of a Baben

Fig 1.4 Gram Panchayat Office-Baben

Fig 1.5 Lake And Garden

Fig 1.6 Village Road

Fig 1.7 Overhead Water Tank

1.4 Future Prospects Of Village

- Regarding the future prospects however which of the place solar system is uses possible more and more because day to day the electrical appliances uses in more amount and electrical energy uses in more amount. Another renewable energy like as wind energy, hydro energy and etc. In future underground wiring system will be construct so look as beautiful and another fault occurring in the line in few time compare to overhead line structure. They have to focus on waste water treatment plant and solid waste treatment plant. They have to maintain the public toilet. Developed green Building concept, and ecofriendly technique.

1.5 SWOT Analysis Of Ideal Village/Smart Village

Strength	Weakness	Opportunity	Threats
• Good connectivity, • Banking facilities • Door to door solid waste collection • Health facilities • Education facilities • CCTV Camera • Community hall • Telecommunication • Water supply	• Free Wi-Fi Connection • Library • Open drainage system	• Use modern technology • All places Wi-Fi connection	• Water crises • Open drainage

Table 1.1 SWOT Analysis

1.6 Benefits Of Visits Of Ideal Village/Smart Village

- We are learnt many of the things regarding which problems are affect to villagers and which of the general facilities are available and which of the facilities general requirement isn't fulfil to villagers, how to save environment, how to uses more and more amount to renewable energy source.
- It helps us gain firsthand information regarding functioning of the village.
- We know a new thing about swot analysis and other many systems in the village.
- Provides an opportunity to plan, organize and engage in active learning experiences.
- It helps to enhance are inter personal skills and communications.
- Helps to understand the do 's and don 'ts of the village activity
- As baben has developed a lot during the year 2007 to 2016 we got a good knowledge related to rural development and general infrastructure facilities to be provided in a village.
- Baben can also be considered as bench mark for the development of other villages.
- We also know the maintenance system of village, their problem-solving technique, their regularity, and concentration in work. We also knowing from visit how to interact with people and govt. authority, and representation of our idea against saarpanch, Talati, villagers.
- Visit is also providing us live and practical knowledge like doing internship at site.

1.7 Civil aspects required in Ideal village

- In ideal village So many structure, planning & management wise facilities available which are more than any other village. That happens because of only rubrics & rules of civil engineering conceptual fundamental studies.
- As a making of ideal villages following things should be present

  Good drainage,

  Good economic condition of person,

  Good housing condition,

  Commercial buildings.

Chapter-2
Literature Review

2.1 Introduction To Rural And Urban

❖ Rural

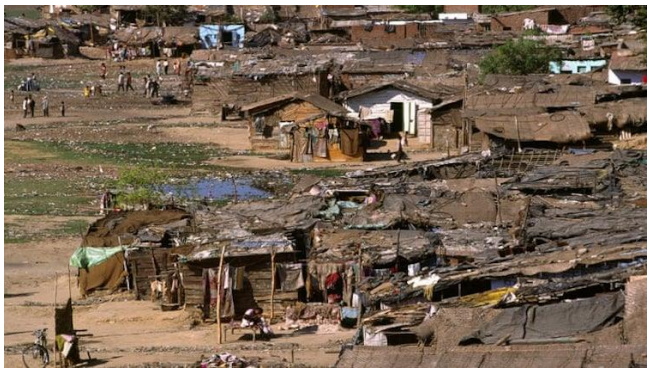


Fig 2.1 Rural

- The word 'rural' means an area which is marked by non-urban style of life, occupational Structure, social organization and settlement pattern.
- Rural is noticeably agricultural, its settlement System consists of villages or homesteads socially it Signifies greater inter dependence among people,More
- deeply rooted community life and a slowmoving Rhythm of life built around nature and Natural phenomenon and occupationally it is highly Dependent on crop farming, animal enterprises, tree Crops and related activities.
- Population density is up to 400 persons per square Kilometer.
- Minimum 75% of population is working with Agricultural activity.
- Village has no municipal board.
- Population of gujarat state rural part is 14%, among them 52% are boys and 48% are girls.There are about 67.7 lakh households in the state and an average 5 persons live in everyFamily.
- Rural population density of gujarat state rural part is 184 persons per km2.

❖ Urban

Fig 2.2 Urban

- An urban area or urban agglomeration is a human Settlement with high population density and Infrastructure of built environment.
- Minimum population is 5000.
- Population density is 400 persons per square Kilometer or higher.
- Minimum 75% of population is working with nonagricultural Activity.
- Population of the state has increased by 36% in Last 10 years.
- In 2001 census total population here were about 2 crore. Female population growth rate of the state is 36% which is 0% lower than male population growth rate of 36%.

- Population of gujarat state urban part is 11%, among them 54% are boys and 46% are girls. There are about 54.7 lakh households in the state and an average 5 persons live in every family.

2.2 Importance Of The Rural Development

- Rural development is important not only for the majority of the population residing in a rural area but the growth of rural activities is necessary to stimulate the speed of overall economic expansion of the nation.
- Rural development is pretended to be noticeable importance in the country today than in the olden days in the process of the evolution of the nation. It is a strategy trying to obtain improved rural creation and productivity, higher socio-economic equality, and ambition, stability in social and economic development.
- The primitive task is to decrease the famine roughly about 70 percent of the rural population, implement sufficient and healthy food. Later, serve fair equipment of clothing and footwear, a clean environment and house, medical attention, recreational provision, education, transport, and communication.
- Rural development in simple terms can be defined as the process of improving the quality of life and economy in the remote and rural parts of the country. These rural areas may be isolated and sparsely populated, but, in most cases, they offer a picturesque natural setting with a rich culture. These areas have generally been dependent on agriculture and natural resources for their economic upturn.
- Rural development is a complete term that concentrates on the action taken for the development of rural areas improve the village economy. However, few areas that demand more focused attention and new initiatives are.

2.3 Ancient Village / Different Definition Of: Rural Urban Village

- A village is a small settlement usually found in a rural setting. It is generally larger than a "hamlet" but smaller than a "town". Some geographers specifically define a village as having between 500 and 2,500 inhabitants.
- Rural areas are areas which are not towns or cities. They are often farming or agricultural areas.
- These areas are sometimes called "the country" or "countryside".
- People who live "in the country" often live in small villages, but they might also live somewhere where there are no other houses nearby
- ACCORDING TO UK: -
  - A small community or group of houses in a rural area, larger than a hamlet and usually smaller than a town, and sometimes (as in parts of the U.S.) incorporated as a municipality the inhabitants of such a community collectively
- ACCORDING TO THE PLANNING COMMISSION: -
  - A town with a maximum population of 15,000 is considered rural in nature. In these areas the Panchayat takes all the decisions. There are five people in the Panchayat
- ACCORDING TO RESERVE BANK OF INDIA (RBI): -
  - Defines rural areas as those areas with a population of less than 49,000 (tier -3 to tier-6 cities).
- ACCORDING TO THE NATIONAL SAMPLE SURVEY ORGANIZATION (NSSO): -

- An area with a population density of up to 400 per square kilometer, Villages with clear surveyed boundaries but no municipal board, A minimum of 75% of male working population involved in agriculture and allied activities.

2.4 Scenario: Rural / Urban Village Of India Population Growth

- ❖ The population of India increased drastically from 361 million in 1951 to 1,028 million in 2001, almost tripling within half a century. The percentage of people living in urban areas increased to 28% in 2001. The annual growth rate of the rural population during the decade 1991–2001, was 1.7. Nearly 16% of India's population belongs to Scheduled Castes (SCs) and 8% to Scheduled Tribes
- ❖ The growth of India's population since independence hovered around 2% per year for nearly two

Census year	Population	Growth over decade		Multiple of 1901 population
		Number	Percent	
1901	238,396,327	-	-	1
1911	252,093,390	13,697,063	5.7	1.1
1921	251,321,213	−772,177	-0.3	1.1
1931	278,977,238	27,656,025	11	1.2
1941	318,660,580	39,683,342	14.2	1.3
1951	361,088,090	42,427,510	13.3	1.5
1961	439,234,771	78,146,681	21.6	1.8
1971	548,159,652	108,924,881	24.8	2.3
1981	683,329,097	135,169,445	24.7	2.9
1991	846,421,039	163,091,942	23.9	3.6
2001	1,028,737,436	182,316,397	21.5	4.3

Table 2.1 Population size and growth in India, 1901–2001

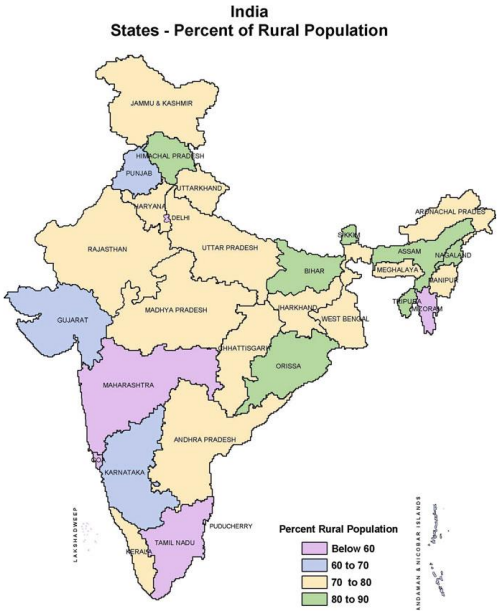


Fig 2.3 Percent rural population, 2001

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

- As per Official Census, Population of India has reached 1.21 Billion (121 Crore) in 2011 which is an increase of 17% from the earlier figure of 103 Crore of 2001. Although population growth rate has decreased but actual population continue to rise.
- As per estimates, it is expected that India would be most populous country by 2025 overtaking china.
- Gujarat Population Census Data shows that it has Total Population of 6.03 Crore which is approximately 4.99% of total Indian Population. Literacy rate in Gujarat has seen upward Trend and is 79.31% as per 2011 population census. Of that, male literacy stands at 87.23% while female literacy is at 70.73%.
- According to census 2011 the population percentage in urban area of Gujarat is 42.60% and in rural area of Gujarat is 57.40%.

Population of india (In crores)			
Year	2001	2011	Difference
India's population	102.87	121.08	18.21
Rural population	742.49	833.74	91.25
Urban population	286.12	337.10	90.98

Table 2.1(a) Population of India

Population of Gujrat (In crores)			
Year	2001	2011	Difference
Gujrat's population	50.61	60.44	9.38
Rural population	31.74	34.69	2.95
Urban population	18.93	25.74	90.98

Table 2.1(b) Population of Gujarat

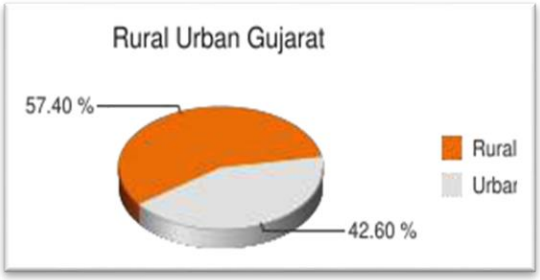


Fig 2.4(a) Rural & Urban Chart of Gujarat census 2011

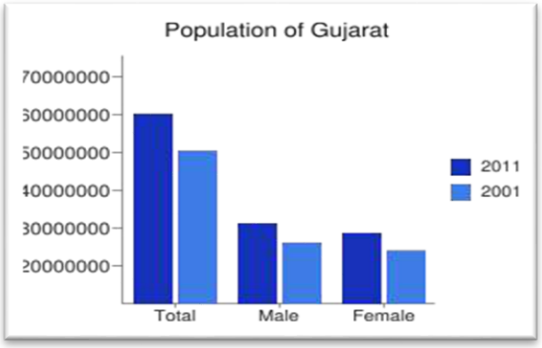


Fig 2.4(b) Population Of Gujarat

2.6 Rural Development Issues/Concerns-Measures

- CRIME FREE / DISPUTE FREE
  - Due to less percentage of literacy in rural area cases of crime will me more.
  - Annuum income of peoples of rural area will be less as compare to peoples of urban areas.
- RESOURCES
  - Everyone wants to go to the cities, so that rural people 's remains as ignores part by the policy makers also.
- LITERACY
  - Literacy is the major problem in rural development programmers.
  - The poor extension linkage causes slow growth of rural development.
  - Untrained, unskilled, inexperienced staff in extension linkage cannot provide satisfactory help to rural peoples.

Fig 2.5 Rural Issues Like smoke of the fire

- HEALTH / HYGIENE
  - Now also many rural peoples using primitive methods of cooking, living and farming and they have trust on these methods.
  - By using primitive cook stoves, around 300,000 death / year take plan due to pollution.
- WOMEN EMPOWERMENT
  - Women empowerment in rural area are very less as compare to urban area.
  - In some area women are not able to study which decrease literacy.
- ELECTRICAL CONCEPT
  - In 21st Century, there is no electricity supply in many villages.
  - Due to poor electricity peoples are suffer from many problems.
  - Due to improper electricity employment opportunity will be reduced which increase poverty in rural areas
- ANY OTHER
  - The financial, manpower and managerial resources devoted to the implementation of rural development programs are utterly inadequate.
  - The political parties have a vital role to play in rural development. But unfortunately, this role has not been effectively realized by any democratic political party so far. The political parties today are guide more by party interests rather than by national interests.

2.6.1 Measures Of Rural Development

- The main objective of rural development has been to remove poverty of the people and fill the widened gap between the rich and the poor. Rural development which encompasses the entire gamut of improvement in the overall quality of life in the rural areas can be achieved through eradication of poverty in rural areas.

- Rural development is the national necessity and it has following measures:need to develop a rural area as of its culture, society, economy, digitalization and health.
- We need to develop living slandered of rural people.
- We need to develop education in rural youths, children and women.
- We need to develop and empower human resource of their psychology, skill and other abilities.
- We need to develop infrastructure facility of rural area in terms of sanitation, water and roads facility.
- We need to provide minimum facility to rural mass in terms of education, electricity, communication and network facility.
- We need to develop rural institutions like Panchayat, cooperatives, post, banking and credit.
- We need to provide a financial source for rural people to create an own business
- We need to develop rural industries through the development of handicrafts, small scaled industries, village industries, rural crafts, cottage industries and other related economic operations in the rural sector.
- We need to develop agriculture, animal husbandry and other agricultural related areas.
- We need to restore uncultivated land, provide irrigation facilities and motivate farmers to adopt a new soil cultivation method.
- This has been also vocalized in the policy of the government which says: said, Rural poverty alleviation has been the primary concern in the economic planning and development process of the country rural development which encompasses the entire gamut of improvement in the overall quality of life in the rural areas can be achieved through eradication of poverty in rural areas.

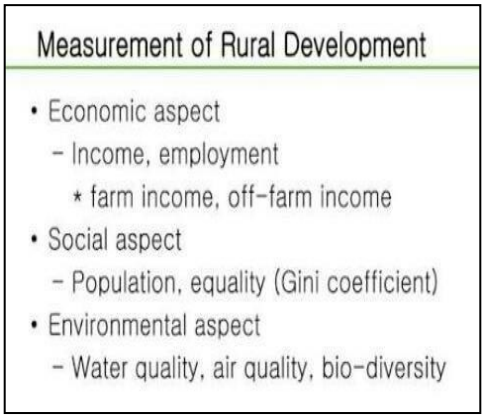


Fig 2.6 Measurement Of Rural Development

2.7 Various Infrastructure Guidelines With Norms For Villages For The Provisions Of Different Infrastructure Facilities

- Allotment of Grant:- The grant shall be allocated through District Panchayat to the Gram Panchayats eligible for the grant of Smart Village. Maximum grant allotment shall be based on population and area as follows.
- Population Area (Hector) Maximum admissible grant (Rs. in Lakh)
  - Villages having more than 10,000 population More than 3000 100.00 1000 to less than 3000 90.00 Less than 1000 80.00
  - 5000 to 10,000 More than 3000 75.00 1000 to less than 3000 67.50 Less than 1000 60.00
  - Less than 5000 More than 3000 50.00 1000 to less than 3000 45.00 Less than 1000 40.00 6 - 50% amount of the total grant shall be allocated in the first installment and rest of the amount shall be allocated after the expenditure of 50% of the grant by the concerned Gram Panchayat. - This grant shall be used for sanctioned works and programmes of the plan only.

- **Water supply:-** Delivery of safe drinking water is vital for protecting public health and of promoting more secure livelihoods. The traditional approach to water quality and safety management has relied on the testing of drinking water, as it leaves the treatmentworks or at selected points, either within the distribution system or at consumer taps. It is referred to as 'end-product testing.
  - Various methods for water supply
    - Gravity-fed water supply systems in hilly areas
    - Dug well-based rural water supply system
    - Borewell-based rural water supply systems (hand pump operated)
    - Pond-based rural water supply systems with appropriate treatment and rain water harvesting systems through surface storage
    - Groundwater recharging systems
    - Rooftop rainwater harvesting systems
- **Sanitation Facilities:-** Demand and supply of sanitation facilities and services should be addressed concurrently to ensure toilet adoption and sustained use and enable scale Adoption and sustained use of sanitation facilities requires construction of safe toilets and their sustained use. Access to a toilet does not mean it is used or used consistently by everyone at all times. Poorly constructed and managed facilities may lead to households reverting to open defecation.
- **Hospital:-** National Rural Health Mission (NHM) was launched in the year 2005 to strengthen the Rural Public Health System and has since met many hopes and expectations. The Indian Public Health Standards (IPHS) for Sub-centers, Primary Health Centers (PHCs), Community Health Cen-tres (CHCs), Sub-District and District Hospitals were published in January/ February, 2007 and have been used as the reference point for public health care infrastructure planning and up-gradation in the States and UTs. These IPHS guidelines will act as the main driver for continuous improvement in quality and serve as the bench mark for assessing the functional status of health facilities. States and UTs should adopt these IPHS guidelines for strengthening the Public Health Care Institutions and put in their best efforts to achieve high quality of health care across the country.
- **Roads:-** The Union ministry of rural development has recently issued fresh guidelines under the 'Pradhan Mantri Gram Sadak Yojana' (pmgsy) to prevent construction of poorquality roads and streamline the bidding process throughout India. pmgsy is the largest rural road connectivity program in the world. The new rules stipulate a standard procedure for road construction. They envisage a three-tier quality control system, with executive engineers at the lowest rung and national quality monitors at the top level. The contractor has to give a five-year guarantee for the work done. The state governments,too, have been made responsible for the maintenance of roads in rural areas for a period of five years.
- **Schools:-** Many small towns lack basic educational infrastructure. Most schools don't have proper toilets, electricity, and proper buildings with roofs. There is also lack of drinking water. The condition of government schools is also not satisfactory, according to many reports. There have been several cases of poisoning due to poor quality mid-day meals in government schools. Therefore, provide among the all facilities in rural schools like proper toilets, electricity and proper building and also provide good furniture which required in schools.

2.8 Other Projects / Schemes Of Gujarat / Indian Government

❖ Followings are the schemes or projects by govt. sector:

1. Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)
2. Pradhan Mantri Gram Sadak Yojana (PMGSY)
3. Indira Awas Yojana (IAY)

❖ **(i) Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA):**

- 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 any rural household whose adult members are willing to do unskilled manual work.

❖ **(ii) Pradhan Mantri Gram Sadak Yojna (PMGSY):**

- Pradhan Mantri Gram Sadak Yojana (PMGSY) was launched on 25th December 2000 as a fully funded Centrally Sponsored Scheme to provide all weather road connectivity in rural areas of the country. The program envisages connecting all habitations with a population of 500 persons and above in the plain areas and 250 persons and above in hill States, the tribal and the desert areas.
- According to latest figures made available by the State Governments under a survey to identify Core Network as part of the PMGSY program, about 1.67 lakh Unconnected Habitations are eligible for coverage under the program. This involves construction of about 3.71 lakh km. of roads for New Connectivity and 3.68 lakh km. under up gradation.
- The President of India, in his address to Parliament on 25th February, 2005 announced a major business plan for rebuilding rural India called Bharat Nirman. The Finance Minister, in his Budget Speech of 28th February,2005, identified Rural Roads as one of the six components of Bharat Nirman and has set a goal to provide connectivity to all habitations with a population of 1000 persons and above (500 persons and above in the case of hilly or tribal areas) with an all-weather road. A total of 59564 habitations are proposed to be provided new connectivity under Bharat Nirman. This would involve construction of 1,46,185kms of rural roads. In addition to new connectivity, Bharat Nirman envisages up gradation/renewal of 1, 94,130kms of existing rural roads. This comprises 60% up gradation from Government of India and 40% renewal by the State Governments.

❖ **(iii) Indira Awas Yojana (IAY):**

- 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.

Chapter-3
Smart (Cities / Villages) Concept Idea And Its Visit (Civil Concept)

3.1 Introduction: Concepts, Definitions And Practies

3.1.1 Concepts

- The concepts of smart city embrace serval definitions depending on the meaning of the word “smart” intelligent city, ubiquitous city, sustainable city, digital cities. Many definitions of smart city exit, but no one has been universally acknowledged yet. From literature analysis it emerges that smart city and digital city are the most used terminology in literature to indicates the smartness of a city.
- A smart city is an urban area that uses different types of electronic data collection sensors to supply information which is used to manage assets and resources efficiently. This includes data collected from citizens, devices, and assets that is processed and analyzed to monitor and manage traffic and transportation systems, power plants, water supply networks, waste management, law enforcement, information systems, schools, libraries, hospitals, and other community services.

Fig 3.1Smart City Concepts

- That village almost contains every basic facility as well as some unique facility and activities such as sport festival, cultural event and social event.Solid waste management and utilization of solar energy. Smart village has facilities such as,
    - Primary and higher secondary school
    - Primary health center as well as medical store
    - Water head reservoir
    - Public building such as post office, police station , bank, ATM
    - Panchayat building
    - Proper waste management water treatment plant
    - Wi-Fi facility in government building
    - Recreational center
    - Well design sewer line
    - 24 hours electricity
    - Bituminous road
    - Public library
    - Community hall
    - Solar resources
    - Play ground
    - Social activities
    - Healthy and hygienic environment

3.1.2 Definitions

- A smart city is a designation given to a city that incorporates information and communication technologies (ICT) to enhance the quality and performance of urban services such as energy, transportation and utilities in order to reduce resource consumption, wastage and overall costs.
- We define a Smart City as a city which uses information and communication technologies so that it's critical infrastructure as well as its components and public services provided are more interactive, efficient and so that citizens can be made more aware of them.

3.1.3 Practice, Visit And Information About Smart City

Fig 3.2 Front View Of ENA Village

- The smart village concept is a community village with a self-sustaining income producing projects, independent electrification system generated from non-fuel based device, clean water facility for drinking including water for irrigation, quality but affordable housing, school, medical facilities for human being and animal, proper sanitation system, information centre, bank, police station, post office retail outlet for household and agriculture needs, communication facility, connecting roads to nearby villages and towns.
- Ena village is a village in surat district. It is known as a smart village in palsana taluka. The name of sarpanch is smt. Nayanaben ahir and the total population of the village is 3777. We visited ena village on 14th Oct 2020 and studied the village.

Fig 3.3 CCTV Camera in ENA Village

Fig 3.4 ATM in ENA Village

Fig 3.5 Primary School

Fig 3.6 Post-Office

Fig 3.7 PHC

Fig 3.8 Gram Panchayat Office

Fig 3.9 Garden

Fig 3.10 Water Tank

3.2 Vision-Goals,Standards And Performance Measurement Indicators

3.2.1 Smart Cities Development Vision-Goals.

- Identify the transportation challenges and needs of the citizen and business community and demonstrate how advanced technologies can be used to address issues in safety, mobility, and climate change, now and into the future.
- Determine which technologies, strategies, applications, and institutional arrangements demonstrate the most potential to address and mitigate, if not solve, transportation challenges identified within a city.
- Support and encourage cities to take the evolutionary and revolutionary steps to integrate advanced technologies – including connected and automated vehicle technologies – into the management and operations of the city, consistent with the USDOT vision elements.

- Demonstrate, quantify, and evaluate the impact of these advanced technologies, strategies, and applications towards improved safety, efficiency, and sustainable movement of people and goods.
- Examine the technical, policy, and institutional mechanisms needed for realizing the potential of these strategies and applications – including identifying technical and policy gaps and issues – and work with partners to address them.
- Assess reproducibility and qualify successful smart city systems and services for technology and knowledge transfer to other cities facing similar challenges.

3.2.2 Smart Cities Standards

- The amount of activity in Smart City standardization is truly overwhelming – this is partly due to the breadth and scope of Smart City activities – from water pipes to people and partly because it is early in the process and the standards bodies are still trying to understand how best to contribute.
- **Level 1: Strategic**: These are smart city standards that aim to provide guidance to city leadership and other bodies on the "process of developing a clear and effective overall smart city strategy". They include guidance in identifying priorities, how to develop a roadmap for implementation and how to effectively monitor and evaluate progress along the roadmap.
- **Level 2: Process**: Standards in this category are focused on procuring and managing smartcity projects in particular those that cross both organizations and sectors. These essentially offer best practices and associated guidelines.
- **Level 3: Technical**: This level covers the myriad technical specifications that are needed to actually implement Smart City products and services so that they meet the overall objectives

Fig 3.11 Smart Cities Framework

3.2.3 Smart Cities Performance Measurement Indicators

- CITY keys provides a validated, holistic performance measurement framework for monitoring and comparing the implementation of Smart City solutions, with the objective of speeding up the transition to low carbon, resource-efficient cities.
- Based on the inventory of indicators from **43 existing indicator frameworks**, a set of indicators for assessing smart city projects and smart city performance has been designed for CITY keys have been suggested to fill gaps in existing frameworks, mostly related to specific characteristics of smart city projects

- The resulting indicator selection responds to the wishes of cities and citizens for the coverage of their priorities and reflects city goals. CITY keys has collaborated with TRIANGULUM, REMOURBAN and SMARTER TOGETHER 'lighthouse' project consortia to develop the indicator selection.
- The indicators are arranged in an extended triple bottom line sustainability framework, including the themes **people, planet, prosperity, governance and propagation**, and completed with specific **smart city** indicators. Under the main themes, subthemes conforming to major policy ambitions have been identified.
- Under these subthemes in total **92 project indicators and 73 city indicators** have been selected
    - The **indicators for assessing smart city** serve to assess or evaluate single projects. They indicate the difference the project has made, by comparing the situation without the project with the situation after the implementation of the project. As such they can also serve to benchmark projects against each other.
    - The **indicators for smart cities** focus on monitoring the evolution of a city towards an even smarter city. The time component -"development over the years"- is an important feature. The city indicators may be used to show to what extent overall policy goals have been reached, or are within reach.

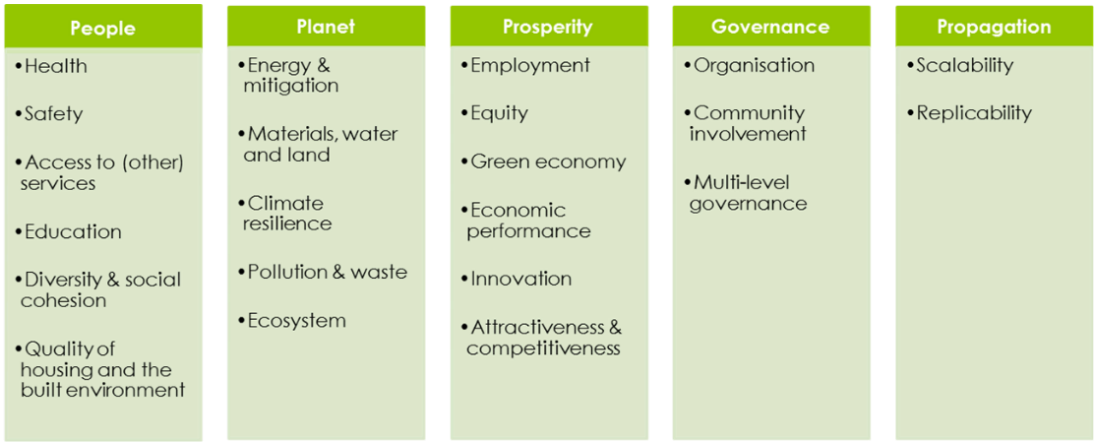


Fig 3.12 Key Point of Smart Cities

3.3 Technological Options for Smart Cities

1. Smart Buildings
2. Smart Mobility
3. Smart Governance
4. Smart Healthcare
5. Smart Society
6. Smart Infrastructure
7. Smart Energy
8. Smart Public Services
9. Smart Farming
10. Smart Education
11. Smart Business

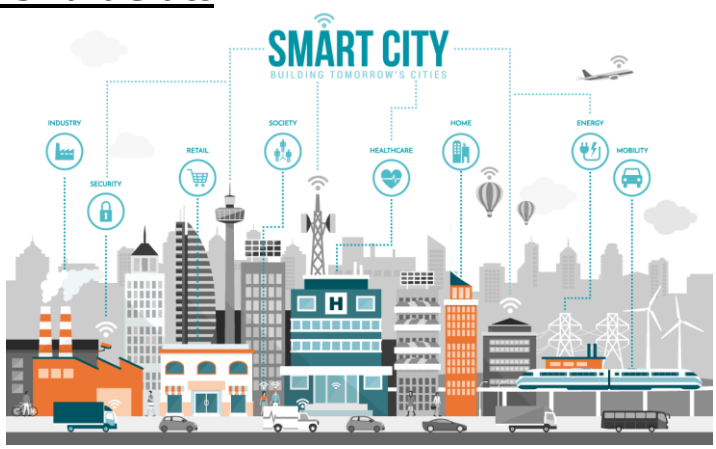


Fig 3.13 Technological Options

3.3.1 CIVIL Related Technology

- **Services required for smart village**
  - Smart Security.
  - Efficient public transportation system.
  - Improving health service.
  - Improving sanitation conditions.
  - Smart farming.
  - Solid and liquid waste management.
  - Improving Education facilities.
  - Improving Infrastructure.
  - Rain harvesting /Rain water drainage system.
  - Improving energy facilities.
  - Safe drinking water facilities.
  - Use of renewable energy.
- Services required for smart village Efficient public transportation system. Improving sanitation conditions Rain harvesting /Rain water drainage system Use of renewable energy. The idea of Smart villages based on Internet of Things Smart Weather and Irrigation , Accurate weather information can be of great use to the people of the village. As we know, the majority of population in villages engages in agriculture for their living. The use of environmental sensors to predict weather forecasts can help the farmers to a large extent. Many farming activities like sowing, irrigation and harvesting depend on the weather. Smart irrigation systems can make use of sensors in the fields and remote satellite data to ensure the optimal use of available water resources. If it is going to rain the next day, then watering the fields on that day makes no sense. All this information can be made available to the farmers through message alerts on their mobile phones. The level of water in the dams and canals can also be monitored using sensors and it can be used to predict the future need of water.

3.4 Road Map And Safe Guards

3.4.1 Road Map

- To become a digital city, governments will need an appropriate set of solutions that will help them advance to the next stage of maturity. The more a city takes advantage of the potential offered by ICT in terms of the provision of digital services and an integrated urban network, the higher its level of maturity. In many ways, this is easier for newer cities in emerging markets, which are just now investing in urban infrastructure
- For example, Lusail City in Qatar, Masdar City in the UAE, and Songdo in South Korea are all Making digital technology, networks, and apps a central part of how they operate and interact with citizens. By contrast, existing — or brownfield — metropolitan areas face clear challenges in moving up the ICT maturity ladder, as they need to modernize their existing infrastructure with embedded sensors and control systems and retrofit old buildings a complicated and expensive process.
- Indeed, in some cases it is impossible as the buildings cannot accommodate new technologies. However, becoming a digital city is not so stark a choice that urban authorities either achieve this evolution or fail. Rather, even taking small steps, particularly for established cities, toward becoming more digitized and offering enhanced digital services provides a variety of benefits. In some cases, established cities can use the disruptive power of digitization to leapfrog some of the obstacles.

3.4.2 Safe Guards

- In various cities across India, police officers and public safety administrators' work around the clock to make sure millions of its residents are safe an unnerving thought, actually.
- The Delhi Police is perhaps the largest metropolitan police in the world, larger than London, Paris, New York and Tokyo, and yet the ratio of officers to the city's 20 million citizens is 1: 253.This reality leaves officers hard put to keep up with citizens on both routine days and during emergencies.
- The project requires vast experience, expertise as well as technical and financial capability in a system integrator for the successful implementation of the project as well as subsequent management, operation and maintenance.

3.5 Issues & Challenges

- **Insufficient Funds-**Making cities smart means deploying smart, complex infrastructure for implementing digital technologies. Besides, tons and tons of smart devices have to be integrated for data collection. In addition, to ensure smart city success, governments have to hire enough tech experts and city planners.
- **Lack of experienced professional: -**Another most-pressing challenge for smart cities is the lack of skilled professionals. For preparing a strategy to achieve smart city project success, identifying areas for implementation of technologies, and operating these tools, tech experts are required.
- **Inconsistent network connectivity: -**For the smart management of a municipality, several sensors, cameras, and actuators are installed everywhere. These sensors gather
- and send
  large volumes of data in real time. Analysis and processing of the collected data Should happen almost instantaneously for efficient management of city operations. And for instant processing, high-speed Internet connectivity is mandatory.
- **Cyber security risks:-** Though this data help in providing efficiency at municipality functions, it presents serious security risks that can't be ignored. Data from parking lots, CCTV cameras, EV charging stations, and GPS systems contains confidential information of citizens.
- **Corruption:-** This point probably was meant to be from the first as this is the root cause for all above challenges. But if we talk about it solely this is also a major challenge. Both at center and state level corruption is responsible for all the co- ordination mismatch and time lag happening. The financial constraint also somehow creeps in because of this issue. Corruption in India is a challenge which has always been a reason for non-execution or ineffective execution of most big projects in the country.
- **No time figure attached to the plan:-** The entire smart city plan is a one big plan which should get all the clearances if not before time then on time. Everything should be online and timely which unfortunately is not happening in this case. Doing this will address two major issues one of co-ordination and one would be the timely execution. Also, the body should be solely responsible to cater to the financial requirements

3.6 Smart Infrastructure – Intelligent Traffic Management

3.6.1 Smart Infrastructure

- Smart infrastructure has many components like Digital management of infrastructure,

sensor networks, digital water and waste management, institutional, physical, social, economic infrastructure

- Physical Infrastructure refers to its stock of cost efficient and intelligent physical infrastructure such as the urban mobility system, high speed broadband infrastructure, the housing stock, the energy system, the water supply system, sewerage system, sanitation facilities, solid waste management system, drainage system, etc. which are integrated through use of technology.
- Social Infrastructure relates to components that enable development of human and social capital, such as the education, healthcare, entertainment, etc.
- It also includes performance and creative arts, sports, the open spaces, children's parks and gardens.
- Economic Infrastructure include developing proper infrastructure that generates employment opportunities and attract investments.

3.6.2 Intelligent Traffic Management

- In present-day times, the number of vehicles has increased drastically, but in contrast, the capabilities of that roads and transportation systems still remain underdeveloped and as a result, fail to cope with this upsurge in the number of vehicles. As a consequence, traffic jamming, road accidents, increase in pollution levels are some of the common traits that can be observed in our new age cities. With the emergence of the Internet of Things and its applicability in Smart Cities, creates a perfect platform for addressing traffic-related issues, thus leading to the establishment of Intelligent Traffic Management Systems (ITMS).its foundation on Cloud computing, Internet of Things and Data Analytics.
- Its proposed system helps to resolve the numerous challenges being faced by traffic management authorities, in terms of predicting an optimum route, reducing average waiting time, traffic congestion, travel cost and the extent of air pollution. The system aims at using machine learning algorithms for predicting optimum routes based upon traffic mobilization patterns, vehicle categorization, accident occurrences and levels of precipitation. Finally, the system comes up with the concept of a green corridor, wherein emergency services are allowed to travel without facing any kinds of traffic congestion.

3.7 Cyber Security

- Cyber security refers to the body of technologies, processes, and practices designed to protect networks, devices, programs, and data from attack, damage, or unauthorized access. Cyber security may also be referred to as information technology security.
- Cyber security is important because government, military, corporate, financial, and medical organizations collect, process, and store unprecedented amounts of data on computers and other devices.
- Elements of cyber encompass all of the following:.
    - Network security

Fig 3.14 Cyber security

- Application security
- Endpoint security
- Data security
- Identity management
- Database and infrastructure security
- Cloud security
- Mobile security
- Disaster recovery
- Business continuity planning
- End-user education

3.8 Retrofitting-Redevelopment-Greenfield Development-District Cooling

3.8.1 Retrofitting

❖ Retrofitting will introduce planning in an existing built-up area to achieve smart city objectives, along with other objectives, to make the existing area more efficient and liveable. In retrofitting, an area consisting of more than 500 acres will be identified by the city in consultation with citizens. Depending on the existing level of infrastructure services in the identified area and the vision of the residents, the cities will prepare a strategy to become smart. Since existing structures are largely to remain intact in this model, it is expected that more intensive infrastructure service levels and a large number of smart applications will be packed into the retrofitted smart city. This strategy may also be completed in a shorter time frame, leading to its replication in another part of the city.

Fig 3.15 Retrofitting development

3.8.2 Redevelopment

❖ 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. Redevelopment envisages an area of more than 50 acres, identified by Urban Local Bodies (ULBs) in consultation with citizens. For instance, a new layout plan of the identified area will be prepared with mixed land-use, higher FSI and high ground coverage. Two examples of the redevelopment model are the Saifee Burhani Upliftment Project in Mumbai (also called the Bhendi Bazaar Project) and the redevelopment of East Kidwai Nagar in New Delhi being undertaken by the National Building Construction Corporation.

3.8.3 Greenfield Development

❖ Greenfield development will introduce most of the Smart Solutions in a previously vacant area (more than 250 acres) using innovative planning, plan financing and plan implementation tools (e.g. land pooling/ land reconstitution) with provision for

affordable housing, especially for the poor. Greenfield developments are required around cities in order to address the needs of the expanding population. One well known example is the GIFT City in Gujarat. Unlike retrofitting and redevelopment.

3.8.4 District Cooling

- District cooling is the cooling equivalent of district heating. Working on broadly similar principles to district heating, district cooling delivers chilled water to buildings like offices and factories needing cooling. In winter, the source for the cooling can often be sea water, so it is a cheaper resource than using electricity to run compressors for cooling. Alternatively, District Cooling can be provided by a Heat Sharing Network which enables each building on the circuit to use a heat pump to reject heat to an ambient ground temperature circuit.

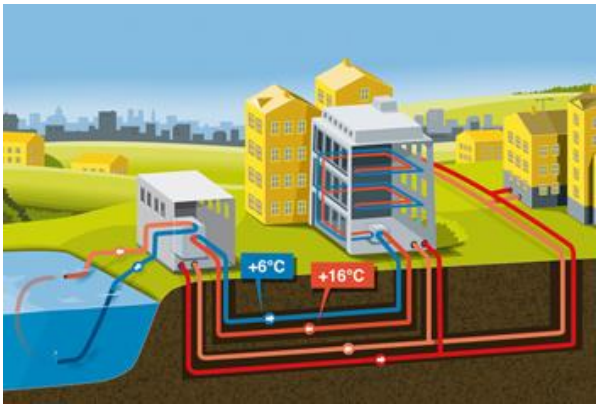


Fig 3.16 Distric Cooling

3.9 Strategic Options For Fast Development

- As far as developing of fast smart cities is concerns, following are the primary option which should implement first.

SMART CITY				
E-Governance and citizen	**Energy Management**	**Urban mobility**	**Waste management**	**Water Management**
1. Public Information	1. Smart Meters& Management	1. Smart Parking	1. Waste To Energy & Fuel	1. Smart Meter & Management
2. Electronic Service Delivery	2. Renewable Resources Of Energy	2. Intelligent Traffic Management	2. Waste To Compost	2.Leakage Identification, Preventive Measures.
3. Citizen Engagement	3. Energy Efficient & Green Building	3. Integrated Multi-Modal Transport	3. Waste Water To Be Treated	3. Water Quality Monitoring
4. Video Crime Monitoring			4. Recycling And Reduction Of Waste	

Table 3.1 Strategic Options

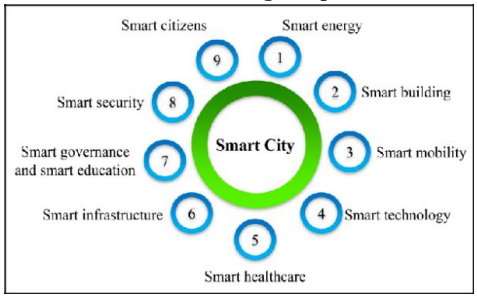


Fig 3.17 Stategic Plannig of Smart Cities

3.10 India's Urban Water And Sanitation Challenges And Role Of Indigenous Technologies

3.10.1 India's Urban Water And Sanitation Challenges

- There is a clear link between unsafe water, sanitation and hygiene, and detrimental health outcomes for women and children, especially in developing countries. Despite great advancements in reproductive, adolescent, maternal, neonatal and child health, increasing investments in WASH interventions may further improve the health and well-being of women and children.
- Power supply in rural areas is a serious concern. Availability of power varies from 8 to 10 hours a day and even the available power supply is highly erratic with crippling voltage fluctuations and sudden power cuts. Hence the total requirement of drinking water for the village needs to be produced in a short span of time when the power is usually available
- **The major challenges are:**
  - Creating consensus on sector governance and institutional arrangements
  - Developing and testing service provider models that have characteristics of well-run public companies for different market segments (large/small);
  - Improving financial sustainability of providers (commercial, energy, Non-Revenue Water)
  - Professionalizing the WSS sector.
- **Role of Indigenous Technologies:**
  - Although urban areas present major challenges for adequate water and sanitation management, "they also present a potential efficiency of scale in basic service provision never possible in the rural context. Urban systems also present the best opportunity for a transition to integrated service management, leveraging investments in energy, transportation, water, and sanitation in order to create more innovative and environmentally sustainable human development and natural resource management".

