DETAIL PROJECT REPORT ON

VISHWAKARMA YOJNA: VIII

AN APPROACH TOWARDS RURBANISATION
BALVA VILLAGE

GANDHINAGAR DISTRICT

PREPARED BY

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COLLEGE NAME

SHANKERSINH VAGHELA BAPU INSTITUTE OF TECHNOLOGY

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COLLEGE LOGO

श्रमम् विना न किमपि साध्यम्
BAPU GUJARAT
KNOWLEDGE VILLAGE

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmadabad– 382424 Gujarat

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CERTIFICATE

ThisistocertifythatthefollowingstudentsofDegree/DiplomaEngineeringsuccessfully submitted

Detail Project Report for,

VILLAGE BALVA
DISTRICT
GANDHINAGAR

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 the under our supervision and guidance.

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ABSTRACT

"Vishwakarma Yojana is one such initiative towards Rurbanization of villages by Government of Gujarat that hinders such migrations. This Yojana aims at developing the village by providing all the urban facilities that a city may have, yet maintaining the rural soul. This can be achieved by considering various aspects such as Physical, Social, and Renewable infrastructural facilities. The concept of Rurbanization at regeneration and revitalization of both the physical as well as social environment in villages through a judicious and economic consumption of resources is the thought for betterment and the villages. It is designed to reduce and remove the rural-urban divide and to lead to process of rural transformation that is not exploitative. Vishwakarma Yojana is an approach towards Rurbanization, it has been proposed to provide the benefit of real world experience to engineering students and apply their technical knowledge in the planning, development and management of rural infrastructure facilities. Rurbanization means urban facilities and amenities in rural area, developing village with help of rural soul and urban amenities. In this village on one hand some essential infrastructural facilities like Water Supply, Road Network and electricity, primary school, secondary and higher secondary school etc. have been good and sufficient on the other hand lacking of infrastructural facilities like drainage, public toilet, and public garden. The name of the allocated village is Balva located in Mansa Taluka of Gandhinagar district. It has a total population of 6504 with 3114 female population against 3390 males according census 2011 data. The main aspects for development of this village are bus stand, waste collection, street lighting, water body purification, etc. Some of the physical infrastructure like dairy, panchayat building, primary school, secondary school, water tank, and well exist in village but some of the milk panchayat building is not properly maintained.

On the basis of survey data we have observed that there are some physical infrastructures like water tank, dairy, primary school, etc. but among them some are not in usable condition which creates problems for villagers. The work of Sarpanch and Talati is good as per the feedback given by villagers. Clinic facility is also not available. Construction of roads are in better condition and usable. More such problems are identified and are to be designed and renovated in the project phases.

Key words: - Road network, Waste collection, Street lighting, water body purification.

ACKNOWLEDGEMENT

We are highly indented to Gujarat Technological University, Ahmadabad 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-Ahmadabad, for his encouragement and giving us the wonderful project. We express our sincere thanks to Commission rate of Technical Education, Gujarat State for appreciating and acknowledging our work.

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

We are also thankful to our **Prof. (Dr.) Kinjal Adhvaryu** Principal, faculties of our colleges for their encouragement and support to complete this project work. An act of gratitude is expressed to our internal guide / Evaluator / Nodal Officer, Mr. Jay Pandya from college SVBIT 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** SCET, Surat, Professor, **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.

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Chapter.1

Ideal village visit from District of Gujarat State

(Civil Concept)

In this chapter, we include overall analyze of ideal village for the basic approach to develop ideas for our selected village, case analyze, literature review of ideal village and all other in formation.

1.1 Background and Analyze Area Location

- Punsari is a village located in Talod Taluka in Sabarkantha district. 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 is the largest table top land of India. The village follows the panchayat raj system.
- The Village extent is about 65km. The land in use of agriculture is 6 hectares. The main non farming activity is dairy in this village. The village has undergone a transformation under the panchayat. There has been use of new and advanced technology in education.
- This village has Wi-Fi connection for all people. Efforts have been made for the empowerment of women and increasing security in the village. Some of the facilities provided by the panchayat include local mineral water supply, sewer & drainage project, a healthcare center, banking facilities and toll-free complaint reception service.

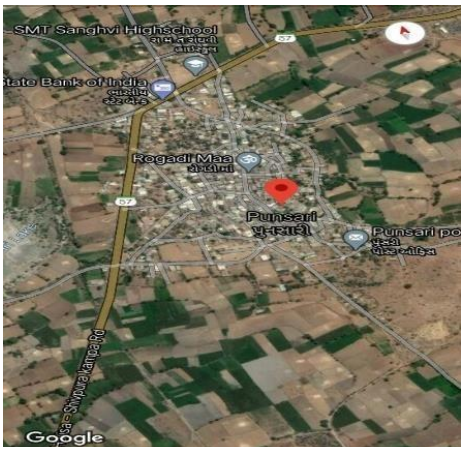


Fig 1.1 Location of Ideal Village of Punsari

Some important details & location

- Name of village :Punsari
- Name of Taluka :Sabarkantha
- Latitude : 23*20'59.46" N
- Longitude :73*8'12.48"
- Population range : 6000 (as per census 2011)

1.2 Concept: Ideal Village, Normal Village

- Currently, about 70% of the country's total population lives in village, people are migrating to better opportunities and luxurious life from rural tour ban areas, such as the lack of land availability to live in slums etc.

1.2.1 Objective:

- To analyze the current growth, aspect and development of villages.
- To analyze the current infrastructure facilities and its handling issues phasing by villages.
- To analyze and study how to assist facilities like water treatment plant, solar system, bio gas plant, etc. can be used in village. To implement improvement of underground drainage facility in rural areas.

1.2.2 Live Case Study of Ideal Village of India/Gujarat:

1) **Kumbalangi, Kerala:**

- KumbalangiislocatedinKeralastate'sErnakulumdistrict&isbasicallyafishingvillagethathas been developed as a unique rural tourist destination.
- The Kumbalangi project was launched in 203 to help through tourism the local people.
- Under the Kumbalangi project, Kalagraamam, an artists' village, is also being set up. The initial plans were to erect a cottage in the middle of the backwaters. Later, the panchayat members, tourism secretary and the tourism minister all agreed that this would disturb the backwaters ecology.

2) **Mawlynnong, Meghalaya :**

- TitledasAsia'scleanestvillagein2003, the beautiful village of Mawlynnongsa smooth100odd km drive further forms hilong.
- While you are there, make sure trek to Mawlynnong, which is equally beautiful.
- Every waste product and garbage item, even dry leaves go into the dustbin. Plastic bags and smoking are strictly prohibited here. Those who fail to follow the serulesare charged very heavily. Mawlynnong also converts its own manure from the garbage gathered. People also clean roads and plant trees along with keeping their own rooms clean

Fig 1.2. Kumbalangi, Kerala

Fig 1.3. Mawlynnong, Meghalaya

1.2.3 The Idea of a model / smart village:

- India is a country of villages, where more the 68% of the total population reside in over 5.97lakh of villages
- Agriculture is practiced in the country from antiquity where communities settled and civilized structure of village evolved.
- Nowaday'surbanizationhastakenplaceonabigscale.Onlyduetolackoffacilitiesandsources in village.

1.3 Detail Study

1.3.1 Physical & Demographical Growth

1) Source of water	**: 3 hand pump**
	: 13 tube wells
	: Water tank about 5000 lt. Capacity
2) Road Networks	**: Good Condition**
	: C.C. Road
	: Bituminous Road
3) Electricity	**: 66 KV Power supply**
	: LED lighting
	: Bio –gas plant

Table -1.1 Physical Growth of Punsari

Sr. No	Census	Population	Male	Female	Total Household
1)	2001	4681	2221	2456	1200

2)	2011	6000	3256	2798	145

Table-1.2 Demographical Growth

1.3.2 Economic Profile

- InPunsarivillagemostofpeopleareconnectedwithagricultureactivity.Othervillagersaremostly employed. Through development center and some of are connected withgovernment.

Class	Percentages (%)
Farmers	**85.00**
Job	**12.00**
Others	**03.00**

Table -1.3 Economic Profiles

1.3.3 Social Scenario

- The Social scenario of Punsari village is very good. Literacy rate is constantly decreases. There are108womenself-helpgroupinoperationhavingacollectivemembershipofover1200women. A young man Himansu Patel & Sarpanch Sunandaben Patel Working towards improving & maintain the village as ideal. Child malnourishment rate is0%.

Class	Percentages (%)
Male	**84.84**
Female	**53.06**
Total	**69.38**

Table- 1.4 Literacy Profile of Punsari Village

1.3.4 Infrastructure Facilities

Fig 1.4. Infrastructure of Punsari

Fig 1.5. Solar system of Punsari

1.4 SWOT Analysis of Ideal Villages

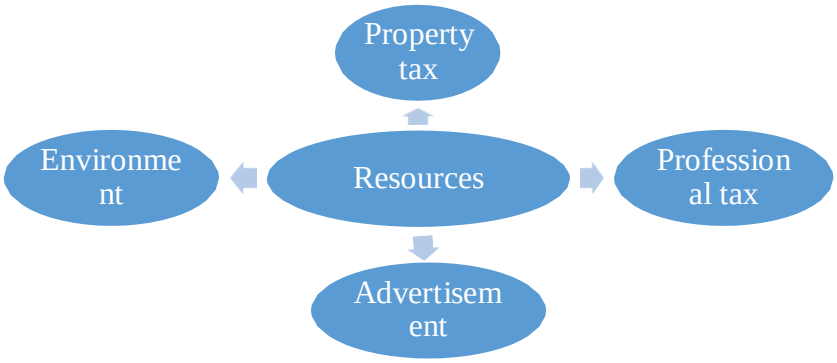
1) Village Strength	: Better natural resources base
	: Basic Infrastructure
	: Availability of enough agricultural land
	: Strong will power
2) Weakness	**: Few Water sources are drying**
	: Poor health facilities
	: Poor livelihood
	: Great deficit in fodder and fuel
3) Opportunities	**: Use of modern techniques**
	: Soil improvement
	: Development of wastelands, abandon lands & other village lands
4) Threads	**: Crop damage by wild animals**
	: Low Rainfall & dry season for crops

Table -1.5 SWOT Analysis of ideal village

1.5 Future Prospect of Village

- To fulfill the requirements of future population, they provide rain water harvesting system to collect the rain water & use it in to agricultural purpose and domestic purpose.