3.10.2 Indigenous Technologies

1. Smart buildings:- Automated Intelligent Buildings, Advanced Heating Ventilation and Air Conditioning systems (HVAC), Lighting Equipment.
2. Smart mobility:- Intelligent mobility; Advanced traffic management system (ATMS), Parking management, ITS-enabled transportation pricing system.
3. Smart governance and smart education:- Government-on-the-Go;e-Government, e- Education, Disaster management solutions.
4. Smart healthcare: - Intelligent Healthcare, Technology, use of e-Health and m-Health systems, Intelligent and connected medical devices.

3.11 Initiatives In Village Development By Local Self-Government

- Local self-government in India refers to governmental jurisdictions below the level of the state. India is a federal republic with three spheres of government: central (union), state and local. The 73rd and 74th constitutional amendments give recognition and protection to local governments and in addition each state has its own local government legislation.

- Since 1993, local government in India takes place in two very distinct forms. Urban localities, covered in the 74th amendment to the Constitution, have Nagar Palika but derive their powers from the individual state governments, while the powers of rural localities have been formalized under the Panchayat raj system, under the 73rd amendment to the Constitution.
- The Panchayat raj system is a three-tier system with elected bodies at the village, taluka and district levels.
- Although, as of 2015, implementation in all of India is not complete, the intention is for there to be a gram Panchayat for each village or group of villages, a tehsil level council, and a District Panchayat at the district level.

3.12 Smart Initiatives By District Municipal Corporation

Some Smart Development By Surat Municipal Corporation

1. SMAC (SMArt City) Center:-

- SMAC Center is envisaged as an administrative control center for the city of Surat for effective and efficient delivery of all civic services.SMART City Center will operate in four layers. This center will collect functioning information of all the departments on real time basis, as far as possible. Automated sensors and systems will send various data sets to the SMAC Center, which are analyzed to derive some conclusions. SMAC Center will play an important role in providing real time information about civic facility utilization in the city. It will help all the departments in maintaining civic service delivery standards on day-to-day basis. It will give support to the departmental heads for taking quick decisions in restoring services while handling unforeseendisturbing situations. In case of emergency situation, SMAC Center will play important role of coordinating all departments with decision support system for effectively managing rescue and relief operations. Thus the SMAC center will be able to address the issue of delivery quality civic services.

Fig 3.18 SMAC Center

2. Integrated Traffic and Mobility Administration Center (IT-MAC):-

- This center will house various departments/entities involved with managing city traffic and mobility like BRTS, City Bus, Traffic Police, RTO, Fire, Emergency Services, etc. IT-enabled applications will help all the concerned agencies to co-ordinate and support each other for smooth traffic operations.

Fig 3.19 IT-MA Center.

- SMC has intelligent transit system for BRTS, which will be extended to the city bus operations. This will offer real-time vehicle location and passenger information. SMC is using Adoptive Traffic Control System (ATCS) in BRTS, which will be extended to all major traffic junctions. Surat city has a network of more than 600 CC surveillance cameras, which will be expanded to all major locations in the city with the IT-MAC. All stakeholder agencies like BRTS, City Bus, Traffic Police, RTO, Fire & Emergency services, utility services, etc. will co-ordinate, share and act on an integrated platform through the IT-MAC. Citizens will be connected through variable message signs, website, mobile app, mobile alerts and social media. Thus, this integrated center will be single point sources in resolving all traffic & mobility issues to the satisfaction of the citizens.

3. Common City Payment System:-

- This will be Co-Branded Multi-Application Contact less Smart Card. It is envisioned to offer wide range of civic services to citizens with convenience of using single SMART card only.
- This card will be enriched with many other applications in order to enhance user convenience and experience. In the first phase 16 services have been identified which include transport, health, education, nutrition, affordable housing, shop and other licenses, library, sports and recreational facilities etc. This will fulfill citizen expectations of multi-applicability of the card. Simultaneously it will also make available one more service delivery channel with 'tap & go' features.

Fig 3.20 ATM Card

4. Connected Surat:-

- Internet has become a critical enabler of social and economic change, transforming how government, business and citizens interact. SMC wishes to provide WiFi service to the citizens covering important public places. Apart from this, SMC wishes to have the citywide Fiber to Home connectivity, which will be useful in providing reliable connectivity with high bandwidth, meeting the present and future requirements. It will also help in bridging digital divide by enabling access of Internet to all section of society.
- This component aims at assured and affordable connectivity for all in Surat. Demands and expectations of the citizens will fulfill with this component. Connectivity is also planned on transit. This will greatly help the citizens to get connected with the government. It will also boost up the local economy through online shopping and bookings. Citizens and society in general will also get connected on this inclusive platform.

5. **Automatic Fare Collection System (AFCS).**
   - This IT enabled service will make present public transport system more efficient and citizen friendly. It will be possible to manage the system centrally, simultaneously extending a package of transport options to citizens.
   - This component will help in having an intelligent public transport system in Surat City. AFCS will not only help in overall management of the public transport system but also it will also give citizen friendly transit options.
   - This component will help in having an intelligent public transport system in Surat City. AFCS will not only help in overall management of the public transport system but also it will also give citizen friendly transit options.

Fig 3.21 Automatic Fare Collection

6. **Incubation/Start up Centre:-**
   - High employment opportunities are available in the proposed area due to various commercial activities. A Startup & Incubation centre is proposed here to train the semi-skilled/ skilled job seekers in various trades and to provide necessary information though single window clearance to promote start-ups.

Fig 3.22 Start-up Center

3.13 Any Projects Contributed Working By Government/ NGO / Other Digital Country Concept

❖ GIFT City(Gandhinagar)

- GIFT City is an integrated development on 886 acres of land with 62 mm sq. ft. of Built Up area which includes Office spaces, Residential Apartments, Schools, Hospital, Hotels, Clubs, Retail and various Recreational facilities.
- The City is located on the bank of river Sabarmati connecting the Business capital (Ahmedabad) and Political capital (Gandhinagar) of Gujarat State- the Growth Engine of India.
- GIFT City is a new Financial & Technology Gateway of India for the World

- Infrastructure plays a pivotal role in supporting the business environment and quality of life in GIFT City.
- A judicious combination with the latest technology and global best practices in infrastructure service delivery are in place. All of these come together to provide an international standard of working and living.

Fig 3.23 GIFT City-Master Plan

3.14 How To Implement Other Countries Smart Villages Projects In Indian Village Context

- It is clear that the situations and challenges in developing urban and rural area are different due to the constraints and opportunities. Many researchers believe that the existing technologies developed for the smart city may be useful for the smart village concept. Researchers reported that the Smart village system can be developed on the lines of smart city model. The components taken in to consideration will vary from region to region for villages, based on the available resources and opportunities. Following are some generalized guidelines for the development of Smart Villages I
- Economic Component: This component will include local administration and economic factors. It will cover governance models, bandwidth, mobility, cloud computing, entrepreneurship etc.
- Environmental Component: This component will address the issues related to resources and infrastructures available at local level. It may cover cleaner technologies, public and alternative transportation, green spaces, smart growth, climate change etc.
- Social Component: This component may address issues related to community life, participatory democracy, social innovation, proximity services etc.

Chapter-4
About Manvad(Hadmatiya) Village

4.1 Introduction

4.1.1 Introduction About Manvad Village

- Manvad is a village located in Palitana Taluka of Bhavanagar District. Manvad is near to 5 km from Palitana and 58 km Bhavnagar Distric. Population of this village is 1055 as per census 2011.Main occupation of Manvad is farming.

Fig 4.1 Village map

4.1.2 Justifcation / Need Of Study

- By VishwakarmaYojana project government required technical result of the problem of villages at the engineering point of view.
- The developmental work in villages that could under taken as per the need of the village includes,
  - Socio- Cultural Facilities such as Community Hall, Public Library, Recreation Facilities, Assembly polling and other.
  - Sustainable development: Rain water harvesting, Biogas plant, Eco friendly Toilets, Solar Street lights & other for effective development of Villages.
  - Physical infrastructure facilities such as Water, Drainage, Road network, transport facility, Electricity, sanitation, Irrigation, Solid waste Management, Storm Water Network, Telecommunication & other,
  - Social infrastructural facilities such as Health, education etc

4.1.3 Study Area

- In Manvad village some physical and social facilities are better like underground drainage, cement concrete road, primary school, secondary school, and Aanganwadi.

- For development Manvad village we are try to provide required facilities like Government Dispensary as a physical infrastructure facility,Public garden as a social infrastructure facility,Water waste management as a sustainable infrastructure and E-center as a smart infrastructure facility.
- Based on survey we tried to give design of basic facilities to fulfill their needs. By providing this basic facility to village for reduce urban city pressure and decrease migration rate, which is ultimate aim of Vishwakarma Yojana.
- We are given attractive of public garden, An e-center and krishi seva kendra using smart technology for Manvad village. We are tried to give batter design to use maximum natural resources and provide all the basic needs.

4.1.4 Objectives Of The Study

- To study the existing growth, characteristics and development of villages.
- To study the existing infrastructure facilities and its management issues phasing by villages.
- To study strategic planning proposal in the form of Physical, Social and Renewable infrastructure facilities for the development of villages. To study the future growth and future scenario of village.
- To study how to improve a drainage facility of rural areas.

4.1.5 Scope Of The Study

- To development of village compare to the city area in the basic facility to needed for people and their amenities and to study whole village.
- The study will focus the development trend intensity of growth of the village find out the problems related to the physical development of the area and infrastructure services of the village.
- The information of the village is collected based on different categories like, Education, water facilities, drainage facilities, transportation facilities, primary health center, bank facilities, public toilets, community hall and other amenities.
- Based on these studies the requirement can be known and the further plan based on this requirement can be visualize for compacted development of the village.

4.1.6 Methodology Frame Work For Development Of Manvad

- The study frame work of our village divided in three phases, Preliminary survey, analysis, design.
- In preliminary survey there are two approaches one is direct and second is indirect.
- We first done indirect study of village through using various online sources and official websites of Gandhinagar district.
- Then we visit the village on primary bases and to collect the data as per techno-economic survey form prescribed by university.
- Then we come at the second phase of project, the analysis. We analyze the information collected and come to decide the road map of development ofvillage.
- Then we again contact the Gram Panchayat member to inform about our future scope of project and get the further data for designing various facilities. And at third phase of project we design the various facility in village like library, pick up stand, biogas plant, construction of paver block road and solid waste collection facility.

❖ In this way we approach our phase I project.

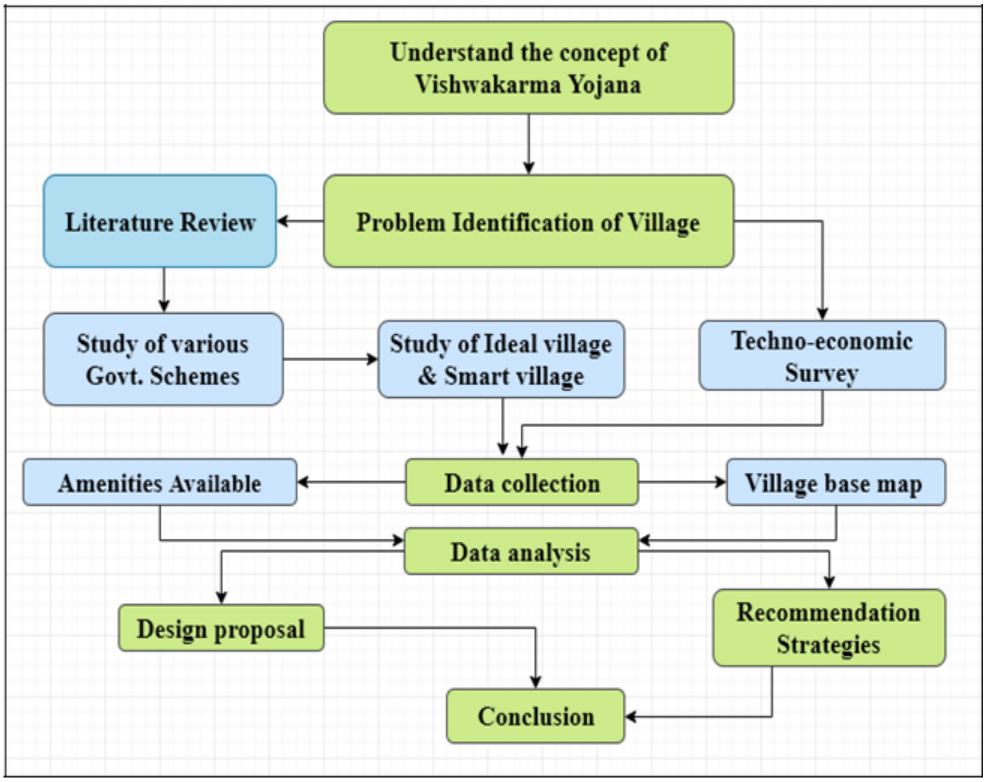


Fig 4.2 Methodology Framework for Village

4.1.7 Available Methodology For Development Of Related To Civil

- ❖ Panchayat
- ❖ Gram Drainage System
- ❖ Overhead Water Tank
- ❖ Bus Stop
- ❖ R.C.C Roads
- ❖ Paver Blocks
- ❖ Electricity 24*7
- ❖ General Provision Street.
- ❖ Water Supply System
- ❖ Community Hall
- ❖ Temple
- ❖ Education
- ❖ Solid Waste System
- ❖ WIFI

4.2 Manvad Village Study Area Profile

4.2.1 Study Area Location With Brief History Land Use Details

4.2.1.2 Study Area Location

- Village name :- Manvad(Hadmatiya)
- Taluka :- Palitana
- Distric :- Bhavnagar
- State :- Gujarat
- Pin code :- 364270
- Area(hectare) :- 1049.19

- Elevation/ Altitude :- 65 meters
- Coordinates :- 21.54630^{O}N , 71.79694^{O}E
- Population :- 1055

4.2.1.2 Brief History

❖ Manvad village is located in Palitana taluka and Bhavanagar district. People of this village are living in very peaceful manner. This village having very proud history. literacy rate of Manvad village was 94.67 %. In Manvad Male literacy stands at 97.88 % while female literacy rate was 91.28 %. Agriculture is the main profession of this village. Major crops in village are cotton,peanuts and vegetables.Young generation is attracted towards mobile, laptop and computer technology these days.Village is fully depending on an agriculture and diamond. New generation are attracted toward the small-scale business and many people are success in business from this village. Village is surrounded by many recreational and religious places.

4.2.2 Base Location Map,Land Map,Gram Tal Map

Fig 4.3 Satellite map

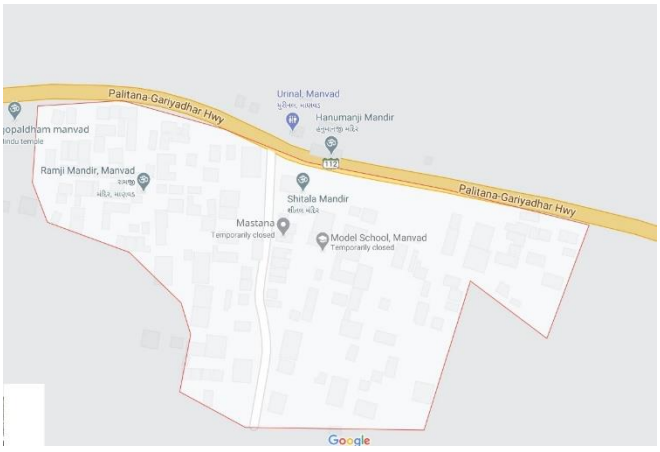


Fig 4.4 Village map

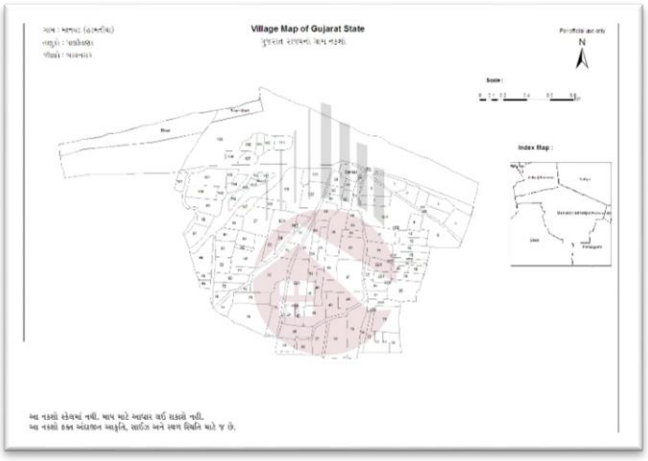


Fig 4.5 Land map of Manvad

4.2.3 Physical & Demographical Growth

- **Source of water**
  - Overhead Water tank
  - Under ground tank
  - bore well & piped water
  - Bottled water for drinking.
  - Local Municipal Corporation
- **Drainage System**
  - Closed drainages are provided in the village (Pucca)
- **Road network**
  - Village is connected by SH 112 to Palitana.
  - All connecting roads are bitumen road (good condition).
  - All internal roads are c.c. road.
- **Transportation facility**
  - Nearest railway station 5Km. (Palitana)
  - Nearest bus station in village.(Main road)
  - Auto, jeep, mini bus available.
- **Electricity**
  - GEB power supply more than 6 hr.
  - Main streets have solar lighting (not working).
  - All government buildings are fully facilitated with good lighting.
- **Housing conditions**
  - 90% houses in village are pucca house.
  - All houses are consisting of lighting, good ventilation and good sanitation with toilets.

Sr.no.	Census	Population	Male	Female	Total House
1	2001	-	-	-	-
2	2011	1055	536	519	183

Table 4.1 Demographic detail village

4.2.4 Economic Generation Profile/Bank

- The major population Manvad village is engaged with agricultural activities and other some people is doing business and services.
- The main crops are grown in manvad village is:
  - Cotton
  - Peanuts
  - All vegetables

4.2.5 Actual Problem Faced By Villages And Smart Solution

- Manvad village have no facility of solid waste treatment and not Available any hospital so peoples go to 5 km away from village for illness.

4.2.6 Social Scenario – Preservation Of Traditions,Festivals Cuisine

4.2.6.1 Social Scenario

Population	Persons	Males	Females
Total	1055	536	519
In age group 0-6 year	136	62	62
Scheduled cast(SC)	92	40	52
Scheduled tribes(ST)	0	0	0
Literacy	94.67%	97.88%	91.22%

Table 4.2 Social Scenario

4.2.6.2 Preservation Of Traditions, Festivals,Cuisine

- Navratri festival is celebrated with a durga pooja. This 10-day celebration, people do durga pooja, and enjoy with music and play dandiya and garba. Festival like diwali, bhai duj, vasant panchami, holi, kevadi etc. All festival is celebrating in full spirit of god. This village are concerned with fully hindu religion people. People also celebrate a nation festival like freedom day, gandhi jayanti, etc. Are celebrate.

4.2.7 Migration Reasons/ Trends

- Immediate concerns faced by such migrant workers relate to food, shelter, healthcare, fear of getting infected or spreading the infection, loss of wages, concerns about the family, anxiety and fear. Sometimes, they also face harassment and negative reactions of the local community.
- The reason of migration is to study abrot for further education like college and other reason of expand the business.
- Marriage of girls are migrant in her husband residence after marriage so this trend is never being stop. In village up to higher secondary education are available. lack of security Is a reason for people of which are migrant.

4.3 Data Collection Of Manvad Village

4.3.1 Methods For Data Collection

- Self-survey of the village.
- Interaction with the villagers.
- Techno economic survey.
- Physical survey of the village.
- Census 2011 reports and other reports published by different Ministries of the Government.
- Journals, Magazines and periodicals.
- Statement of villagers.
- Published reports of Central and State Governments and local bodies.

4.3.2 Primary Details Of Survey

- Manvad is a village located in Palitana Taluka of Bhavnagar district. Sarpanch of the village is Batukbhai d Chauhan. Village is located 5 Km away from Palitana. Total area of village is 1049.19 hectares.
- Manvad is well connected by state highway(SH112)

- Total population of village is 1055 among them 536 are male and 183 are female as per census 2011.
- Total households in Manvad village are 183 as per census. Main occupation of the Manvad village peoples is Farming.

4.3.3 Average Size Of The House-Geo Tagging Of House

4.3.3.1 Average Size Of The House

- Average size of house is 3.5 m x 6m.

4.3.3.2 Geo Tagging Of House

- Most of the houses in the Medra village is residential house and some of the are Kutchha house.
- 80% Pucca house.
- 20% Kutchha house.

4.3.4 No Of Human Being In One House

- Mainly in the one house there is 5 persons including children.

4.3.5 Material Available Locally In The Village And Material Out Sourced By The Villagers

- For the house, they used mainly bricks, sands and wood.
- There is no any out sourced material in the village.

4.3.6 Geographical Detail

Sr. No.	Description	Information/ Detail
1	Area of village (in Hector).	1049.19 Hector
2	Coordinates for location.	21.54630°N,71.79694°E
3	Forest are (in Hect.).	-
4	Residential area (in Hect.).	5.35 Hector
5	Agricultural land area (in Hect.).	703.26 Hector
6	Other land.	340.58
7	Distance to the nearest railway station (Km).	4 km Palitana
8	Nearest town and distance.	5 km Palitana
9	Distance to the nearest bus station (Km).	In Village
10	Connectivity to other roads.	SH112

Table 4.3 Geographical Detail

4.3.7 Demographical Detail-Cast Wise Population Details/Which ID Proof Using By Villagers

Population	Persons	Males	Females
Total	1055	536	519

In age group 0-6 year	136	62	62
Scheduled cast(SC)	92	40	52
Scheduled tribes(ST)	0	0	0
Literacy	94.67%	97.88%	91.22%

Table 4.4 Demographical Detail & Cast wise detail

- **List of ID proof using by Villagers**
  - Aadhar card
  - Voter id card
  - Ration Card
  - Passport
  - Pan card

4.3.8 Occupational Deatil- Occupation Wise Details / Majority Business

- In this village 80 to 85 % people connected with agriculture activities it's the villages main source of income. Out of that 42 to50 % people are connecting with both agriculture and labor work. But village has the milk production business so that's a income of source too there are approx. 5 to 10 % people are connected with milk production and other are doing labor work for money.

Name of three major occupation groups in villages	Farmer
	Diamond Labour Worker

Table:-4.5 Occupation Detail of Manvad Village.

4.3.9 Agricultural Details / Organic Farming / Fishery

- Most of area covered by agriculture of total area of Manvad village. And most of people in Manvad village are base of agriculture labors Most of population of Manvad village is depended agriculture.

Major crops grown in the village	Cotton
	Peanuts

Table:- 4.6 Demographic detail Manvad village.

4.3.10 Physical Infrastructure Facilities – Manufacturing HUB/ Ware House

- In Village no any Manufacturing hub.
- In Village one ware house of fertilizer of Vadiya Juth Seva Sahkari Mandali

4.3.11 Tourism development available in the village for attracting the tourist

- No tourism in this village.

4.4 Infrastructure Details(With Exiting Villages Photograph)

4.4.1 Drinking Water / Water Management Facilities

- In Manvad village there are two overhead tank of 50,000 lit capacity and two underground tank of 50,000 lit capacity. In village attached with pipeline through Narmada river.
- In Manvad village there is water distribution system is well developed in all over village. Its work in Good Condition.

4.4.2 Drainage Network

- Village drainage line are construct before 4 or 5 yrs. Its work in Good Condition.

Fig 4.6 Overhead tank

Fig 4.7 Tank of drainage line

4.4.3 Transportation And Road Network

- Good all-weather road is available in all over village. And it makes door to door connectivity. internal street is made up of paver block and external street which joint state highway is made up of R.C.C.
- Transportation network railway stop near 5 km away. public use owns two-wheeler or four-wheeler are used for travelling through main road. there is availability of rickshaw, jeep or other transportation facility.

Fig 4.8 Road Network

4.4.4 Housing Condition

- All houses are pucca house and constructed by modern methodology and material like brick, rcc, blocks etc. All houses are newly constructed. Also, a government housing (ghb) scheme is available nearby the area.
- Most of the houses in the Medra village is residential house and some of the are Kutchha house.
- 80% Pucca house.
- 20% Kutchha house.

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

4.4.5.1 Social Infrastructure

- Like Gram panchayat etc. Available in village.

Fig 4.9 Gram Panchayat of Manvad

4.4.5.2 Health

- There is no availability of PHC in Manvad Village. All type of health facilities is available at Palitana So, villagers go to Palitana for medical facilities.

4.4.5.3 Education

Sr. no.	Description	Information/Detail
1	Play group	1Nos.
2	Primary school	1Nos.
3	Secondary school	1Nos.
4	Higher secondary school	1Nos.

Table 4.7 Educational Facilities at Manvad village

Fig 4.10 Primary School

4.4.5.4 Community Hall

- In Village Community hall is in under construction.

4.4.5.5 Library

- There is no availability of Library in Manvad Village.

4.4.6 Existing Condition Of Public Building And Maintenance Of Existing Public Infrastructures

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

4.4.7 Technology Mobile / WIFI / Internet Usage Details

- In village 60 to 65 % use smart phone are 20 to 25% use a normal phone and rest of people are not use phone. 60 % people have knowledge about internet and use.
- In village in gram panchayat office have WIFI for Public use.

4.4.8 Sports Activity As Gram Panchayat

- Currently no activities organized at Gam Panchayat.

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

- There is no availability of any socio-cultural facility like public library, public garden, cinema hall etc. inside the village so Socio-cultural Facility is required.

4.4.10 Other Facilities

- There is one Hanumanji's temple is famous in Plaitana Taluka.In village one Cemetery ferry it's Enough for Village.

4.4.11Any Other details

- Gam Panchayat have their own building in good condition.
- E-Gram facility is available in village.
- Gram Panchayat is provided WIFI for public uses.

Fig 4.11 Gram Panchayat of Manvad

4.5 Existing Institution Like- Village Administration- Detail Profile

4.5.1 Bachat Mandali

- Village have no bachat mandala. required a small scale bachat mandli in village.Village have one Mandali but its only for farmer.

4.5.2 Dudh Mandali

- Village have no dudh mandali. So people go to away 5 km to Palitana for sale his milk.

4.5.3 Mahila Forum

- No mahila forum in village.

4.5.4 Plantation for the Air Pollution

- In a village every year plantation program is arranged by some local group and panchayat. Last year in higher secondary school in 100 nos. palnt grown by villagers.

4.5.5 Rain Water Harvesting – Waste Water Recycling

- No facility of rain water harvesting in a village. And no facility of waste water recycling in a village.

4.5.6 Agricultural Development

- There is no any institute for Agricultural Development.

4.5.7 Any Other

- In village one ware house of fertilizer by Vadiya juth seva sahakari mandali.

Chapter-5
Technical Options With Case Studies

5.1 Vertical Farming

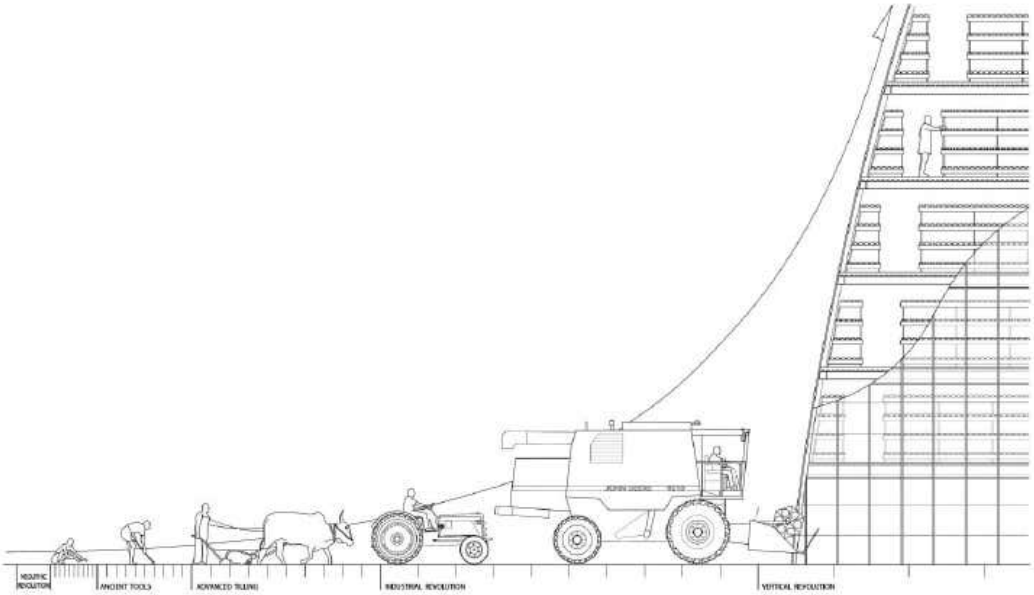


Fig 5.1 "Agriculture's Evolution"

5.1.1 ABSTRACT:

- Vertical farming is the urban farming of fruits, vegetables, andgrains, inside a building in a city or urban centre, in which floors are designed toaccommodate certain crops. These heights will acts as the future farms land and asarchitects we can shape these high-rises to sow the seeds for the future. Theobjective of this dissertation was to investigate the feasibility and plausibility of thevertical farming concept in three specific and interrelated research domains. The firstresearch question was to investigate whether enough energy can be generatedonsite to meet the needs of the building. The second research question was toinvestigate the carbon footprint of produce grown vertically and compare that toproduce grown conventionally (greenhouse and outdoors). The final researchquestion was to investigate how relevant stakeholders perceive the concept ofvertical farming and what they believe are current barriers and opportunities towardsuptake of the technology. The purpose of this investigation was to determine ways tosupply food to cities in an energy efficient and sustainable manner from both aquantitative and qualitative approach.
- **WHAT IS A VERTICAL FARM?**

  As the world's population grows, so does the land required to produce the neededfood. The concept of a vertical farm was developed to remedy this crisis. A verticalfarm is farms stacked on top of one another, instead of branching out horizontally.Developed

in 1999 by Professor Dickson Despommier, the farm uses conventionalfarming methods such as hydroponics and aeroponics to produce more yields faster.

5.1.2 Introduction About Vertical Farming

- It is predicted that the world population will reach 9 billion by 2050, of which 70% will live in urban centres. This change, alongside a changing climate,will strain Earth's resources,specifically the ability to supply food. A valuable investigation would be to determine other ways to supply food to cities alongside current agricultural practices in a sustainable manner.
- One idea is the concept of vertical farming.Vertical farming can be defined as farming fruits, vegetables, grains, etc. in the middle of acity inside of a building where different floors have different purposes (one floor for acertain crop, another floor for a vegetable, etc.) using hydroponics(water withnutrients). The concept of supplying food in cities is not a new one as the history of urban agriculture goes back to many ancient civilizations, including the Mayans, the city of Tenochtitlan (Mexico City today), etc. There are many developments taking place today that apply the concept of urban agriculture, and the concept of vertical farming is a large scale extension of urban agriculture.
- It is becoming increasingly understood that both ourforms of settlement and methods of sustenance are functionally incompatible with a planet of limited natural resources. Modern cities exhibit decisively "linear" resource metabolisms where food, fresh water, energy, and other resource demands are imported from great distances, consumed, and then swiftly dispensed as sewage or rubbish that the natural world cannot easily process. Likewise, the high-yield farming methods that support our immense population are characterized by their insatiable consumption of our limited reserves of freshwater, fossil-fuel energy, and soil.
- A glimpse of humanity's predictable future indicates that the way cities and agriculture consume the Earth's precious natural capital will only worsen with the passage of time. The projected addition of 2.25 billion people to the global population by 2050 and another 2 billion by the end of the century forces us to consider what our world will be like with nearly twice as many consumers.Considering humanity's current population is already effectively degrading the ecological conditions we require to thrive, it appears the only way to avoid both a global ecological tragedy and wide spread famine in the next century is to significantly transform the way cities and agriculture utilize natural resources.
- This dissertation presents an argument for the implementation of an emerging building typology,the vertical farm,as potential solution to the conflict between ecological stability and humanity's persistent and economic growth.

5.1.3 Aim

- To evaluate the scope of the vertical farming concept in the building levels of the future cities. And there by to analyze how well this concept can integrated be into the urban to sow the seeds for the future and to resolve the long-standing paradox of humanity's inclination towards exponential demographic and economic growth while inhabiting a planet of limited resource material means.

5.1.4 Objective

- Vertical farming is the urban farming of fruits, vegetables ,and grains, inside a building in a city or urban centre, in which floors are designed to accommodate certain crops. The objective of this dissertation was to investigate the feasibility and plausibility of the vertical farming concept in three specific and interrelated research domains.
  - The first research question was to investigate whether enough energy can be generated onsite to meet the needs of the building.
  - The second research question was to investigate the carbon footprint of produce grown vertically and compare that to produce grown conventionally(greenhouse and outdoors).
  - The final research question was to investigate how relevant stakeholders perceive the concept of vertical farming and what they believe are current barriers and opportunities towards uptake of the technology.
  - The purpose of this investigation was to determine ways to supply food to cities in an energy efficient and sustainable manner from both a quantitative and qualitative approach.

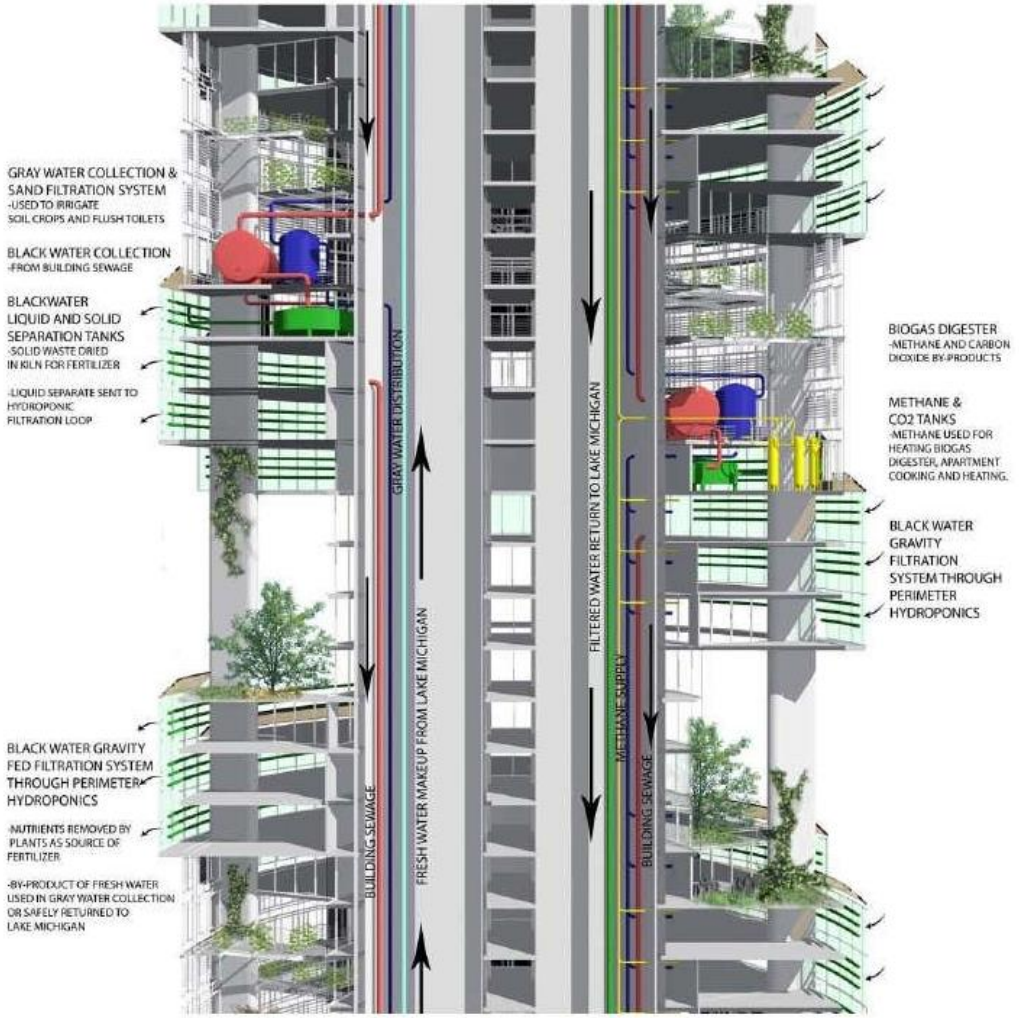


Fig 5.2 Methodology Of Vertical Farming

5.1.5 Methodology

- Literature reviews to examine the current agricultural practices were exhausting our natural resources, and whether it was sensible to explore other farming options.
- Knowing the history and overview of urban agriculture. The history of urban agriculture was provided because it offered a sense of the history and development of the concept, its applications in the past and today, and the advantages and disadvantages associated.
- To quantify the energy flows in the building. Also to study how much energycan be generated on site and how much energy will be used on site. Theenergy generation source was from photovoltaics,and the energy was usedto pump the water, light the building (for indoor cultivation), and ventilate thebuilding.
- Conduct the carbon foot printanalysis for horizontal conventional andvertical farming methods.
- Conduct life cycle analysis of leafy veggies grown vertically.
- An exploration of social perceptions of relevant stakeholders, and this includesarchitects, engineers, and the general public.
- Conduct semi structured interviews to explore the concept.
- Conduct the experiments and study to find out the crop growing condition atdifferent levels of atmosphere.
- Detailed case study on vertical framing and bio climatic sky scrapers to knowthe design process and approach.
- Comparative studies of crop cultivation and yielding in a conventional methodand vertical farming.
- Finding out solutions for the correct implementation of techniques andmaterials for the same.

5.1.6 Scope

- Reduction in vehicular transport is also foreseen; there will be less demand for delivery trucks, garbage trucks and other utilities.
- Overall wellness because city wastes will be channeled directly into the farm building's recycling system, hence, less bacteria can find its way in the environment and the atmosphere.
- Abandoned or unused properties will be used productively.
- Water can be used more efficiently in a vertical farm.
- The greywater from office etc can be used efficiently.The layers of atmosphere can be used effectively in vertical build ups. Less CO_2 emissions and pollution by decreasing reliance on coal-burning power plants and transportation, and implementing renewable-sources of energy.
- Crops will be protected from harsh weather conditions and disturbances like typhoons, hurricanes, floods, droughts, snow and the likes. Food production as well as food transport will not be affected.
- Crops will be consumed immediately upon harvest since there is no need to transport them to far-off places. Spoilage will also be lessened.
- The use of chemicals as pesticides will be eliminated; hence, even vector borne diseases can be prevented.
- Less deforestation and land use, this means less erosion and less flooding.

Chapter-6
Swachh Bharat Abhiyan (Clean India)

❖ **What is Swachh Bharat Abhiyan?**

- Swachh Bharat Abhiyan is a massive mass movement that seeks to create a Clean India by 2019. The father of our nation Mr. Mahatma Gandhi always puts the emphasis on swachhta as swachhta leads to healthy and prosperous life. Keeping this in mind, the Indian government has decided to launch the swachh bharat mission on October 2, 2014.The mission will cover all rural and urban areas. The urban component of the mission will be implemented by the Ministry of Urban Development, and the rural component by the Ministry of Drinking Water and Sanitation.

6.1 Swachhta Needed In Allocated Village – Existing Situation With Photograph

❖ Our village is facing problems regarding the Swachhta as there are not any facilities available in village for excretion of waste.
❖ There are no facilities given by government for management of waste.
❖ No facility is available for the management of solid waste as well.