- For electricity requirements they put Bio gas plant for the generation of electricity from Solid waste. Punsari will be facilitated with 100% LED lighting.
- The Sarpanch of Punsari trying to open a Taluka ITI center in village for the better Skill development in young people.



1.6 Benefits available in the villages

- The village has proper sanitation and underground drainage facilities.
- Drinking Water taps are available for all.
- Mini bus transport facilities are available for transportation within the village.
- Good road facilities
- Proper waste collection and disposal facilities.

1.7 Civil aspects required in ideal village

- We have observed the balance of commercial, residential and recreational land use in the Punsari village but as per the feedback which were given by villagers some facilities are lacking in the village from civil aspect and these are, gas pipe line, bio gas plant, cold storage area, rain water harvesting, solar street lights, Wi-Fi connections, fire station etc.
- Moreover, by providing skill development centers for the youth, panchayat should also focus on enabling the youth to setup the self-employment units. Water harvesting, ground water recharge and improvement of village tanks are also projects to be pursued.

Chapter 2

Balva Village Literature Review

2.1 Introduction: Urban & Ruler Village Concept:

Rural

- A rural area is a geographic area that is located outside cities and towns.
- According to the planning commission, a town with a maximum population of 5, 000 is considered rural in nature. In these areas the Panchayat takes all the decisions.
- Generally rural has fewer amenities of transportation, road network, PHC, community center, education system, water supply etc.

Keywords

- Amenities are less
- People are related to agriculture
- Population is less

Urban

- An Urban area is a location characterized by high human population density and vast human-built features in comparison to the areas Surrounding it.

Fig.2.1 Urban vs. Rural

- 75%of people are related to non-agriculture.
- In urban areas all type of facilities are available like transportation, malls, education system, hospitals, road , network, etc.

Keywords:

- All amenities are provided
- People are related to non-agriculture field
- Population is high

Rurbanization

- To reduce and remove the rural urban divide through infusion of urban patterns and services in rural systems to ensure provision of quality lifestyles and livelihood options while keeping the basic rural soul intact.

Urbanization

Urbanizationisapopulationshiftfromruraltourbanareas,"thegradualincreaseintheproportion of people living in urban areas" and the ways in which each society adapts to the changes.

Government norms

- To develop urban infrastructure facilities such as transport, drinking water, sewerage, drainage and solid waste management etc. At satellite towns counter magnets around million plus urban agglomeration (UAs) covered under JAWAHARLAL NEHRU NATIONAL URBAN RENEWABLE MISSION (JNNURM) and to channelize their future growth so as to reduce pressure on millions plus UAs.

- **PMGSY- Pradhan Mantri Gram SadakYojana**
- **PMJJBY- Pradhan Mantri Jeeven Jyoti Bima Yojana**
- **PMSBY- Pradhan Mantri Suraksha Bima Yojana**
- **APY – Atal Pension Yojana**
- **MGNREGA**
- **APL/BPLYOJANA**
- **IAY – Indira Aawas Yojana**

2.2 Importance of the Ruler Development

Creation of Infrastructure

- To provide connectivity, civic and social infrastructure along with provision of alternative economy generation is the key pillars that the concept hinges on.

Physical Infrastructure

- To provide water supply, transport, sewerage and solid waste management should be the priority focus and be provided.
- To provide internal roads within village settlement, efficient mass transportation systems to improve connectivity b/w urban and rural areas.

Social Infrastructure

- To provide health and education facilities should be provided and ensure proper delivery of facilities to village dwellers.

Identification of Sanitation Facilities That Need Improvement

- To provide sewerage and drainage line for household connection, door to door, solid waste collection, dumping facilities, electricity connections like street lighting that is energy efficient and eco-friendly refurbishing of village lakes, water tanks and wells, construction of rain water harvesting structure for sustainable development.

2.3 Scenario: Rural/Urban India & Gujarat as per Census 2011 and latest population

- As per details from Census 2011, Gujarat has population of 6.04 Crores, an increase from figure of 5.07 Crore in 2001census.
- Total population of Gujarat as per 2011 census is 60,439,692 of which male and female are 31,491,260 and 28,948,432respectively.
- In 2001, total population was 50,671,017 in which males were 26,385,577 while females were 24,285,440. The total population growth in this decade was 19.28 percent while in previous decade it was 22.48percent.
- The population of Gujarat forms 4.99 percent of India in 2011. In 2001, the figure was 4.93 percent. Gujarat census data, 83.92% houses are owned while 13.54% were rented.
- Gujarat population as per census:

Description	2011	2001
Approximate Population	6.04 Crores	5.07 Crore
Actual Population	60,439,692	50,671,017
Male	31,491,260	26,385,577
Female	28,948,432	24,285,440
Population Growth	19.28%	22.48%

Percentage of total Population	4.99%	4.93%
Sex Ratio	919	920
Child Sex Ratio	890	883

Literacy Rates (in %):

	GUJARAT	INDIA
Female	**69.68%**	**64.63%**
Male	**85.75%**	**80.88%**
Total	**78.03**	**72.98%**

The improvement in the literacy rate of the males and females of the Rural and Urban areas have been improved over passing years and increasing the education level of the country and the opportunities for young generation of our nation.

2.4 Rural issues and Concerns

2.4.1 People related:

- Traditional way of thinking.
- Poor understanding.
- Low level of education to understand developmental efforts and new technology
- Deprived psychology and scientific orientation
- Lack of confidence
- Poor awareness
- Low level of education
- Existence of unfelt needs &Personal ego.

2.4.2 Agricultural related problems:

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

- Small size of landholding.
- Division of land.
- Unwillingness to work and stay in rural areas.

2.4.3 Infrastructure related problems:

- Poor infrastructure facilities like water, electricity, transport, educational institutions, Communication, health, storage facility etc.

2.4.4 Economic problems:

- Unfavorable economic condition to adopt high cost technology.
- High cost of inputs.
- Underprivileged rural industries.

2.4.5 Social and Cultural problems:

- Cultural norms and traditions.
- Conflict within and between groups, castes, religions, regions, languages.

2.4.6 Leadership related problems:

- Leadership among the hands of inactive and incompetent people.
- Mollified interest of leaders.
- Biased political.

2.4.7 Administrative problems:

- Earlier, majority of the programmers were planning based on top to bottom approach and were target oriented.
- Political interference.
- Lack of motivation and interest.
- Unwillingness to work in rural area.
- Improper utilization of budget

2.5 Various measures for rural Development

- Ruraldevelopmentistheprocessofimprovingthequalityoflifeandeconomicaswellasfinancial well-being of people living in rural areas, often relatively isolated and sparsely populated areas from the modern activities and modern lifestyle of cities. Following are the measures taken:

- To develop the standard of living of people.
- To educate the youngsters of the rural areas and aware them about the modern facilities and rights.
- To provide basic amenities such as education, transportation, communication facilities, electricity and drinking water to the rural people.
- To provide irrigation facilities to the farmers and motivate them to adopt new methods of soil conservation.
- To spread awareness to the farmers to restore uncultivated land.
- Develop agricultural areas in rural mass.
- To develop the institutional infrastructure of the rural mass, such as banks, cooperatives, and panchayat.
- To uplift the artisan the rural area such as to improve their economy.
- Small scale industries to be setup in the rural areas.
- Provide financial assistance to small scale industries, cottage industries and other economic operations in this sector by the development of skilled handicrafts.
- To uplift the SC and ST people.
- To develop the growth of housing facilities of the rural mass.

2.6 Various Infrastructure & guidelines/Norms for villages for the provisions of different infrastructure facilities:

Facilities	Planning Commission UDPIF	Required As Per Norms
Education		
Aanganwadi	Each Village	1
Primary School	Each Village	1
Secondary School	Per 7,500Population	2
Higher Secondary School	Per 15,000Population	0
College	Per 125,000 Population	0
Tech. Training Institute	Per 100,000 Population	0
Agriculture Research	Per 100,000 Population	0

Medical Facility		
Govt/Panchayat Dispensary or Sub PHC or Health Centre	Each Village	1
PHC & CHC	Per 20,000Population	0
Child Welfare and	Per 10,000Population	1
Hospital	Per 100,000 Population	0
Transportation		
Pucca Village Approach Road	Each Village	
Bus/Auto Stand Provision	All Villages connected by PT (ST Bus or Auto)	1
Drinking Water		
Water Facilities		
Over Head Tank	1/3 of Total Demand	1.6 lac cap
U/G Sump	2/3 of Total Demand	3.2 lac cap
Public Latrines	Each Village	60
Cremation Ground	Per 20,000Population	1
Post Office	Per 10,000Population	1
Gram Panchayat building	Each individual/group panchayat	1
APMC	Per 100,000 Population	0
Fire Station	Per 100,000 Population	0
Police Station	Per 15,000Population	0
Community Hall	Per 10,000Population	1

Table 2.1 Norms for villages for the provisions of different infrastructure facilities

- **Various Infrastructure**

2.6.1 Physical infrastructure facilities

1) Water:

- With two thirds of the earth's surface covered by water and the human body consisting of 75%of it, it is evidently clear that water is one of the prime elements responsible for life on earth.