❖ **Types of Swachhta needed in Manvad village:-**

- Biogas plant is required for the treatment of biological waste.
- Dustbins should be distributed in whole village so the villagers throw garbage in dustbins.
- Government should provide facilities like garbage vans like urban areas so that waste is deposited and directly treated in treatment plants.
- Water treatment plant is also necessary for the treatment of waste water from houses and agricultural fields.


Fig 6.1 Real Scenario of Village About Swachhta

6.2 Guidelines – Implementation In Allocated Village With Photograph

❖ Implementation of SBM (G) is proposed with ‘District ‘as the base unit, with the goal of creating ODF GPs.
❖ A project proposal shall be prepared by a District, and scrutinized and consolidated by the State Government into a State Plan.

- Funds are to be made available for these preliminary IEC works including for triggering behavior change. This will endeavor to reach every household in every community and shalldisseminate information regarding the need for safe sanitation, and the ill effects of open defecation getting the population oriented towards satisfying their felt-needs.
- The proliferation of educational facilities in the rural areas provides the opportunity to utilize an approach that should essentially include an element that involves school and college children as potential agents of change in homes.
- The built-in flexibility in the menu of options is to give the poor and the disadvantaged families' opportunity for subsequent up gradation of their toilets depending upon their requirements and financial position.
- The provision of Incentives for individual household latrine units to the rural households is available to States which wish to provide the same this may also be used to maximize coverage so as to attain community outcomes.
- The Scheme shall aim to saturate coverage in the first instance the States/ Districts/ GPs in all major river basins of India e.g. Sutlej , Ravi, Beas, Ganga, Yamuna, Godavari, Narmada, Tapti, Kaveri, Brahmaputra. This will ensure the outcomes required for pollution free rivers, in addition to ODF communities.
- A robust Monitoring arrangement has to be put in place to monitor open defecation status of a village, the implementation of Solid and Liquid Waste Management projects as well as the construction and us of Household, Schools, Aaganwadi toilets and Community Sanitary Complexes. The monitoring has inter-alia also to use a robust community led system, like Social Audit.
- To accelerate coverage in Gram Panchayat selected under the SansadAdarsh Gram Yojana,these GPs may be selected on priority for coverage under the SBM.

6.3 Activities Done By Students For Allocated Village With Photograph

- Our group of the Vishwakarma Yojana had visited our allocated village after this we mate sarpanch another Panchayat member and selected one small area for cleaning purpose. Then Villagers join with claning and clean Gram panchayat,bus stop,main chowk etc.


- Fig 6.3 Activity done by Student and Villagers for Swachhta

Chapter-7
Village Condition due to Covid-19

7.1 Taken Steps In Allocated Village Related To Existing Situation With Photograph

- Sanitization is being done in the Manvad Gram Panchayat. Villagers are maintaining social distancing while receiving ration and essentials from the Gram Panchayat in Manvad Gram Panchayat.
- Disinfectant was sprayed in every house of manvad village.
- Vegetables and ration kit are being distributed by panchayat and some local group among the vulnerable communities.
- During lockdown village's main entry get was locked by gram panchayat.
- The gram panchayat took preventive actions against COVID- 19 proactively before the lockdown in the entire country.
- Gram panchayat sprayed pesticides and distributed homeopathic medicine in every house in the village in lock down.
- Every villagers are strictly obeyed the decision of the government and the gram panchayat.

Fig 7.1 During Lock-down entry gate locked

7.2 Activities Done By Students For Allocated Village With Photograph

- In Village when we are visited then we distributed mask.

Fig 7.2 Activities done by students

7.3 Any Other Steps Taken By The Students / Villagers

- During the lock down, ration kits and vegetables were distributed to the needy people by the Gram Panchayat and the local social group.
- During the lock down, a decision was taken by the villagers that no one could enter or leave the village in the after afternoon.

Fig 7.3 Ration kits distributed by the Gram Panchayat

Chapter-8
Sustainable Design Planning Proposal (Prototype Design)-Part-1
(Scenario / Existing Situation / Proposed Design In Auto Cad / Recapitulation Sheet / Measurement Sheet / Abstract Sheet / Sustainability Of Proposal)

8.1 Design Proposals

- In the Vishwakarma Yojana Phase-VIII Part–I we have given total six design according to the village need and useful for the villagers.
- The design proposals are:
  - Solid Waste Management
  - Animal Water Pond (Avedo)
  - Waste Water Treatment
  - Public Garden
  - E Suvidha center
  - Government Dispensary

8.1.1 Sustainable Design(Solid waste management)

- Swachh Bharat Abhiyan was launched in October 2014.
- Swachh Bharat Abhiyan is a nation-wide campaign in india for the period 2014 to 2019 that aims to clean up the streets, road and infrastructure of india's cities,towns, and rural areas.

➢ **Profile Of The Study Village**

- Manvad is located on Palitana taluka in Bhavnagar district. It has a population of 1055 that make into 183 households as per 2011 census data. The amount of daily waste generated is around more than 500kg per day.

➢ **Proposed Solid Waste Management system**

- **Construction**
  - In the past record of village a Scattering dustbin are provided in whole village for cleaning purpose of village.
  - But, after sometime a dustbins are stolen by villagers and take it and put in the home So now we are providing a Dustbins with fixed solid base with ground, it is easy to use and for collecting purpose.
  - By providing fixed dustbins a stolen problem is neglected and dustbins are used for village cleaning purpose.

- There is a one set of two dustbins one for Dry Waste & other one for Wet waste hanged with steel pipe and fixed in the ground.

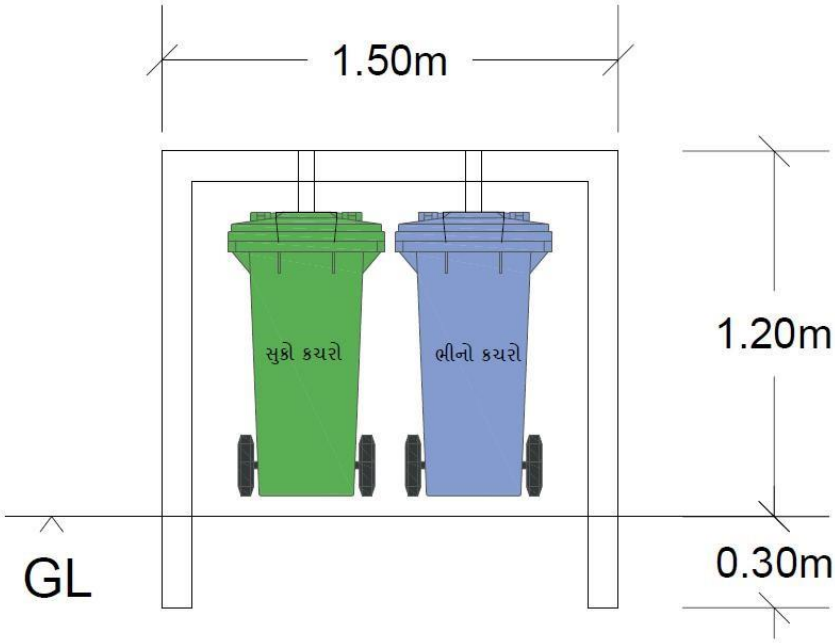


Fig 8.1 Elevation of Fixed Dustbin

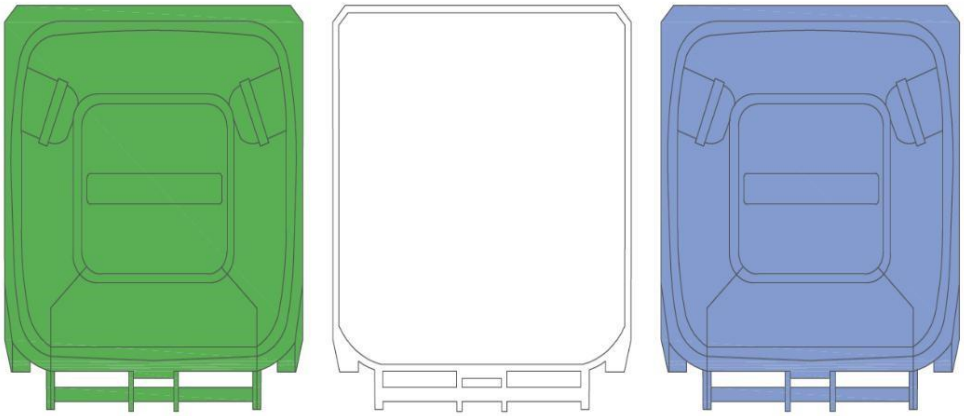


Fig 8.2 Top View

➢ **One Set of Fixed Dustbin Estimate**

1m long and 1 inch dia steel pipe price – 425/-
Total steel price for one set = 4.5m long pipe*425 = 1912.5/-
Dustbins of 100 kg capacity unit price = 500/-

One Fixed Dustbin Set Price=1912.5+500+500=2912.5/-

Sr. no	Particular	Quantity	Unit price	Total cost ₹
	No. of dustbins install			
1	**No. of Fixed dustbin installed in whole Village**	**16**	**2912.5**	**46600/-**

Table 8.1 Estimate of Solid waste management

- **Collection of waste**

Fig: 8.3 Procedure

Fig: 8.4 Dry-Wet

STEP 1: Community Education and Provision of Dustbins: At least two weeks before the actual collection of waste from the door steps of households, ward-wise community education took place on types of wastes; and how community cooperation in waste-segregation at the household level can ease waste management at the GP level. The GP campaigned with the community to cooperate with the arrangement in their personal interests, and in the interest of community well-being. Each household was provided with two dustbins Green for dry waste; and Red for Wet Waste.

STEP 2: Collection: Manvad engages 1 battery operated three-wheeler (vehicles) for daily collection of waste from households and other area. The vehicles make one trips daily in the morning from 7.00 to 10.30 am. The vehicle has two compartments one for collection of ‘wet wastes’ and the other for ‘dry wastes’. Each vehicle has a driver and a genitor who empties the dustbins into the vehicle handed by residents at their door steps. The idea of collecting one time in a day is part of their planning. It feels easy to touch the ‘wet waste’ when it is still fresh / or when it has not started decaying. It is a well-thought out plan. The unit attempts handling any type of waste of any quantity generated within the Panchayat.

STEP 3: Segregation – Primary – Secondary - Tertiary: The households are supposed to segregate wet waste from dry waste at the household level, before handing them over to genitors. This is primary segregation. Bring them to the SWM unit and do secondary segregation. Secondary segregation is reported to be necessary because all said and done many a household do only a rough segregation into two different bins. The genitors do a secondary segregation and shift the wet waste fit for vermin-composting, and others go for tertiary segregation. Practically, tertiary segregation involves sorting dry wastes of different types such as plastics, bottles, pet bottles, iron pieces, papers, card boards, cloth pieces, carry bags, tetra packs etc.

STEP 4: Treatment: Wet wastes that are easily digestible / decomposable go into making vermin-compost; and wet waste of assorted nature go into plain composting covered with a plastic sheet. The non-biodegradable wastes are classified and kept separately for different recycling use. There are buyers for each type of waste be it papers, card boards, bottles, pet bottles, bottle caps etc. Each type of bio-degradable waste has some utility. Some of the items like orange peels, lemon peels, eggshells etc. are processed by the SWM Unit itself and are converted into bio-products.

STEP 5: Store Keeping: Each type of dry waste is kept in one compartment each after segregation. There is a long tin-shed compartmentalized for this purpose. These items (bottles, pet bottles, papers, card boards, worn out cloths/footwear etc.) cannot be sold on a daily basis. So, they let them accumulate over a period of one or two months so that it becomes economical for recyclers who deal in such waste materials to buy and transport to their places. They are sold to recycling agents who visit this SWM Unit periodically.

STEP 6: Sale as recyclables: These items (bottles, pet bottles, papers, card boards, worn out cloths/footwear etc.) are sold to traders who deal in recyclable waste materials. They go for reprocessing, and they may arrive in the market in several different forms.

STEP 7: Sale after recycled products: Some of the wastes such as orange peels, lemon peels, and egg shells are processed by the SLWM Unit. They become salable commodities. For instance, orange peels / lemon peels are dried up and powdered to be added in making scouring powders used for vessel cleaning. Similarly, egg shells are powdered and sold for use as organic fertilizers in rose gardens. They are presented as resource recovery from wastes below.

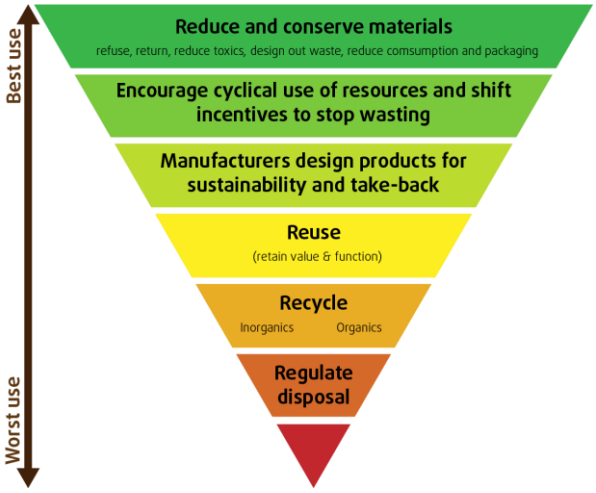


Fig: 8.5 Integrated Waste Management Hierarchy

➢ **Solid Waste Management**

❖ This hierarchy can only be achieved by way of DECENTRALISATION of Waste management. This model is a culmination of awareness to systemized and scientific management.

❖ Pre-production Actions

- Reducing Production (consumption): Producing and consuming only as much as needed.
- Redesigning Production processes: Producing using cleaner processes and packaging using less material.
- Production of safe and recyclable materials: Avoiding the use of toxic and non-recyclable materials, so that maximum resource can be recovered with least harm to the environment.

❖ Post-production Actions

- Reuse: What is produced should be reused as many times as possible. E.g. Bottles, containers, bags, etc.
- Recycle: Recycling those materials that cannot be reused. E.g. Organic waste into compost, PET bottles into polyester fibers, glass bottles into glass panes, cotton rags into paper, etc.

Waste Generation	Collection & Transportation	Disposal
• Total estimated Solid Waste Generated: approx.650kgper day(based on an estimate of 250g per person per day) • Types of Solid Waste: 1)Biodegradable: Animal waste, vegetable waste, 2)Non-Biodegradable:Plastic bags, papers,glass • Solid Waste Sources: HH, Weekly markets, Schools/Aanganwadi, Shops, etc.	• Currently there is noscientific system to daily collect and/or transport the solid waste generated • Once in 2 to 3 months, waste is collected from the roads/drains and transported to an open area outside the village • This process is contracted out by the GP	• Current Disposal methods • Vegetables & Food Waste: Given to livestock, reused in field • Plastics: Thrown outside in the open area, fields, drains or burnt

Table 8.2 Solid waste management

Abstract Sheet For Solid Waste Management-I

SR. NO	PARTICULAR	QUANTITY	UNIT PRICE	AMOUNT (RS.)
Solid waste management				
	System for collection, segregation and disposal of household garbage			
1	Workers Uniforms, safety equipment; hand gloves, canvas shoes, first aid kits etc.		3000	3000
2	Tools required (Shovels, Brooms etc.)	1 set	15000	15000
3	Waste Collection Vehicles (Battery operated vehicles)	1	200000	200000
4	Other SWM Activities, Landscaping and Beautification			30000
				Total cost =284000

Abstract Sheet For Solid Waste Management-II

SR. NO	PARTICULAR	QUANTITY	UNIT PRICE	AMOUNT (RS.)
1	Salary for the workers	2	7500	15000
2	Safety tools and equipment	LS	3000	3000
3	Water and Electricity charges at the RRC	LS	4500	4500
4	Vehicle maintenance	LS	3000	3000
				Total cost=25500

FINAL COST=3,09,500 Rs.

8.1.2 Physical Design(Animal Water Pond {Avedo})

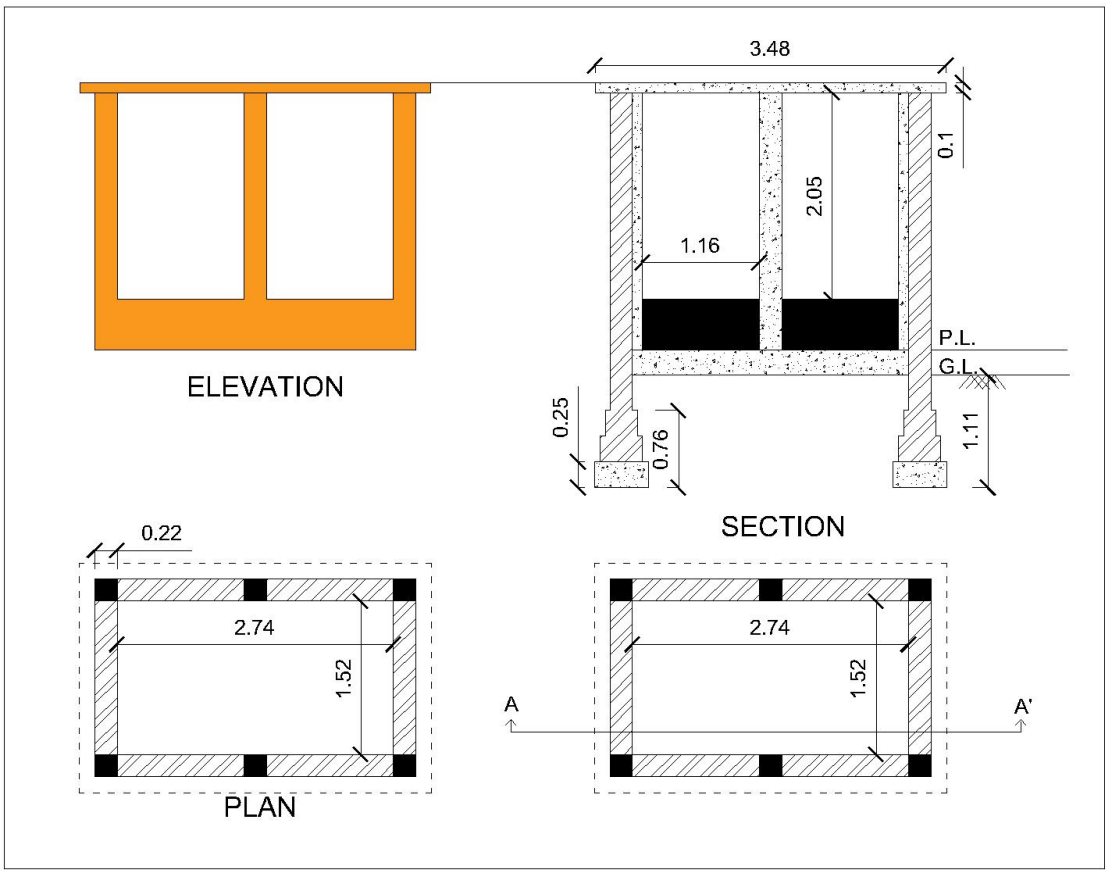


Fig: 8.6 Plan, Section and Elevation of Design of Animal Water Pond {Avedo}

- All the dimensions are in meter.
- The area of Avedo is 2.74 x 1.52 m.
- Total Numbers of bricks are 3,400 nos. use in this Avedo.
- 2.5 cm mortar bed is used.
- 7.5 cm BBCC is used above earth filling.
- Earth filling thickness is about 0.6 m.
- The step footing below the ground level is about 0.9 m.
- Column Size is 0.5m x 0.3m.
- Beam Size is 0.3m x 0.3m

Measurement Sheet Of Animal Water Pond {Avedo}

SR NO	ITEM DESCRIPTION	NO	LENGTH	BREADTH	HEIGHT	QUANTITY
1	Excavation in foundation					
	Size of Footing = 1.5*1.5m	6	1.5	0.9	1.5	12.15
				Total quantity =		12.15 M^3
2	Plain cement concrete					
	in foundation(1:2:4)					

	Size of Footing = 1.5*1.5m	6	1.5	0.9	0.3	2.43
				Total quantity =		2.43 M^3
3	Concreting in Footing					
	and plinth in C.M(1:6)					
	Column					
STEP :1	1.5+0.6 =2.1m	6	2.1	0.6	0.2	1.51
STEP :2	1.5+0.5 =2.0m	6	2	0.5	0.2	1.20
STEP :3	1.5+0.4 =1.9m	6	1.9	0.4	0.2	0.91
STEP :4	1.5+0.3 =1.8m	6	1.8	0.3	0.6	1.94
						5.57
	Column					
STEP :1	1.5-0.6 =0.9m	6	0.9	0.6	0.2	0.65
STEP :2	1.5-0.5 =1.0m	6	1	0.5	0.2	0.60
STEP :3	1.5-0.4 =1.1m	6	1.1	0.4	0.2	0.53
STEP :4	1.5-0.3 =1.2m	6	1.2	0.3	0.6	1.30
				Total quantity =		14.21 M^3
4	Concreting in Column in					
	Foundation					
	Height =0.7	6	0.5	0.3	0.7	0.63
				Total quantity =		0.63 M^3
5	Sand Filling up to GL					
	9.09					9.09 M^3
6	Concreting in Beam					
	Size of Beam=0.3*0.3m	4	2.75	0.3	0.3	3.30 M^3
		2	3.4	0.3	0.3	2.04 M^3
				Total Quantity =		5.34 M^3
7	Sand filling in space between					
	Plinth beam	1	6.4	3.4	0.9	19.58 M^3
				Total Quantity =		19.58 M^3

8	PCC in space between Plinth beam	1	6.4	3.4	0.3	1.92 M^3
				Total Quantity =		1.92 M^3
9	Concreting in column	6	0.5	0.3	2.5	7.50 M^3
				Total quantity =		7.50 M^3
10	Brick Masonry above plinth up					
	To slab level					
	L = 13.3 m	1	13.3	0.3	0.5	6.65 M^3
				Total quantity =		6.65 M^3
11	Concreting in Beam below slab					
	level					
	Size of Beam=0.3*0.3m	4	2.75	0.3	0.3	3.30 M^3
		2	3.4	0.3	0.3	2.04 M^3
				Total quantity =		5.34 M^3
12	Concreting for slab	1	9.3	6	0.15	1.40
				Total quantity =		1.40 M^2
13	Plaster					
	For wall	4	8.3		0.6	19.92
		4		5	0.6	2.40
	For Column	6	1.6		2	19.20
	For Beam	4	2.75		0.3	3.30
		2	3.4		0.3	2.04
	For Slab	1	9.3		6	55.80
				Total quantity =		102.66 M^2

Abstract Sheet Of Animal Water Pond {Avedo}

SR. NO	PATICULARS OF ITEM	QUANTITY	RATE	PER	AMOUNT Rs.
1	Excavation in foundation	12.15 M^3	85	M^3	1032.75
2	plain cement concrete in foundation	2.43 M^3	3200	M^3	7776.00
3	Concreting in Footing and plinth in C.M(1:6)	14.21 M^3	3000	M^3	42624.00
4	Concreting in Column in Foundation	0.63 M^3	3500	M^3	2205.00
5	Sand Filling up to GL	9.09 M^3	900	M^3	8181.00
6	Concreting in Beam	5.34 M^3	3500	M^3	18690.00

7	Sand filling in space between plinth beam	19.58 M^3	900	M^3	17625.60
8	PCC in space between plinth beam	1.92 M^3	3200	M^3	6144.00
9	Concreting in column	7.50 M^3	3500	M^3	26250.00
10	Brick Masonry above plinth up to Slab level	6.65 M^3	2800	M^3	18620.00
11	Concreting in Beam below slab level	5.34 M^3	3500	M^3	18690.00
12	Concreting for slab	1.40 M^2	3500	M^2	4882.50
13	Plaster	102.66 M^2	260	M^2	26691.60
				Total Rs.	199412.45

Required Material Of Animal Water Pond {Avedo}

Sr. No.	Perticuler of item	Quantity
1	Cement	241 Nos.
2	Sand	12.45 M^3
3	Aggregate	33.67 M^3.
4	Bricks	3325 Nos.

➢ Slab Details of Animal Water Pond (Avedo):

- ❖ An Avedo has a clear dimension 3.2m x 1.98m.
- ❖ 10 mm diameter main steel bars are provided @ 60 mm c/c spacing alternate bent up.
- ❖ 8 mm diameter distribution steel bars are provided @ 60 mm c/c spacing alternate bent up.
- ❖ Top and bottom cover is 20 mm and end cover is 50 mm.
- ❖ Cement concrete proportion for slab (1:1.5:3).
- ❖ Two-way slab design.

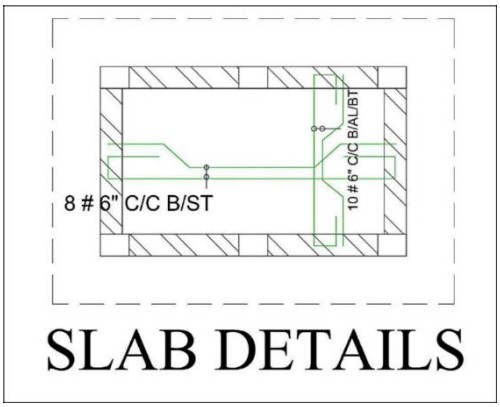


Fig: 8.7 Slab of Animal Water Pond{Avedo}

Measurement Sheet Of Slab Of Animal Water Pond {Avedo}

SR No.	Item Description	No	Length	Breadth	Height	Quantity
1	Cement Concrete for Slab					
	(1: 1.5: 3)					
	L=32m					
	B= 1.98 m	1	3.2	1.98	0.12	0.76 M^3
2	Centering and shuttering for slab					
	Bottom	1	2.74	3		8.22
	Sides	2	3.2		0.15	0.96
		2	1.98		0.15	0.594
					Total Quantity=	9.77 M^2
3	10 mm dia main steel bars 60 mm c/c alternate bent up					
	L = 3.28 m					
	Span = 1.88 m					
	No. of bars = 5 nos					
	Extra length of bent up bars					
	L = 3.31 m	5	3.31		0.9	14.90 KG
4	8 mm dia. Distribution steel.60mm c/c					
	L = 2.03 m					
	Width of slab = 3.1 m					
	Total no. of bars = 17 nos	17	2.03		0.22	7.5922 kg.
					Total Quantity=	22.4872 M^2

Abstract Sheet Of Slab Of Animal Water Pond {Avedo}

SR NO.	ITEM DESCRIPTION	QUANTITY	RATES	PER	AMOUNT RS.
1	Cement Concrete for Slab	0.76 M^3	9600.00	M^3	7299.07
	(1: 1.5: 3)				
2	Centering and shuttering for slab	9.77 M^3	125.00	M^2	1221.75

3	10 mm dia main steel bars	14.90 Kg.	60.00	Kg.	893.70
	60 mm c/c alternate bent up				
4	8 mm dia. Distribution steel.	7.59 Kg.	60.00	Kg.	455.53
	60 mm c/c				
5	Labour for cutting, bending, and placing steel	22.49 Kg.	7.00	Kg.	157.41
			Total Rs.		10027.46
			Add 5% contingencies Rs.		501.37
			Grand Total Rs.		10529
			Say		10600.00

➢ Required Material for Slab of Animal Water Pond {Avedo}

❖ **Cement, Sand, Aggregate for Slab :**

- **Proportion = 1 : 1.5 : 3 = 5.5**
  - **Volume of dry concrete = 1.15 M^3**
  - **Cement= 6 bags**
  - **Sand=0.31 M^3**
  - **Aggregate=0.63 M^3**

❖ **Percentage of steel in slab :**

- **Volume of steel = 0.0017 M^3**
- **Volume of concrete = 0.76 M^3**
- **Percentage of steel in slab = 0.230 %**

8.1.3 Social Design(Government Dispensary)

- All the dimensions are in meter.

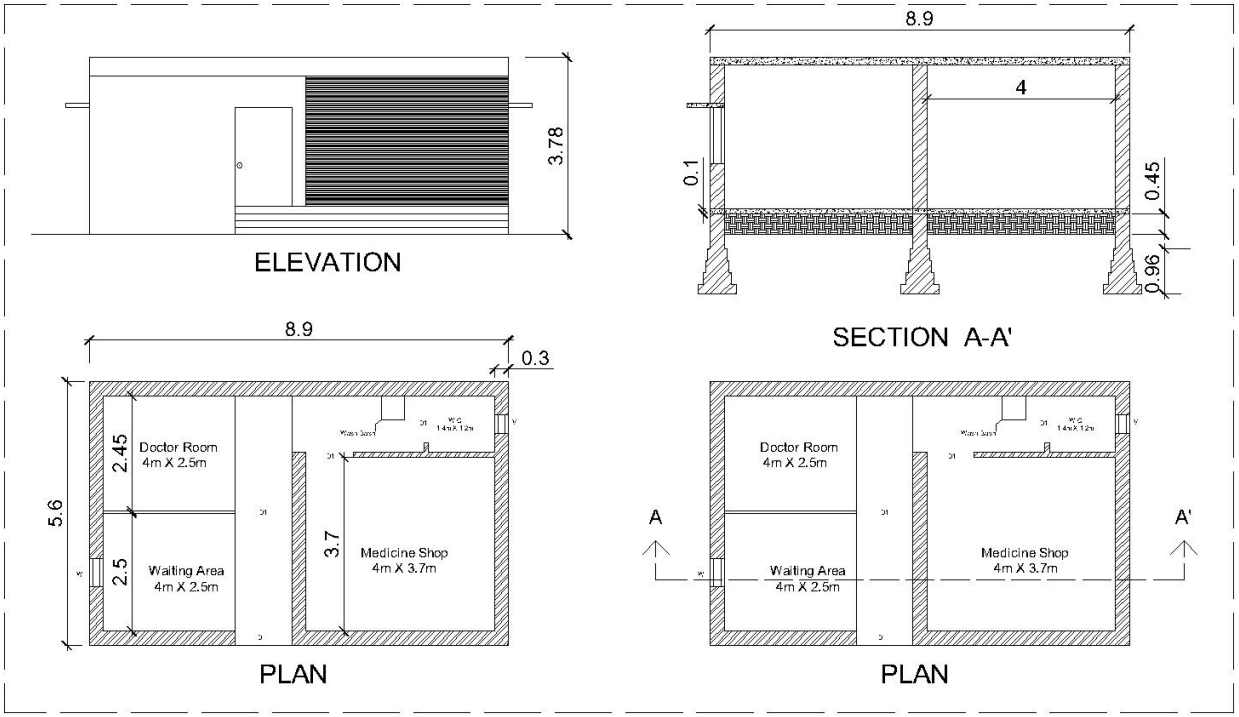


Fig: 8.8 Plan, Section and Elevation of Design of Government Dispensary

Measurement Sheet Of Government Dispensary

SR. NO	Item Description	No.	Length	Breadth	Height	Quantity
1	Excavation					
	For Walls	1	32.2	0.9	1.1	31.878
	For Steps	1	6	1	0.1	0.600
				Total Quantity=		32.478 M^3
2	PCC					
	For Walls	1	32.2	0.9	0.2	5.796
	For Steps	1	6	1	0.1	0.600
				Total Quantity=		6.396 M^3
3	Brick Masonary Upto Plinth					
	For 60cm Thick Wall	1	32.5	0.6	0.2	3.900
	For 50cm Thick Wall	1	32.6	0.5	0.2	3.260
	For 40cm Thick Wall	1	32.7	0.4	0.2	2.616
	For 30cm Thick Wall	1	32.8	0.3	0.8	7.872
	Steps	1	5.8	0.9	0.3	1.566
				Total Quantity=		19.214 M^3

4	**DPC**	**1**	**32.8**	**0.3**	**0.1**	**0.984**
				Total Quantity=		**0.984 M^3**
5	**Brick Masonary For Super Structure**	**1**	**32.8**	**0.3**	**3**	**29.520**
	Deduction					
	D	**1**	**1.2**	**0.3**	**2.1**	**0.756**
	W	**1**	**1**	**0.3**	**1.2**	**0.360**
	O	**1**	**1.2**	**0.3**	**2.1**	**0.756**
	Shutter Lintel	**1**	**4**	**0.3**	**3**	**3.600**
	D	**1**	**1.5**	**0.3**	**0.1**	**0.045**
	W	**1**	**1.2**	**0.3**	**0.1**	**0.144**
	O	**1**	**1.5**	**0.3**	**0.1**	**0.045**
				Total Quantity=		**23.814 M^3**
6	**Backfill**	**2**	**4**	**5**	**0.5**	**20.000**
				Total Quantity=		**20.000 M^3**
7	**Concreting Below Flooring**	**2**	**4**	**5**	**0.075**	**3.000**
				Total Quantity=		**3.000 M^3**
8	**RCC Slab(1:2:4)**	**1**	**8.9**	**5.6**	**0.12**	**5.98**
				Total Quantity=		**5.98 M^3**
9	**Flooring**	**2**	**4**	**5**	**1**	**40.000**
	Shutter	**1**	**4**	**0.3**	**1**	**1.200**
	D/O	**2**	**1.2**	**0.3**	**0.1**	**0.072**
				Total Quantity=		**41.272 M^2**
10	**Partition Wall**	**1**	**5.2**	**1**	**3**	**15.600**
	Deduction					
	D1	**2**	**1**	**1**	**2.1**	**4.200**
				Total Quantity=		**11.400 M^2**
11	**RCC Lintel**					
	D	**1**	**1.5**	**0.3**	**0.1**	**0.045**
	W	**1**	**1.3**	**0.3**	**0.1**	**0.039**
	O	**1**	**1.3**	**0.1**	**0.1**	**0.013**
	D1	**2**	**1.3**	**0.1**	**0.1**	**0.026**
	Weathershed	**1**	**11**	**0.5**	**0.1**	**0.550**
				Total Quantity=		**0.673 M^3**
12	**Partition**	**1**	**11.15**	**3**	**1**	**33.450**
	Deduction					
	D1	**1**	**1**	**1**	**2.1**	**2.100**
				Total Quantity=		**31.350 M^2**

13	Outside Plaster	1	29	3.775	1	109.475
	Deduction					
	D	0.5	1.2	2.1	1	1.260
	W	0.5	1	1.2	1	0.600
	Shutter	0.5	4	1	2.775	5.500
				Total Quantity=		102.065 M^2
14	Inside Plaster	2	18	3	1	108.000
	Celing	1	4	5	1	20.000
	Deuction					
	D	0.5	1.2	2.1	1	1.260
	W	0.5	1	1.2	1	0.600
	O	1	1.2	1	2.1	2.520
	Shutter	0.5	4	1	2.775	5.550
				Total Quantity=		118.070 M^2
15	White Washing	1	1	1	1	220.135
				Total Quantity=		220.135 M^2
16	Door Wood Work					
	D	1	1.2	2.1	1	2.520
	D1	3	1	2.1	1	6.300
				Total Quantity=		8.820 M^2
17	Window Wood Work	1	1	1.2	1	1.200
				Total Quantity=		1.200 M^2
18	Ventilator Wood Work	1	0.5	0.5	1	0.250
				Total Quantity=		0.250 M^2
19	Wash Basin	1	1	1	1	1 NOS.
				Total Quantity=		1 NOS.

Abstract Sheet Of Government Dispensary

SR. NO	ITEM DESCRIPTION	QUANTITY	RATE	PER	AMOUNT
1	Excavation	32.478 M^3	150.00	M^3	4872
2	PCC	6.396 M^3	3900	M^3	24944
3	Brick Masonary Upto Plinth	11.016 M^3	5200	M^3	57283

4	D.P.C	0.984 M^3	4700	M^3	4625
5	Brick Masonary For Super Structure	19.214 M^3	4900	M^3	94149
6	Backfill	20.000 M^3	120	M^3	2400
7	Concreting Below Flooring	3.000 M^3	4300	M^3	12900
8	Flooring	41.272 M^2	450	M^2	18572
9	RCC Work	0.673 M^3	5500	M^3	3702
10	RCC Slab	5.98 M^3	8800	M^3	52624
11	Partition	31.350 M^2	550	M^2	17243
12	Partition Wall	11.400 M^2	715	M^2	8151
13	Outside Plaster	102.065 M^2	310	M^2	31640
14	Inside Plaster	118.070 M^2	260	M^2	30698
15	White Washing	220.135 M^2	16.00	M^2	3522
16	Door Wood Work	8.820 M^2	1600.00	M^2	14112
17	Window Wood Work	1.200 M^2	1500.00	M^2	1800
18	Ventilator Wood Work	0.250 M^2	1550.00	M^2	388
19	Wash Basing	1 NOS.	350.00	NOS.	350
20	Slab				
	Concreting	7.977 M^3	4100.00	M^3	32706
	Shuttering	45.580 M^2	250.00	M^2	11395
	Rebar	405.000 Kg.	42.00	Kg.	17010
21	Beam				
	Concreting	0.517 M^3	4100.00	M^3	2120
	Rebar	36.000 Kg.	42.00	Kg.	1512
		Total Amount			448717
		Add 3% contingencies Rs.			13461
		Add 2% charged establishment Rs.			8974
		Grand total			471152
		For 1 Sq. Mt			4711.52

8.1.4 Socio-Cultural Design(Public Garden)

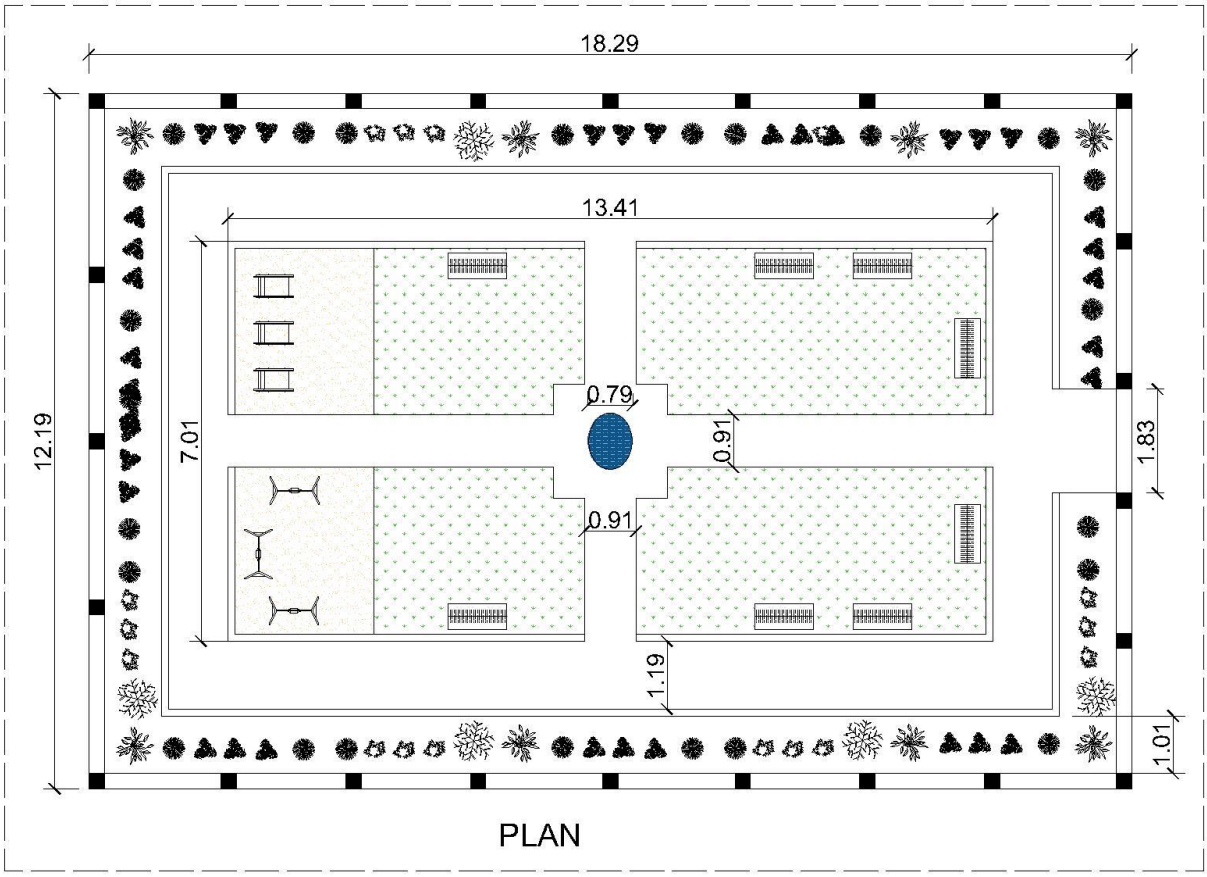


Fig: 8.9 Plan of Public Garden

Abstract Sheet Of Public Garden

SR. NO	ITEM DESCRIPTION	QUANTITY	RATE	PER	AMOUNT (RS.)
1	Excavation for Foundation	186	100	M^3	18600
2	Concreting in foundations	15.5	3000	M^3	46500
3	Masonry in foundation	85.5	1200	M^3	102600
4	Earth Filling	85	40	M^3	3400
5	Super structure masonry work	75	1500	M^3	112500
6	Plaster work	300	120	M^2	36000
7	Colouring	200	20	M^2	6000

8	**Pavement block**	**250**	**570**	**M^2**	**142500**
9	**Fountain**	**1**	**10000**	**NOS.**	**10000**
10	**Tree plantation**	**55**	**50**	**NOS.**	**2750**
11	**Light pole with light**	**25**	**5000**	**NOS.**	**125000**
12	**Slides & Swings**	**4**	**7000**	**NOS.**	**28000**
13	**Benches**	**10**	**4500**	**NOS.**	**45000**
		Total Amount			**678850**
		Add 3% contingencies Rs			**20365**
		Add 2% charged establishment Rs.			**13577**
		Grand total			**712792**
		For 1 Sq. Mt			**7127.2**

Fig: 8.10 3D Top view of Public Garden

8.1.5 Smart Village Design(E-Suvidha Center)

- **Introduction**
- The purpose of this study was to investigate the use and services of Akshaya Community Information Centers in Kerala. Structured questionnaires were employed to collect data from a representative sample of 100 Akshaya Centre Entrepreneurs in Malappuram district of Kerala. The study found that Akshaya Centers are widely used for bill payments and a majority of the entrepreuneurs provides various services at affordable rates.
- E-literacy programme is the main attraction of the Akshaya that increased the status of Akshaya Centers. It is revealed that the entrepreneurs are willing to diversify the Centers with more IT related services. Demand for new services through the Centers showed the trust of local community towards Akshaya Centers.
- Akshaya project officially launched in 2002, by setting up more than 600 sites in malappuram district of kerala,with the goal that one person in every family to be computer literate in the district. After the first phase,malappuram district is said to be india's first e-literate in the district.

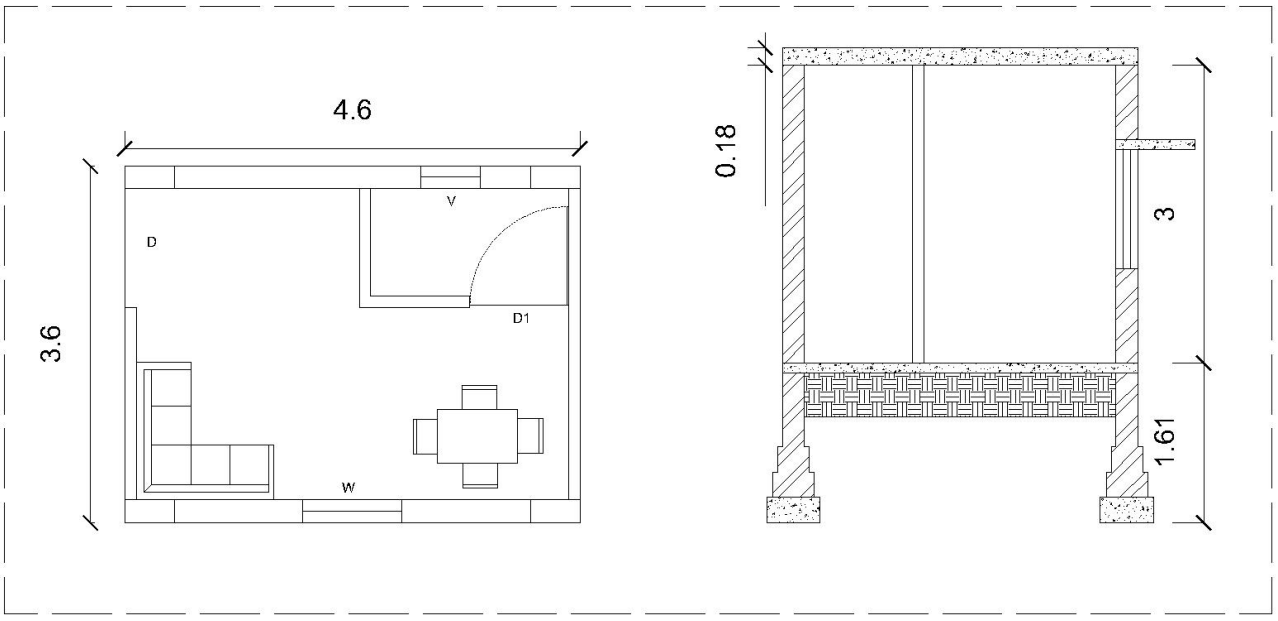


Fig: 8.11 Plan of E-Suvidha Center

- **Mission**
- To bridge the gap between the 'Information Rich and the Information Poor'.
- Transformation of Governance to provide efficient, transparent and convenient services to the Citizens through Information & Communication Technologies.
- Improving public service delivery by making services accessible to 'the common man' in her/his locality.

➢ **Benefit**

- ❖ There is no any service centre for villager facilities.
- ❖ So, we have prepared a design for E-center keeping the view to avail facilities in Manvad.
- ❖ E-Center design has been made under the Vishwakarma yojana project digital facility infrastructure.

Measurement Sheet Of E-Suvidha Center

SR. NO	ITEM DESCRIPTION	NO.	LENGTH	BREADTH	HEIGHT	QUANTITY
1	Earthwork In excavation for foundation					
	Long wall	2	5.9	0.9	1.2	12.74
	Short wall	2	2.7	0.9	1.2	5.832
				Total Quantity=		18.572 M^3
2	PCC					
	Long wall	2	5.9	0.9	0.3	3.186
	Short wall	2	4.9	0.9	0.3	2.646
				Total Quantity=		5.832 M^3
3	Brick Work					
	Footing:1					
	Long wall	2	5.5	0.6	0.2	1.32
	Short wall	2	3.2	0.6	0.2	0.744
	Footing:2					
	Long wall	2	5.4	0.5	0.2	1.08
	Short wall	2	3.2	0.5	0.2	0.64
	Footing:3(up to ground level)					
	Long wall	2	5.3	0.4	0.2	0.848
	Short wall	2	3.3	0.4	0.2	0.53
	Footing:4(up to plinth level)					
	Long wall	2	5.2	0.2	0.85	1.768
	Short wall	2	3.4	0.2	0.85	1.16
				Total Quantity=		8.09 M^3
4	RCC Slab	1	4.6	3.6	0.12	1.98
				Total Quantity=		1.98 M^3
5	Super Structure					

	Long wall	2	5.1	0.2	3	6.12
	Short wall	2	3.5	0.2	3	4.2
				Total Quantity=		10.32 M^3
6	Deduction					
	Opening D	1	1.1	0.2	2.1	0.462
	Window W	1	1.8	0.2	1.4	0.504
				Total Quantity=		-0.966 M^3
7	Deduction For Lintels above door and Windows with 15cm bearing at each end					
	Door(D)	1	1.4	0.2	0.15	0.042
	Window(W)	1	2.1	0.2	0.25	0.063
				Deduction=		-0.105 M^3
					Net Quantity=10.34-0.966-0.105=9.269 M^3	
8	Smooth Plastering					
	Outside Wall	4	4.6	-	3.0	55.32
	Inside Wall	4	3.6	-	3.0	43.2
	Celing	1	4.6	3.6	-	16.56
	Deduction					
	D	0.5	1.1	-	2.1	1.155
	W	0.5	1.8	-	1.4	1.26
				Total Quantity=		112.51 M^3
9	Door Wood Work	1	1.1	0.2	2.1	0.462
				Total Quantity=		0.462 M^3
10	Window Wood Work	1	1.8	0.2	1.4	0.504
				Total Quantity=		0.462 M^3
111	Ventilator Wood Work	1	0.5	0.5	1	0.250
				Total Quantity=		0.250 M^3

Abstract Sheet Of E-Suvidha Center

SR. NO	ITEM DESCRIPTION	QUANTITY	RATE	PER	AMOUNT (RS.)
1	Excavation in Foundation	18.572 M^3	100	M^3	1857.2
2	Concreting in foundations	5.832 M^3	3200	M^3	18662.4

3	**Brick work(1:6)**	**8.09 M^3**	**3200**	**M^3**	**25888**
4	**RCC Slab**	**1.98 M^3**	**5500**	**M^3**	**10890**
5	**Brick work in super structure**	**9.269 M^3**	**3500**	**M^3**	**32441.5**
6	**Smooth Plastering**	**112.51 M^2**	**150**	**M^2**	**16821**
		Total Amount			**106559**
		Add 3% contingencies Rs			**3196**
		Add 2% charged establishment Rs.			**2131**
		Grand total			**111886**
		For 1 Sq. Mt			**1118.86**

8.1.6 Sustainable Design(Waste Water Treatment)

- **Introduction**

❖ Water scarcity has become a major issue in today's world. The present scenario demands the need of conserving water resources. In addition, there is lot of advanced technologies developed in purifying and recycling wastewater produced. The recycled water is stored in the tank and used whenever the need arises.

❖ The underground water table is low and reducing because of poor rainfall. The rate of natural recharging in the aquifer has become slow due to the low amount of rainfall. In addition, the water in the borehole is diminishing very fast and need for boreholes are increasing. Hence, the process of Purifying and recycling water is the need of the present. Activated charcoal is increasingly used for purifying water. The recycled water can be used for multi purposes.

- **Objective**

❖ The main objective of this Activated charcoal filtering tank is to meet the water needs of the Manvad village people. Charcoal is used to remove contaminants and impurities, using chemical adsorption active. Charcoal carbon filters are most effective at removing chlorine, sediment, volatile organic compounds (VOCs), taste and odor from water. The purified water is stored in underground tank. The water is pumped and stored in overhead tanks. The recycled water is used to meet the water needs of the Manvad village people. The wastewater generated from the village including water from the bathrooms, kitchen sinks and the laundry is recycled and used for cleaning and other purposes.

- **Data Collection**
  - ❖ Capacity of tank = 70000 liters
  - ❖ Size of filtration tank = 5.5 m X 2.6 m X 4 m
  - ❖ Size of storage tank = 7.6 m X 4.5 m X 2 m

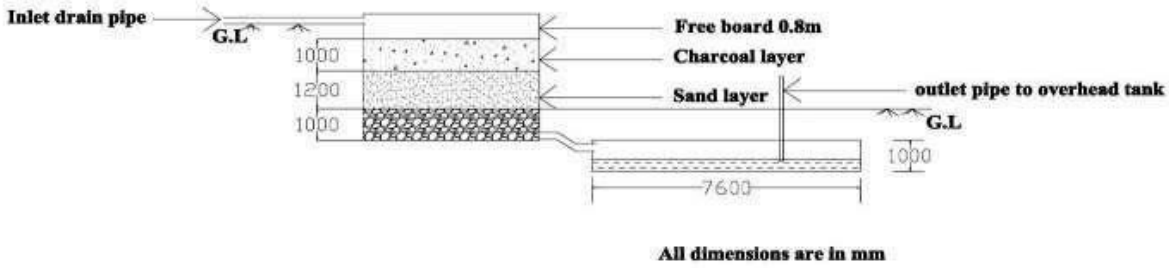


Fig 8.12 Waste water filtration unit

- **Analysis of waste water outflow**
  - Average waste water outflow = 15000 lit/day (assume)
  - Factor of safety = 1.5
  - Total amount of waste water flow outflow = 15000 X 1.5 = **22500 lit/day**

- **Filtration Unit Details**
  - Materials: Activated charcoal, coarse aggregate, Fine aggregate.
  - Top Layer: Activated Charcoal,
  - Middle Layer: Fine Aggregate,
  - Bottom Layer: Coarse Aggregate.

- **PROCESS OF MODEL FILTRATION UNIT**
  - **Collection of Materials**
    - Sand
    - Aggregate
    - Charcoal

- **Cleaning of Materials -** Clean sand and aggregate

- **Filing the Materials in Model Filtration Unit**
  - Top Layer: Activated Charcoal
  - Middle layer: Fine Aggregate
  - Bottom layer: Coarse Aggregate
  - **P^h Value - 6.5 to 7.5**

Abstract SHEET FOR Waste Water Treatment

SR. NO	ITEM DESCRIPTION	QUANTITY	RATE	PER	AMOUNT (RS.)
1	Sand	2 TON	1500	Ton	3000
2	Aggregate	1.5 TON	700	Ton	1100
3	Activated Charcoal	215 Kg.	60	Kg	12900
4	Pipe (40 mm Dia.)	100 M	410	M	41000

5	**Other Plumbing item**	**-**	**-**	**-**	**5000**
6	**Other construction and labour cost**	**-**	**-**	**-**	**15000**
		Total Amount			**78000**
		Add 3% contingencies Rs			**2340**
		Add 2% charged establishment Rs.			**1560**
		Grand total			**81900**
		For 1 Sq. Mt			**8190.00**

8.2 Reason For Students Recommending This Design

- There is no waste water management system and reuse of water for other purpose villagers generally dispose waste water into river through drainage system. So we design waste water management system as a sustainable infrastructure design.
- There is no health facility in Manvad village then improve health of people we design Government Dispensary as a social infrastructure design to improve health of village people.
- There is no Avedo in the village for drinking and feeding of cattles so it is necessary to provide it.
- For online facility we have design E Suvidha Center for village peoples.
- In village there is no library for book reading and students have to travel outward for this purpose we have design library for physical comfort.
- There is no Solid waste management. So we design as a Sustainable infrastructure design.

8.3 About Designs Suggestions / Benefit Of The Villagers

- Due to construction of Government Dispensary i7n the village the people will get health facility.
- Due to construction of E Suvidha center in the village's people not go to outside of village for Online facility.
- Due to construction of public library in the village the students will get a good environment for the study.
- Villagers gives us suggestions that they require Avedo, public garden, Solid Waste Management, Waste Water Treatment etc. which is help full for villagers.

Chapter-9
Proposing Designs For Future Development Of The Village For The PART-II

- The study is aimed to know the basic scenario of village through techno economic survey and gap analysis done.
- After completion of visit & data collection of the Manvad village, we have given some of the designs which were to be provided under this project.
- By studying the present status and techno-economic survey of Manvad village in terms of basic services, public amenities, socio-culture facilities, other physical and social infrastructural facilities for the need of the people and to prepare a report on the expected socioeconomic growth of the area with the consultation of Sarpanch, Talati, Village Dweller; will help full in providing better facilities and services in Manvad village.
- Future scope would be study over other different urban amenities that would be sustainable in rural areas of Saurashtra.
- The village still lacks in many building and various structures. Taking this into consideration the estimation of its rehabilitation with other necessary amenities will be designed in the next semester.
- Through our study we will try to make a master development plan of the village.
- Our master development plan might be including provisions of all the facilities suggest by us, then we focus on the improvement in the existing facilities. Our aim is to work according to new upcoming T.P. scheme in Manvad Village.
- In next part we will design public latrine block, bio gas plant, public library, dairy,Sport complex and krishi seva kendra.
- One this all basic facilities is available in Manvad Village, then we should focus on making the village smarter by adopting various technology.
- In new designs proposed by as, we should focus on regular maintenance of these facilities.Because due to lack of maintenance peoples will avoid to use and hence it become obsolete.For maintenance purpose we should provide a maintenance plan which is economical and effective. It can be done by villagers them self.
- In this way with coordination between various Government agencies, we can develop Manvad village in better way as other smart or model villages.
- For Part-II We Can Provide,
    - BIO-GAS Plant
    - Dairy
    - Krishi Seva Kendra
    - Sport Complex
    - Public Library
    - Public Toilet

Chapter-10
Conclusion of the Entire Village Activities of the Project

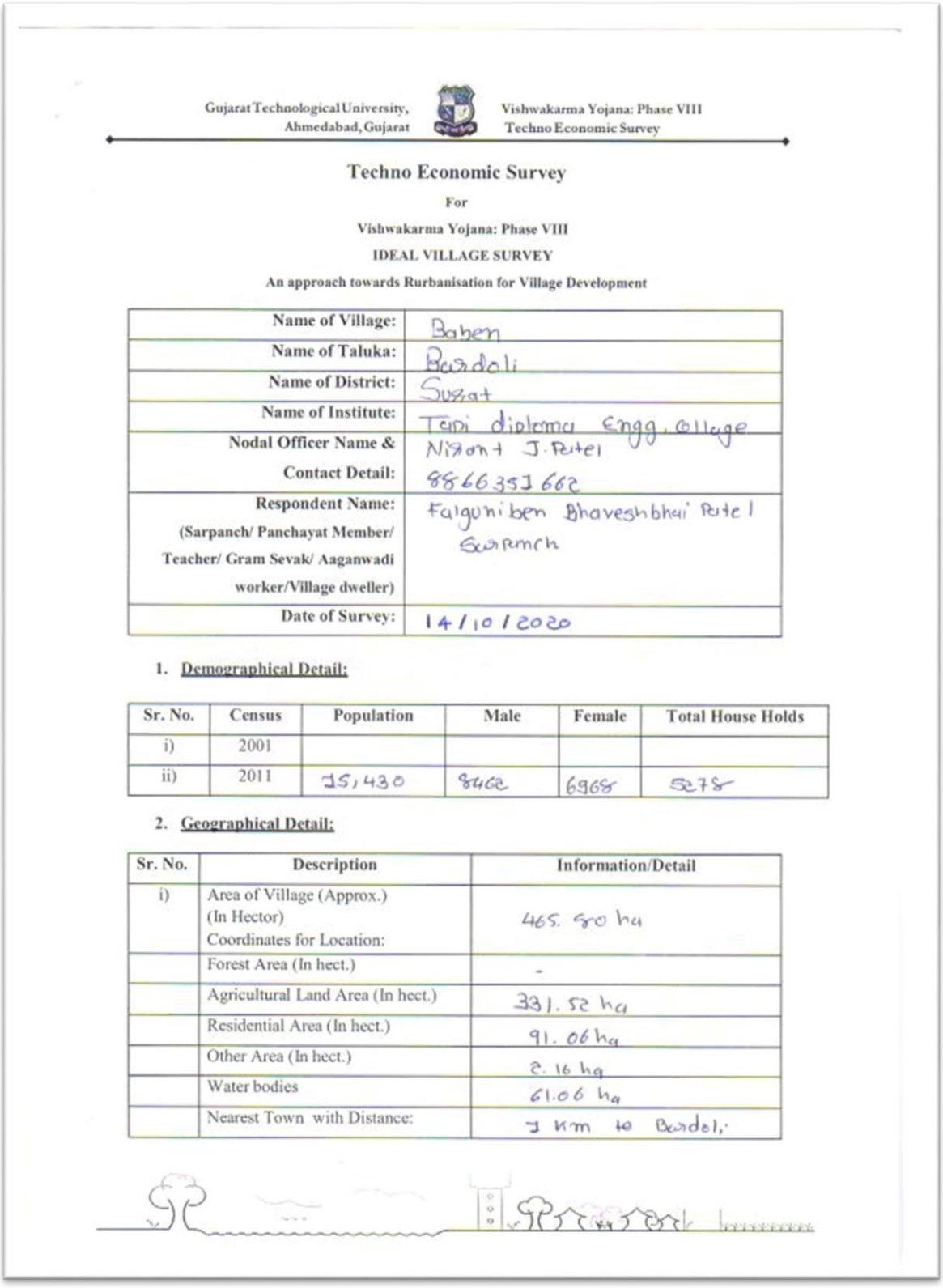
- We discuss with Manvad, baben and ena village authorities and dwellers of village and filled different types of survey form and analyze it. Using techno-economic survey we get existing condition of village like demographical details, geographical details, occupational detail, physical infrastructure 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 Manvad village. We observe available amenities in village like, road network, drinking water facility, educational 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.
- 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.
- An approach that will be used successfully when planning for the future of a community involves preceding the planning process with an exercise designed to develop vision of the future for the "Vishwakarma Yojana". By developing Rural India, the future scenario for urbanization can be change in Sustainable manner.
- 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.
- We are proposing a design base on our survey, knowledge and Gap analysis to village for its development. following are all design we propose for a village are:
    - Solid Waste Management
    - Animal Water Pond (Avedo)
    - Waste Water Treatment
    - Public Garden
    - E Suvidha center
    - Government Dispensary

Chapter-11
References Refereed For This Project

- IS 456: 2000 (Reinforced Concrete structure).
- IS 875: 1987 (Load calculation for Slab).
- SP 16 (design of steel as per IS 456).
- IS 962: 1989 (Code of Practice for Architectural and Building Drawings).
- IS 1553: 1989 (Design of Library Building)
- Census of India(www.censusindia.gov.in)
- UDPFI norms 2014(www.mohua.gov.in)
- Swachh bharat Mission (www.swachhbharatmission.gov.in)
- Vishwakarma Yojana(www.vyojana.gtu.ac.in)
- Google Map(www.google.com/maps/)
- Other Website
    - www.rural.nic.in
    - www.saanjhi.gov.in
    - www.swaniti.in
    - https://panchayat.gujarat.gov.in
    - www.giftgujarat.in
    - www.gujaratindia.gov.in
    - www.nrega.nic.in
    - www.cag.gov.in
    - www.gujarattourism.in

Chapter-12
Annexure

12.1 Scanned Copy of Survey from of 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:	Bahen
Name of Taluka:	Bardoli
Name of District:	Surat
Name of Institute:	Tapi diploma Engg. College
Nodal Officer Name & Contact Detail:	Nishant J. Patel 8866351662
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Falguniben Bhaveshbhai Patel Sarpanch
Date of Survey:	14/10/2020

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001				
ii)	2011	15,430	8462	6968	5278

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	465.80 ha
	Forest Area (In hect.)	-
	Agricultural Land Area (In hect.)	331.52 ha
	Residential Area (In hect.)	91.06 ha
	Other Area (In hect.)	2.16 ha
	Water bodies	61.06 ha
	Nearest Town with Distance:	3 km to Bardoli.

3. **Occupational Details:**

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

4. **Physical Infrastructure Facilities:**

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated) • RO Water • Well (Covered/ Uncovered) • Hand pumps • Tube well/ Borehole • River/ Canal/ Spring/ Lake/ Pond	Yes Yes (Pond)	✓ ✓		
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	50,000	8 Nos.	
	Underground Sump	Capacity:			
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	Yes	✓		Underground
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	Closed	✓		
	If Open than Pucca / Kutchcha	No	✓		
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	Yes	✓		
Suggestions if any:					

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

	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
	Renewable Energy Source Facilities (Y/ N)	Yes	✓		Solar
	LED Facilities	Yes			
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	Yes	✓		8 Nos
	Location Condition	Good	✓		
	Community Toilet (With bath/ without bath facilities)	Yes	✓		
	Solid & liquid waste Disposal system available	Yes	✓		
	Any facility for Waste collection from road	No		✓	
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Canal and pipe	✓		
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Good	✓		90% Pakka 10% Kachha.

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	Yes NO Good			PHC-2
	Private Clinic/Private Hospital/ Nursing Home	Yes	✓		good
	If any of the above Facility is not available in village than approx. distance from village: ..7.....kms. ~~to~~ bardoli				
Suggestions if any:					

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

M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:	Yes	✓		

	Condition:	Good			
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	Yes Good	✓		
	Public Garden Location: Condition:	Yes Good	✓		
	Village Pond Location: Condition:	Yes Good	✓		
	Recreation Center Location: Condition:	Yes Good	✓		
	Cinema/ Video Hall Location: Condition:	Yes Good	✓		
	Assembly Polling Station Location: Condition:	Yes Good	✓		
	Birth & Death Registration Office Location: Condition:	Yes 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	Yes	✓		
	Telecommunication Network/ STD booth	Yes	✓		

	General Market	Yes	✓		
	Shops (Public Distribution System)	Yes	✓		
	Panchayat Building	Yes	✓		
	Pharmacy/Medical Shop	Yes	✓		
	Bank & ATM Facility	Yes	✓		emise village
	Agriculture Co-operative Society	Yes	✓		
	Milk Co-operative Soc.	Yes	✓		
	Small Scale Industries	Yes	✓		
	Internet Cafes/ Common Service Center/Wi Fi	Yes	✓		
	Other Facility	Yes	✓		
Suggestions if any:					

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

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

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	Yes

Recent Projects going on for Development of Village	
Any NGO working for village development	

8. Additional Information/ Requirement:

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

9. Smart Village Proposal Design

Sr. No.	Descriptions	Information/ Detail	Remarks
1.			

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

સત્યમેવ જયતે

ફોન : ૦૨૬૨૨ - ૨૨૦૯૪૬

સ્વર્ણિમ ગ્રામ પંચાયત, બાબેન

મુ.પો. બાબેન, તા. બારડોલી, જિ. સુરત

જાવક નં. :

તા. ૧૪ - ૧૦ -૨૦૨૦.

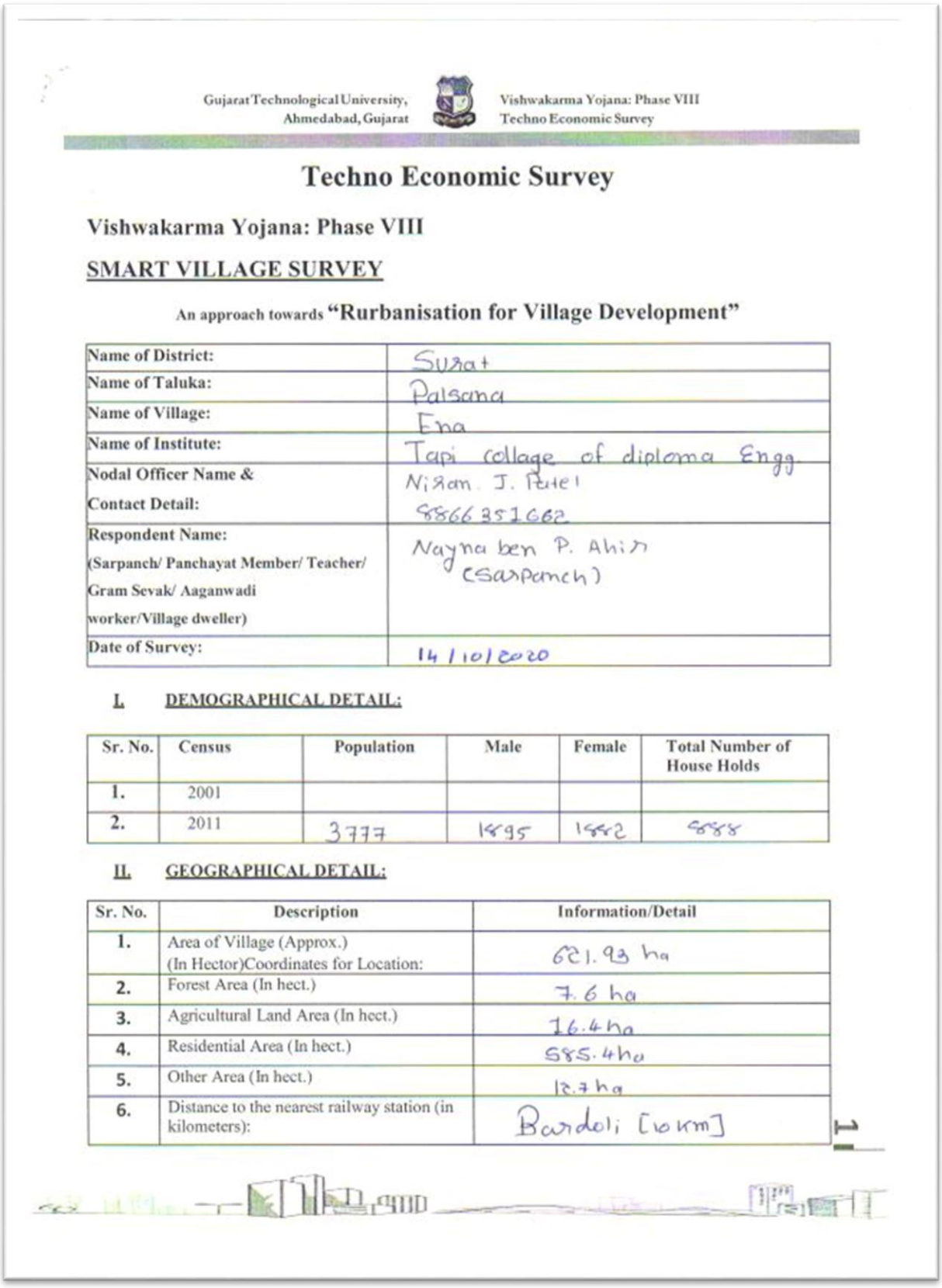
પ્રમાણપત્ર

આથી ગ્રામ પંચાયત, બાબેન. તા. બારડોલી તરફથી પ્રમાણપત્ર લખી આપવામાં આવે છે. કે. તાપી ડિપ્લોમા એન્જીનિયરીંગ કોલેજના વિદ્યાર્થીઓએ સર્વે કરી આજરોજ આવેલ હતા. જે બદલ આ પ્રમાણપત્ર આપવામાં આવે છે.

તલાટી કમ મંત્રી
ગ્રામ પંચાયત બાબેન
તા. બારડોલી, જિ. સુરત

Gram Panchayat Baben, Ta. Bardoli, Dist. Surat
ગ્રામ પંચાયત બાબેન

12.2 Scanned Copy of Survey from of Smart Village



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

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

Name of District:	Surat
Name of Taluka:	Palsana
Name of Village:	Ena
Name of Institute:	Tapi collage of diploma Engg.
Nodal Officer Name & Contact Detail:	Niran J. Patel 9866351662
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Nayna ben P. Ahir (Sarpanch)
Date of Survey:	14/10/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	3777	1895	1882	888

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	621.93 ha
2.	Forest Area (In hect.)	7.6 ha
3.	Agricultural Land Area (In hect.)	16.4 ha
4.	Residential Area (In hect.)	585.4 ha
5.	Other Area (In hect.)	12.7 ha
6.	Distance to the nearest railway station (in kilometers):	Bardoli [10 km]

7.	Name of Nearest Town with Distance:	Bardoli [7.2km]
8.	Distance to the nearest bus station (in kilometers):	Bardoli [8km]
9.	Whether village is connected to all road for the any facility or town or City?	NH 53

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Farming
	2.	Auto. rixa drivers
	3.	Job

Major crops grown in the village:	1.	Sugar cane crop
	2.	Banana crop
	3.	Mango crop

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	✓		[45,000]
	Underground Sump	Capacity:			
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	Yes	✓		
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	✓	✓		Black Topped Pakka
	Main road	✓	✓		Black Topped Pakka
	Internal streets	✓	✓		R.C.C Road
	Nearest NH/SH/MDR/ODR Dist. in kms.	NH53	✓		Black Topped Pukka
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No	✓		Bardoli (10km)
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes	✓		End bus stan - Near Mandir - Bardoi (1km)
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto, Bhkada	✓		
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes	✓		

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Power supply for Domestic Use	Yes	✓		
	Power supply for Agricultural Use	Yes	✓		
	Power supply for Commercial Use	Yes	✓		
	Road/ Street Lights	Yes	✓		
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
	Renewable Energy Source Facilities (Y/ N)	Yes	✓		Solar
	LED Facilities	Yes	✓		Some Working
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	Yes	✓		bloks
	Location Condition	good			
	Community Toilet (With bath/ without bath facilities)	No	✓		
	Solid & liquid waste Disposal system available	Yes			Tempo, Lari (3 Km aways)
	Any facility for Waste collection from road	Yes			
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND				
	STREAM/RIVER				
	CANAL	✓	✓		
	WELL	✓	✓		
	TUBE WELL	✓	✓		
	OTHER (SPECIFY)				
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Yes	✓		90% Pucca 10% Kutcha

V. SOCIAL INFRASTRUCTURAL FACILITIES:

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

Suggestions if any:

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

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

Suggestions if any:

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

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

Suggestions if any:

N.	Other Facilities	Condition		Available (YES)	Available (NO)
	1. Have these programme implemented the village?				No
	2. Are there any beneficiaries in the village from the following programme?				NO
	3. Janani Suraksha Yojana	working		✓	
	4. Kishori Shakti Yojana	working		✓	
	5. Balika Samriddhi Yojana				
	6. Mid-day Meal Programme				
	7. Intergrated Child Development Scheme (ICDS)	working		✓	
	8. Mahila Mandal Protsahan Yojana (MMPY)	working		✓	
	9. National Food for work Programme (NFFWP)				
	10. National Social Assistance Programme				
	11. Sanitation Programme (SP)	working		✓	
	12. Rajiv Gandhi National Drinking Water Mission	working		✓	
	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)	working		✓	
	18. Jawahar Rozgar Yojana (JRY)				
	19. Indira Awas Yaojna (IAY)	working		✓	
	20. Samagra Awas Yojana (SAY)				
	21. Sanjay Gandhi Niradhar Yojana (SGNY)				
	22. Jawahar Gram Samridhi Yojana (JGSY)	working		✓	
	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	Solar energy Source			
2.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	Yes	✓		Some working
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	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		
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?	cleaning daily Fogging in one month	

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
એના-ગોદીયા ગ્રુપ ગ્રામ પંચાયત
તા. પલસણા, જિ. સુરત

12.3 Scanned Copy of Survey from of Allocated Village

Gujarat Technological University,
Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

Name of District:	Bhavnagar
Name of Taluka:	Palitana
Name of Village:	Manvad
Name of Institute:	Tapi collage of diploma
Nodal Officer Name & Contact Detail:	Nirant J Patel 8866351662
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Batukbhai D Chauhan Mo:- 9879140270
Date of Survey:	18/10/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	1055	536	519	183

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1049.19
2.	Forest Area (In hect.)	-
3.	Agricultural Land Area (In hect.)	703.26
4.	Residential Area (In hect.)	5.35
5.	Other Area (In hect.)	340.58
6.	Distance to the nearest railway station (in kilometers):	4 km (Palitana)

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

7.	Name of Nearest Town with Distance:	Palitana
8.	Distance to the nearest bus station (in kilometers):	4 Km (Palitana)
9.	Whether village is connected to all road for the any facility or town or City?	Yes

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Farmer
	2.	Diamond labour workers
	3.	Labour work

Major crops grown in the village:	1.	cotton
	2.	Peanuts
	3.	Vegetables

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

2

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Other(Specify)**Lake/ Pond**	No	✓		
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: Lit	✓	50,000	2 Nos.
	Underground Sump	Capacity: Lit	✓	50,000	2 Nos.
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1	ok	Yes		
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Yes	✓		R.C.C Road
	Main road	Yes	✓		Bituminous
	Internal streets	Yes	✓		
	Nearest NH/SH/MDR/ODR Dist. in kms.	SH 112	Yes		
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No .5km	Yes		
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes Good Condition	Yes		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	All	✓		
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	GEB	✓		more than 6 hours

	Power supply for Domestic Use	Good	✓		
	Power supply for Agricultural Use	Good	✓		
	Power supply for Commercial Use	Good	✓		
	Road/ Street Lights	Good	✓		
	Electrification in Government Buildings/ Schools/ Hospitals	Good	✓		
	Renewable Energy Source Facilities (Y/ N)	Good	✓		
	LED Facilities	Good	✓		
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	Yes		✓	
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	Yes		✓	
	Solid & liquid waste Disposal system available	No		✓	
	Any facility for Waste collection from road	No			
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL OTHER (SPECIFY)	Good		✓	
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)		✓		80% Pucca 10% Kutchha

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)		Yes		
	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: .....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	Good	✓		
	Primary School	Good	✓		
	Secondary school	Good	✓		
	Higher sec. School	Good	✓		
	ITI college/ vocational Training Center	No			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	No			

	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
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)				✓
	Public Garden				✓
	Village Pond				✓
	Recreation Center				✓
	Cinema/ Video Hall				✓
	Assembly Polling Station				✓
	Birth & Death Registration Office	Good		✓	
If any of the above Facility is not available in village than approx. distance from village: .....kms.					
Suggestions if any:					
M.	**Other Facilities**	Condition	Location	Available (YES)	Available (NO)
	Post-office				✓
	Telecommunication Network/ STD booth	Good		✓	
	General Market	Good		✓	
	Shops (Public Distribution System)	Good		✓	
	Panchayat Building	Good		✓	
	Pharmacy/Medical Shop				✓
	Bank & ATM Facility				✓
	Agriculture Co-operative Society				✓
	Milk Co-operative Soc.				✓
	Small Scale Industries	Good		✓	
	Internet Cafes/ Common Service Center/Wi Fi				✓
	Youth Club	Good		✓	
	Mahila Mandal	Good		✓	

	Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-chaupal / Mills / Small Scale Industries				NO
	Other Facility				

Suggestions if any:

N.	Other Facilities	Condition		Available (YES)	Available (NO)
	1. Have these programme implemented the village?				NO
	2. Are there any beneficiaries in the village from the following programme?				No
	3. Janani Suraksha Yojana	working		✓	
	4. Kishori Shakti Yojana	working		✓	
	5. Balika Samriddhi Yojana	working		✓	
	6. Mid-day Meal Programme	working		✓	
	7. Intergrated Child Development Scheme (ICDS)	working		✓	
	8. Mahila Mandal Protsahan Yojana (MMPY)	working			
	9. National Food for work Programme (NFFWP)				
	10. National Social Assistance Programme				
	11. Sanitation Programme (SP)				
	12. Rajiv Gandhi National Drinking Water Mission	working		✓	
	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)	working		✓	
	20. Samagra Awas Yojana (SAY)				
	21. Sanjay Gandhi Niradhar Yojana (SGNY)				
	22. Jawahar Gram Samridhi Yojana (JGSY)				
	23. Other (SPECIFY)				

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources			✓	
2.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System			✓	
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			No	
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	-	-
2.	Additional Information/ Requirement	-	-
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?	-	-

IX. Smart Village / Heritage Details

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

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

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

સરપચશ્રી
માનપઠ (હડમતીયા) ગ્રા. પંચાયત
તા. પાલીતા

12.4 Gap Analysis Of The Allocated Village

VILLAGE GAP Analysis					
Village Facillities	Planning Commission/UDPFI Norms	Village Name:	MANVAD		
		Population:	1055		
		Existing	Required as per Norms	Smart village/cities Heritage Future Projection Design	Gap
Social Infrastructure Facillities					
Education					
Anganwadi	Each or Per 2500 population	1	1	-	0
Primary School	Each Per 2500 population	1	1	-	0
Secondary School	Per 7,500 population	0	0	-	0
Higher Secondary School	Per 15,000 Population	0	0	-	0
College	Per 125,000 Population	0	0	-	0
Tech. Training Institute	Per 100000 Population	0	0	-	0
Agriculture Research Centre	Per 100000 Population	0	0	-	0
Skill Development Center	Per 100000 Population	0	0	-	0
Health Facility					
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	0	1	-	-1
Primary Health & Child Health Center	Per 20,000 population	0	0	-	0
Child Welfare and Maternity Home	Per 10,000 population	0	0	-	0
Multispeciality Hospital	Per 100000 Population	0	0	-	0
Public Latrines	1 for 50 families (if toilet is not there in home, specially for slum pockets & kutcha house)	0	1	-	-1

Physical Infrastructure Facilities					
Transportation		**Adequate/ Inadequate**			
Pucca Village Approach Road	Each village	**Adequate**	-	-	0
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	**Adequate**	-	-	0
Drinking Water (Mini. 70 lpcd)		**Adequate**	-	-	0
Over Head Tank	1/3 of Total Demand	**1,00,000**	-	-	0
U/G Sump	2/3 of Total Demand	**1,00,000**	-	-	0
Drainage Network - Open		**-**	-	-	0
Drainage Network - Cover		**Adequate**	-	-	0
Waste Management System		**Inadequate**	Need a Storage for waste	-	Need a System for waste manage ment
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	1	0	-	
Community Hall and Public Library	Per 15000 Population	0	0	-	0
Cremation Ground	Per 20,000 population	1	0	-	
Post Office	Per 10,000 population	0	0	-	0
Gram Panchayat Building	Each individual/group panchayat	1	1	-	0
APMC	Per 100000 Population	0	0	-	0
Fire Station	Per 100000 Population	0	0	-	0
Public Garden	Per village	0	1	-	-1
Police post	Per 40,000Population	0	0	-	0
Shopping Mall		Shopes Are Available			
Electrical Design					
Electricity Network		Adequate		66Kv Sub-Station	
Any Smart Village Facility					
Technology					
		ESR cap	0		
		Sump cap	0		
		Lat	0		

Table 12.1 Gap Analysis

12.5 Summary Details Of All The Villages Designs As Part-I And Part-II, In Table Format

Sr. No	Village	Discipline	Part-I	Part-II
1	Manvad (Hadmatiya)	CIVIL	Solid Waste Management	Public Latrine Block
			Animal Water Pond (Avedo)	Bio Gas Plant
			Waste Water Treatment	Public Library
			Public Garden	Dairy
			E Suvidha center	Sport Complex
			Government Dispensary	Krishi Seva Kendra.