2) Drainage:

- Drainage is the natural or artificial removal of surface and sub-surface water from an area.

3) Transportation:

- Transportation is really much more than the movement of people.

2.6.2 Social Infrastructure facilities:

1) Education:

- Education is not all about studying and getting good marks. An educated person has the ability to differentiate b/w right and wrong.

2) Sanitation:

- Sanitation makes a positive contribution in family literacy. A healthy child has better learning and retaining ability.

3) Health:

- Each day we work toward maximizing our level of health and well ness to live long, full and healthy lives.

2.6.3 Socio Cultural Infrastructure Facilities:

1) Play ground:

- Playground play an essential role in the social, economic, cognitive office and physical wellbeing of children right from the stage of early childhood.

2) Post office:

- A post is a customer service facility forming part of a national postal system.

2.6.4 Renewable energy source:

1) Water:

- Development of water resources and wastelands are other important activities.

2) Bio-gas:

- It can be used both as a raw material for the production of a wide range of most if not all organic compounds, depending on the sequences of reaction and degree of polymerization carried out.

2.7 Sustainable Village Development Concept

- India is an agro based country. About 70% population of India stays in villages. The environment of villages is entirely different than cities and urban centers. Villages have low cost houses with use of local materials. The families are generally associated with animal stock like buffalo, goat, hen, etc. Hence rural houses have different planning from those in urban area. The majority of rural area is of middle and low income group and depends on agriculture.
- The general problems faced by villagers are non-availability of adequate water of good quality, absence of proper sewerage system, solid waste problem due to agro waste and shortage of power. Low budget of gram panchayat, lack of technical know-how, frequent power shortage are the reasons for under development of villages.
- There are eco-friendly economical options for meeting the needs of energy and manure through utilization of agriculture waste for biogas production, vermin composting of domestic solid waste and harnessing solar energy for water heating and electricity generation. The rain water harvesting system can help in recharging the ground water table.

Aspects of Green Design:

- Sustainability
- Eco-Sensitivity
- Energy Efficiency.
- Climate-responsiveness.
- User-effectiveness,
- Cost-effectiveness.

Fig.2.2 Green Design

Principles of green concept:

- Conserve energy water and other natural resources.
- Preserve our environment.
- Strengthen local economy

- Promote high quality life of citizens

2.8 Other Projects/Schemes:

- Following are the schemes that are running or on board for the rural development by Indian Government:
- Pradhan Mantri Gram Sadak Yojana(PMGSY)
- Indira Awas Yojana
- Pradhan Mantri Adarsh Gram Yojana
- Mahatma Gandhi National Rural Employment Guarantee Act.(MGNREGA).

➢ Pradhan Mantri Gram Sadak Yojana(PMGSY)

- Pradhan Mantri Gram Sadak Yojana was launched on 25th December 2000 as a fully funded Centrally Sponsored Scheme to provide good all-weather road connectivity to unconnected villages.
- In this 178,000 (1.7 lakh) habitations with a population of above 500 in the plains and above 250 in the hilly areas planned to be connected by all-weather roads, 82% were already connected by December 2017 and work-in-progress on the remaining 47,000 habitations was on-track for completion by March2019.
- Inthisremaining47, 000, workonallisinprogressexceptfor1700whichwillbeapprovedbythe end of December 2017 and 100% connectivity will be achieved by March 2019 (16 December 2017update).
- Pending work included harsh terrain states of Assam, Jammu and Kashmir and Uttarakhand as well as left-wing Naxalite–Maoist extremism infested state of Chhattisgarh, some districts of Jharkhand and Malkangiri district of Odisha.
- The average speed of road construction under the PMGSY was 98.5 kilometers per day from 2004 to 2014, it rose to 130 km per day infy2016-17.
- The aim was to provide roads to all villages:

➢ Indira Awas Yojana:

- Thegovernmentin1985undertheleadershiponRajivGandhiIntroducedapublichousingscheme that is popularly known as the Indira Awas Yojana.

- This program me happened to fall under a larger scheme called the RLEGP which was the official acronym Rural Landless Employment Guarantee Programme.
- This scheme was run under the Ministry of Rural Development where the primary objective was to provide housing for the roofless. This programme particularly targeted the free bonded labourers under the below poverty line (BPL) and the population falling in the Scheduled Castes and Scheduled Tribes categories where it intended to address the housing issues and eventually construct residences.
- The year 1996 saw the Indira Awas Yojana, become and independent scheme that fell under the Ministry of Rural Development.
- Though the central idea of the scheme was to provide housing for all, it also aimed at eradication of rural poverty along with the alleviation of the general living standards of the rural population by providing them with various development programs.
- The benefits of the Indira Awas Yojana are as follows:
- TheIndiraAwaasYojanaaimstoprovideassistanceandsupportintheconstructionofthehouses in rural locations.
- It seeks to support the construction of the houses with the required supplies including workplaces within the house.
- The houses under the Scheme are to be designed based on the requirements of the residence.

➢ Pradhan Mantri Adarsh Gram Yojana:

- Pradhan Mantri Adarsh Gram Yojana (PMAGY) is a rural development Programme launched by the Central government in India in the financial year 2009–10 for the development of villages havingahigherratio(over50%)ofpeoplebelongingtothescheduledcastesthroughconvergence of central and state schemes and allocating financial funding on a per village basis.
- The Plan aims to build an "Adarsh Gram" (Model village} which has adequate physical and institutional infrastructure, in which minimum needs of all sections of the society are fully met. The village which is progressive and dynamic and its residents live in harmony.
- All the facilities necessary for dignified living should be available and the residents are enabled to utilize their potential to the fullest.
- The plan is considered ambitious as it aimed to bring a number of development programs to the

Villages. Some of these programs are Bharat Nirman, Pradhan Mantri Gram Sadak Yojana (PMGSY) for rural roads, water supply, housing, electrification and other big-ticket schemes like Sarva Shiksha Abhiyan, Mahatma Gandhi National Rural Employment Guarantee Act, Integrated Child Development Services, sanitation.

- This program would be applicable to around 44,000 villages which had a scheduled castes population above 50% and so qualified for PMAGY.

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

- NationalRuralEmploymentGuaranteeAct2005 (later renamed as the "Mahatma Gandhi National Rural Employment Guarantee Act", MGNREGA), is an Indian labor law and social security measure that aims to guarantee the 'right to work'.
- It aims to enhance livelihood security in rural areas by providing at least 100 days of wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work.
- The act was first proposed in 1991 by P.V. Narasimha Rao. It was finally accepted in the parliament and commenced implementation in 625 districts of India. Based on this pilot experience, NREGA was scoped up to cover all the districts of India from 1 April2008.
- The statute is hailed by the government as "the largest and most ambitious social security and public works Programme in the world".
- In its World Development Report 2014, the World Bank termed it a "stellar example of rural development". The MGNREGA was initiated with the objective of "enhancing livelihood security in rural areas by providing at least 100 days of guaranteed wage employment in a financial year, to every household whose adult members volunteer to do unskilled manual work".
- Another aim of MGNREGA is to create durable assets (such as roads, canals, ponds and wells). Employment is to be provided within 5 km of an applicant's residence, and minimum wages are to be paid. If work is not provided within 15 days of applying, applicants are entitled to an unemployment allowance. Thus, employment under MGNREGA is a legal entitlement.

Chapter 3
Smart (Cities / Village) Concept Idea and its Visit - (Civil Concept)

3.1 Introduction: Concepts, Definitions and Practices

➢ Concept

- In a smart villages, access to sustainable energy services acts as a catalyst for development enabling the provision of good education and healthcare, access to clean water, the growth of productive enterprise to boost incomes, and enhanced security, gender equality and democratic engagement.

➢ Definition:

- Themeaningofsmartvillageisallthenecessariesfacilitiesisdevelopedinthevillageandnoneed to moves in city for any kind of requirement.

3.2 Smart Cities Bench Marks, Standards and Performance measurement indicators

Benchmarks:

3.2.1 Transport:

- Maximum travel time of 30 minutes in small &medium size cities and 45 minutes in metropolitan areas.
- Continuous unobstructed footpath for 2 m wide on either side of all streets with Row 12 mm ore
- Dedicated and physically segregated bicycle tracks with width of 2 more, one in each direction, should be provided on all streets with carriageway larger than 10m
- High quality and high frequency mass transport within 800m (10-15-minute walking distance) of all residences in areas over 175persons / ha of built area.

3.2.2 Spatial Planning:

- 175 per sons per Ha along transit corridors. 95% of residences should have daily needs retail, parks, primary schools and recreational areas accessible within 400m walking distance.

- 95% residences should have access to employment and public and institutional transport or bicycle or walk. At least 20% of all residential units to be occupied by economically weaker sections in each Transit Oriented Development Zone 800m from Transit Stations
- At least 30% residential and 30 commercial/institutional in every TOD Zone with in 800 m of Transit Stations.

3.2.3 Water Supply:

- 24 x 7 supply of water.
- 100% household with direct water supply connections.
- 135 liters of per capita supply of water.
- 100% metering of water connections.
- 100% efficiency in collection of water.