Table 12.2 Summary Details Of All The Villages Designs As Part-I And Part-II

12.6 Drawing A3 (Attached At End Of The Report)

12.7 Summary Of Good Photographs In Table Format (Ideal Village, Smart Village & Allocted Village)

❖ Smart Village (Ena-Village)

Front View Of ENA Village

ATM in ENA Village

CCTV Camera in ENA Village

PHC

Water Tank

Primary School

Gram Panchayat Office

Higher Secondy School

❖ Ideal Village (Baben-Village)

Education Building Of a Village

Overhead Water Tank

Village Road

Lake And Garden

Gram Panchayat Office-Baben

❖ Allocated Village (Manvad-Village)

Entry Gate of Manvad Village

Primary School

Gram Panchayat Office Of Manvad Village

Bus Station Of Manvad

Over Head Tank

Road Of Manvad Village

12.8 Village Interaction With Sarpanch Report With The Photograph

- As per the circular GTU guideline, VY section informed all the teams of Vishwakarma Yojana to present their work in village for the effective implementation of Vishwakarma Yojana. Under this guideline Student's team presented the village development plan of design requirement & benefits at Manvad of village.
- After going through techno economic survey forms and by doing survey on the field, we addressed our design proposal to people of Manvad. During this we interacted with following persons and sarpanch of the village Mrs. Batukbhai Chauhan to get proper scenario of various design implementation of our designs mentioned in our report.
- After interacting with them, defining problems and required designs by UDPFI Guidelines/Gap Analysis we chose following main design proposal for primary importance.From all the designs, we explained the benefits & how it will contribute to village development solving unwanted situation in daily life.
  1) Solid Waste Management
  2) Animal Water Pond(Avedo)
  3)Public Garden
  4)Government Dispensary
  5)E-Suvidha center
  6)Waste Water Treatment

Fig 12.1 Interaction With Sarpanch

12.9 Sarpanch Latter Giving information about the village development

Managed By: Shree Tapi Brahmcharyashram Sabha, Surat.
TAPI DIPLOMA ENGINEERING COLLEGE
Formerly : Shree Tapi Brahmcharyashram Sabha College of Diploma Engineering
Approved by AICTE New Delhi & Affiliated to GTU Ahmedabad
Shree Swami Atmanand Saraswati Vidya Sankul
ESTD: 2002
Kapodra, Varachha Road, SURAT-395006 (Gujarat), Email :stbs_29@yahoo.co.in | website : stbscollege.org
Ph. : 0261-2571671/679 Fax : 0261-2571692

VishwakarmaYojana Phase - VIII

Village: Manvad(Hadmatiya) District: Bhavnagar

Subject: Approval ofdesign proposal for Manvadvillage

To,
Sarpanch,
(Manvad village, Bhavnagar District)

As per "Vishwakarma Yojna" guidelines, following students are allocated Manvad village at part of the project. From the actual visits of villageand valuable information provide by you, students found the requirement of some basic facilities for Manvad Village. As the outcome of our project they proposed the following designs with a detail design drawing, estimation, costing.

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

Name Enrollment No.	**Mo.no.**	
Shihora Satyam G.	186470306112	9408865866
Kevadiya Prince S.	186470306096	8469276043

Proposed Design for Manvad Village

- Government Dispensary
- Animal Water Pond (Avedo)
- Waste Water Treatment
- E-Center
- Public Garden
- Solid Waste Management

Mr. N.J. Patel
Nodal Officer- Project
Tapi DiplomaEngg. Collage, Surat.

I am Sarpanch of Manvad (Bhavnagar Dist.) undersigned accepting your proposed design for the development of village given under "Vishwakarma Yojna".

સરપચશ્રી
માનપડ (હડમતીયા) ગ્રા. પચાયત
તા. પાલીતાણા

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

- In the Vishwakarma Yojana Phase-VIII Part–II we have given total six design according to the village need and useful for the villagers.
- The design proposals are:
  - Public library
  - Krishi seva kendra
  - Bio-gas plant
  - Public toilet
  - Dairy
  - Sport complex

13.1.1 Public Library

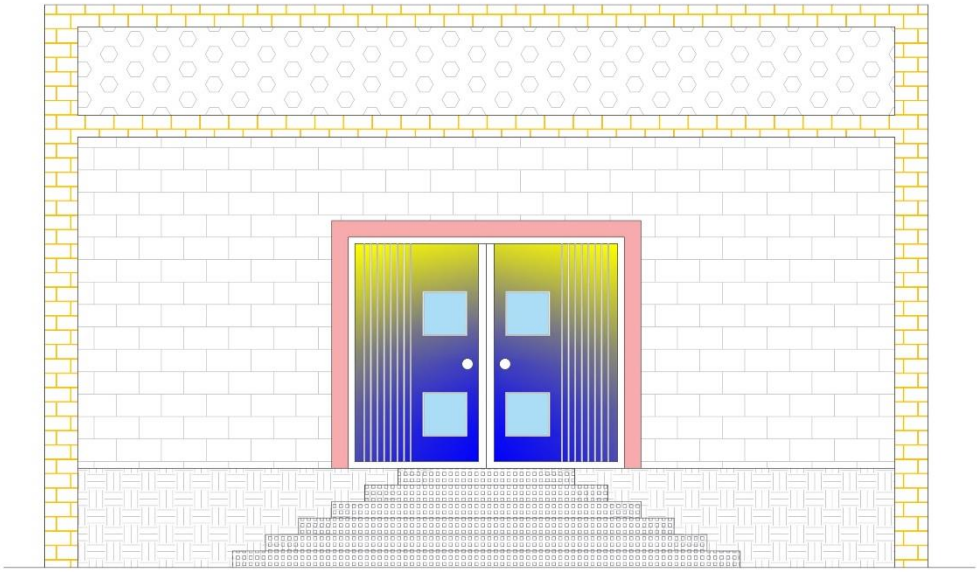


Fig: 13.1 Elevation of Public Library

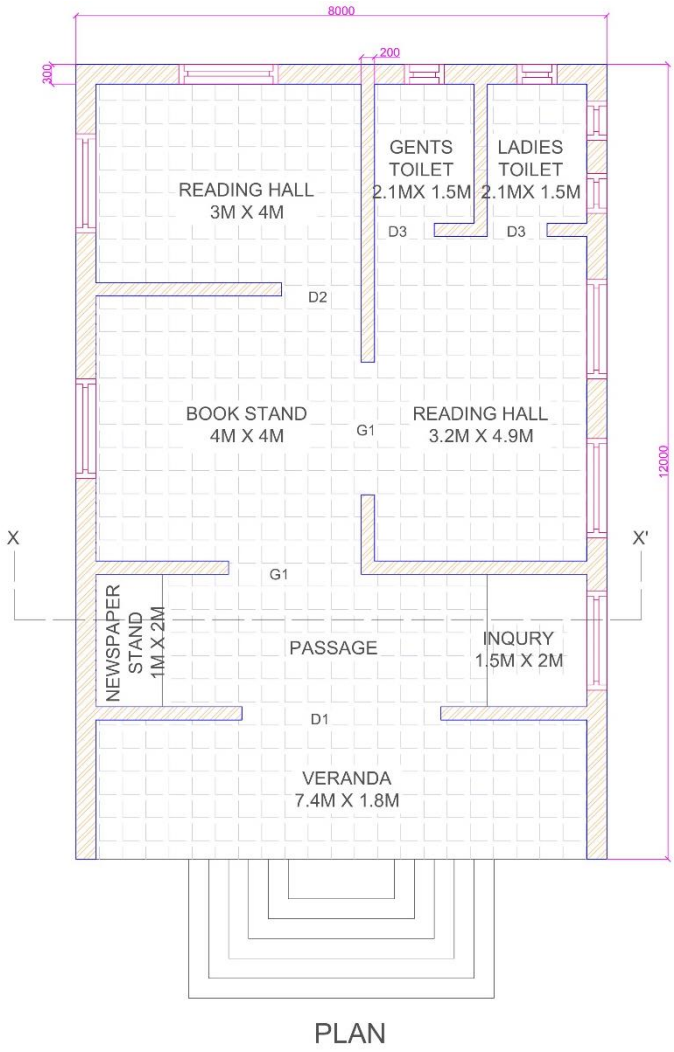


Fig: 13.2 Plan of Public Library

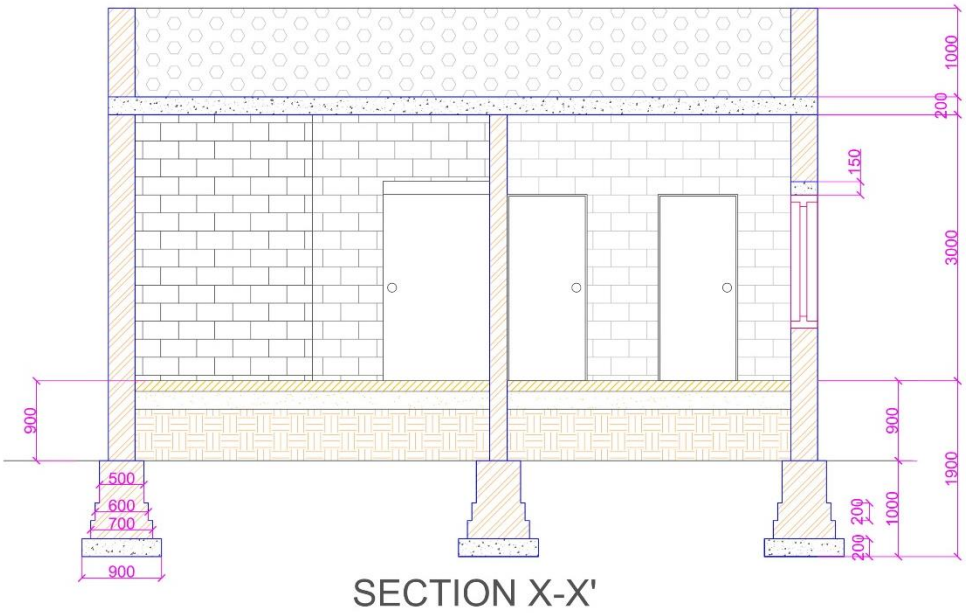


Fig: 13.3 Section of Public Library

Measurement Sheet Of Public Library

SR. NO	ITEM DESCRIPTION	NO.	LENGTH	BREADTH	HEIGHT	QUANTITY
	L= 5(0.15+7.4+0.15) +3(0.15+4.0+0.2+4.0+0.2+2.0+0.2+1.5) =75.25Mt					
	Number of Junction	13				
1	Earthwork In excavation for foundation					
	L=75.25+(2*0.9/2)-13=63.15	8	63.15	0.9	1.8	818.424 M^3
				Total Quantity=		818.424 M^3
2	PCC In Foundation					
	L=75.25+(2*0.9/2)-13=63.15	8	63.15	0.9	0.3	136.404 M^3
				Total Quantity=		136.404 M^3
3	Brick Masonry in Foundation Up to Plinth level					
	Step 1					
	L=75.25+(2*0.7/2)-13=62.95	8	62.95	0.7	0.2	70.504 M^3
	Step 2					
	L=75.25+(2*0.6/2)-13=62.85	8	63.85	0.6	0.2	60.336 M^3
	Step 3					
	L=75.25+(2*0.5/2)-13=62.75	8	62.75	0.5	0.2	50.2 M^3
	Step 4					
	L=75.25+(2*0.3/2)-13=62.55	8	62.55	0.3	0.9	135.324 M^3
				Total Quantity=		316.364 M^3
4	Brick Masonry in Superstructure					
	H=3.0m					
	wall					
	L=75.25+(2*0.3/2) =75.55	8	75.55	0.3	3	543.96 M^3
	Parapet Wall					
	Wall	2	12	0.3	1	7.2 M^3
	Wall	2	8	0.3	1	4.8 M^3
				Total Quantity=		555.96 M^3

	Deduction for Door & Window					
	Door					
	D1	**1**	**3**	**0.2**	**2.1**	**1.26 M^3**
	D2	**1**	**1.2**	**0.2**	**2.1**	**0.504 M^3**
	D3	**2**	**0.9**	**0.2**	**2.1**	**0.756 M^3**
	Window					
	W1	**6**	**1.5**	**0.3**	**1.5**	**4.05 M^3**
	Ventilation					
	V	**4**	**0.6**	**0.3**	**0.6**	**0.432 M^3**
	Gap					
	G	**2**	**2**	**0.2**	**2.1**	**1.68 M^3**
				Total Deduction=		**8.682 M^3**
	Deduction for Lintel					
	Bearing=0.15M					
	Door					
	D1	**1**	**3.2**	**0.2**	**2.1**	**1.344 M^3**
	D2	**1**	**1.4**	**0.2**	**2.1**	**0.588 M^3**
	D3	**2**	**1.1**	**0.2**	**2.1**	**0.924 M^3**
	Window					
	W1	**6**	**1.8**	**0.3**	**1.5**	**4.86 M^3**
	Gap					
	G	**2**	**2.2**	**0.2**	**2.1**	**1.848 M^3**
				Total Deduction=		**9.564 M^3**
				Total Quantity=		**537.714 M^3**
5	**Inside Plaster (1:6)**					
	Reading hall					
	Wall	**2**	**3**	**-**	**3**	**18 M^2**
	Wall	**2**	**4**	**-**	**3**	**24 M^2**
	Celling	**1**	**3**	**4**	**-**	**12 M^2**
	Book stand					
	Wall	**2**	**4**	**-**	**3**	**24 M^2**
	Wall	**2**	**4**	**-**	**3**	**24 M^2**
	Celling	**1**	**4**	**4**	**-**	**16 M^2**
	Reading hall					
	Wall	**2**	**3.2**	**-**	**3**	**19.2 M^2**
	Wall	**2**	**4.9**	**-**	**3**	**29.4 M^2**
	Celling	**1**	**3.2**	**4.9**	**-**	**15.68 M^2**
	Passage					
	Wall	**2**	**7.4**	**-**	**3**	**44.4 M^2**
	Wall	**2**	**2**	**-**	**3**	**12 M^2**
	Celling	**1**	**7.4**	**2**	**-**	**14.8 M^2**
	Veranda					
	Wall	**1**	**7.4**	**-**	**3**	**22.2 M^2**

	Wall	2	1.8	-	3	10.8 M^2
	Celling	1	7.4	2	-	13.32 M^2
	Gents Toilet					
	Wall	2	2.1	-	3	12.6 M^2
	Wall	2	1.5	-	3	9 M^2
	Celling	1	2.1	1.5	-	3.15 M^2
	Ladies Toilet					
	Wall	2	2.1	-	3	12.6 M^2
	Wall	2	1.5	-	3	9 M^2
	Celling	1	2.1	1.5	-	3.15 M^2
				Total Quantity=		349.3 M^2
	Deduction for Door & Window					
	Door					
	D1	1	1.5	-	3	4.5 M^3
	D2	1	1	-	3	3 M^3
	D3	4	0.9	-	3	10.8 M^3
	Window					
	W1	6	1.5	-	1.5	13.5 M^3
	Ventilation					
	V	4	0.6	-	0.6	1.44 M^3
	Gap					
	G	4	2	-	2.1	16.8 M^3
				Total Deduction=		50.04 M^3
				Total Plaster=		299.26 M^3
6	R.C.C Slab(1:2:4)					
	L=8.0M	1	8	12	0.12	11.52 M^3
	B=11.0M					
	H=0.12M					
				Total Quantity=		11.52 M^3
7	Flooring					
	Reading hall	1	3	4	-	12 M^2
	Bookstand	1	4	4	-	16 M^2
	Reading hall	1	3.2	4.9	-	15.68 M^2
	Passage	1	7.4	2	-	14.8 M^2
	Veranda	1	7.4	1.8	-	13.32 M^2
	Toilet	2	2.1	1.5	-	6.3 M^2
				Total Flooring=		78.1 M^2
8	Earth Filling in Foundation					
	Total Earth Filling =Excavation - P.C.C.- Masonry in foundation					
	Total (818.424 - 136.404	-	-	-	-	365.656 M^3

	- 316.364) = 365.656					
	Earth filling on plinth	1	8	12	0.88	84.48 M^3
	H=0.9-0.02=0.58					
				Total Filling=		450.136 M^3

Abstract Sheet Of Public Library

Sr.No.	Description of Items	Quantity	Rate	Per	Amount
1	Excavation in foundation	818.424	95	M^3	77,750.28
2	P.C.C in foundation	136.404	3000	M^3	4,09,212.00
3	Brick Masonry in foundation	316.364	3200	M^3	10,12,364.80
4	Brick Masonry in Superstructure in cement mortar (1:4)	537.714	3500	M^3	18,81,999.00
5	Plaster (1:6)	299.26	440	M^2	1,31,674.40
6	R.C.C Slab (1:2:4)	11.52	8800	M^3	1,01,376.00
7	Flooring	78.1	500	M^2	39,050.00
8	Earth Filling in Foundation	450.136	50	M^3	22,506.80
9	Earth Filling in plinth	84.48	950	M^3	80,256.00
		Total Rs.			37,56,189.28
		Add 3% contingencies Rs.			1,12,685.68
		Add 2% charged establishment Rs.			75,123.79
		Grand total			39,43,998.74
		For 1 Sq. Mt			39,439.99

13.1.2 Krishi seva kendra

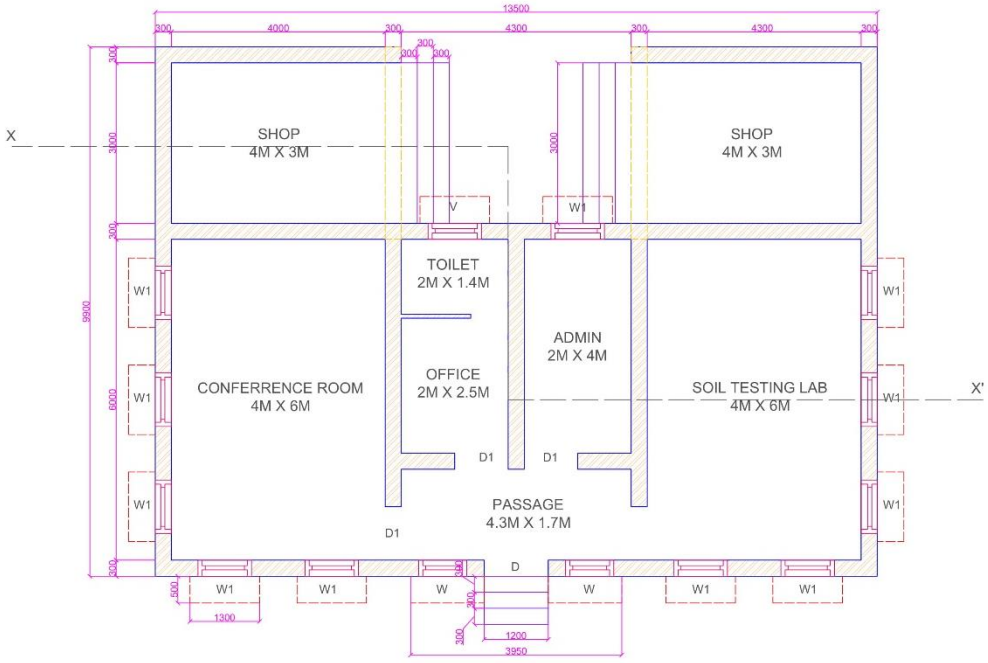


Fig: 13.4 Plan of Krishi seva kendra

Fig: 13.5 Elevation of Krishi seva kendra

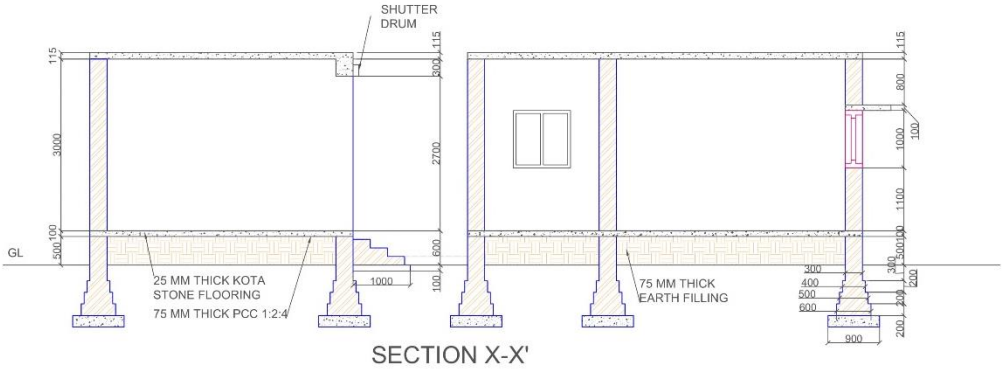


Fig: 13.6 Section of Krishi seva kendra

Measurement Sheet Of Krishi seva kendra

SR. NO	ITEM DESCRIPTION	NO.	LENGTH	BREADTH	HEIGHT	QUANTITY
1	EXCAVATION					
	FOR WALL	1	78.45	0.9	1.1	77.666 M^3
	FOR STEPS	1	1.4	1	0.1	0.140 M^3
	FOR STEPS (SHOPS)	2	3.1	1	0.1	0.620 M^3
				Total Quantity=		78.426 M^3
2	PCC					
	FOR WALL	1	78.45	0.9	0.2	14.121 M^3
	FOR STEPS	1	1.4	1	0.1	0.140 M^3
	FOR STEPS (SHOPS)	2	3.1	1	0.1	0.620 M^3
				Total Quantity=		14.881 M^3
3	BRICK MASONARY UPTO PLINTH					
	FOR 60CM THICK WALL	1	83.4	0.6	0.2	10.008 M^3
	FOR 50CM THICK WALL	1	84.05	0.5	0.2	8.405 M^3
	FOR 40CM THICK WALL	1	84.7	0.4	0.2	6.776 M^3
	FOR 30CM THICK WALL	1	85.35	0.3	0.8	20.484 M^3
	STEPS	1	1.2	0.9	0.3	0.324 M^3
	STEPS(SHOPS)	2	3	0.9	0.3	1.620 M^3
				Total Quantity=		47.617 M^3
4	DPC	1	85.35	0.3	0.1	2.561 M^3
				Total Quantity=		2.561 M^3
5	BRICK MASONARY	1	85.35	0.3	3	76.815 M^3

	FOR SUPER STRUCTURE					
	DEDUCTION					
	D	**1**	**1.2**	**0.3**	**2.1**	**0.756 M^3**
	D1	**4**	**1**	**0.3**	**2.1**	**2.520 M^3**
	S	**2**	**3**	**0.3**	**2.56**	**4.608 M^3**
	W	**2**	**0.9**	**0.3**	**1.5**	**0.810 M^3**
	W1	**11**	**0.5**	**0.3**	**0.5**	**0.825 M^3**
	V	**1**	**1**	**0.3**	**0.5**	**0.150 M^3**
				Total Quantity=		**67.146 M^3**
6	**PARTITION WALL**	**1**	**2**	**2.1**	**1**	**4.200 M^3**
	DEDUCTION					
	D2	**1**	**0.7**	**2.1**	**1**	**1.470 M^3**
				Total Quantity=		**2.730 M^3**
7	**EARTH FILLING**					
	CONFERENCE ROOM	**2**	**4**	**6**	**0.5**	**24.000 M^3**
	ADMIN/OFFICE	**2**	**2**	**4**	**0.5**	**8.000 M^3**
	PASSAGE	**1**	**4.3**	**1.7**	**0.5**	**3.655 M^3**
	SHOP	**2**	**4**	**3**	**0.5**	**12.000 M^3**
				Total Quantity=		**47.655 M^3**
8	**CONCRETING BELOW FLOORING**					
	CONCRETING ROOM	**2**	**4**	**6**	**0.075**	**3.600 M^3**
	ADMIN/OFFICE	**2**	**2**	**4**	**0.075**	**1.200 M^3**
	PASSAGE	**1**	**4.3**	**1.7**	**0.075**	**0.548 M^3**
				Total Quantity=		**7.148 M^3**
9	**FLOORING**					
	CONFERENCE ROOM	**2**	**4**	**6**	**1**	**48.000 M^3**
	ADMIN/OFFICE	**2**	**2**	**4**	**1**	**16.000 M^3**
	PASSAGE	**1**	**4.3**	**1.7**	**1**	**7.310 M^3**
	SHOP	**2**	**4**	**3**	**1**	**24.000 M^3**
	OPENING					
	D	**1**	**1.2**	**0.3**	**1**	**0.360 M^3**
	D1	**4**	**1**	**0.3**	**1**	**1.200 M^3**
	D2	**1**	**0.7**	**0.1**	**1**	**0.070 M^3**
	S	**2**	**3**	**0.3**	**1**	**1.800 M^3**
				Total Quantity=		**98.740 M^3**
10	**OUTSIDE PLASTER**	**1**	**46.8**	**3.775**	**1**	**176.670 M^3**
	STEPS	**1**	**0.9**	**0.9**	**1**	**0.810 M^3**
	STEPS(SHOPS)	**2**	**3**	**0.9**	**1**	**5.400 M^3**

	DEDUCTION					
	D	**0.5**	**1.2**	**1**	**2.1**	**1.260 M^3**
	S	**1**	**3**	**1**	**2.56**	**7.680 M^3**
	W	**1**	**0.9**	**1**	**1.5**	**1.350 M^3**
	W1	**5.5**	**0.5**	**1**	**0.5**	**1.375 M^3**
	V	**0.5**	**1**	**1**	**0.5**	**0.250 M^3**
				Total Quantity=		**170.965 M^3**
11	**INSIDE PLASTER**					
	ADMIN/OFFICE	**2**	**12**	**1**	**3**	**72.000 M^3**
	CONFERENCE ROOM	**2**	**20**	**1**	**3**	**120.000 M^3**
	SHOP	**2**	**14**	**1**	**3**	**84.000 M^3**
	PASSAGE	**1**	**12**	**1**	**3**	**36.000 M^3**
	CELING					
	ADMIN/OFFICE	**2**	**2**	**4**	**1**	**16.000 M^3**
	CONFERENCE ROOM	**2**	**4**	**6**	**1**	**48.000 M^3**
	SHOP	**2**	**4**	**3**	**1**	**24.000 M^3**
	PASSAGE	**1**	**4.3**	**1.7**	**1**	**7.310 M^3**
	DEDUCTION					
	D	**0.5**	**1.2**	**1**	**2.1**	**1.260 M^3**
	D1	**4**	**1**	**1**	**2.1**	**8.400 M^3**
	S	**1**	**3**	**1**	**2.56**	**7.680 M^3**
	W	**1**	**0.9**	**1**	**1.5**	**1.350 M^3**
	W1	**5.5**	**0.5**	**1**	**0.5**	**1.375 M^3**
	V	**0.5**	**1**	**1**	**0.5**	**0.250 M^3**
				Total Quantity=		**386.995 M^3**
12	**WHITE WASHING**	**387**	**1**	**1**	**1**	**386.995 M^3**
				Total Quantity=		**386.995 M^3**
13	**WEATHER SHEDS**	**1**	**19.55**	**0.5**	**0.1**	**0.978 M^3**
				Total Quantity=		**0.978 M^3**
14	**LATRINE BLOCK**	**1**	**1**	**1**	**1.000**	**1.000**
				Total Quantity=		**1.000**
15	**WASH BASIN**	**1**	**1**	**1**	**1.000**	**1.000**
				Total Quantity=		**1.000**
16	**DOOR**					
	D	**1**	**1.2**	**1**	**2.1**	**2.520 M^3**
	D1	**4**	**1**	**1**	**2.1**	**8.400 M^3**
	D2	**1**	**0.7**	**1**	**2.1**	**1.470 M^3**
				Total Quantity=		**12.390 M^3**

17	WINDOW					
	W	2	0.9	1	1.5	2.700 M^3
	W1	11	1	1	1	11.000 M^3
				Total Quantity=		13.700 M^3
18	VENTILATOR					
	V	1	1	1	0.5	0.500 M^3
				Total Quantity=		0.500 M^3
19	SHUTTER	2	3	1	2.56	15.360
				Total Quantity=		15.360 M^3

Abstract Sheet Of Krishi Seva Kendra

Sr.No.	Description of Items	Quantity	Rate	Per	Amount
1	Excavation in foundation	78.43	95	M^3	7,450.85
2	P.C.C in foundation	14.81	3000	M^3	44,430.00
3	Brick Masonry in foundation	47.62	3200	M^3	1,52,384.00
4	DPC	2.56	4700	M^3	12,032.00
5	Brick Masonry in Superstructure in cement mortar (1:4)	67.15	3500	M^3	2,35,025.00
6	Partition Wall	2.73	715	M^2	1,952.00
7	Concreting Below Flooring	7.15	4300	M^3	30,736.00
8	Plaster (1:6)	577.97	440	M^2	2,45,506.80
9	Flooring	98.74	500	M^2	48,370.00
10	White Washing	387.00	16	M^2	6,192.00
11	Weathersheds	0.98	5500	M^3	5,376.00
12	Latrine Block	1	350	NOS.	350.00

13	**Wash Basin**	**1**	**350**	**NOS.**	**350.00**
14	**Door**	**12.39**	**1600**	**M^2**	**19,824.00**
15	**Window**	**13.70**	**1550**	**M^2**	**21,235.00**
16	**Ventilator**	**0.50**	**1550**	**M^2**	**775.00**
17	**Earth Filling**	**47.66**	**120**	**M^3**	**5,719.20**
		Total Rs.			**7,89,337.05**
		Add 3% contingencies Rs.			**23,680.1115**
		Add 2% charged establishment Rs.			**15,786.741**
		Grand total			**8,28,803.906**
		For 1 Sq. Mt			**8,288.03**
*** DETAILD BOQ OF R.C.C. MEMBERS ARE PROVIDED BELOW.**					

BQC SUMMARY

Element: Beam

No.	Material	Unit	Quantity	Rate	Cost
1	Concrete M25	M^3	0.90	4100.00	3690
2	Rebar T8(Fe415)	kg	45.13	42.00	1890
	RebarT12(Fe415)	kg	57.13	42.00	2399
3	Shuttering	M^2	6.60	250.00	1650
	GRAND TOTAL				**9635/-**

BQC SUMMARY

Element: Slab

No.	Material	Unit	Quantity	Rate	Cost
1	Concrete M25	M^3	13.49	4100.00	55313
2	Rebar T8(Fe415)	kg	522.56	12.00	6271
3	Shuttering	M^2	95.31	250.00	23827
	GRAND TOTAL				85,411/-

13.1.3 Bio-Gas Plant

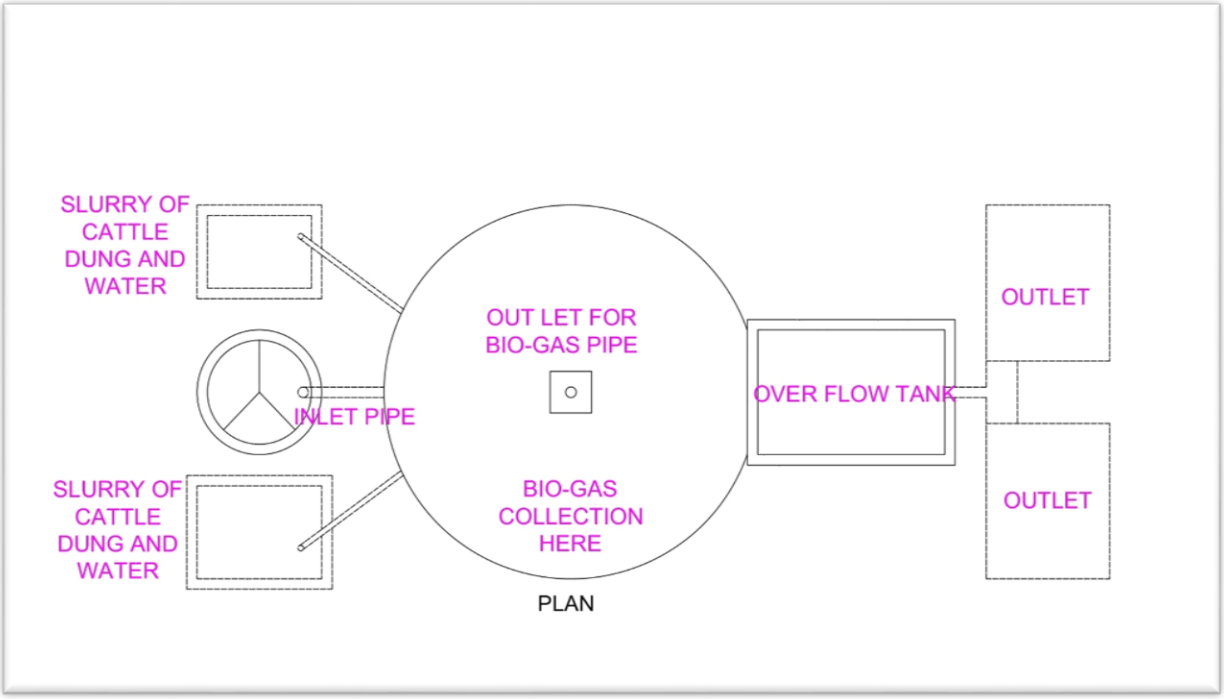


Fig: 13.7 Plan of Bio-Gas

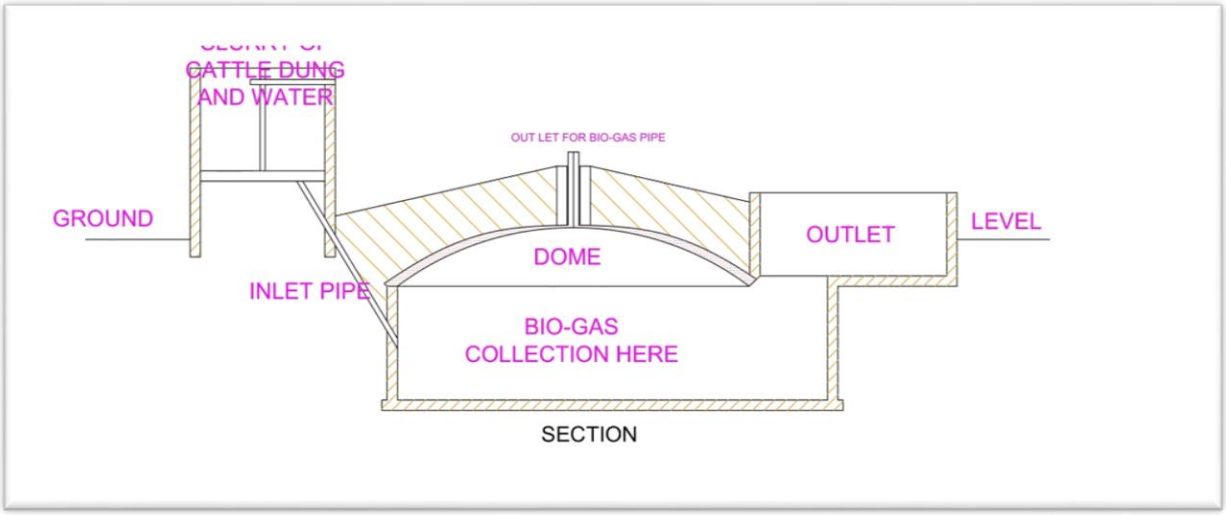


Fig: 13.8 Elevation of Bio-Gas

- Bio gas plant is one of the economical solutions for renewable energy sources for a rural area. It transforms rural village in to clean village and also provide gas as energy source and gives fertilizer at end.
- Bio gas plant is one of the economical solutions for renewable energy sources for a rural area. It transforms rural village in to clean village and also provide gas as energy source and gives fertilizer at end.

Data to be taken: -

Numbers of animals to one of the villagers = 20(As per survey)
As per standard data, assume per day dung of animal =10 Kg.
So total per day dung = 20 X 10 =200 Kg/day

Data to be taken: -

Assume retention period (R_T) = 60 days.
Assume mixing proportion of solid and water is 1:1
Now total amount of slurry per day (S_d) = Total per day dung + Water amount
= 200 + 200
= 400 Kg/da
= 400 lit /day
= 0.40 $m^{3/}$ day

Digester volume (V_d) = S_d X R_T
= 0.40 X 60
= 24 m^3

Assume cylinder shaped bio gas plant. So, digester volume becomes for one unit
Total digester volume (V_d) = $\pi r^2 h$
24 = πr^2 X 2.4 (assume h= 2.4mt)
R= 1.784 m

So, dimensions of digester are h=2.4 m
Provide R = 1.80 m

Design of Gas Holder:-

Assume digester temperatur = 26-28 ˚C

Now from following fig find G_d by taking R_T =60 days

Specific gas production G_d=34 Lit /Kg/day

Daily gas production G= G_d × Feed volume

=34x300

=10200Lit.

=10.20M^3

Now assume gas holder capacity = 60 %

Gas holder volume = Daily gas production × Capacity of holder

= 10.20 × 0.60

=6.12 M^3

So, take Gas holder volume = 6.20 M^3

Provide cylinder shaped holder so,

Volume= π r2 h

6.20 = π x r2 x 0.50 (take h = 0.50 m)

r = 1.98mt

Design of Inlet & Outlet:-

Total volume of slurry mixes per unit = 0.40m^3 / day

Assume single time filling operation in plant

So, take total volume of slurry = 0.40 m3 / day

Take= 0.40 m3 / day

Provide rectangular tank so,

Total volume for one time mixing of slurry = L × B × H

0.30 = L × B × H (take H=0.50m)

Assume rectangle chamber with proportion width: length = 1: 1.5

So, 0.30= 1.5B X B X 0.50

B = 0.88

Provide B = 0.90

Hence L = 1.0

Dimension of inlet are L = 1.0 m

B = 0.90m

H = 0.50 m

Here 0.4 m3 / day required < 0.45 m3/day provided.

Provide same size for outlet tank also.

Measurement Sheet Of Bio-Gas

SR. NO	ITEM DESCRIPTION	NO.	LENGTH	BREADTH	HEIGHT	QUANTITY
1	Excavation for foundation					
	Inlet chamber	1	0.90	1.20	0.25	0.270 M^3
		1	0.70	0.70	0.25	0.122 M^3
		1	0.70	0.70	0.75	0.367 M^3
	Digester chamber	1	π x $(3.86)^2$		2.33	27.202 M^3
	Outlet chamber	1	0.90	1.00	01.00	0.900 M^3

	For Inlet and Outlet pipe	**2**	**0.90**	**0.30**	**0.80**	**0.432 M^3**
				Total excavation=		**29.293 M^3**
2	**P.C.C. in foundation. Inlet**					
	Chamber	**1**	**0.90**	**1.20**	**0.10**	**0.108 M^3**
		1	**0.70**	**0.70**	**0.10**	**0.049 M^3**
		1	**0.70**	**0.70**	**0.10**	**0.049 M^3**
	Digester chamber	**1**	**π x $(3.86)^2$**		**0.10**	**1.286 M^3**
	Outlet chamber	**1**	**0.90**	**1.00**	**0.10**	**0.090 M^3**
				Total Quantity=		**1.582 M^3**
3	**Cement Concrete for foundations**					
	Inlet chamber	**1**	**0.90**	**1.20**	**0.23**	**0.248 M^3**
		1	**0.70**	**0.70**	**0.23**	**0.112 M^3**
		1	**0.70**	**0.70**	**0.23**	**0.112 M^3**
	Digester chamber	**1.10**	**π x $(3.86)^2$**		**0.23**	**2.960 M^3**
	Outlet chamber	**1**	**0.90**	**1.00**	**0.23**	**0.207 M^3**
				Total Quantity=		**3.649 M^3**
4	**Masonry work**					
	Inlet chamber	**1**	**4.80**	**0.10**	**0.50**	**0.240 M^3**
		1	**1.40**	**0.10**	**0.70**	**0.098 M^3**
		1	**12.12**	**0.23**	**1.77**	**4.934 M^3**
	Digester chamber	**1**	**17.34**	**0.10**	**0.45**	**0.780 M^3**
	Outlet chamber	**1**	**3.80**	**0.10**	**0.85**	**0.323 M^3**
				Total Quantity=		**6.375 M^3**
5	**Plastering double coat water proof**					
	Inlet chamber	**1**	**3.40**	**-**	**0.50**	**1.700 M^2**
		1	**2.80**	**-**	**1.15**	**3.220 M^2**
	Digester chamber	**1**	**21.36**	**-**	**1.77**	**37.807 M^2**
		1	**23.00**	**-**	**1.00**	**23.000 M^2**
	Outlet chamber	**1**	**3.40**	**-**	**0.85**	**2.890 M^2**
				Total Quantity=		**68.617 M^2**
6	**200mm Dia. Pipe required**	**1**	**2.33Mt**	**-**	**-**	**2.33Mt**
				Total Quantity=		**2.33Mt**
7	**Mechanical mixing unit.**	**1**		**1nos**		**1nos**
				Total Quantity=		**1nos**

Abstract Sheet Of Bio-Gas

Sr.No	Description of Items	Quantity	Rate	Per	Amount
1	Excavation for foundation for depth 1.5mt to 3.0mt including sorting out and stacking of useful material and disposing off the Excavated stuff up to 50mt lead.	29.293	93.20	M^3	2,730.108
2	Providing and laying cement concrete 1:4:8 and curing complete in foundation.	1.582	1898.0	M^3	3,002.636
3	Providing and laying cement concrete work 1:1:2 and complete curing excluding Cost of for work and reinforcement.	3.639	3327.00	M^3	12,106.953
4	Brick work using common burnt clay building brick in foundation in C: M (1:5).	6.375	3242.00	M^3	20,667.750
5	Providing 20mm thick plaster in single Coat in single or half brick walls smooth in 1:3 (C: M).	68.617	137.00	M^2	9,400.529
6	R.C.C heavy duty pipe.	2.330	250.00	Mt	582.500
				Total cost.	48,490.476/-
				Add 2% water charge.	727.350/-
				Add 10% contactor's profit.	4,849.047/-
				Subsidy Available by Govt.	-7,000.00/-
				Net total cost	47,066.873/-

- Cost may be varying due to site condition, final selection of material, unexpected cost etc.
- Cost of Floating holder, shed for Inlet chamber is not consider as it depends on owner.
- Cost for putting the plant in working condition is not consider.