3.2.4 Sewerage & Sanitation:

- 100% households should have access to toilets.
- 100% schools should have separate toilets for girls
- 100% households should be connected to the waste water network.
- 100% efficiency in the collection and treatment of wastewater.
- 100% efficiency in the collection of sewerage network.

3.2.5 Solid management:

- 100% households are covered by daily door step collection system.
- 100% collection of municipal solid waste.
- 100% segregation of waste at source, i.e. biodegradable and non-degradable waste.
- 100% recycling of solid waste.

3.2.6 Storm storage:

- 100% coverage of road network with storm water drainage network.
- Aggregate number of incidents of water logging reported in a Year =0.
- 100 % rain water harvesting.

3.2.7 Health care facilities:

- Availability of telemedicine facilities to100%residents.
- 30 minutes ‘emergency response time.
- 1 dispensary for every 15,000residents.

- Nursing home, child, welfare and maternity, center - 25 to 30 beds per lakh population.
- Intermediate Hospital (Category B) - 80 beds per lakh population
- Intermediate Hospital (Category A) – 200beds per lakh population.
- Multi-Specialty Hospital - 200 beds per lakh population.
- Specialty Hospital - 200 beds per lakh population.
- General Hospital - 500 beds per lakh population.
- 10020 Family Welfare Centre for every 50, 000residents.

3.2.8 Telephone connections:

- 100% households have a telephone connection including mobile.

3.2.9 Wi-Fi connectivity:

- 100% households have a telephone connection including mobile.

3.2.10 Electricity:

- 100% households have electricity connection 24 x 7 supply of electricity.
- 100% metering of electricity supply
- 100% recovery of cost
- Tariff slabs that work towards minimizing waste.

3.3 Technological Options for Smart Cities:

I. Smart Buildings

- Automated Intelligent Buildings, Advanced Heating Ventilation and Air conditioning systems (HVAC), Lighting Equipment.

II. Smart Mobility

- Intelligent Mobility; Advanced traffic management system (ATMS), Parking management, ITS-Enabled transportation Pricing system.

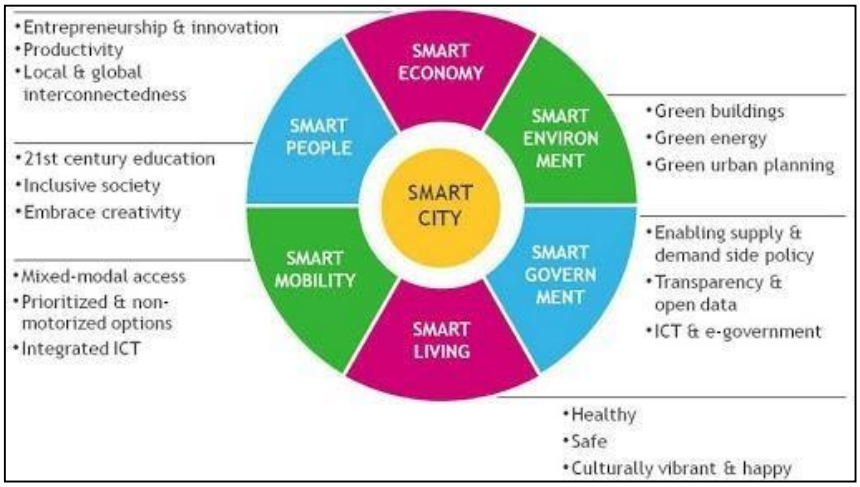


Fig.3.1 various options for Smart Cities

III. Smart governance and smart education

- Government –on-the-Go; e-Government Education, Disaster management solutions.

IV. Smart healthcare

- Intelligent Healthcare, Technology, Use of e- Health and m-Health systems, Intelligent and connected medical devices.
- Human society developing with rapid momentum and achieve various successes for making its livelihood better. The civilization is witness for various changes related to its development through different catalysts like industrial development, green revaluation, science and technology, etc. India has more than 72% of its population in villages near about 7 decades had been passed since India got freedom, but the scenario in villages in our country is still unchanged. On one side India has recently selected 100 cities for smart city project and ready to adept all the advance technologies for these smart cities and on other hand villages in our country are still struggling for getting basic amenities like 24x7electricity.
- The technology that we use here can be availed to the people living in rural areas to help in improving their lifestyle. These paper summarizes such affords which can definitely help us to introduce various technology in these neglected parts of our country fulfilling our responsively to build up our nation.

3.4 Road map and safeguards

- A smart city roadmap consists of four/three (the first is a preliminary check) major components:
- I. Define exactly what is the community: maybe that definition can condition what you are doing in the subsequent steps; it relates to geography, links between cities and countryside and flows of people between them; maybe – even – that in some Countries the definition of City/community that is stated does not correspond effectively to what–in fact–

Fig.3.2 Road map and safe guards

Happens in the real life.

- II. Study the Community: Before deciding to build a smart city, first we need to know why. This can be done by determining the benefits of such an initiative. Study the community to know the citizens, the business's needs – know the citizens and the community's unique attributes, such as the age of the citizens, their education, hobbies, and attractions of the city.
- III. Develop a Smart City Policy: Develop a policy to drive the initiatives, where roles, responsibilities, objective, and goals, can be defined. Create plans and strategies on how the goals will be achieved.
- IV. Engage The Citizens: This can be done by engaging the citizens through the use of government initiatives, open data, sport events, etc.

3.5 Issues Challenges

This is the first time, a MOUD Programme is using the Challenge ‘or competition method to select cities for funding and using a strategy of area-based development. This captures the spirit of competitive and cooperative federalism. States and ULBs will play a key supportive role in the development of Smart Cities. Smart leadership and vision at this level and ability to act decisively will be important factors determining the success of the Mission. Understanding the concepts of retrofitting, redevelopment and Greenfield development by the policy makers, implementers and other stakeholders at different levels will require capacity assistance. Major investments in time and resources will have to be made during the planning phase prior to participation in the Challenge. This is different from the conventional DPR-driven approach

3.6 Job opportunities of development

I. Wastage of resources:

- Most of students in 6-14 age groups leave the school before completing their education. The dropout rate is very high in primary and secondary level.

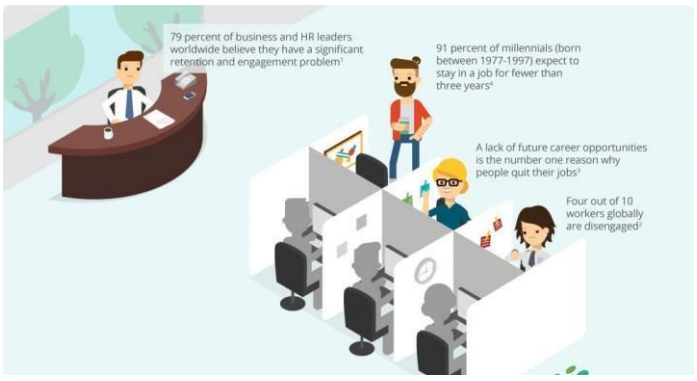


Fig.3.3 Job opportunities of development

II. Neglect of Indian languages :

- The medium of instruction particularly in science subject is English. So rural student who are not well versed in English, cannot study science properly.

III. Problem of brain drain:

- When intelligent, talented and deserving candidates do not get suitable jobs in the country, they prefer to go abroad for skiing jobs.

3.7 Cyber security:

- Security Challenges in Smart Cities Insecure Hardware: One of the major concerns about smart cities sensors in the equipment; buildings, etc. are in secure and not tested thoroughly. Owing to lack of standardization of IoT devices, the sensors are prone to hacking. Notorious individual scan hack these nsors and feed fake data, causing signal failures, system shutdowns, etc. Larger Attack surface: Smart city operations utilize complex, networked assembly of these risks This includes:

- Strong password policy.
- E end-to-end encryption.
- Up-to date firewalls, anti-virus.
- Audit logs
- Isolation of trusted resources from public resources(DMZ)
- Implement manual over rides on all systems
- The aim is to reduce the attack surface As much as possible and to make the surface that is Visible as robust and resilient as possible. Disaster recovery and back-up services Data centers, either on site or off site, are at the heart of smart cities. Disaster recovery is a critical part of the data Centre‘s architecture. If servers go down, is it important that systems are brought back online as soon as possible and, once those systems are back up and running, need to have all their previous workloads operational. It is important to identify the right level of back-up required for various services. Data back-ups should be done regularly, and according to the best practices, should be done off site. This helps in data protection in case of physical security breach at the datacenter.