Material Consumption sheet for Bio-gas plant.

Sr.No	Material	Quantity	Unit
1	Cement(53Grades)	72.00	Bag
2	Sand	5.532	M^3
3	Aggregate	4.244	M^3
4	R.C.C pipe	2.33	Rmt.
5	Brick(19x9x9 cm)	3200	Nos.

13.1.4 Public Toilet

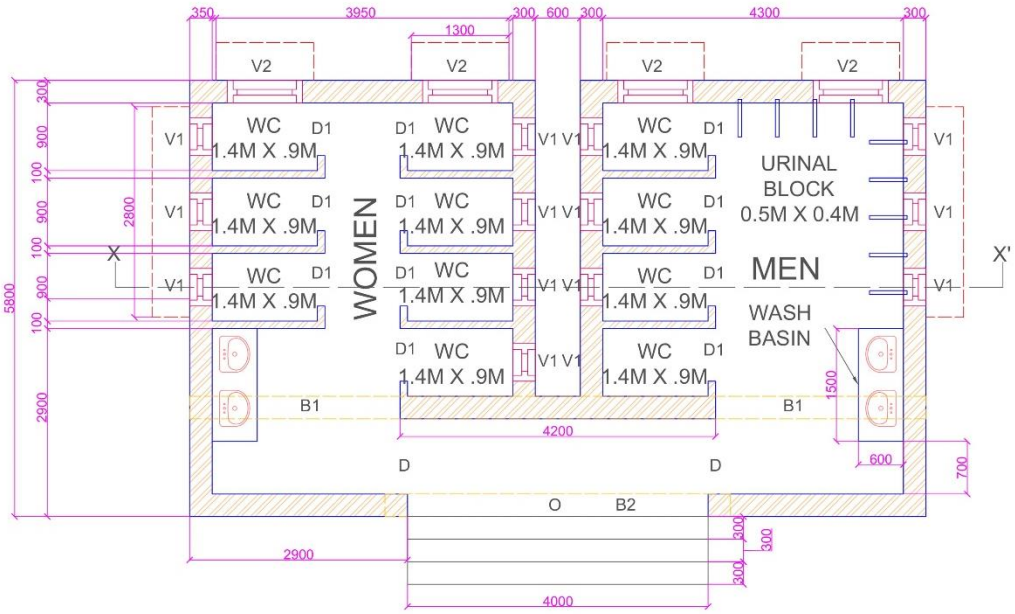


Fig: 13.9 Plan of Public Toilet

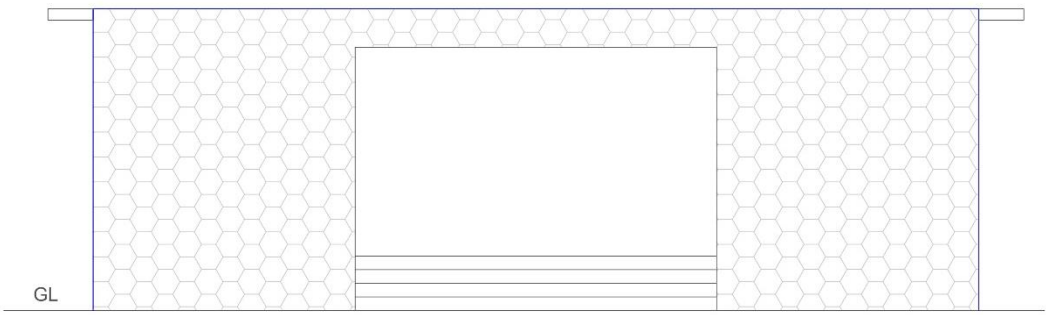


Fig: 13.10 Plan of Public Toilet

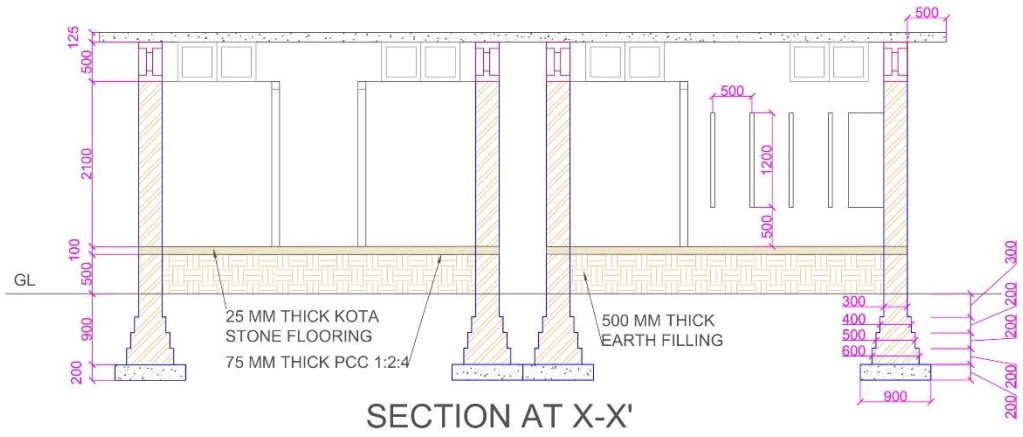


Fig: 13.11 Section of Public Toilet

Measurement Sheet Of Public Toilet

SR. NO	ITEM DESCRIPTION	NO.	LENGTH	BREADTH	HEIGHT	QUANTITY
1	EXCAVATION					
	FOR WALL	1	40.5	0.9	1.1	40.095 M^3
	FOR STEPS	1	4.2	1	0.1	0.420 M^3
				Total Quantity=		40.515 M^3
2	PCC					
	FOR WALL	1	40.5	0.9	0.2	7.290 M^3
	FOR STEPS	1	4.2	1	0.1	0.420 M^3
				Total Quantity=		7.710 M^3
3	BRICK MASONARY UPTO PLINTH					
	FOR 60CM THICK WALL	1	40.8	0.6	0.2	4.896 M^3
	FOR 50CM THICK WALL	1	40.9	0.5	0.2	4.090 M^3
	FOR 40CM THICK WALL	1	41	0.4	0.2	3.280 M^3
	FOR 30CM THICK WALL	1	41.4	0.3	0.8	9.936 M^3
	STEPS	1	4	0.9	0.3	1.080 M^3
				Total Quantity=		23.282 M^3
4	DPC	1	41.4	0.3	0.1	1.242 M^3
				Total Quantity=		1.242 M^3
5	BRICK MASONARY FOR SUPER	1	37.7	0.3	2.6	29.406 M^3

	STRUCTURE					
	DEDUCTION					
	V1	**14**	**0.5**	**0.3**	**0.5**	**1.050 M^3**
	V2	**4**	**1**	**0.3**	**0.5**	**0.600 M^3**
				Total Quantity=		**27.756 M^3**
6	**PARTITION WALL**	**1**	**25.35**	**-**	**2.1**	**49.035 M^2**
	DEDUCTION					
	D1	**11**	**0.7**	**-**	**2.1**	**16.170 M^2**
				Total Quantity=		**32.865 M^2**
7	**EARTH FILLING**					
	PART 1	**2**	**3.9**	**4**	**0.5**	**15.600 M^3**
		2	**2.5**	**0.3**	**0.5**	**0.750 M^3**
	PART 2	**1**	**1**	**9.2**	**0.5**	**4.600 M^3**
				Total Quantity=		**20.950 M^3**
8	**CONCRETING BELOW FLOORING**					
	PART 1	**2**	**3.9**	**4**	**0.075**	**2.340 M^3**
		2	**2.5**	**0.3**	**0.075**	**0.113 M^3**
	PART 2	**1**	**1**	**9.2**	**0.075**	**0690 M^3**
				Total Quantity=		**3.143 M^3**
9	**FLOORING**					
	WC	**11**	**1.4**	**0.9**	**-**	**13.860 M^2**
	PASSAGE	**1**	**1**	**5.2**	**-**	**5.200 M^2**
		1	**1.5**	**2.2**	**-**	**3.300 M^2**
		1	**2.5**	**5.2**	**-**	**13.000 M^2**
	OPENING					
	D	**2**	**1**	**0.1**	**-**	**0.200 M^2**
	D1	**11**	**0.7**	**0.1**	**-**	**0.770 M^2**
	O	**1**	**4**	**0.3**	**-**	**1.200 M^2**
	STEPS	**1**	**4**	**0.3**	**-**	**3.600 M^2**
				Total Quantity=		**41.130 M^2**
10	**OUTSIDE PLASTER**	**1**	**39.6**	**-**	**3.325**	**131.670 M^2**
	STEPS	**2**	**0.9**	**-**	**0.3**	**0.540 M^2**
	DEDUCTION					
	O	**0.5**	**4**	**-**	**2.31**	**4.620 M^2**
	V1	**7**	**0.5**	**-**	**0.5**	**1.750 M^2**
	V2	**2**	**1**	**-**	**0.5**	**1.000 M^2**
				Total Quantity=		**124.840 M^2**

11	INSIDE PLASTER	2	17.4	-	2.6	90.480 M^2
	DEDUCTION					
	V1	7	0.5	-	0.5	1.750 M^2
	V2	2	1	-	0.5	1.000 M^2
				Total Quantity=		87.730 M^2
12	WHITE WASHING	1	212.570 M^2			212.570 M^2
				Total Quantity=		212.570 M^2
13	WEATHERSHEDS	1	10.8	0.5	0.125	0.675 M^3
				Total Quantity=		0.675 M^3
14	GRANITE	2	3	065	-	3.900 M^2
				Total Quantity=		3.900 M^2
15	LATERINE BLOCK	11	-	-	-	11.000 NOS.
				Total Quantity=		11.00 NOS.
16	URINAL BLOCK	8	-	-	-	8.000 NOS.
				Total Quantity=		8.000 NOS.
17	WASH BASIN	4	-	-	-	4.000 NOS.
				Total Quantity=		4.000 NOS.
18	DOOR					
	D	2	1	-	2.6	5.200 M^2
	D1	11	0.7	-	2.1	16.170 M^2
				Total Quantity=		21.370 M^2
19	VENTILATOR					
	V1	14	0.5	-	0.5	3.500 M^2
	V2	4	1	-	0.5	2.000 M^2
				Total Quantity=		5.500 M^2

Abstract Sheet Of Public Toilet

SR. NO	DESCRIPTION OF ITEMS	QUANTITY	RATE	PER	AMOUNT
1	Excavation	40.52	150	M^3	6,078.000
2	PCC	7.71	3900	M^3	30,069.000
3	BRICK MASONARY UPTO PLINTH	23.28	5200	M^3	1,21,056.000

4	DPC	1.24	4700	M^3	5,828.000
5	BRICK MASONARY FOR SUPER STRUCTURE	27.76	4900	M^3	1,36,024.000
6	PARTITION WALL	32.87	715	M^2	23,498.000
7	EARTH FILLING	20.95	120	M^3	2,514.000
8	CONCRETING BELOW FLOORING	3.14	4300	M^3	13,502.000
9	FLOORING	41.13	450	M^2	18,509.000
10	OUTSIDE PLASTER	124.84	310	M^2	38,700.000
11	INSIDE PLASTER	87.73	260	M^2	22,810.000
12	WHITE WASHING	215.57	16	M^2	3,449.000
13	WEATERSHEDS	0.68	5500	M^3	3,740.000
14	GRANITE	3.90	550	M^2	2,145.000
15	LATRINE BLOCKS	11.00	350	NOS.	3,850.000
16	URINAL BLOCKS	8.00	250	NOS.	2,000.000
17	WASH BASING	4.00	350	NOS.	1,400.000
18	DOOR	21.37	1600	M^2	34,192.000
19	VENTILATOR	5.50	1550	M^2	8,525.000
20	BEAM	1.00	8412	RS.	8,412.000
21	SLAB	1.00	44733	RS.	44,733.000
				Total Rs.	5,31,034/-
				Add 3% contingencies Rs.	15,931.02/-
				Add 2% charged establishment Rs.	10,620.68/-
				Grand total	5,57,585.7/-
				For 1 Sq. Mt	5,575.857/-
* DETAILD BOQ OF R.C.C. MEMBERS ARE PROVIDED BELOW.					

BQC SUMMARY

Element: Beam

No.	Material	Unit	Quantity	Rate	Cost
1	Concrete M25	M^3	0.81	4100.00	3321
2	Rebar T8(Fe415)	kg	41.44	42.00	1740
	RebarT12(Fe415)	kg	42.30	42.00	1777
3	Shuttering	M^2	6.30	250.00	1575
	GRAND TOTAL				8412/-

BQC SUMMARY

Element: Slab

No.	Material	Unit	Quantity	Rate	Cost
1	Concrete M25	M^3	5.34	4100.00	21,904
2	Rebar T8(Fe415)	kg	289.16	42.00	12144
3	Shuttering	M^2	42.74	250.00	10685
	GRAND TOTAL				44,733/-

13.1.5 Dairy

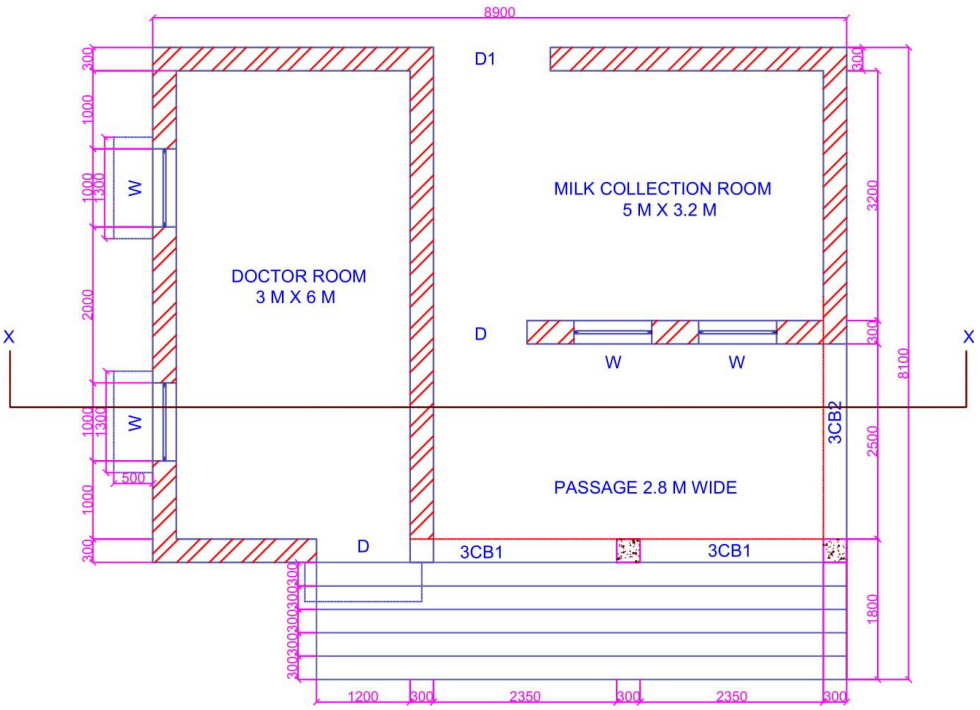


Fig: 13.12 Plan of Dairy

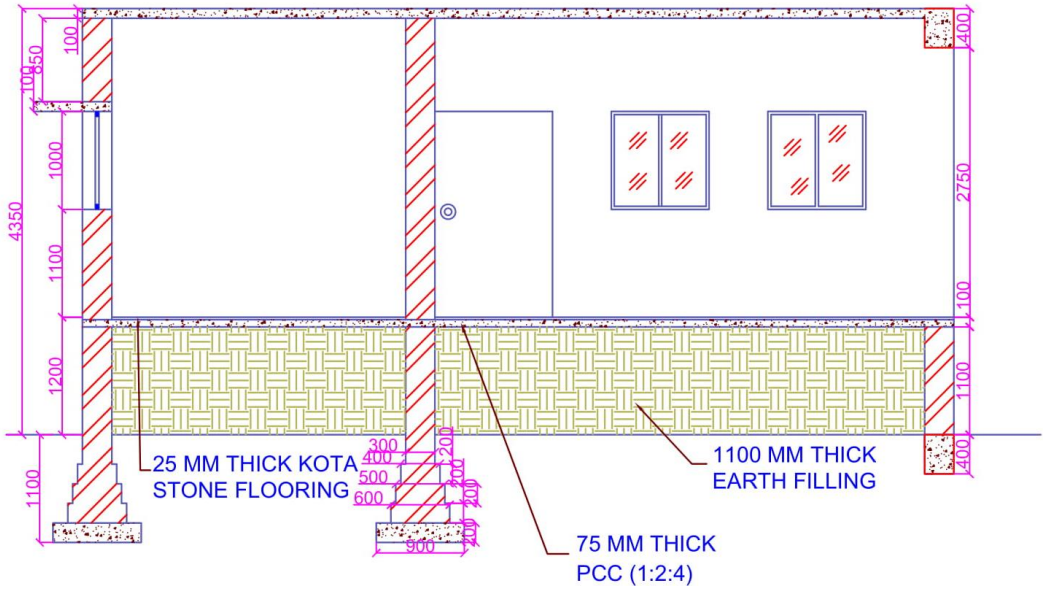


Fig: 13.13 Section of Dairy

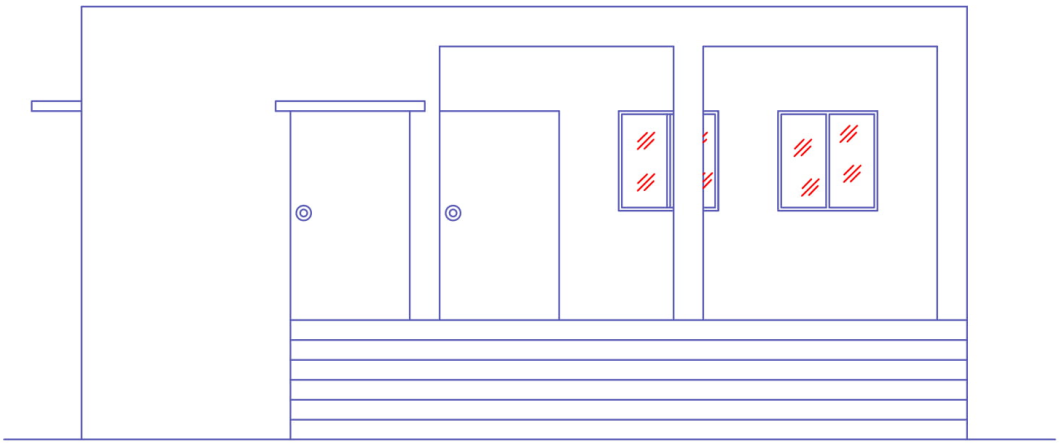


Fig: 13.14 Elevation of Dairy

Measurement Sheet Of Dairy

SR. NO.	ITEM DESCRIPTION	NO	LENGTH	BREADTH	HEIGHT	QUANTITY
1	EXCAVATION					
	FOR WALLS	1	39.6	0.9	1.1	39.204 M^3
	FOR STEPS	1	7	1.6	0.1	1.120 M^3
				Total Quantity=		40.324 M^3
2	PCC					
	FOR WALLS	1	39.6	0.9	0.2	7.128 M^3
	FOR STEPS	1	7	1.6	0.1	1.120 M^3
				Total Quantity=		8.248 M^3
3	BRICK MASONARY UPTO PLINTH					
	FOR 60CM THICK WALL	1	40.2	0.6	0.2	4.824 M^3
	FOR 50CM THICK WALL	1	40.4	0.5	0.2	4.040 M^3
	FOR 40CM THICK WALL	1	40.6	0.4	0.2	3.248 M^3
	FOR 30CM THICK WALL	1	40.8	0.3	1.4	17.136 M^3
	STEPS	15	6.8	0.3	0.3	9.180 M^3
				Total Quantity=		38.428 M^3
4	DPC	1	40.8	0.3	0.1	1.224 M^3
				Total Quantity=		1.224 M^3

5	BRICK MASONARY FOR SUPER STRUCTURE	1	33	0.3	3	29.700 M^3
	DEDUCTION					
	D	2	1.2	0.3	2.1	1.512 M^3
	W	4	1	0.3	1	1.512 M^3
	D1	1	1.5	0.3	2.1	0.945 M^3
	LINTEL					
	D	2	1.2	0.3	0.1	0.072 M^3
	W	4	1.2	0.3	0.1	0.144 M^3
	D1	1	1.5	0.3	0.1	0.045 M^3
				Total Quantity=		25.782 M^3
6	BACKFILL					
	DOCTOR ROOM	1	3	6	1.1	19.800 M^3
	PASSAGE	1	5	3.2	1.1	17.600 M^3
	MILK COLLECTION ROOM	1	5	2.5	1.1	13.750 M^3
				Total Quantity=		51.150 M^3
7	CONCRETING BELOW FLOORING					
	DOCTOR ROOM	1	3	6	0.75	13.500 M^3
	PASSAGE	1	5	3.2	0.75	12.000 M^3
	MILK COLLECTION ROOM	1	5	2.5	0.75	9.375 M^3
				Total Quantity=		34.875 M^3
8	FLOORING					
	DOCTOR ROOM	1	3	6	-	18.000 M^2
	PASSAGE	1	5	3.2	-	16.000 M^2
	MILK COLLECTION ROOM	1	5	2.5	-	12.500 M^2
	D1	1	1.5	0.3	-	0.450 M^2
	D	2	1.2	0.3	-	0.720 M^2
				Total Quantity=		47.670 M^2
9	RCC					
	LINTEL					
	D	2	1.5	0.3	0.1	0.090 M^3
	W	4	1.3	0.3	0.1	0.156 M^3
	D1	1	1.8	0.1	0.1	0.018 M^3
	WEATHERSHED	1	3.9	0.5	0.1	0.195 M^3
				Total Quantity=		0.459 M^3
10	OUTSIDE PLASTER	1	31	-	4.35	134.850 M^2

	DEUCTION					
	D	**0.5**	**1.2**	**-**	**2.1**	**1.260 M^2**
	W	**1**	**1**	**-**	**1**	**1.000 M^2**
	D1	**0.5**	**1.5**	**-**	**2.1**	**1.575 M^2**
	PASSAGE	**1**	**8.1**	**-**	**2.75**	**22.275 M^2**
				Total Quantity=		**108.740 M^2**
11	**INSIDE PLASTER**					
	DOCTOR ROOM	**1**	**18**	**-**	**3**	**54.000 M^2**
	MILK COLLECTION ROOM	**1**	**16.4**	**-**	**3**	**49.200 M^2**
	PASSAGE	**1**	**11.1**	**-**	**3**	**33.300 M^2**
	CELING					
	DOCTOR ROOM	**1**	**5**	**-**	**6**	**30.000 M^2**
	MILK COLLECTION ROOM	**1**	**5**	**-**	**3.2**	**16.000 M^2**
	PASSAGE	**1**	**2.8**	**-**	**5.3**	**14.840 M^2**
	DEUCTION					
	D	**1.5**	**1.2**	**-**	**2.1**	**3.780 M^2**
	W	**3**	**1**	**-**	**1**	**3.000 M^2**
	D1	**0.5**	**1.5**	**-**	**2.1**	**1.575 M^2**
				Total Quantity=		**188.985 M^2**
12	**WHITE WASHING**					
	INSIDE PLASTER	**1**	**188.985 M**			**188.985 M^2**
	OUTSIDE PLASTER	**1**	**108.740 M**			**108.740 M^2**
				Total Quantity=		**297.7250 M^2**
13	**DOOR WOOD WORK**					
	D	**2**	**1.2**	**2.1**	**-**	**5.040 M^2**
	D1	**1**	**1.5**	**2.1**	**-**	**3.150 M^2**
				Total Quantity=		**8.190 M^2**
14	**WINDOW WOOD WORK**	**4**	**1**	**1**	**-**	**4.000 M^2**
				Total Quantity=		**4.000 M^2**

Abstract Sheet Of Dairy

SR. NO	DESCRIPTION OF ITEMS	QUANTITY	RATE	PER	AMOUNT
1	**EXCAVATION**	**40.324**	**150.00**	**M^3**	**6,049.00**
2	**PCC**	**8.248**	**3900.00**	**M^3**	**32,167.00**
3	**BRICK MASONARY UPTO**	**38.428**	**5200.00**	**M^3**	**1,99,826.00**

	PLINTH				
4	**D.P.C**	**1.224**	**4700.00**	**M^3**	**5,753.00**
5	**BRICK MASONARY FOR SUPER STRUCTURE**	**25.782**	**4900.00**	**M^3**	**1,26,332.00**
6	**BACKFILL**	**51.150**	**120.00**	**M^3**	**6,138.00**
7	**CONCRETING BELOW FLOORING**	**34.875**	**4300.00**	**M^3**	**1,49,963.00**
8	**FLOORING**	**47.670**	**450.00**	**M^2**	**21,452.00**
9	**RCC WORK**	**0.459**	**5500.00**	**M^3**	**2,525.00**
10	**OUTSIDE PLASTER**	**108.740**	**310.00**	**M^2**	**33,709.00**
11	**INSIDE PLASTER**	**188.985**	**260.00**	**M^2**	**49,136.00**
12	**WHITE WASHING**	**297.725**	**16.00**	**M^2**	**4,764.00**
13	**DOOR WOOD WORK**	**8.190**	**1600.00**	**M^2**	**13,104.00**
14	**WINDOW WOOD WORK**	**4.000**	**1500.00**	**M^2**	**6,000.00**
15	**SLAB**				
	CONCRETING	**7.236**	**4100.00**	**M^3**	**29,668.00**
	SHUTTERING	**54.180**	**250.00**	**M^2**	**13,545.00**
	REBAR	**284.000**	**42.00**	**KG.**	**11,928.00**
16	**BEAM**				
	CONCRETING	**1.944**	**4100.00**	**M^3**	**7,970.00**
	REBAR	**115.000**	**42.00**	**KG.**	**4,830.00**
17	**COLUMN**				
	CONCRETE	**1.458**	**4800.00**	**M^3**	**6,998.00**
	REBAR	**134.000**	**42.00**	**KG.**	**5,628.00**
18	**FOUNDATION**				
	CONCRETE	**0.240**	**4800.00**	**M^3**	**1,152.00**
	REBAR	**11.340**	**42.00**	**KG.**	**476.00**
	SHUTTERING	**1.080**	**250.00**	**M^2**	**270.00**
	EXCAVATION	**1.730**	**150.00**	**M^3**	**260.00**
	BACKFILL	**1.200**	**120.00**	**M^2**	**144.00**
	PCC	**0.220**	**4200.00**	**M^3**	**924.00**
				Total Rs.	**7,40,709.00/-**
				Add 3% contingencies Rs.	**22,221.27/-**

	Add 2% charged establishment Rs.	**14,814.18/-**
	Grand Total	**7,77,744.45/-**
	For 1 Sq. Mt	**7,777.44/-**

13.1.6 Sport Complex

- As we know, that we are improving our standard in sports, so it is necessary to develop sports ground. Now why should we develop it in village, so as per records maximum Olympic athletes are from small villages from different area. So to provide small facilities like this may help you to create sports ground with indoor as well outdoor gaming facilities. Thus, we decided to create one here. So that even neighbor villagers can take advantage of it.

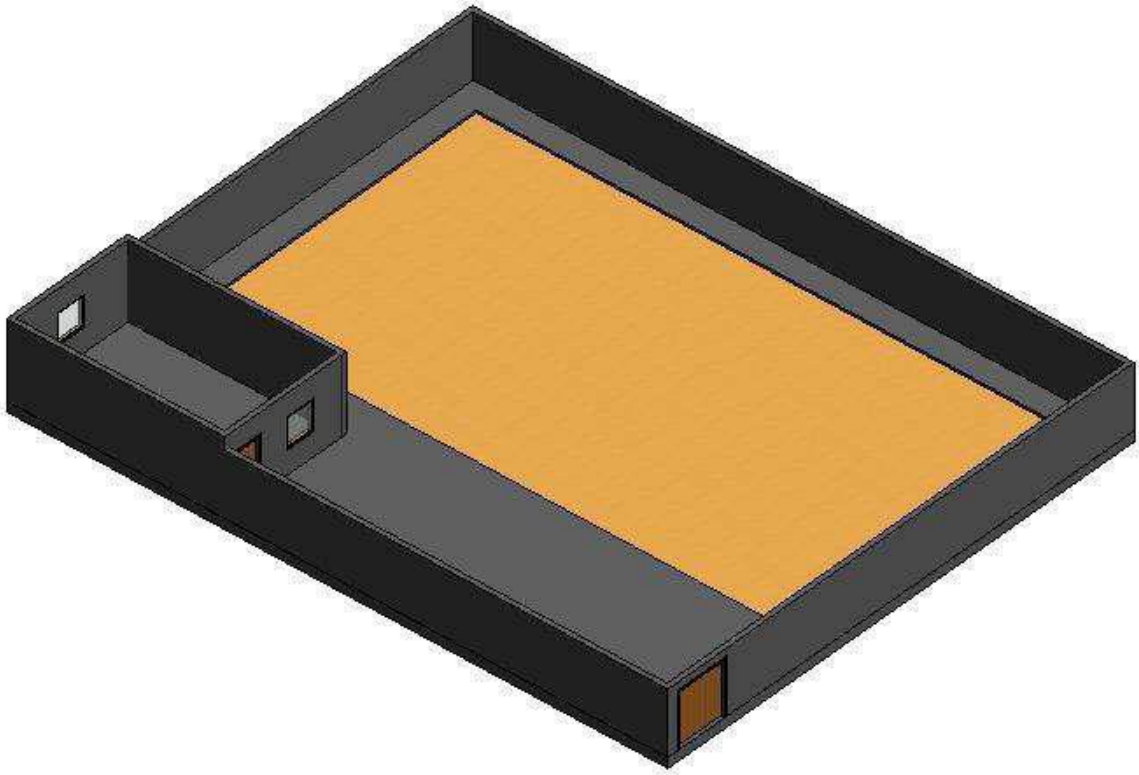


Fig: 13.15 3D View Of Sport Complex

SCHEDULING OF ROOM FOR INDOOR GAMES	
DOOR D	2.0x2.10
DOOR D1	1.2x2.10
WINDOW W1	2.0x1.40

Table 13.1: Scheduling

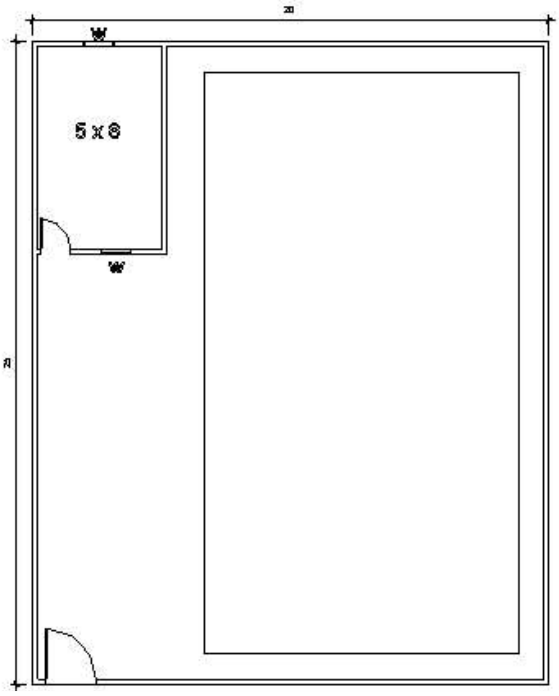


Fig: 13.16 Plan Of Sport Complex

Measurement Sheet Of Sport Complex

SR. NO.	ITEM DESCRIPTION	NO	LENGTH	BREADTH	HEIGHT	QUANTITY
1	EXCAVATION					
	LONG WALL					
	LONG WALL-1	2	2	0.7	1.3	46.41 M^3
	LONG WALL-2	1	8	0.7	1.3	8.099 M^3
	SHORT WALL					
	SHORT WALL-1	2	1	0.7	1.3	34.762 M^3
	SHORT WALL-2	1	4	0.7	1.3	4.095 M^3
				Total Quantity=		93.366 M^3
2	PCC					
	LONG WALL-1	2	2	0.7	0.2	7.14 M^3
	LONG WALL-2	1	8	0.7	0.2	1.246 M^3
	SHORT WALL-1	2	1	0.7	0.2	5.348 M^3
	SHORT WALL-2	1	4	0.7	0.2	0.63 M^3
				Total Quantity=		14.37 M^3
3	BRICK MASONARY UPTO PLINTH					
	LONG WALL-1					
	0.4M STEP	2	2	0.4	0.3	6.048 M^3
	0.3M STEP	2	2	0.3	0.3	4.518 M^3
	0.2M STEP	2	2	0.2	055	5.5 M^3

	LONG WALL-2					
	0.4M STEP	**1**	**8**	**0.4**	**0.3**	**1.032 M^3**
	0.3M STEP	**1**	**8**	**0.3**	**0.3**	**0.765 M^3**
	0.2M STEP	**1**	**8.4**	**0.2**	**0.55**	**0.924 M^3**
	SHORT WALL-1					
	0.4M STEP	**2**	**19.4**	**0.4**	**0.3**	**4.656 M^3**
	0.3M STEP	**2**	**19.5**	**0.3**	**0.3**	**3.51 M^3**
	0.2M STEP	**2**	**19.6**	**0.2**	**0.55**	**4.312 M^3**
	SHORT WALL-2					
	0.4M STEP	**1**	**4.8**	**0.4**	**0.3**	**0.576 M^3**
	0.3M STEP	**1**	**4.9**	**0.3**	**0.3**	**0.441 M^3**
	0.2M STEP	**1**	**5**	**0.2**	**0.55**	**0.55 M^3**
				Total Quantity=		**32.49 M^3**
4	**DPC**					
	LONG WALL-1	**2**	**25**	**0.2**	**0.05**	**0.5 M^3**
	LONG WALL-2	**1**	**8.4**	**0.2**	**0.05**	**0.084 M^3**
	SHORT WALL-1	**2**	**19.6**	**0.2**	**0.05**	**0.392 M^3**
	SHORT WALL-2	**1**	**5**	**0.2**	**0.05**	**0.05 M^3**
				Total Quantity=		**1.026 M^3**
5	**BRICK MASONARY ABOVE PLINTH UP TO 3.5M HIGHT**					
	LENGTH OF COMPOUND WALL	**1**	**75.8**	**0.2**	**2.5**	**37.9 M^3**
	ROOM	**2**	**5.4**	**0.2**	**3**	**6.48 M^3**
		2	**8**	**0.2**	**3**	**9.6 M^3**
	DEDUCTION					
	D	**1**	**2**	**0.2**	**2.1**	**0.84 M^3**
	D1	**1**	**1.2**	**0.2**	**2.1**	**0.504 M^3**
	W	**2**	**1.2**	**0.2**	**1.4**	**0.672 M^3**
				Total Quantity=		**51.98 M^3**
6	**RCC SLAB FOR ROOM**	**1**	**5.4**	**8.4**	**0.1**	**4.54 M^3**
				Total Quantity=		**4.54 M^3**
7	**12MM THICK SMOOTH PLASTER**					
	ROOM	**2**	**5**	**-**	**3**	**30 M^2**
		2	**8**	**-**	**3**	**48 M^2**
	CEILING	**1**	**5**	**8**	**-**	**40 M^2**
				Total Quantity=		**118 M^2**
	12MM THICK PLASTER OUTDOOR	**1**	**5.4**	**-**	**3**	**16.2 M^2**

		1	20	-	2.5	50 M^2
		1	14.6	-	2.5	36.5 M^2
		1	16.6	-	2.5	41.5 M^2
		1	8.4	-	3	25.2 M^2
		1	25	-	2.5	62.5 M^2
				Total Quantity=		231.9 M^2
	DEDUCTION					
	D	0.5	2	-	2.1	2.1 M^2
	D1	0.5	1.2	-	2.1	1.26 M^2
	W	0.5	1.2	-	1.4	0.84 M^2
				Total Deduction=		4.2 M^2
				Total Quantity=		345 M^2
8	FLOORING					
	ROOM	1	5	8	-	40 M^2
	PARKING	1	6	3	-	18 M^2
				Total Quantity=		58 M^2

Abstract Sheet Of Sport Complex

SR. NO	DESCRIPTION OF ITEMS	QUANTITY	RATE	PER	AMOUNT
1	EXCAVATION FOR FOUNDATION	93.366	150	M^3	14,004.00
2	PCC IN 1:4:8	14.37	3200	M^3	43,110.00
3	BRICK MASONARY UPTO PLINTH	32.49	3200	M^3	10,3968.00
4	DPC 5CM	1.026	300	M^2	307.00
5	BRICK MASONARY IN SUPER STRUCTURE	51.98	3500	M^3	1,81,930.00
6	RCC SLAB AND LINTEL	4.54	8800	M^3	39,952.00
7	PLASTERING(12MM)	345	440	M^2	15,1,800.00
8	FLOORING	58	100	M^2	5,800.00
				Total Rs.	5,40,870/-
				Add 3% contingencies Rs.	16,266.1/-
				Add 2% charged establishment Rs.	10,817.4/-
				Grand Total	5,67,953.5/-
				For 1 Sq. Mt	5,679.53/-

Chapter-14
Technical Options with Case Studies

14.1 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. Examples of such applications are the Cathedral of Our Lady of the Angels and the Acropolis Museum.

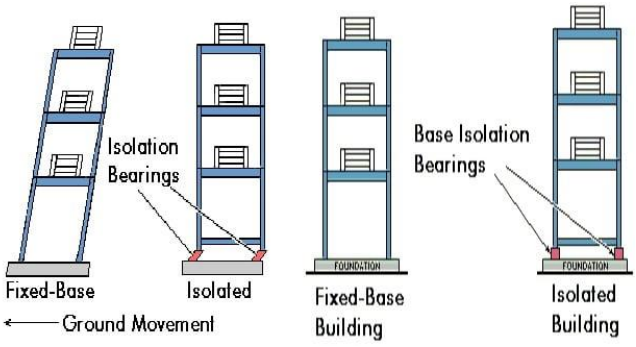


Fig 14.1 Advanced Earthquake Resistant

14.2 Seismic Retrofitting of Buildings

- Seismic retrofitting is the modification of existing structures to make them more resistant to seismic activity, ground motion, or soil failure due to earthquakes. With better understanding of seismic demand on structures and with our recent experiences with large earthquakes near urban centers, the need of seismic retrofitting is well acknowledged. Prior to the introduction of modern seismic codes in the late 1960s for developed countries (US, Japan etc.) and late 1970s for many other parts of the world (Turkey, China etc.), many structures were designed without adequate detailing and reinforcement for seismic protection. In view of the imminent problem, various research work has been carried out. State-of-the-art technical guidelines for seismic assessment, retrofit and rehabilitation have been published around the world – such as the ASCE-SEI 41and the New Zealand Society for Earthquake Engineering (NZSEE)'s

guidelines.These codes must be regularly updated; the 1994 Northridge earthquake brought to light the brittleness of welded steel frames, for example.

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

Fig 14.2 seismic retrofitting

14.3 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.
- The term 'advanced construction technology' covers a wide range of modern techniques and practices that encompass the latest developments in materials technology, design procedures, quantity surveying, facilities management, services, structural analysis and design, and management studies.
- Incorporating advanced construction technology into practice can increase levels of quality, efficiency, safety, sustainability and value for money. However, there is often a conflict between traditional industry methods and innovative new practices, and this is often blamed for the relatively slow rate of technology transfer within the industry.
- The adoption of advanced construction technology requires an appropriate design, commitment from the whole project team, suitable procurement strategies, good quality control, appropriate training and careful commissioning.
- Advanced construction technologies are commonly described as including (amongst many others) advanced forms of:
    - 3D printing.
    - Materials.
    - Building information modeling (BIM).
    - Cladding systems.