Fig.3.4 Cyber Security

3.8 District Heating and Cooling / Green Building

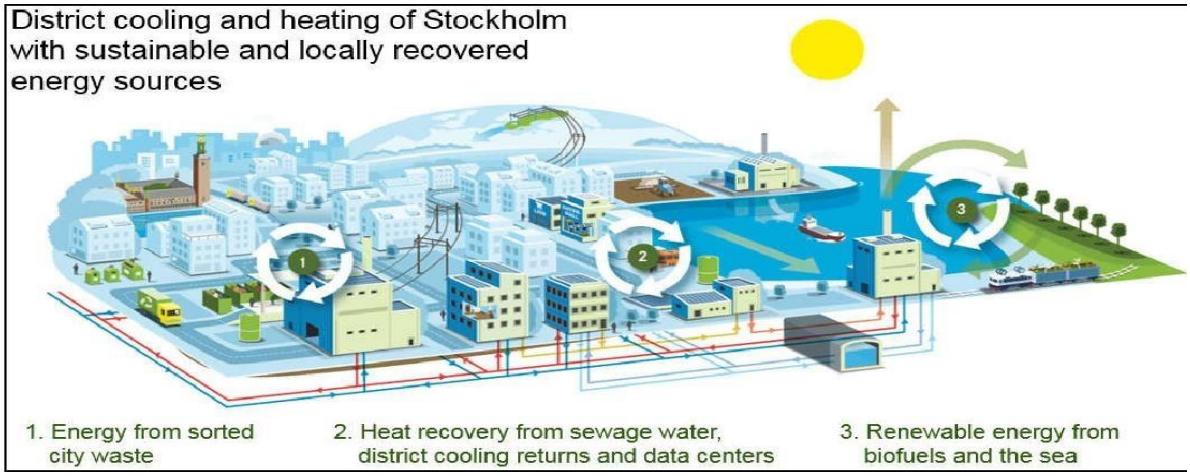


Fig. 3.5City layout of district heating and cooling system

- District energy, both heating and cooling, tie together the energy generating sources in a city with buildings and facilities having a need of heating and/or cooling. Instead of each building having its own heating or cooling system, the energy is delivered to several buildings in a larger area from a central plant. The water based distribution system guarantees that heat and cooling arrive safely to the end users. District Heating: District heating is the most widespread of the two types of district energy; heating and cooling. To transport heat efficiently, the district heating distribution infrastructure comprises network of insulated pipes, delivering heat in the form of hot water, from the generation site to the end user. Networks can measure from a few hundred meters to covering entire large cities. End users range from residential buildings to offices and industrial facilities. The network‘s coverage can easily be extended by laying more pipes, often in combination of adding more points of generation.
- The district cooling system in Stockholm was implemented on a larger scale during the 1990‘s. It is based on the same distribution principle as district heating, and can be generated by different fuel sources and techniques. Free water cooling is a common technique, using sea or lake water in order to cool the water in the system. Heat pumps, generating both heating and cooling, as well as cooling machines can also be used. Another way is to use the heat energy from the district heating in cooling sorption machines.

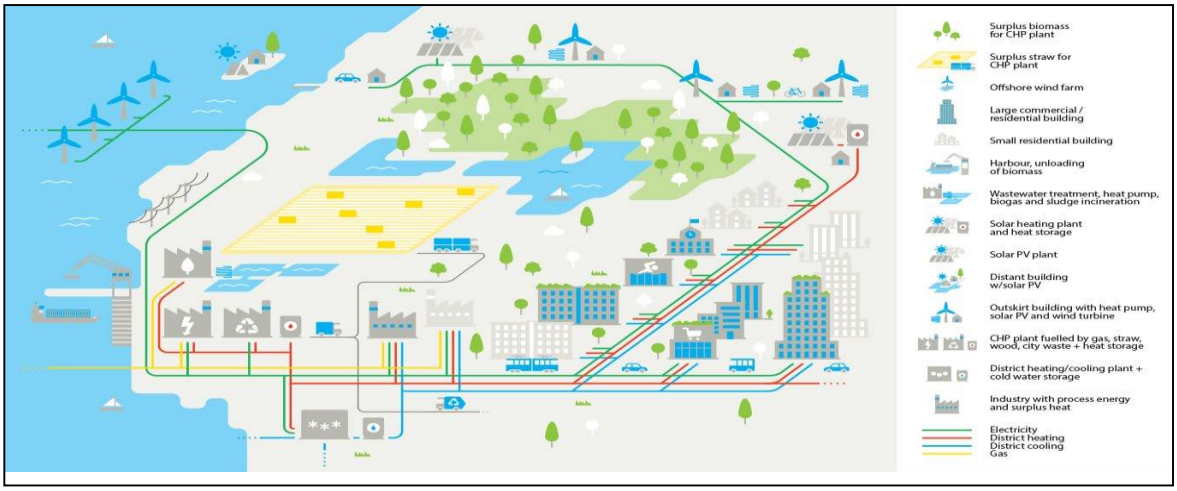


Fig.3.6 Layout of district cooling using free cooling with sea water

3.9 Strategic Option for fast Development

- The Smart City Mission will be operated as a Centrally Sponsored Scheme (CSS) and the Central Government proposes to give financial support to the Mission to the extent of Rs. 48,000crores over five years i.e. on an average Rs.100crore per city per year. An equal amount, on a matching basis, will have to be contributed by the State/ULB; therefore, nearly Rupees one lakh Crore of Government/ULB funds will be available for smart cities development. The project cost of each Smart City proposal will vary depending up on the level of ambition, model and capacity to execute and repay. It is anticipated that substantial funds will be required to implement the Smart City proposal and towards this end, Government grants of both the Centre and State will be leveraged to attract funding from internal and external sources. The success of this endeavor will depend upon the robustness of SPV‘s revenue model and comfort provided to lenders and investors. A number of State Governments have successfully set up financial intermediaries (such as Tamil Nadu, Gujarat, Orissa, Punjab, Maharashtra, Karnataka, Madhya Pradesh and Bihar) who can be tapped for support and other States may consider some similar setup in the irrespective States. Some form of guarantee by the State or such a financial intermediary could also be considered as instrument of comfort referred to above. It is expected that a number of schemes in the Smart City will be taken up on PPP basis and the SPVs have to accomplish this.
- The GOI funds and the matching contribution by the States/ULB will meet only a part of the project cost. Balance funds are expected to be mobilized from:
    I. States/ULBs own resources from collection of user fees, beneficiary charges and impact

Fees, land monetization, debt, loans, etc.

II. Additional resources transferred due to acceptance of the recommendations of the Fourteenth Finance Commission (FFC).

III. Innovative finance mechanisms such as municipal bonds with credit rating of ULBs, Pooled Finance Mechanism, Tax Increment Financing (TIF).

IV. Other Central Government schemes like Swatch Bharat Mission, AMRUT, National Heritage City Development and Augmentation Yojana (HRIDAY).

V. Leverage borrowings from financial institutions, including bilateral and multilateral institutions, both domestic and external sources.

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

More than 90% of the population has access to drinking and 60 % of the population has access basic sanitation. The challenges faced by India urban water and sanitation are as Follow:

- 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 Is the main challenges faced by India urban and sanitation.
- Improving financial sustainability of providers. Moderating the WSS sector.
- The first is that the data bank for people seeking to information.
- The documentation can be used for communities or individuals for payment for the transfer of technology.
- Data bank will serve an important function of establishing community knowledge firmly in the public domain.

Role of Indigenous technologies

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

Environment friendly Plasma technologies: Solid waste dumping sites or landfill sites need more

Amount of land which is not available in urban areas. Incineration of solid waste pollutes the environment if the incinerators are not designed or operated properly. Thermal Plasma Technology is ideally suited for waste treatment. By plasma technology Hazardous & toxic compounds are broken down to elemental constituents at high temperatures; Inorganic materials are converted to Vitrified Mass; and Organic materials are Pyrolysed or Gasified, Converted to flue gases (H2 & CO) & Lower hydrocarbon gases when operated at low temperature (500 – 600OC).Disposal of carcass is also being thought of using plasma pyrolysis.

Unique Multi Stage Biological Treatment Solution: Multi Stage Biological Treatment Solution (MSBT) can be implemented on existing STP which are not able to process Sewage to optimum efficiency. MSBT can be implemented as a modular or container on the banks of rivers on Drains/Nalas which discharge waste water to the river. It can also be implanted in small urban societies and housing complex for better water management. Benefits of MSBT are: No Surplus of Organic Sludge, No Odor problem, drastic reduction of Electrical Power usage which minimizes operating costs, No need for return sludge pumping (minimizing electromechanical component which ultimately reduces operating cost).

3.11 Initiatives in village development by local Self-Government

- The transformation that took place in the Dharnai village of Bihar is nothing short of a miracle that is being talked of here. Sitting in the comfort of our homes or offices; we cannot even imagine a single day without electricity. But for the Dharnai village, a small village near Bodhgaya in Bihar which had remained in darknessfor30years, having electricity was like a far-fetched dream. The village happens to be on a NH, it has a railway halt. It has pretty much all the social infrastructure that should be available in a village. And, the only thing that sort of was missing was energy, says Manish Ram, senior campaigner/analyst, Renewable Energy, Greenpeace India.

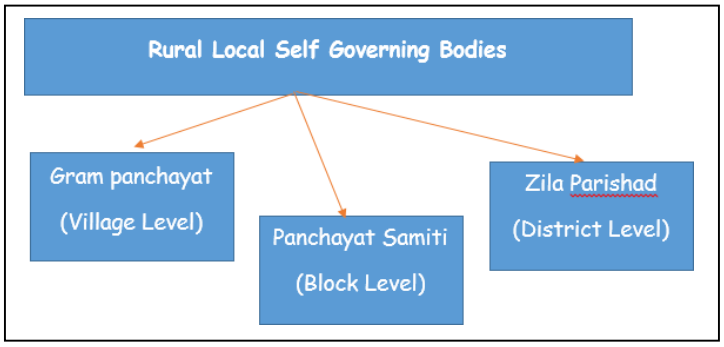


Fig.3.7 Rural local self-governing bodies'

- Greenpeace, along with partner organizations CEED (Centre for Environment and Energy Development) and BASIX(livelihood promotional institute),decided to transform the lives of

people in this village by bringing in electricity through Decentralized Renewable Energy System (DRES). The project was put into operation on 20 July 2014, with an initial cost of around Rs. 3 crore. It made Dharnai the first village in India to be fully powered by solar energy. The system has a capacity of 100 kilo watt and powers 450 homes of the 2,400 residents, 50 commercial operations, 60 street lights in the village, two schools, a training center and a health care facility. A battery backup ensures electricity is available around the clock.