- Computer aided design and computer aided manufacturing (CAD/CAM).
- Computer numerical control.
- Construction Innovation Hub.
- Construction plant.
- Modern methods of construction.
- Modular construction.
- Offsite manufacturing.
- Prefabrication and preassembly.
- Research and development.
- Site investigations and surveying.
- Substructure works.
- Water engineering.
- Temporary works.
- Smart technology.
- Robotics.
- GPS controlled equipment.

Fig 14.3 New Construction Techniques

14.4 Engineering Aspects Of Soil mechanics - Environmental Impact Assessment

- The main objective of the Environmental Impact Assessment (EIA) is to evaluate the Project likely impacts on the environment as described in section 4 of this ESIA.One of the key objectives of the ESIA is to assist in ensuring environmentally and socially sound management of the Project during its entire lifecycle. The description of the existing conditions of the local environment provides a comprehensive data collection and analysis of the baseline conditions at the Project site. The baseline data permits the identification of the main socio-environmental factors that might be associated with the Project activities.
- The interaction between the Project activities and the environmental and social baseline conditions of the ecosystem at the Project site is at the core of the ESIA.
- The ESIA is designed to forecast the positive and negative effects that may occur to the receiving environment. The early identification of impacts that may occur in the area leads to a reduction of the risk of future adverse environmental effects, and permits the proposal of mitigation guidelines/measures to avoid, reduce or remediate significant adverse effects.

- The ESIA also acknowledges potential socio-economic impacts, and predicts the effect on people and communities occurring as a result of the Project.
- In this section, key biological, physical, and human receptors are selected from he baseline data. The impacts of the Project activities on each of these "Valued Ecosystem Components" are evaluated using a significance ranking process.

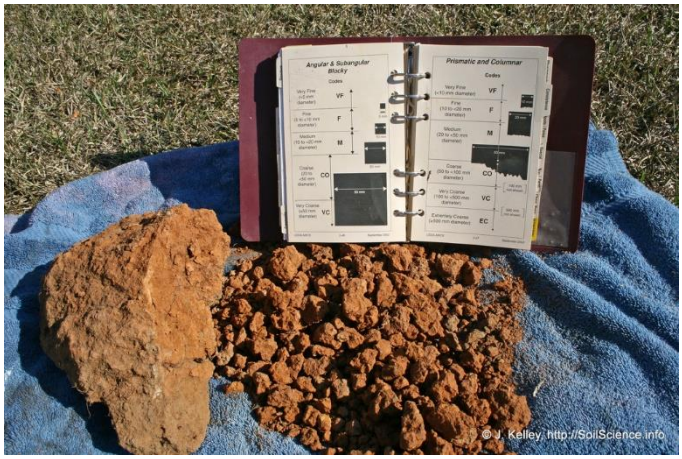


Fig 14.4 Soil Sample

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

14.5.1 Rain Water Harvesting System

- Rain water harvesting is one of the most effective methods of water management and water conservation. It is the term used to indicate the collection and storage of rain water used for human, animals and plant needs. It involves collection and storage of rain water at surface or in sub-surface aquifer, before it is lost as surface run off. The augmented resource can be harvested in the time of need.
- Artificial recharge to ground water is a process by which the ground water reservoir is augmented at a rate exceeding that under natural conditions of replenishment. The collected water is stored and pumped in a separate pipe distribution. This is a very useful method for a developing country like India in reducing the cost and the demand of treated water and also economizing the treatment plants operation, maintenance and distribution costs.
- Need
  - To overcome the inadequacy of surface water to meet our demands.
  - To arrest decline in ground water levels.
  - To enhance availability of ground water at specific place and time and utilize rain water for sustainable development.
  - To increase infiltration of rain water in the subsoil this has decreased drastically in urban areas due to paving of open area.
  - To improve ground water quality by dilution.
  - To increase agriculture production.Improve ecology of the area by increase in vegetation cover etc.
- **Advantages**
  - The cost of recharge to sub-surface reservoir is lower than surface reservoirs.
  - The aquifer serves as a distribution system also.
  - No land is wasted for storage purpose and no population displacement is involved.
  - Ground water is not directly exposed to evaporation and pollution.
  - Storing water under ground is environment friendly.

- It increases the productivity of aquifer.
- It reduces flood hazards.
- Effects rise in ground water levels.
- Mitigates effects of drought.
- Reduces soil erosion.

❖ Science of water harvesting

- In scientific terms, water harvesting refers to collection and storage of rainwater and also other activities aimed at harvesting surface and groundwater, prevention of losses through evaporation and seepage. and all other hydrological studies and engineering inventions, aimed at conservation and efficient utilization of the limited water endowment of physiographic unit such as a watershed. Rain is a primary source of water for all of us. There are two main techniques of rainwater harvesting:
  - ❖ Storage of rainwater on surface for future use.
    - Recharge to groundwater.
    - Directly collected rainwater can be stored for direct use or can be recharged into thegroundwater.
- All the secondary sources of water like rivers, lakes and groundwater are entirely dependent on rain as a primary source.
- The term water harvesting is understood to encompass a wide range of concerns,including rainwater collection with both rooftop and surface runoff catchment, rainwater storage in small tanks and large-scale artificial reservoirs, groundwater recharge, and also protection of water sources against pollution.
- The objective of water harvesting in India differs between urban and rural areas. Inurban areas, emphasis is put on increasing groundwater recharge and managing storm water. On the other hand, in rural areas securing water is more crucial. There the aim is to provide water for drinking and farming, especially for life- saving irrigation, and to increase groundwater recharge.

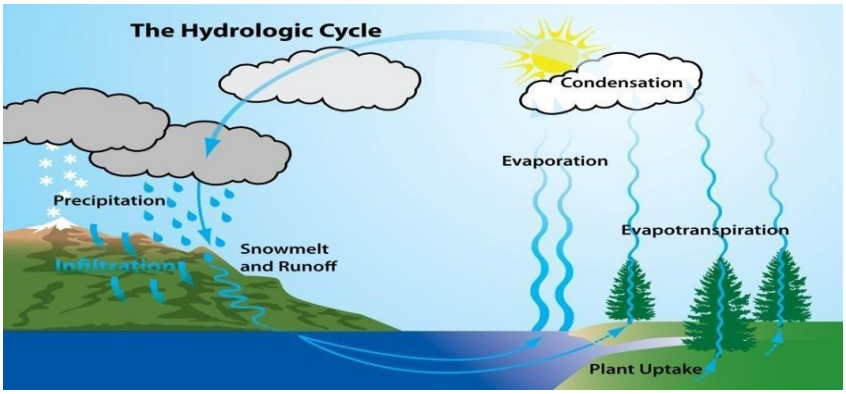


Fig: 14.5 Hydrological Cycle

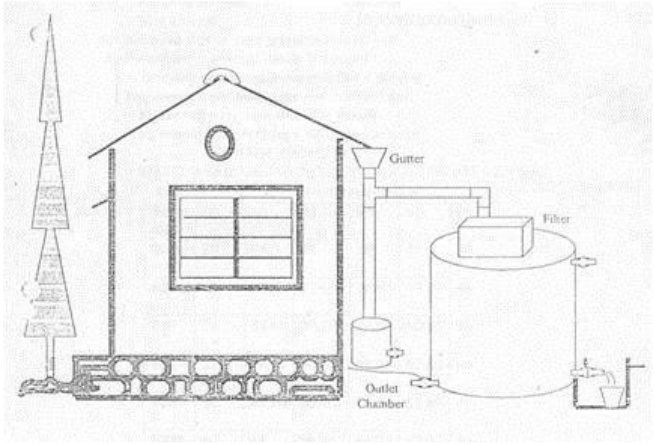


Fig: 14.6 Components of Rainwater harvesting

- The system mainly constitutes of following sub components:
  1. Catchments- The surface that receives rainfall directly is the catchment of rainwater harvesting system. It may be terrace, courtyard, or paved or unpaved open ground.
  2. Transportation- Rainwater from rooftop should be carried through down take water pipes or drains to harvesting system.
  3. Coarse Mesh- To provide passage for debris at the roof.
  4. Gutters- All around the edge of a sloping roof Channels are provided to collect and transport rainwater to the storage tank. Gutters need to be supported so they do not sag or fall off when loaded with water. The way in which gutters are fixed depends on the construction of the house; it is possible to fix iron or timber brackets into the walls, but for houses having wider eaves, some method of attachment to the rafters is necessary.
  5. Conduits-Conduits are pipelines or drains that carry rainwater from the catchment or rooftop area to the harvesting system.
  6. First Flush-First flush is a device used to flush off the water received in first shower. The first shower of rains needs to be flushed-off to avoid contaminating storable/rechargeable water by the probable contaminants of the atmosphere and the catchment roof.
  7. Filter-There is always some skepticism regarding Roof Top Rainwater harvesting since doubts are raised that rainwater may contaminate groundwater.

Chapter-15
Smart /or Sustainable features of Chapter 8 & 13 designs, Impact on society.
Benefit –
a)Immediately b) Within 1 year c) Long term (3-5 years) along with cost estimation.
If possible, List the sources of the funding available with the Village gram panchayat

Sr. No	Designs	Period	Amount Expenditure	Benefits
1	Solid Waste Management	Immediately	284000/-	➢ It will help in maintaining hygienic condition in village.
2	Animal Water Pond	7-8 Months	2,10,012/-	➢ Facility for the animal to drink water through cattel watering facility.
3	Government Dispensary	Within 1 year	4,71,152/-	➢ Improve a health conscious and reduce a chance of emergency death ratio.
4	Public Garden	Within 1 Year	7,12,792/-	➢ For entertainment purpose Provide refreshment to the village peoples. ➢ Children use playground to improve their physical fitness.
5	E-Suvidha Center	Within 1 Year	1,11,886/-	➢ Use of new technologies. ➢ Online education system
6	Waste Water Treatment	Immediately	81,900/-	➢ Reduce dieses Caused by water.
7	Public Library	Within 1 year	3943998/-	➢ Increase education facilities. ➢ Learn about modern new technology.
8	Krishi seva kendra	7-8 Months	7,89,337/-	➢ Improvement in crop productivity.

				➢ **Give guidance about latest technology to improve productivity and gov. benefit regarding agriculture.**
9	**Bio-Gas Plant**	**Long Term**	**47,066/-**	➢ **For methane gas to generate electricity.**
10	**Public Toilet**	**Within 1 year**	**5,57,585/-**	➢ **More access to toilet for urination and defecation.** ➢ **Use for wash hands use mirror for grooming.** ➢ **Decrease health issue and improve cleanliness in village.**
11	**Dairy**	**7-8 Months**	**7,77,744.45/-**	➢ **Improve a milk collection and income of village.**
12	**Sport Complex**	**Within 1 year**	**5,67,953.5/-**	➢ **For the students for playing the various sports game.**

Table 15.1: Design Benefits and Period

❖ List the sources of the funding available with the Village Authority:

1. Taluka Panchayat
2. Fund Collected by panchayat for development of village
3. State Government
4. Central Government
5. Donation of any private organizations
6. MLA(Member of Legislative Assembly) Grant
7. Jilla Panchayat Sadasya Grant
8. MGNREGA(Mahatma Gandhi National Rural Employment Act) Grant
9. ATVT(Apno Taluko Vibrant Taluko) Grant

Above are available sources are available with sarpanch and authority. other sources are available but not exact information are available.

Chapter-16
Survey By Interviewing With Talati And/Or Sarpanch

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

CHAPTER- 16

Sr.	Questions	Yes/ No	Remarks
1	What are the sources of income in village?	Yes	Farming, Diamond
2	What are the chances of employment in village?	Yes	" "
3	What are the special technical facilities in village?	No	-
4	Is any debt on village dwellers?	No	-
5	Are village people getting agricultural help?	Yes	other people
6	Is women health awareness Program organized in village?	Yes	-
7	Are women having opportunity to work and income?	Yes	Diamond work
8	Child girl education is appreciated in village?	Yes	in school
9	Facility of vaccination to child is available in village?	No	Go to Surm Away
10	Are village people aware about child vaccination and done to each and every child as per norms?	Yes	-
11	Women help line number information is provided to village people?	Yes	About 30% known
12	Is water scarcity in village? How many days per year?	No	-
13	Is village under any debt?	No	-
14	Is any serious issue due to debt from bank or any person happened in village?	No	-
15	Is any suicide like incident observed in village due to government policy, debt or threatening?	No	-
16	Is any death of patient occurred due to unavailability of medical facility in village?	No	-
17	How many disabled (physically challenged) is observed in village? Provide list with Male/female/girl/boy with age and type of disability and reason of disability.	Yes	-
18	Is village improvement is observed in comparative scenario from past to present?	Yes	Many chenges
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	giving the respect

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

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

સરપચશ્રી
માનવડ (હડમતીયા) ગ્રા. પચાયત
તા. પાલીતાણા

Chapter-17
Irrigation / Agriculture Activites And Agro Industry, Altenate Technics And Solution

- Technological change has been the major driving force for increasing agricultural productivity and promoting agriculture development in all OECD countries. In the past, the choice of technologies and their adoption was to increase production, productivity and farm incomes. Over many decades, policies for agriculture, trade, research and development, education, training and advice have been strong influences on the choice of technology, the level of agricultural production and farm practices..
- Agriculture is becoming more integrated in the ago-food chain and the global market, while environmental, food safety and quality, and animal welfare regulations are also increasingly impacting on the sector. It is faced with new challenges to meet growing demands for food, to be internationally competitive and to produce agricultural products of high quality. At the same time, it must meet sustainability goals in the context of on-going agricultural policy reform, further trade liberalisation and the implementation of multilateral environmental agreements as agreed to by OECD Ministers.
- Today, farmers, advisors and policy makers are faced with complex choices. They are faced with a wide range of technologies that are either available or under development; they must deal with the uncertainties of both the effects these new technologies will have throughout the agri-food chain and the impact that a whole range of policies will have on the sustainability of farming systems. In addition, there is increasing pressure on agricultural research and advisory budgets that must be accommodated.
- The focus of the workshop was the adoption of technologies that have the potential to contribute to sustainable farming systems. Technology adoption, however, is a broad concept. It is affected by the development, dissemination and application at the farm level of existing and new biological, chemical and mechanical techniques, all of which are encompassed in farm capital and other inputs; it is also affected by education, training, advice and information which form the basis of farmers' knowledge. It also includes technologies and practices in the whole agri-food sector that have an impact at the farm level. Finally, it should be borne in mind that most of these new technologies originate outside the farm sector.
- The concept of a sustainable farming system refers to the capacity of agriculture over time to contribute to overall welfare by providing sufficient food and other goods and services in ways that are economically efficient and profitable, socially responsible, while also improving environmental quality. It is a concept that can have different implications in terms of appropriate technologies whether it is viewed at the farm level, at the agri-food sector level, or in the context of the overall domestic or global economy.
- One of the key policy conclusions of the workshop was that technologies for sustainable agriculture cover the whole spectrum of farming systems. All farming systems, from intensive conventional farming to organic farming, have the potential to be locally sustainable. Whether they are in practice depends on farmers adopting the appropriate

technology and management practices in the specific ago-ecological environment within the right policy framework. There is no unique system that can be identified as sustainable, and no single path to sustainability. There can be a co-existence of more-intensive farming system with more-extensive systems that overall provide environmental benefits, while meeting demands for food. However, it is important to recognise that most sustainable farming systems-even extensive systems-require a high level of farmer skills and management to operate.

- Drones with hyperspectral, multispectral, or thermal sensors can identify which parts of a field are dry or need improvements. Additionally, once the crop is growing, drones allow the calculation of the vegetation index, which describes the relative density and health of the crop, and show the heat signature, the amount of energy or heat the crop emits.
- The agriculture industry is using drones to increase watering efficiency and to detect possible pooling or leaks in irrigation. Drones paired with thermal cameras are ideal in this industry as they are able to detect and see from above what humans cannot from the ground. As the need for more efficient water usage increases having a drone that is able to track and monitor irrigation is essential. With thermal and conventional cameras, drones are able to spot water pooling. With larger farms, having the ability to have a bird's eye view of what is being watered, and at what time, allows farmers to more effectively use water resources.
- The use of drones in the agriculture industry is steadily growing as part of an effective approach to sustainable agricultural management that allows agronomists, agricultural engineers, and farmers to help streamline their operations, using robust data analytics to gain effective insights into their crops. Crop monitoring, for example, is made easier by using drone data to accurately plan and make ongoing improvements, such as the use of ditches and evolving fertilizer applications. Products can be accurately traced from farm to fork using GPS locations for every point in the journey, rather than more traditional time and labor-intensive data collection.

Fig 17.1 New Irrigation Technology

Chapter-18
Social Activities – Any Activates Planned By Students

- In Manavad village we the people gave information to the villagers on how to go through a difficult situation like Corona.
- We told the villagers how to take care of them in Corona.
- We guided the villagers to drink boiled water and organized it.
- We distributed free methylene blue to the villagers. And gave information on when and how to take Methylene Blue.

Fig 18.1: Social Activities By Student

Chapter-19
SAGY Questionnaire Survey form with the Sarpanch Signature (Scanned copy attachment in the soft copy report and Original copy in hardbound

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Manvad Gram Panchayat: Manvad Ward No. -

Block: Palitana District: Bhavnagar

State: GUJARAT L S Constituency: Bhavnagar

1. Family Identity and Size

Name of Head of Household	KANJI BHAI Kajavdra							Male/ Female	M
SECC Survey ID:		Family Size	5	Over 18	5	6 to 18	-	Under 6	-

2. Category & Entitlement Details (Tick as appropriate)

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

2. Adults (above 18 years)

Name	Age	Sex M/F / O	Disability Status Y/N	Marital Status[3]	Education Status[4]	Adhaar Card (Y/ N)	Bank A/C (Y/N)	Social Security Pension[5]
Shamu ben	60	F	N	2	3	Y	Y	0
Prashant bhai	30	M	N	2	8	Y	Y	0
Rinkal ben	29	F	N	2	6	Y	Y	0
Arun bhai	32	M	N	2	9	Y	Y	0

3. Children from 6 years and up to 18 years

Name	Age	Sex M/F/O	Disability Y/N	Marital Code*	Level of Education: Code#	Going to School /College (Y/N)	Current Class	Computer Literate Y/N

4. Children below 6 years

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

[1] Scheduled Caste 1, Scheduled Tribe 2, Other Backward Castes 3, Other 4

[2] Enter the BPL Survey round being used in the Gram Panchayat for identification of BPL Families (e.g. 1997/2002/2011)

[3] *Marital Status: Not Married – 1, Married – 2, Widowed – 3, Divorced/Separated – 4*

[4] *Level of Education: Not Literate – 01, Literate – 02, Completed Class 5 - 03, Class 8th – 04, Class 10th-05, Class 12th-06, ITI Diploma-07, Graduate-08, Post Graduate/Professional – 09 (write the highest level applicable)*

[5] No Pension – 0, Old Age Pension – 1, Widow Pension – 2, Disability Pension – 3, Other Pension – 4 (mention)

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

5. Hand washing

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

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

7. Do members take Regular Physical Exercise

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

8. Consumption of Tobacco

	Smoking	Chewing
Adults	N	N
Children	N	N

9. House & Homestead Data

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

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

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

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	13	2. Cultivable Area	13
3. Irrigated Area		4. Uncultivable Area	

13. Principal Occupations in the Household

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

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

15. Agriculture Inputs

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

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

Name	Unit	Quantity
Cotton	-	-
Wheat	-	-
Bajari	-	-

17. Livestock Numbers

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

18. What games do Children Play
↳ School activity games like kho-kho, kabaddi, etc.

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

Schedule Filled By: Satyam, Prince
Principal Respondent: Bahadurbhai
Date of Survey:

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

I. Basic Information

a. Gram Panchayat: Manvad

b. Block: Palitana

c. District: Bhavnagar

d. State: Gujarat

e. Lok Sabha Constituency: Bhavnagar

f. Number of Wards in the Gram Panchayat: -

g. Number of Villages in the Gram Panchayat: 1

h. Names of Villages: Manvad (Hadmatiya)

Demographic Information

Number of Households 183 Total Population 1055 Male 536 Female 519

SC HHs 92 ST HHs 0 OBC HHs 10 Other HHs 81

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	N	Palitana 3 km
b.	Nearest Primary Health Centre (PHC)	N	Palitana 3 km
c.	Nearest Community Health Centre (CHC)	N	Palitana 3 km
d.	Nearest Post Office	N	Vadiya 2 km
e.	Nearest Bank Branch (Any)	N	Palitana 3 km
f.	Nearest Bank with CBS Facility	N	Palitana 3 km
g.	Nearest ATM	N	Palitana 3 km
h.	Nearest Primary School	Y	-
i.	Nearest Middle School	Y	-
j.	Nearest Secondary School	Y	-
k.	Nearest Higher Secondary School / +2 College	N	Palitana 3 km
l.	Nearest Graduate College	N	Palitana 3 km
m	Nearest ITI / Polytechnic Centre	N	Palitana 3 km
n	Kisan Seva Kendra	N	Palitana 3 km

1

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
o	Agriculture Credit Cooperative Society	N	Vadiya 2Km
p	Nearest Agro Service Centre	N	Palitana 3Km
p	MSP based Government Procurement Centre	N	-
q	Milk Cooperative /Collection Centre	N	Palitana 3Km
r	Veterinary Care Centre	N	-
s	Ayurveda Centre	N	Palitana 3Km
t	E – Seva Kendra	N	Palitana 3Km
u	Bus Stop	Y	-
v	Railway Station	N	Palitana 3Km
w	Library	N	Palitana 3Km
x	Common Service Centre	N	Palitana 3Km

IV. Sports Facilities in the Gram Panchayat

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

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 1

b. Number of villages without Angan Wadi Centres -

Names of such villages: –

c. Schools (Number)

Primary Private: – Primary Govt.: 1

Middle Private: - Middle Govt.: 1

Secondary Private: – Secondary Govt.: 1

Higher Secondary Private: – Higher Secondary Govt: 1

VI. Public Distribution System

	Item	Private Contractor	Women's SHG	Gram Panchayat	Cooperative	Other (Mention)	Location in GP (mention Location)	If outside GP, Location & distance from GP HQrs)
a.	Cereal (Rice/ Wheat/ Millets)	Shop in Village		Ration Government				Vadiya (Government) 2Km
b.	Kerosene			Ration Government				Vadiya (Government) 2Km
c.	Other (mention)							

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

VII. Coverage of Villages under different Facilities & Services

	Parameter	Villages Status[1]	Names of Villages Covered	Names of Villages not Covered
a.	Piped Water Supply Coverage to Villages	Covered fully Not Covered	Manvad	–
b.	Hand Pump Coverage in Villages:	Covered fully Not Covered	Manvad (66 Hand pumps)	–
c.	Coverage under Covered Drains:	Covered fully Not Covered	Manvad	–
d.	Coverage under Open Drains:	Covered Not Covered	–	–
e.	Villages with Household Electricity Connection (Numbers)	Connected fully Not Connected	Manvad (100% household connection with electricity)	–

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	703.26	d.	Pasture / Grazing Land	-	g.	Check Dam	1
b.	Irrigated Land	703.26	e.	Forests/ Plantations	1	h.	Wells/Bore Wells	1
c.	Un-irrigated Land	-	f.	Other Common Land	3	i	Tanks /Ponds	3

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

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

IX. Parameters relating to Households & Institutions

		Number
a)	Number of eligible Households for pension (old age, widow, disability)	3
b)	Number of Households receiving pension (old age, widow, disability)	3
c)	Number of eligible Households who are not receiving pension	-
d)	Number of Households eligible for Ration Card	183
e)	Number of eligible HHs having ration cards	183
f)	Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	0
g)	Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	0
h)	Number of active Job Card holders under MGNREGA	7
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	70
l)	Number of landless households	50
m)	Number of IAY beneficiaries	0
n)	Number of FRA[2] beneficiaries	0
o)	umber of Community Sanitary Complexes	0
p)	Number of Households headed by single women	1
q)	Number of Households headed by physically handicapped persons	0
r)	Total number of Persons with Disability in the village	0
s)	Number of SHGs	0
t)	Number of active SHGs	0
u)	Number of SHG Federations	0
v)	Number of Youth Clubs	1
w)	Number of Bharat Nirman Volunteers	0

Name and Signature of Surveyor and Respondent'

Satyam Parmar Surveyor	ગ્રામપંચાયત સરપંચશ્રી માનવડ (હડમતીયા) ગ્રા. પંચાયત તા. પાલીતાણા PRI Respondent (Preferably Gram Panchayat Chairperson)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	25/02/2021 Date of Survey

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

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: Manvad

b. Ward Number: -

c. Gram Panchayat: Manvad

d. Block: Palitana

e. District: Bhavnagar

f. State: Gujarat

g. Lok Sabha Constituency: Bhavnagar

h. Number of Habitations / Hamlets in the Gram Panchayat: 3

i. Names of Habitations / Hamlets: Diamond coarkes, Labours, farmes

Demographic Information

Number of Households 183 Total Population 1055 Male 536 Female 519

SC HHs 92 ST HHs 0 OBC HHs 10 Other HHs 81

II. Access to Infrastructure/Amenities etc.

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
a.	Nearest Primary School	Y	-
b.	Nearest Middle School	Y	-
c.	Nearest Secondary School	Y	-
d.	Kisan Seva Kendra	N	Palitana 3Km
e.	Milk Cooperative /Collection Centre	N	Palitana 3Km
g.	Health Sub Centre	N	Palitana 3Km
h.	Bank	N	Palitana 3Km
i.	ATM	N	Palitana 3Km
j.	Bus Stop	Y	-
k.	Railway Station	N	Palitana 3Km

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

1

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
l	Library	N	Palitana 3Km
m	Common Service Centre	N	Palitana 3Km
n	Veterinary Care Centre	N	Palitana 3Km

ii. Road Connectivity

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

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

iii. Drinking Water Facilities

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

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

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

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

iv. Coverage of Habitations under Waste Management System

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

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

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

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

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

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

v. Coverage of Habitations under Electrification

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

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

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

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

vi. Sports Facilities in the Village

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

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

vii. Education, ICDS

a. Number of Anganwadi Centres: 1

c. Schools (Number)

Primary Private: - Primary Govt.: 1

Middle Private: - Middle Govt.: 1

Secondary Private: - Secondary Govt.: 1

Higher Secondary Private: - Higher Secondary Govt: 1

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	703.26	d.	Pasture / Grazing Land	–	g.	Check Dam	1
b.	Irrigated Land	–	e.	Forests/ Plnatations	–	h.	Wells/Bore Wells	2
c.	Un-irrigated Land	–	f.	Other Common Land	–	I	Tanks /Ponds	3

ix. Entitlement Related Parameters		
1	Number of active Job Card holders under MGNREGA	57
2	Number of active Job Card holders who have completed 100 days of work	–
3	Number of shops selling alcohol	–
4	Number of BPL families	
5	Number of landless households	15
6	Number of IAY beneficiaries	–
7	Number of FRA beneficiaries	–
8	umber of common sanitation complexes	–
9	Number of SHGs	–
10	Number of active SHGs	–
11	Existence of SHG Federation in the Village (Yes / No)	–
12	Number of Youth Clubs	2
13	Number of Bharat Nirman Volunteers	–

Name and Signature of Surveyor and Respondent'

Satyam Prince	ગામપંચાયત સરપચશ્રી માનવડ (હડમતીયા) ગ્રા. પંચાયત તા પાલીતાણા		25/02/2021
Surveyor	PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey

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

Developement Scenerio of Manvad Village, Palitana, Bhavnagar

From: Nirant Patel (p.nirant@yahoo.com)

To: tdopalitana.dp@gmail.com

Cc: rurban@gtu.edu.in

Date: Wednesday, 23 June, 2021, 11:48 am IST

Respected Sir/Madam

I **Nirant J. Patel**, Lecturer in Tapi diploma engineering college under my guidance **Mr. SHIHORA SATYAM G. & Mr. KEVADIYA PRINCE S.** of **Tapi diploma engineering college, Surat** affiliated to Gujarat technological university & Accredited by National board of Accreditation. GTU is allotted important and prestigious project of **Vishwakarma Yojna (Part-VIII)** by the Government of Gujarat, in which the students would study the identified villages and make recommendation to achieve integrated and comprehensive development through Technological options.
As a part of Vishwakarma Yojana's guidelines, we have discussed and informed to all the respected officers about our project in which we will shortly notify about **Manvad village** of Bhavnagar district, our design work for them which are as below:

Village: Manvad

Population: 1055 (As per Census 2011)

Sr. No	Designs	Period	Amount Expenditure	Benefits
1	Solid Waste Management	Immediately	284000/-	➢ It will help in maintaining hygienic condition in village.
2	Animal Water Pond	7-8 Months	2,10,012/-	➢ Facility for the animal to drink water through cattle watering facility.
3	Government Dispensary	Within 1 year	4,71,152/-	➢ Improve a health conscious and reduce a chance of emergency death ratio.
4	Public Garden	Within 1 Year	7,12,792/-	➢ For entertainment purpose provide refreshment to the village peoples. ➢ Children use playground to improve their physical fitness.
5	E- Suvidha Center	Within 1 Year	1,11,886/-	➢ Use of new technologies. ➢ Online education system
6	Waste Water Treatment	Immediately	81,900/-	➢ Reduce diseases Caused by water.
7	Public Library	Within 1 year	3943998/-	➢ Increase education facilities. ➢ Learn about modern new technology.
8	Krishi seva kendra	7-8 Months	7,89,337/-	➢ Improvement in crop productivity.

				➢ Give guidance about latest technology to improve productivity and gov. benefit regarding agriculture.
9	Bio-Gas Plant	Long Term	47,066/-	➢ For methane gas to generate electricity.
10	Public Toilet	Within 1 year	5,57,585/-	➢ More access to toilet for urination and defecation. ➢ Use for wash hands use mirror for grooming. ➢ Decrease health issue and improve cleanliness in village.
11	Dairy	7-8 Months	7,77,744.45/-	➢ Improve a milk collection and income of village.
12	Sport Complex	Within 1 year	5,67,953.5/-	➢ For the students for playing the various sports game.

Please find herewith attached,

Detailed Project Report of **Manvad Village**

Thanking you,
Nirant J. Patel
Lecturer in Civil engineering Department
Tapi diploma engineering college, Surat
Mo. No.- 8866351662

Vishwakarma Yojana PHASE VIII-Bhavnagar-MANVAD.pdf
22.5MB

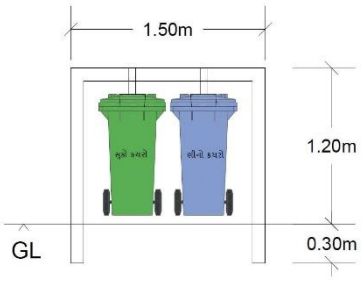
Chapter-21
Comprehensive report for the entire village

- Villages and small towns play an important role as a "rural incubator" in the process of rural development and provide services in areas of marketing, providing agricultural inputs such as fertilizer and agricultural machinery, municipal services such as educational facilities, health care and so on for their rural domains.
- In Vishwakarma Phase-VIII, we selected Ena Village as an Ideal Village. It is 34 km away from Surat City. We visited Ena village. Roads of Ena village is Pucca and vehicle can pass easily. Panchayat building, Post Office, Public Health Center is in Good Condition. Gate, Bio Gas Plant is available. Streets and Roads are very clean in Ena Village. So, we decided to make design of Bio Gas Plant and Public Toilet to clean the village and to maintain healthy life of villagers.
- After visiting of Ideal Village Baben and Smart Village Ena, we get the idea and scenario of a model village. Up till now in our mind we think the meaning of 'village' as low class people, leaving with ordinary life and with old mindset and old technologies. But now a day scenario is totally changed, Indian villages growing out now. With smart cities, Smart Village concept is also introduced and we are proudly say that, we are one of its part. Because through Vishwakarma Yojana we connect with the rural development concepts.
- As from Idea village visit we saw that all the success of village depend on the Sarpanch of village. A sarpanch is the only person who can increase the level of village in all aspects. There are so many Govt. scheme for villages and for villagers, but the Sarpanch is the only a Link between this two phase. With some little awareness and group work can achieve anything, which Baben village has proved.
- Likewise Ena is also a village which is role model of Award winning gram panchayats.It is known for its 100% cleanliness. It is a Smart Village of Gujarat.
- After visiting this two villages, we visit our Manvad Village. We saw the huge difference between the local bodies (Gram Panchayat) and villagers. Major issue for rural development particularly in India is the Political issue. All are working for themselves. They only want to develop them self instead of village. Villages need long term planning proposals in terms of master plan.
- From our study we conclude that providing a facilities is not only the solution of rural development. All villages in Gujarat are now become very well compare to past. But we should focus on improvement on existing facilities. Villagers and also gram panchayats are not focusing on the existing facilities. Due to this villagers try to discarding for its use. Also villagers are not aware about new technologies, which make them a better one. We should try to aware them.

❖ **Our Designs:-**

1. **Solid Waste Management**

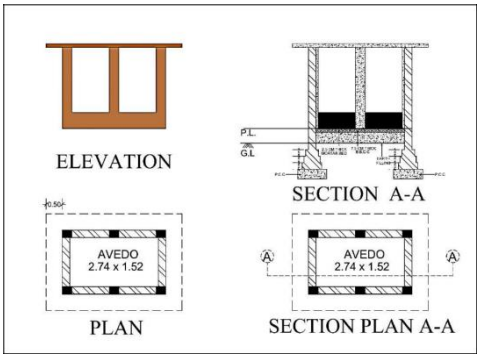
   Estimate Cost:-2,84,000/-



---

2. **Animal Water pond**

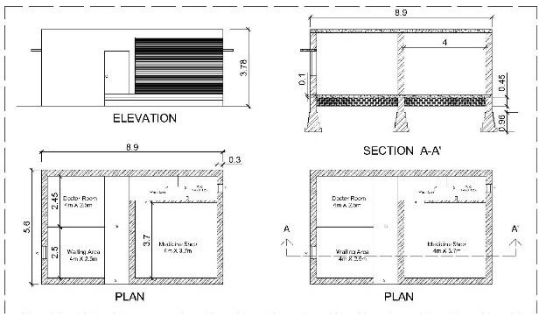
   Estimate Cost:-2,10,012/-



---

3. **Government Dispensary**

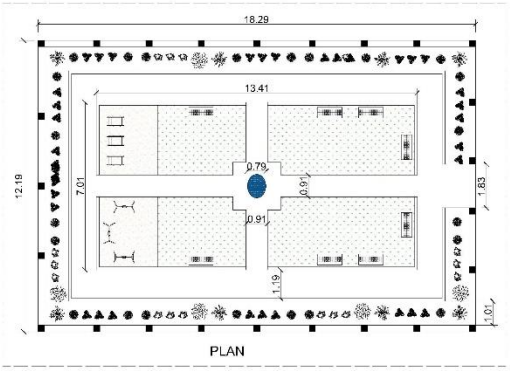
   Estimate Cost:-4,71,152/-



---

4. **Public Garden**

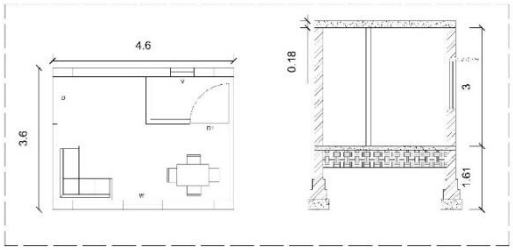
   Estimate Cost:-7,12,792/-



---

5. **E-Suvidha center**

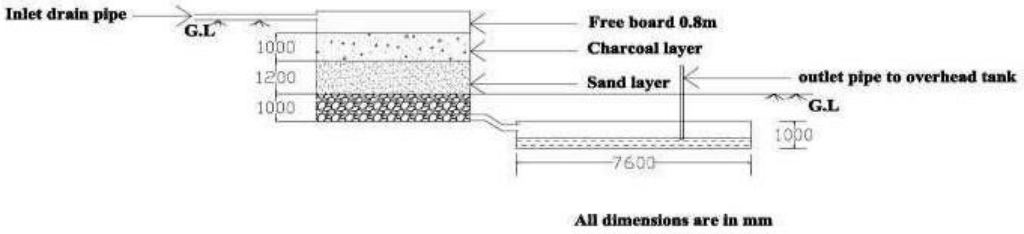
Estimate Cost:-1,11,886/-



---

6. **Waste water Treatment**

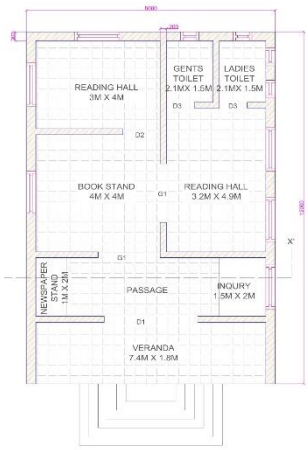
Estimate Cost:-81,900/-



---

7. **Public Library**

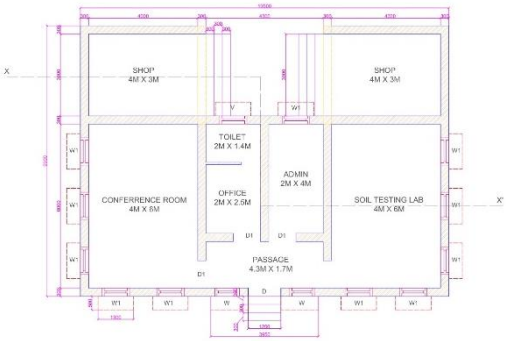
Estimate Cost:-39,43,998/-



---

8. **Krishi Seva Kendra**

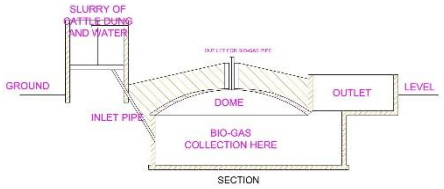
Estimate Cost:-7,89,337/-



---

9. Bio-Gas Plant

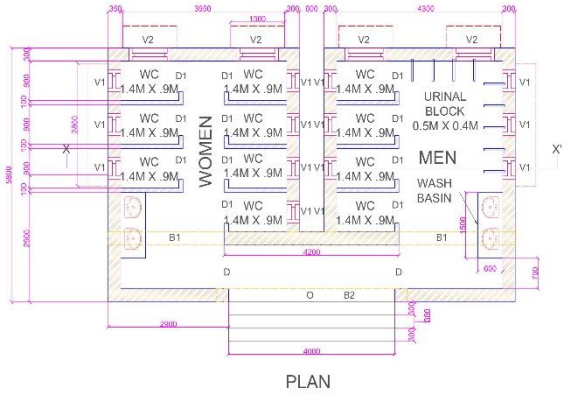
Estimate Cost:-47,066/-



---

10. Public Toilet

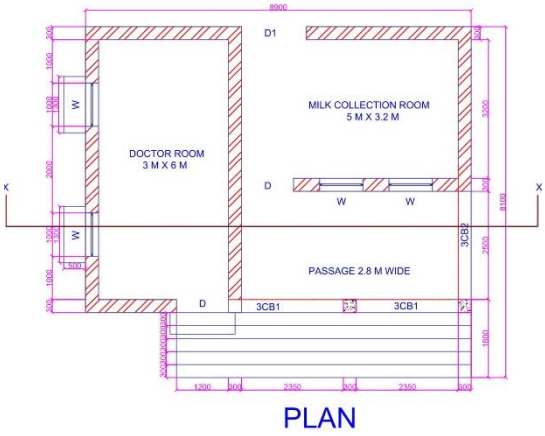
Estimate Cost:-5,57,585/-



---

11. Dairy

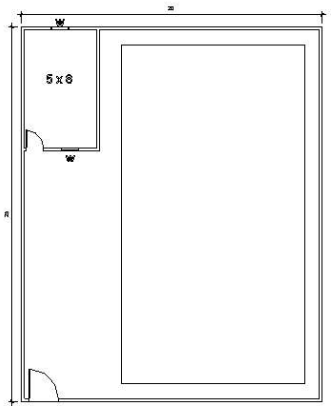
Estimate Cost:-7,77,744.45/-



---

12. Sport Complex

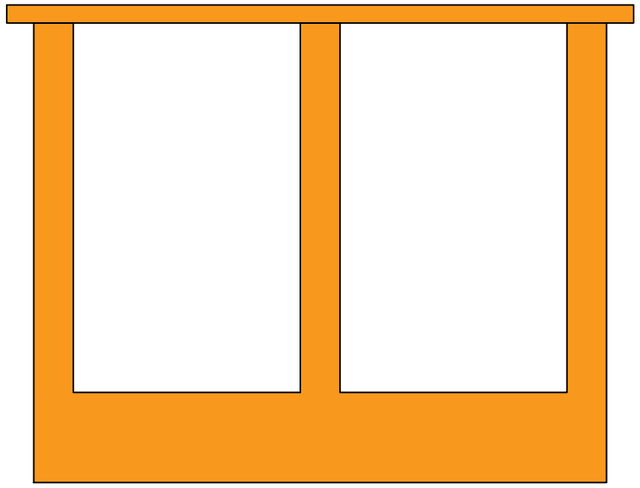
Estimate Cost:-5,67,953.5/-



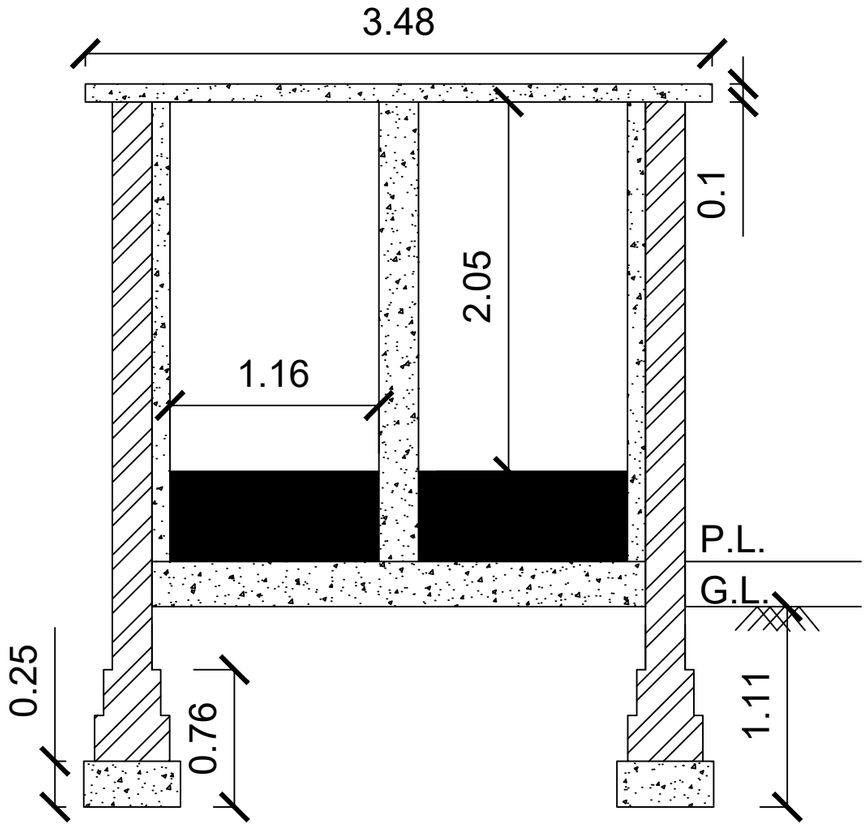
Chapter-22
Entire Village video of 2 minutes (Film)

https://www.youtube.com/watch?v=1l9owikDdpc

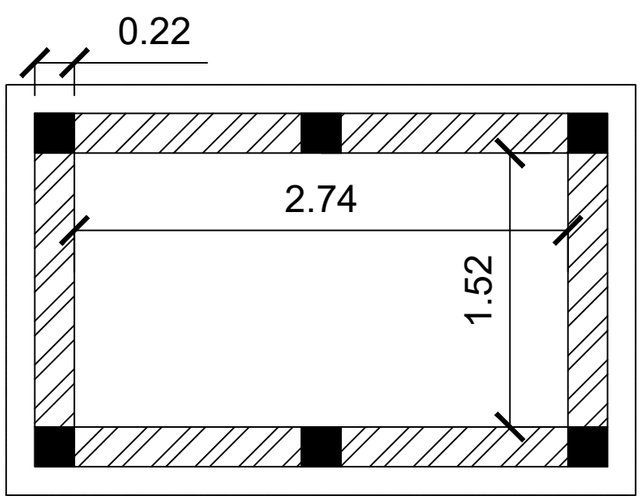
ANIMAL WATER POND



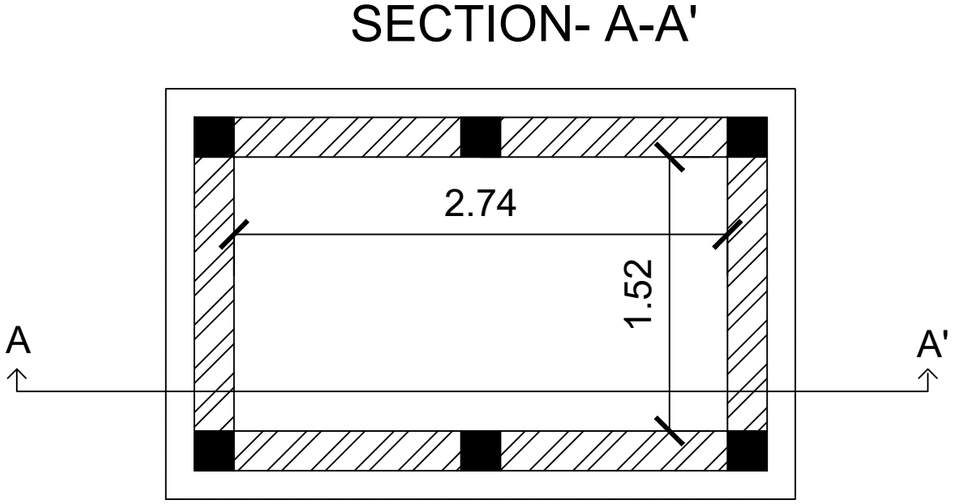
ELEVATION



SECTION- A-A'



PLAN



NOTES

1. All the dimensions are in meter.
2. The area of Avado is 2.74 x 1.52 m.
3. Total Numbers of bricks are 3,400 nos. use in this Avado.
4. 2.5 cm mortar bed is used.
5. 7.5 cm BBCC is used above earth filling.
6. Earth filling thickness is about 0.6 m.
7. The step footing below the ground level is about 0.9 m.
8. Column Size is 0.5m x 0.3m.
9. Beam Size is 0.3m x 0.3m

VISHWAKARMA YOJANA PHASE 8

VILLAGE :- MANVAD (HADMATIYA)

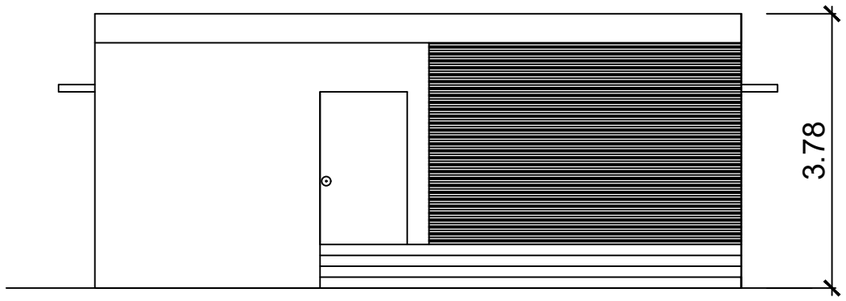
STRUCTURE :- ANIMAL WATER POND

TAPI DIPLOMA ENGINEERING COLLEGE, SURAT

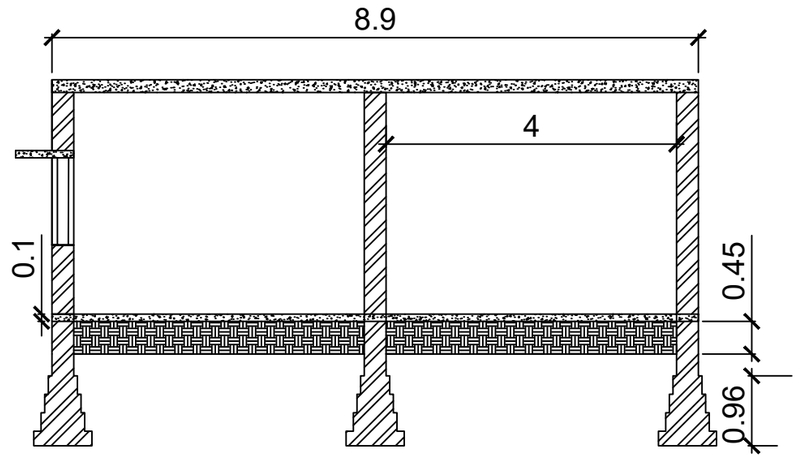
NODAL OFFICER :- MR. NIRANT PATEL

STUDENTS NAME :- 1. SHIHORA SATYAM
2. KEVADIYA PRINCE

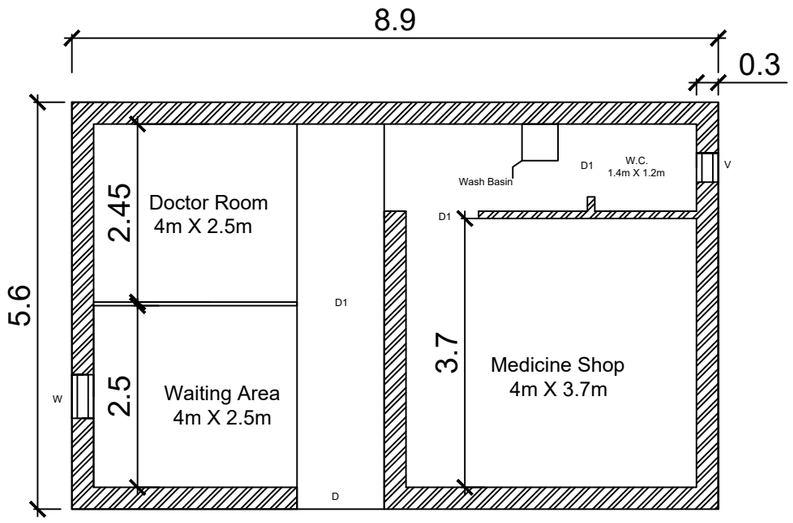
GOVERNMENT DISPENSARY



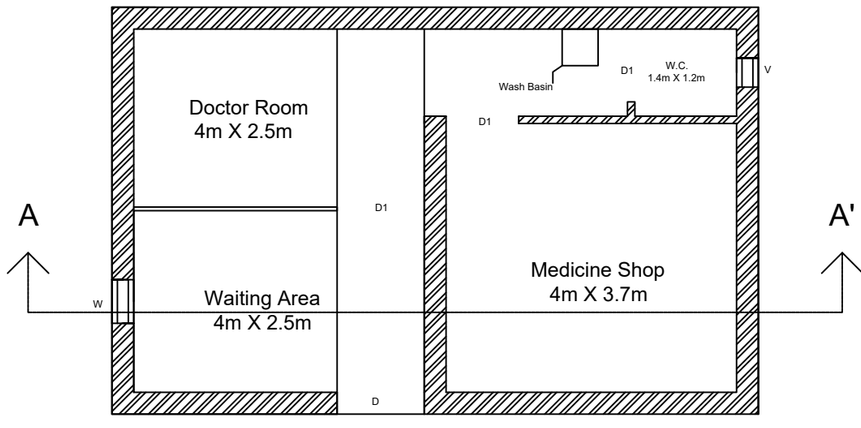
ELEVATION



SECTION A-A'



PLAN



PLAN

NOTES

1. ALL THE DIMENSIONS ARE IN METER.
2. HEIGHT OF PARTITION WALL IS 2.1 M.
3. HEIGHT OF WASHBASIN IS .7 M.
4. PROVIDE WEATHERSHED AND CANTILEVER SLAB HAVING 05 M.PROJECTED FROM THE FACE OF WALL ON OUTER SIDE OF OPENING RESTED EACH SIDE OF OPENING 0.15 M WITH 8T @300 MM C/C IN BOTH WAYS AT TOP HAVING OVERALL THICKNESS OF 125 MM (CLEAR COVER 20MM) WITH 510 MM ANCHORAGE IN LINTEL.
5. OVERALL THICKNESS OF SLAB IS 175MM.
6. BEAM IS PROJECTED 0.3 M INSIDE A WALL.

SCHEDULE OF OPENING	
NAME	SIZE
D	1.2 M X 2.1 M
D1	1 M X 2.1 M
W	1 M X 1.2 M
V	0.5 M X 0.5 M

VISHWAKARMA YOJANA PHASE 8

VILLAGE :- MANVAD (HADMATIYA)

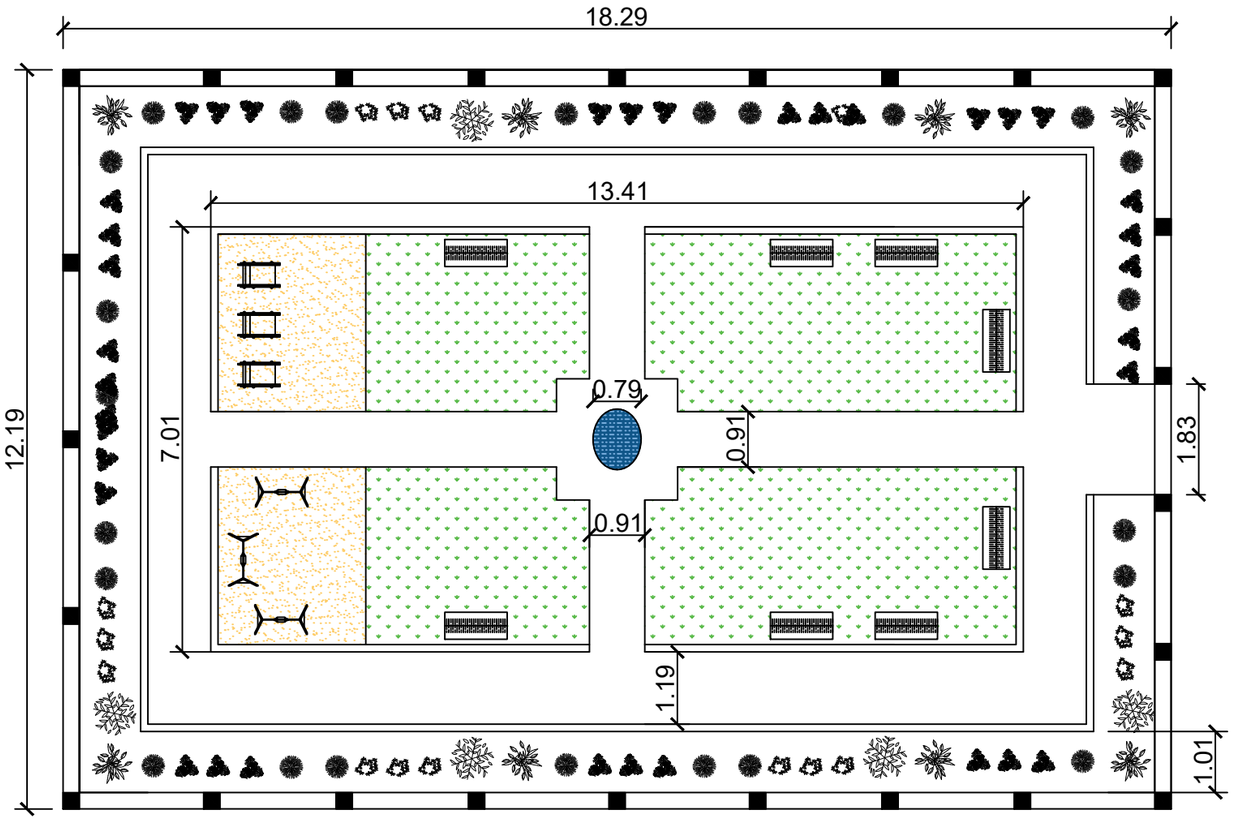
STRUCTURE :- GOVERNMENT DISPENSARY

TAPI DIPLOMA ENGINEERING COLLEGE, SURAT

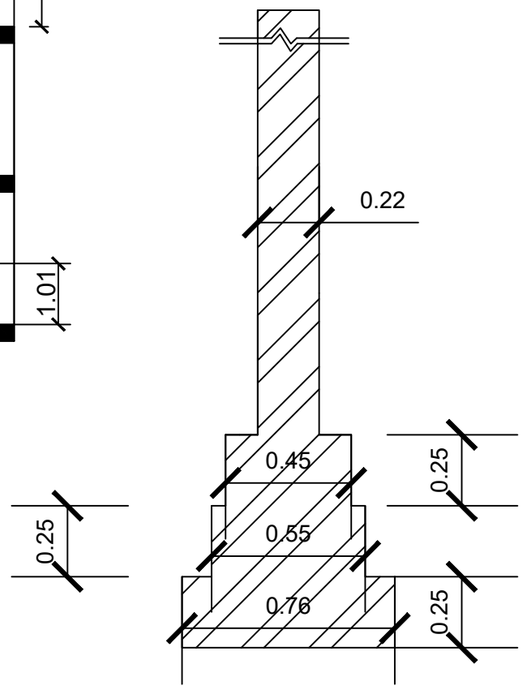
NODAL OFFICER :- MR. NIRANT PATEL

STUDENTS NAME :- 1. SHIHORA SATYAM
2. KEVADIYA PRINCE

PUBLIC GARDEN



PLAN



SECTION OF WALL

NOTES

1. DO NOT SCALE THE DRG. ONLY WRITTEN DIMENSION SHALL BE FOLLOWED.
2. UNLESS OTHERWISE SPECIFIED ALL THE CONCRETE SHOULD BE MIXED IN PROPORTION OF M-20 GRADE
3. ALL LOAD BEARING BRICK MASONARY WALL IN CEMENT MORTAR IN PROPORTION OF 1:6.

VISHWAKARMA YOJANA PHASE 8

VILLAGE :- MANVAD (HADMATIYA)

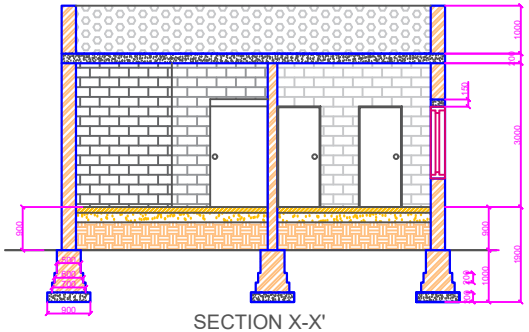
STRUCTURE :- PUBLIC GARDEN

TAPI DIPLOMA ENGINEERING COLLEGE, SURAT

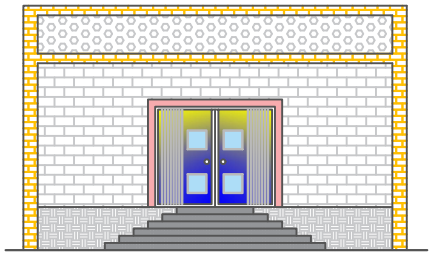
NODAL OFFICER :- MR. NIRANT PATEL

STUDENTS NAME :- 1. SHIHORA SATYAM
2. KEVADIYA PRINCE

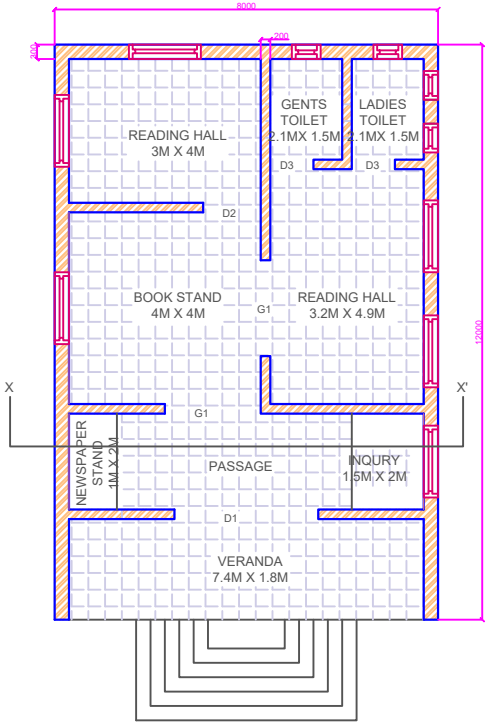
PUBLIC LIBRARY



SECTION X-X'



ELEVATION



PLAN

SCHEDULE			
DOOR	1	D1	3M X 2.1M
DOOR	1	D2	1.2M X 2.1M
DOOR	2	D3	0.9M X 2.1M
GAP	2	G	2M X 2.1M
WINDOW	6	W	1.5M X 1.5M
VENTILATION	4	V	.6M X .6M

NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS AND UNTILL STATED.
2. HEIGHT OF PARTITION IS 2.1M.
3. TAKE LINTEL 100MM THICK AND 150 MM PROJECTED INSIDE OF WALL.
4. NOT TO IN SPECIFIC SCALE.

VISHWAKARMA YOJANA PHASE 8

VILLAGE :- MANVAD (HADMATIYA)

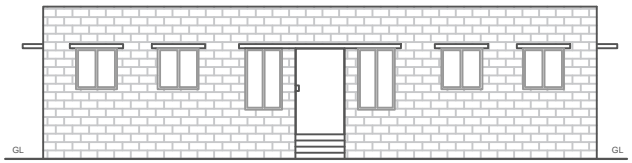
STRUCTURE :- ANIMAL WATER POND

TAPI DIPLOMA ENGINEERING COLLEGE, SURAT

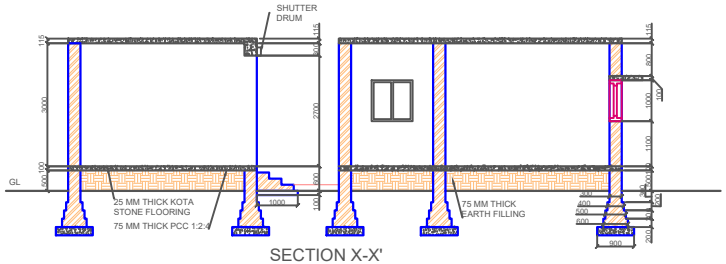
NODAL OFFICER :- MR. NIRANT PATEL

STUDENTS NAME :- 1. SHIHORA SATYAM
2. KEVADIYA PRINCE

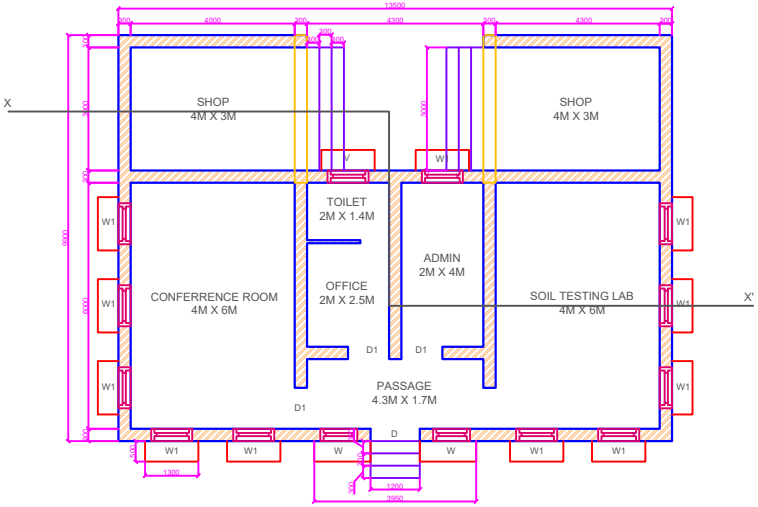
KRISHI SEVA KENDRA



ELEVATION



SECTION X-X'



PLAN

NAME	SIZE
D	1.2M X 2.1M
D1	1M X 2.1M
D2	0.7M X 2.1M
S	3M X 2.56M
W	0.9M X 1.5M
W1	1M X 1M
V	1M X 0.5M

NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS AND UNTILL STATED.
2. HEIGHT OF PARTITION IS 2.1M.
3. TAKE LINTEL 100MM THICK AND 150 MM PROJECTED INSIDE OF WALL.
4. PROVIDE WEATHERSHADE HAVING 0.5M PROJECTED FROM THE FACE OF WALL ON OUTER SIDE OF OPENING RESTED EACH SIDE OF OPENING 0.15M WITH 8T@300 MM C/C IN BOTH WAYS AT TOP HAVING OVERALL THICKNESS OF 125 MM (CLEAR COVER 20 MM) WITH 510 MM ANCHORAGE IN LINTEL.
5. CLEAR COVER - 20 MM (SLAB), 25 MM (BEAM).
6. GRADE OF CONC. = M25, GRADE OF STEEL = Fe415.

VISHWAKARMA YOJANA PHASE 8

VILLAGE :- MANVAD (HADMATIYA)

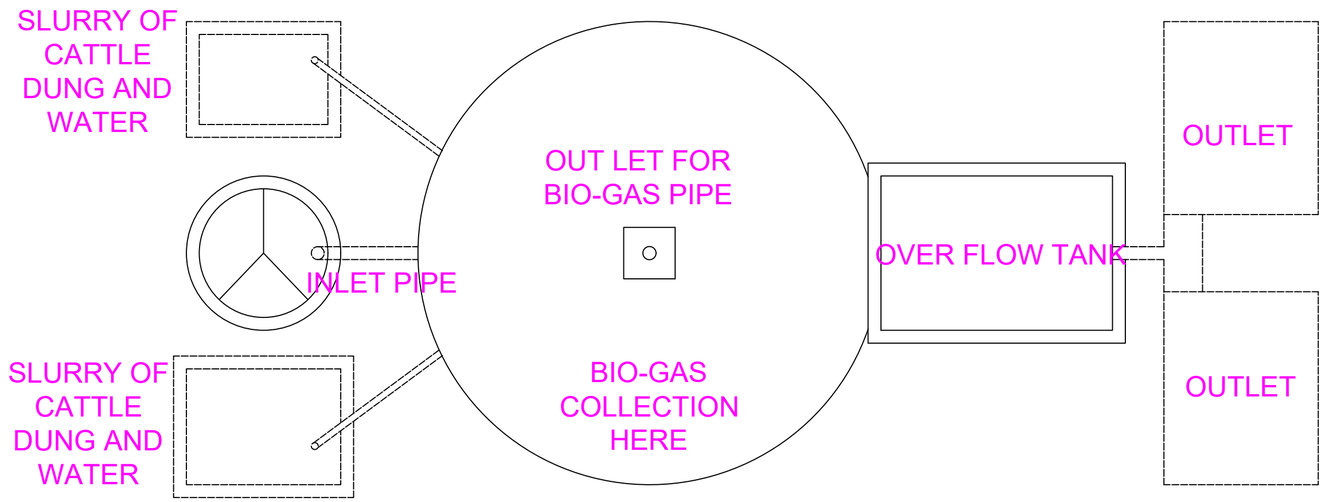
STRUCTURE :- ANIMAL WATER POND

TAPI DIPLOMA ENGINEERING COLLEGE, SURAT

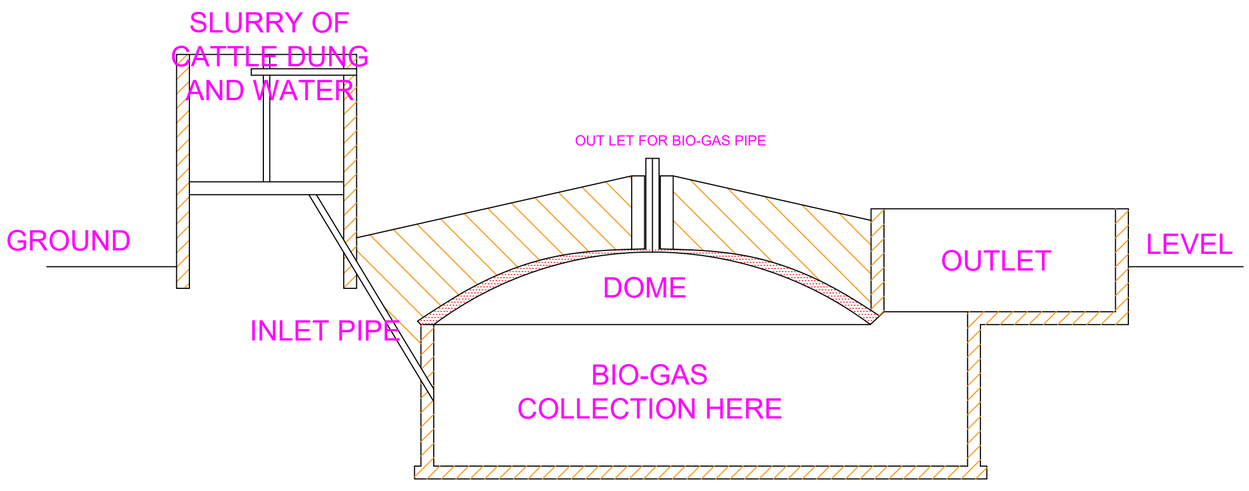
NODAL OFFICER :- MR. NIRANT PATEL

STUDENTS NAME :- 1. SHIHORA SATYAM
2. KEVADIYA PRINCE

BIO GAS PLANT



PLAN



SECTION

NOTES

1. ALL THE DIMENSIONS ARE IN METER UNLESS STATED OTHERWISE.
2. DRAWING SHOULD BE READ NOT TO BE SCALE.
3. DESIGN IS PREPARED ONLY FOR EDUCATION PURPOSE. CORRECTNESS OF ALL DATA MUST BE CHECK BEFORE USE.

VISHWAKARMA YOJANA PHASE 8

VILLAGE :- MANVAD (HADMATIYA)

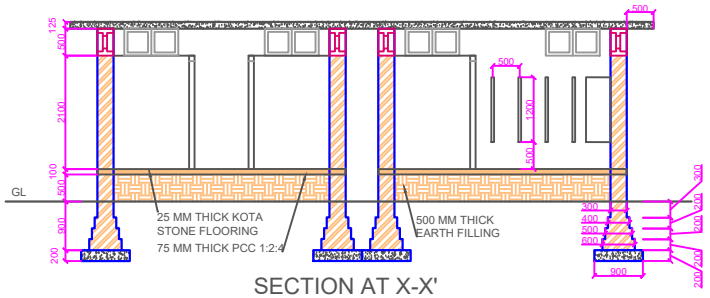
STRUCTURE :- GOVERNMENT DISPENSARY

TAPI DIPLOMA ENGINEERING COLLEGE, SURAT

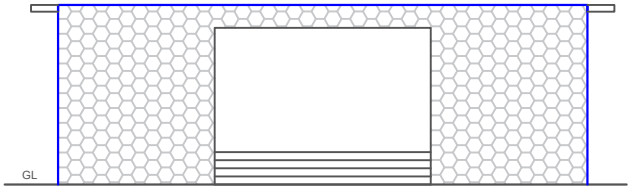
NODAL OFFICER :- MR. NIRANT PATEL

STUDENTS NAME :- 1. SHIHORA SATYAM
2. KEVADIYA PRINCE

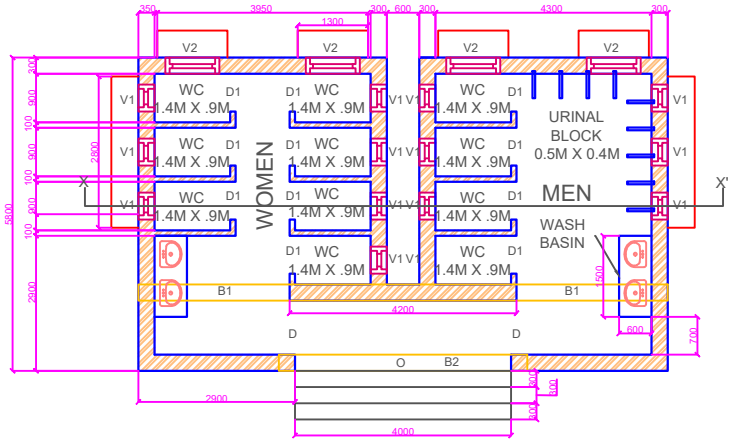
PUBLIC TOILET



SECTION AT X-X'



ELEVATION



PLAN

SCHEDULE OF OPENING	
NAME	SIZE
D	1M X 2.6M
D1	0.7M X 2.1M
O	4M X 2.3M
V1	0.5M X 0.5M
V2	1M X 0.5M

NOTES
1. ALL DIMENSIONS ARE IN MM UNLESS AND UNTILL STATED.
2. HEIGHT OF PARTITION IS 2.1M.
3. TAKE LINTEL 100MM THICK AND 150 MM PROJECTED INSIDE OF WALL.
4. DRAWING SHOULD NOT BE IN SCALE

VISHWAKARMA YOJANA PHASE 8

VILLAGE :- MANVAD (HADMATIYA)

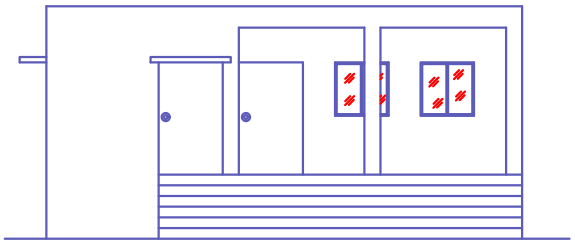
STRUCTURE :- ANIMAL WATER POND

TAPI DIPLOMA ENGINEERING COLLEGE, SURAT

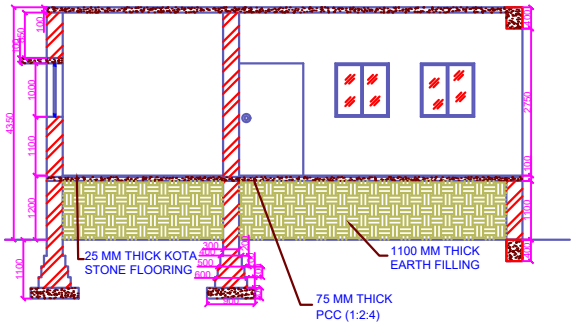
NODAL OFFICER :- MR. NIRANT PATEL

STUDENTS NAME :- 1. SHIHORA SATYAM
2. KEVADIYA PRINCE

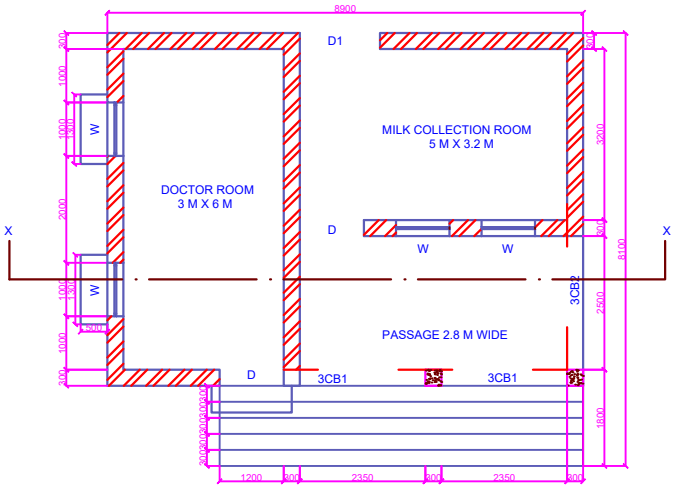
DAIRY



ELEVATION



SECTION X-X



PLAN

NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS AND UNTILL STATED.
2. HEIGHT OF PARTITION IS 2.1M.
3. TAKE LINTEL 100MM THICK AND 150 MM PROJECTED INSIDE OF WALL.
4. PROVIDE WEATHERSHADE HAVING 0.5M PROJECTED FROM THE FACE OF WALL ON OUTER SIDE OF OPENING RESTED EACH SIDE OF OPENING 0.15M WITH 8T@300 MM C/C IN BOTH WAYS AT TOP HAVING OVERALL THICKNESS OF 125 MM (CLEAR COVER 20 MM) WITH 510 MM ANCHORAGE IN LINTEL.
5. CLEAR COVER - 20 MM (SLAB), 25 MM (BEAM).
6. GRADE OF CONC. = M25, GRADE OF STEEL = Fe415.

VISHWAKARMA YOJANA PHASE 8

VILLAGE :- MANVAD (HADMATIYA)

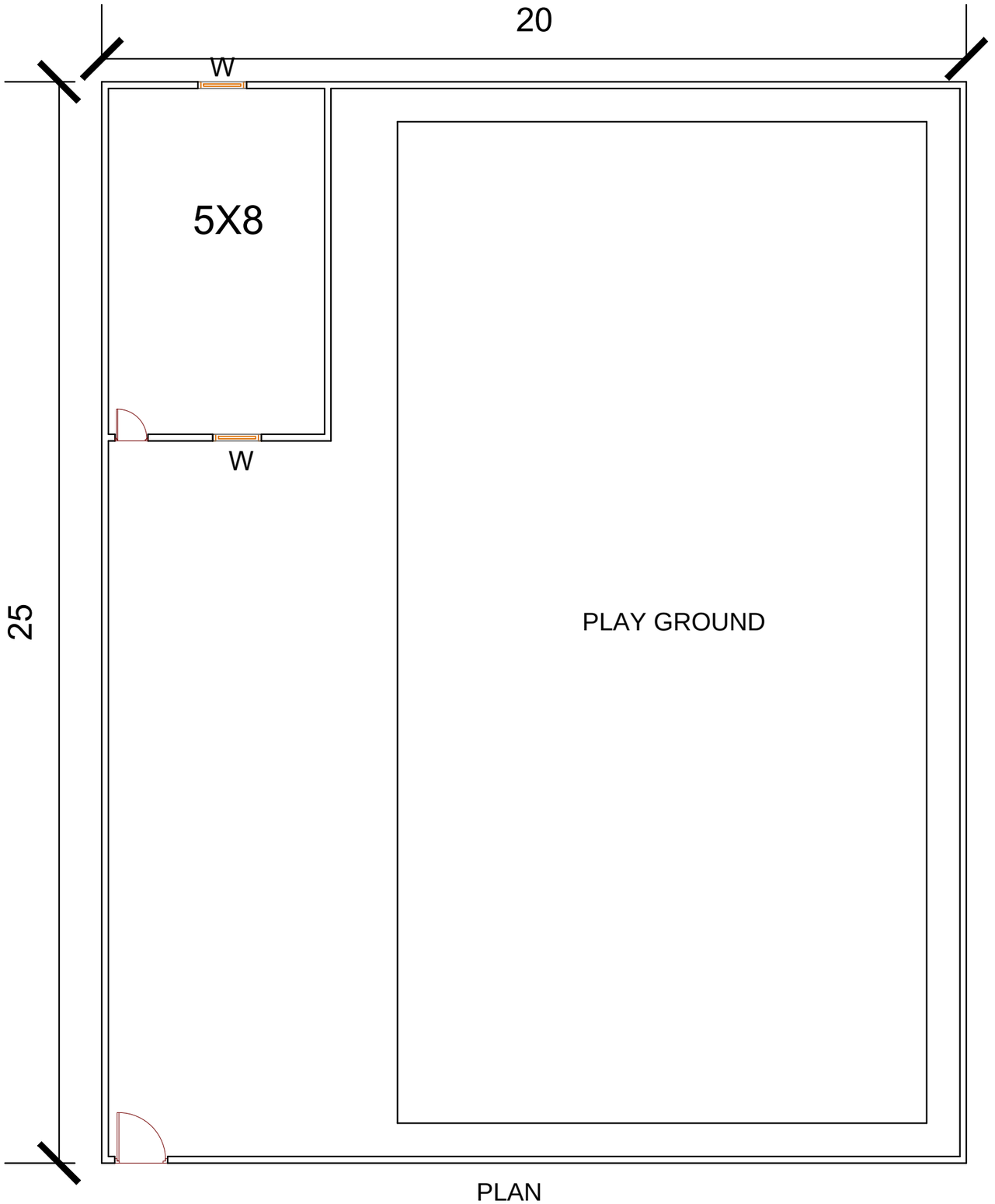
STRUCTURE :- ANIMAL WATER POND

TAPI DIPLOMA ENGINEERING COLLEGE, SURAT

NODAL OFFICER :- MR. NIRANT PATEL

STUDENTS NAME :- 1. SHIHORA SATYAM
2. KEVADIYA PRINCE

SPORT COMPLEX



PLAN

NOTES

1. ALL THE DIMENSIONS ARE IN METER UNLESS STATED OTHERWISE.
2. DRAWING SHOULD BE READ NOT TO BE SCALE.
3. DESIGN IS PREPARED ONLY FOR EDUCATION PURPOSE. CORRECTNESS OF ALL DATA MUST BE CHECK BEFORE USE.

VISHWAKARMA YOJANA PHASE 8

VILLAGE :- MANVAD (HADMATIYA)

STRUCTURE :- GOVERNMENT DISPENSARY

TAPI DIPLOMA ENGINEERING COLLEGE, SURAT

NODAL OFFICER :- MR. NIRANT PATEL

STUDENTS NAME :- 1. SHIHORA SATYAM
2. KEVADIYA PRINCE