3.12 Smart initiatives by District Municipal Corporation

- The Ministry of Environment and Forest (MoEF), Govt. of India issued a notification on the 25th September, 2000 under the Environment Protection Act 1986 stating that all cities and towns of India shouldundertakemunicipalsolidwastemanagement as prescribed by the rules. These are known as "The Municipal Solid Waste (Management & Handling) Rules 2000". Almost 60 Metric Tons of solid waste is generated from the city on a daily basis.

Fig.3.8 Smart cities initiatives

This waste is collected, transported ,treated and disposed according to Rules. Nearly 50 percent of the entire waste is collected from municipal bins and from street sweeping. Street Sweeping is carried out on all 365 days by 167 permanent workers from the morning 7:00 am to 12:00 am and 3 pm to 6 pm on all roads of the city. GMC introduced a new concept of door / Gate to dump since July 2014, in which the GMC appointed contractor collects waste from residential units in the morning hours and from commercial units in the evening in closed Hydraulic Euro III vehicles. The waste from these vehicles is transferred to transferstationsfromeachwardtothetreatmentplants.Theprojectissuccessfullycovering100% of all residential & commercial units, on all 365 days of the year. 65 Vehicles have been deployed that start the collection process from 7 among wards.

- Solar roof panels
- Green campaign
- Installation of CCTV camera
- Installation of smart toilets

- Parking encroachment drive
- Public Wi-Fi

3.13 Any project contributed working by Government/Ngo

Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)

Pradhan Mantri Gram Sadak Yojana (PMGSY)

Indira Awas Yojana (IAY)

Sampoorna Gramin Rojgar Yojana (SGRY)

Shyama Prasad Mukharjee Rurban Mission (SPMRM)

Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA).

Mission Statement: It aims to in hence livelihood security in rural areas by providing at least 100 days of wage employment in financial year to every household whose adult members volunteer to do unskilled manual work.

Awas Yojana:

- It was started in the year January 1996 with a view to provide rural housing as an independent program. It addressed the housing of rural areas but due to identifying of some defects such as the lack of transparency in selection of beneficiaries, lack of technical Supervision, loans not avail by beneficiaries and weak mechanisms for monitoring the Indira.

Fig.3.9 AwasYojana

- Awas Yojana has been restructured in to PMAY-G: Aims at providing a permanent house with basic amenities by 2022.the immediate objective is to cover 1crore houses in 3 years from 2016-17 to 2018-19 the minimum sizes of the house has been increased to 25sq.m with a hygienic cooking space. The assistance has been increase from 70000 to 1.20 lakh in plain and from 75000 to 1.3 lakh in hilly state under this scheme.

Sampoorna Gramin Rojgar Yojana:

- Sampoorna Gramin Rojgar Yojana is actually combination of the provision under the employment assurance scheme (EAS) and Jawahar Gram Samridhi Yojana (JGSY). It was launched on 25th September 2001 by the then PM of India Atal Bihari Vajpayee. The Programme is self-targeting in nature and aims to provide employment and foodto

Fig.3.10 Sampoorna Gramin RojgarYojana

People in rural areas who live below in poverty line. While preference is given to families below the poverty line people who live above the poverty line to are eligible under this scheme.

3.14 How to implement other countries smart villages project in Indian Village context

Integrated biomass and solar town concept for a smart eco village in Iskandar Malaysia 2014

This paper presents a new integrated biomass and solar town concept that can serve as a global model for smart eco-villages in tropical countries. In this research, a renewable energy (RE)-based distributed energy generation (DEG) system for an eco- village driven by the "integrated bio mass and solar town" concept was considered in order to optimize RE resource utilization. To design a cost-effective integrated biomass and solar town, a mixed integer linear Programming (MILP) model was developed. The proposed model considers actual operation constraints due to biomass availability, weather variation, and restriction of the thermal plant. The

Fig.3.11 solar town concept for a smart eco village in Iskandar Malaysia

application of this new concept on the Iskandar Malaysia (IM) case study with an average daily demand load of 16,900 kWh/d revealed that a 417 kW direct-fired biomass power generator, 412 kW biogas thermal power plant, 136 kW solar photovoltaic (PV) modules, and sodium sulphur battery with an energy capacity of 3046 kWh and power of 1530 kW were required. The annual cost of the integrated biomass and solar town was estimated to be approximately RM 3 million at an electricity cost of RM 0.48/kWh.

Village-level solar power in Africa: Accelerating access to electricity services through a socio- technical design in Kenya2014

Village-level solar power supply represents a promising potential for access to electricity services. Increased knowledge is needed for the development of solutions that work for the users and are viable in the long run. This article analyzes a solar power model developed and tested through action research in collaboration

Between community in Kenyan team of Social scientists and technical experts.

Fig.3.12 Village-level solar power in Africa

The analysis includes the reasons for its socio-technical design, and the actual functioning of the model. The research shows that an energy center model can cover basic electricity needs in areas with dispersed settlement patterns, where mini-grid based systems as well as conventional grid extension meet significant challenges. Close attention to the socio-cultural context and the challenges of users, operators and managers is required. Our research draws on theories of socio-technical change and users' innovation, and presents a five step analytical framework for analysis of village-level power provision.

Solar power energy solutions for Yemeni rural villages and desert communities (2016):

Fig.3.13 Yamani village solar energy solution

According to UNDP Policy Note 2014, only 23% of Yemen rural communities have access to electricity – having connected to national grid or use small isolated generating units – while the country is one of the richest in solar energy with over 3000 h per year clean blue sky. The objectives of this paper is to concentrate on the utilization and the cost effectiveness

Of photo voltaic solar energy for electrification of Yemeni rural and desert communities, which will result in enhancing education, culture, science, medical services, and improve the living conditions in rural areas. Otherwise, energy poverty that is a facet of a multidimensional poverty in Yemen will persists because the possibility of connecting rural communities to the national grid, even in the next ten years, is invisible due to major political and financial problems that the country is facing. Moreover, PV energy is environmentally clean and has proved to be one of the best solutions for rural electrification in many countries worldwide due to noticeable drop of PV systems prices with the advance in PV technology. Accordingly, it should be the best solution for rural electrification in Yemeni as well. The paper demonstrates the cost effectiveness and the design procedure of utilization of solar energy for rural and desert communities in Yemen using a number of sub sequent cases typical to Yemeni communities and provides also a practical study to support Bedouin back packers.

Chapter 4

Introduction to allocated village (Balva)

4.1 Introduction:

4.1.1 Introduction about Balva Village:

- Balva village is located in Mansa Taluka of Gandhinagar district, Gujarat. It is located 16 KM towards North from District headquarters Gandhinagar. 3 KM from Mubarakpura and Itla, 4KM from Libodara, 5 KM from Amaja and Chandisana are the nearby villagestoBalva.
- Balva is surrounded by Gandhinagar Taluka towards south, KalolTaluka towards west, PrantijTaluka towards east, VijapurTaluka towards North. This Place is in the border of the Gandhinagar district and Mehsanadistrict.
- Balva Local Languages is Gujarati. Balva village total population is 6504 and number of houses are 1330.female population is 47.9%. Village literacy rate is 71.1% and the female literacy rate is 31.0%.

Connectivity of Balva:

- Nearby villages of Balva are Unava, Amaja, Vasan, Pratppura, Itla, Mubarakpura, Libodaraetc.
- There is no recreation facility in the village. The water Distribution facility is also not proper as well as street lights are also not proper. If recreation facilities are provided dwellers don't have to go outside for recreation. They can also use Solar and Bio-gas plant as a mean of renewable resources.

4.1.2 Justification/ need of thestudy

- Village studies have their own importance. These have enriched the knowledge of the Indian Society in general and rural India. These have given great encouragement to the growth of rural society. After Independence, Planners in India realized that unless Indian villages were properly studied, no real progress could bemade.
- Scholars now began to pay more and more attention to villagestudies.
- Village studies help in planning ruralreconstruction.

- Village studies provide useful information to other disciplines.
- Village studies provide useful knowledge about Indian social reality.

4.1.3 Study Area:

- Present status and techno-economic survey of villages in given district of the state in terms of basic and public amenities, essential commodities, other infrastructural facilities for the need of people and on the adequacy of the available resource with reference to the population of the village and growth of the area with the collection of local revenue income and authorities, TDO and DDO the future need of the village keeping to mind the need of days, future targeted population growth, growth of surrounding town or Taluka places etc..

4.1.4 Objectives of study:

- Creation of infrastructure- connectivity, civic, and social infrastructure along with provision of alternative Livelihood generation are the key pillars.
- Basic Socio-cultural Infrastructure–community hall, Public Library, Recreation facilities should be the priority focus and be provided.
- Basic Sustainable Infrastructure–Rain water harvesting system, Solid waste management system, Solar street Light facilities, Toilet should be provided and ensure proper delivery of facilities to village people.
- Promote integrated development of rural areas with provision of quality housing, better connectivity employment opportunities and supporting physical and social infrastructure.

4.1.5 Scope of study:

- To provide some urban amenities to a village without affecting the soul of village.
- Due to providing urban facilities development of village will be possible.
- Most of people lived at village so first to developed the village as per the Rurbanization term.

4.1.6 Methodology Frame work for development of village:

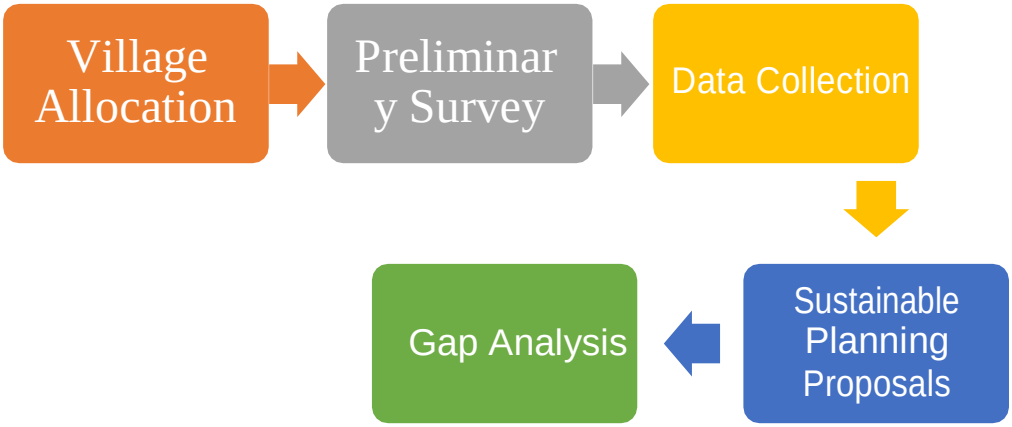


Fig.4.1 Flow Chart Methodology

4.1.7 List of Objects Available Related To Civil Methodology:

- To provide basic amenities in the village, like transportation, sanitation, educational, health care facilities
- To promote integrated development of rural areas with provision of quality housing, better connectivity, employment opportunities and supporting physical and social infrastructure.
- To propose the comprehensive planning suited for ideal village.
- Reduce migration from rural to urban areas due to lack of basic services and sufficient economic activities in rural areas.
- Electricity connection like street lighting that is energy efficient and eco-friendly

4.2 Balva Village Study Area & Data Collection:

4.2.1 Study Area Location with brief History land use details:

Name of village	**Balva**
Taluka	Mansa
District	Gandhinagar
Co ordinates	23.3525* N, 72.6596* E

Table 4.1 Study Area

- According to Census 2011 information the location code or village code of Balva village is 511129. Balva village is located in Kalol Tehsil of Gandhinagar district in Gujarat, India. It is situated 25km

away from sub-district headquarter Kalol and 14km away from district headquarter Gandhinagar. As per 2009 stats, Balva village is also a gram panchayat.

- The total geographical area of village is 1305 hectares. Balva has a total population of 6,504 peoples. There are about 1,330 houses in Balva village. As per 2019 stats, Balva village comes under Mansa assembly & Mehsana parliamentary constituency. Mansa is nearest town to Balva which is approximately 14kmaway.

4.2.2 Base Location map, Land Map,

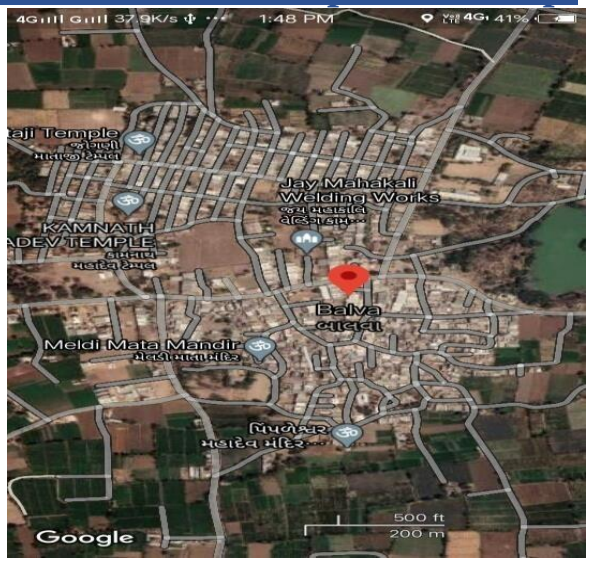


Fig. 4.2 Balva Village Satellite View

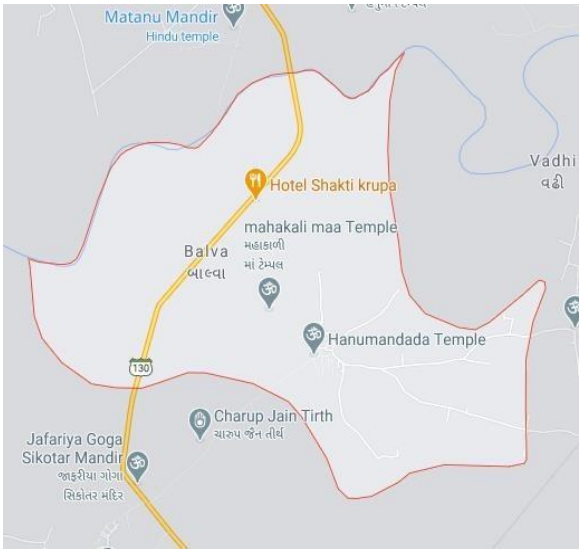


Fig. 4.2 Balva Village map

4.2.3 Physical & Demographical Growth:

PARTICULARS	TOTAL	MALE	FEMALE
Total No. of houses	1330	-	-
Population	6504	3390	**3114**
Child(0-6)	792	449	**343**
Schedule cast	336	180	**156**

Schedule Tribe	8	6	**2**
Literacy	80.93%	88.68%	**72.72%**
Total Workers	**3251**	**1977**	**1274**

Table 4.2 Physical and demographical Growth

4.2.4 Economic Profile:

- Mainly the occupation of village is agriculture and the most of people is farmer. Second occupation is dairy farming the main occupation and economy of village is based on farming and now a day's education get rise and the people is now being little educated to some of the around 35% of people get educated and the farming get decreases gradually and other business gets increase.

4.2.5 Actual Problem faced by villagers and smartsolutions:

- There is no recreation facility in the village. The water Distribution facility is also not proper. Streetlights are not available in every street and those available are also not working properly.
- We can design a recreation center, a secondary school and a library so that dwellers do not need tomigratetonearbyvillagesforsuchfacility.Alsowecanenlightenthestreetsofvillagewithless running cost by designing solar street lights paths. Also we can reduce our power consumption charge by using solar roof proof top design which will help us take the benefit of the renewable energy source at residential and commercial buildings.

4.2.6 Social scenario:

- The Main social scenario of village is agriculture but the villagers make all the festival together and the community program done together in community hall. The social scenario of village is warm. All the existing facility of the village is trying to be kept maintain by the villagers. Thus economy condition is not so good of village thus they can't provide more facility.

4.2.7 Migration Reasons /Trends:

- In Vansva Village people are migrate because of better opportunity for jobs, Business, High living standard. People are migrate to Surat because Surat is the biggest economic hub of Gujarat. People earn more in the city rather than village that's why people migrate from village to city

4.3. Data Collection Balva village Photograph/Graphs/Charts/Table)

4.3.1 Methods for Data collection

- By filling of survey forms
- By interaction with the villagers
- By interaction with the Sarpanch/panchayat members
- By observing the current condition of the village
- Visiting different locations of the village

4.3.2 Primary Survey Detail

- Primarysurveydetailsarecollectedbyobservingthevillageandthepresentscenariooofthevillage. The road network is 50% of total village is poor. There are no solar power for electric city and no renewable power source. Drinking water is provided by three overhead water tanks. There is no recreational for children or senior citizen. In the village there are seven Aanganwadi, one bank, one PHC, one primary school, one secondary school, two dairy.

4.3.3 Average size of the House

- The village has no specified size of house, but the Financially Capable villagers have good constructed House and poor villagers have small size or medium size house. The Average size of house is 100 var plot per house

4.3.4Geo-Tagging of the House

- There is no Geo-Tagging of house is carried out because we go for Home interview survey

4.3.5 No. of Human being in one house

- As per population and house hold number the average Human being in the one House is 4.
- Each House has 4 persons in the house

4.3.6 Which Martial Use locally

- The village has no specific material. All the martial which is required which has been transported to village from the nearest town like Gandhinagar.

4.3.7 Out sourced material

- The Out sourced materials are sand Aggregates, Cement, Blocks, Steels and bitumen whichis used for the construction of road and building

4.3.8 Labor work doing

- Labor works in the Farm

4.3.9 Any costing

- Costing is Low compared to city.

4.3.10Geographical Details

Sr. No.	Description	Information details
1	Area of Village	1305 Hectors
2	Forest area	-
3	Residential area	315 Hectors
4	Other area	990 Hectors
5	New area	-
6	Distance from Nearest railway station	15 Km Gandhinagar
7	Nearest town with distance	15 Km Gandhinagar

Table 4.3 Geographical Detail

4.3.11 Demographical Details

Total Population	Male Population	Female Population	Total House Hold
6,504	3,390	3,114	1,330

Table 4.4 Demographical Detail

4.3.12 Occupational Details

Percentage of worker	Occupation
70%	Farming
20%	Work in farm as labor
10%	Jobs

Table 4.5 Occupational Detail

4.3.13 Agricultural details / Organic farming /Fishery

Weather	Crops name
Winter	Garlics, Chori,
Summer	Rai
Monsoon	Jowar

Table 4.6 Agricultural Detail

4.3.14 Manufacturing Hub / Ware hose

- No, Manufacturing Hub

4.3.15 Tourism cluster

- No tourism Site of village.

4.3.16 Service cluster

- Village has no service cluster

4.3.17 Male Female Details

Total Population	Male Population	Female Population
6,504	3,390	3,114

Table 4.7 Male female Detail

4.3.18 Cast wise population Details / Which ID proof Using by Villagers

	Total	General	Schedule Cast	Schedule Trib
Total	6,504	5958	219	327
Male	3390	3299	114	218
Female	3114	2659	105	109

Table 4.8 cast wise population Detail

4.3.19 Occupational Detail Wise / Majority Business

Percentage of worker	Occupation
70%	Farming
20%	Work in farm as labor
10%	Jobs

Table 4.9 Occupational Detail Wise / Majority Business

4.4 Infrastructure facilities

4.4.1 Drinking water

- There are 3 water tanks in village. There is 2 times in a day water supply in village. But as people says the quality of water is not proper.

Fig 4.3 Water tank

4.4.2 Drainage Network:

- There is underground drainage facility. But the surrounding places are not proper. E.g. the face of underground drainage is place at 0.7 m from the end of road corner and people are using that road and the condition of road is not good.

Fig 4.4 Drainage Network

4.4.3 Transportation and Road network:

- At the visit time we seen entry road at Balva is in worst condition. But after 2 weeks is new constructed.
- But in village road network is in bed condition. Approach road are also in bed condition. We can say 25% of village roads are in good condition.

Fig 4.5 RCC Road

Fig 4.6 Approach road

4.4.4 Housing Condition:

- Village house hold has good Condition, almost villagers has good PaccaMakan(House)

Fig 4.7 PaccaMakan

Fig 4.8 Kachcha house

4.4.5 Social Infrastructure:

I. Health Facilities:

- There is PHC center available.

II. Education system:

- There is 7 Aanganwadi, Primary School, Secondary School are available.

Fig 4.9PHCcenter

Fig 4.10Aanganwadi

Fig 4.11 Primary School

Fig 4.12 Secondary School

4.4.6 Technology Mobile/Wi-Fi

- There is personal Wi-Fi in the village. From the total population 50% people are using mobile phone and used their own internet. There is no any other Wi-Fi facility available for publicusage.

4.4.7 Socio Cultural Facilities

- Public Library: There is no public library.
- Public garden: There is no public garden in the village.
- Village pond: There is a one pond or lake in The village.

Fig 4.13 Village Lake

- Community Hall: There is no community hall in the village

4.4.8 Other facilities

- There is one Panchayat building in the village.
- There is one bank in the village.
- There is one Milk Co-Operative Society in the village.
- There is no any medical shop in the village.

Fig 4.14 Panchayat office

Fig 4.15 Bank

4.4.9 Sustainable Infrastructure Facilities & Repair &Maintenance

- Water Supply System
- Waste Water Management system
- Solid Waste Management system
- Bank
- Underground tank
- Lake development
- Post office
- Public toilet
- Recreational activities.

4.4.10 About Village

- In this village the conditions of road are not good, there is one lake with lot of impurities. There are 3 over head tanks. There is no recreational activities in this village

Chapter 5
Sustainable Technical Options with Case Studies of the Existing Village

5.1 Concept (Civil)

5.1.1 Advance construction techniques

Researchers Discover Additive to Help Concrete Withstand 9.0 Earthquakes

Researchers Discover Additive to Help Concrete Withstand 9.0 Earthquakes Concrete is an extremely strong building material, but has a notoriously weak tensile strength. In order to resist tension, bending, and shear forces, steel rebar or other reinforcement materials are added either prior to the placement or into the mix. Even with reinforcement, concrete is still extremely rigid and prone to cracking.

Fig.5.1 Fly ash concrete

In The event of a major earthquake, the uneven and horizontal forces can cause structures to crack and, in the worst case, cause failure. To help keep buildings and their occupants safe in major earthquakes, researchers at the University of British Columbia have discovered as pray-on concrete reinforcement that greatly improves concrete's resistance to earthquakes up to a magnitude of 9.1.Concrete walls are sprayed with the reinforcement, which is made up of "polymer-based fibers, fly ash, and other industrial additives, "in a 0.4 inch (10mm) thick layer .The retrofit reinforcement allows the concrete to bend with the movement of the earthquake, making it much more ductile The product is being called Eco-Friendly Ductile Cementations Composite, or EDCC, due to its heavy reliance on fly ash, with is an industrial by product of coal. "By replacing nearly 70 percent of cement with fly ash, an industrial by product, we can reduce the amount of cement used," said UBC civil engineering professor Nemy Banthia in a press release. "This is quite an urgent Requirement as one to one of cement production releases almost a to one of carbon dioxide into the atmosphere and the cement industry produces close to seven percent of global greenhouse gas emission."

5.2 Causes Prevention and Repair of Cracks In Building:

- Cracks are the most common problem that occurs in any type of concrete structure such as Beams, Columns, etc. A building component exceeds its strength. Stress in a building component could be caused by externally applied forces such as dead, live, wind or seismic loads and internal forces such as moisture changes, thermal movement and chemical reaction

Fig 5.2 Cracks

5.2.1 Reduce Water Content in Concrete

- A low water cement ratio will affect the quality of concrete. W/C ratio is weight of water to the weight of cement used. A lower w/c ratio leads to high strength in concrete and lesser cracks. W/C ratio shall not exceed 0.5 in concreting, which reduces the workability of concrete which can be covered by use of plasticizer or super plasticizer. Less water content increases the durability of concrete.
- Concrete expands and shrinks with changes in moisture and temperature. The overall tendency is to shrink. Shrinkage is the main cause of cracks, when concrete hardens it evaporates the excess water and thus shrinks, so lesser the water content, lesser is the shrinkage.

5.2.2 Proper Concrete Mix Design and use of Quality Materials

- The concrete its must be properly proportioned, and properly mixed. If you use too little cement, you can almost guarantee cracks. Using too much water will make the concrete weak, leading to cracking.
- Use good quality aggregates so will produce lower shrinkage concrete. Hard, dense aggregate, using a large top size aggregate and optimizing the gradation of the aggregate is able to reduce the shrinkage of the concrete.
- If the aggregate is of poor quality, maximizing the size, gradation, and content may have little effect on the concrete shrinkage. Mixing large aggregate with poor qualities to a mid-size aggregate with good properties may increase the shrinkage of the concrete.

- Avoid the use of shrinkage-promoting admixture such as accelerators; dirty aggregate which increases water demand and using cement with high shrinkage characteristics.

5.2.3 Finishing of Concrete Surface

- Use proper finishing techniques and proper timing during and between finishing operations. Flat floating and flat toweling are often recommended.
- Avoid over working the concrete, especially with vibrating creeds. Over working causes aggregate to settle and bleed water and excess fines to rise.
- Don‘t finish the concrete when there is bleed water on the surface, finishing leads the water back to concrete instead of evaporating thus leading to cracks.

5.2.4 Proper Curing of Concrete

- Stop rapid loss of water from surface or drying of concrete due to hydration (liquid concrete converts to plastic and then to solid state) causes drying of the slab, so it‘s recommended to cure the slab for several days.
- As soon as the concrete on slab sets its general practice to make boundary with mortar on the slab and keep it filled with water. Cover slab with cotton mats soaked with water or spray on a curing compound also prevents loss of water.
- The concrete should not be subjected to load during the curing period, which can last up to one month

5.2.5 Proper Placement and Vibration of Concrete

- Properly placed, vibrated, finished concrete reduces the chances of producing cracks. Properly vibrate to release entrapped air which later leads to cracks.

5.2.6 Proper Compaction of Soil to Prevent Settlement Cracks in Concrete

- The area below the concrete slab has to be compacted properly and in layers so as to ensure against settlement of soil later. If the soil is left loose it will settle over time and create cracks on surface. This applies in the home as well as constructions on highways.

5.2.7 Providing Control Joints in Concrete

- Control joints should be located at regular intervals so as to adjust the shrinkage of concrete. Generally, for 4-inch depth of slab joints are provided 8 to 12 ft. apart. Control joints are pre-planted cracks. An engineer should have an idea that concrete will crack at control joints instead of cracking any other location.

5.2.8 Some Other Preventive Control Measures for Cracks in Concrete

- Applying good acrylic silicone sealer yearly to concrete works
- Avoid calcium chloride admixtures
- Prevent extreme changes in temperature.
- Consider using a shrinkage-reducing admixture
- Warm the subgrade before placing concrete on it during cold weather
- Consider using synthetic fibers to help control plastic shrinkage cracks.

5.2.9 Causes Prevention

- By creating slip joints under the support of RCC slab on walls, cracks by elastic deformation can be prevented.
- Construct various joints such as expansion joints, construction joints, slip joints and control joints to prevent cracks from thermal movement.
- Slab should be provided with thermal insulation.
- Concrete should be good quality. Use richer mix of cement concrete 1:1.5:3 to prevent cracks. In mixing of cement concrete or cement mortar, Use minimum quantity of water, as per cement ratio.
- Use largest possible aggregate and the materials should be of good grading and quality.
- As soon as initial setting has taken place, the curing haul be start and be continued for at least seven to ten days.
- Use coarse and fine aggregates after washing to reduce silt contents.

5.2.10 Repair of Cracks in Building

- By epoxy-injection grouting.
- By Routing and Sealing.
- By Stitching.
- By providing additional reinforcement.
- By drilling and plugging.
- By Prestressing steel.
- By grouting.
- Dry packing.
- Overlays.
- Surface coating.

5.3 Disaster Management in natural calamities

- Natural Calamities can occur without any notice. This causes disaster for the living-beings. It brings management program for the government to develop. Disaster Management is a combination of organization and management of resources and responsibilities, dealing with the humans feeling during disaster. Human Welfare should be done by the government. Also management team should be in alert position in all three aspects such as Pre-disaster, during-disaster and Post-disaster.

5.3.1 Types of disasters

- There is no country that is immune from disaster, though vulnerability to disaster varies. There are four main types of disaster.

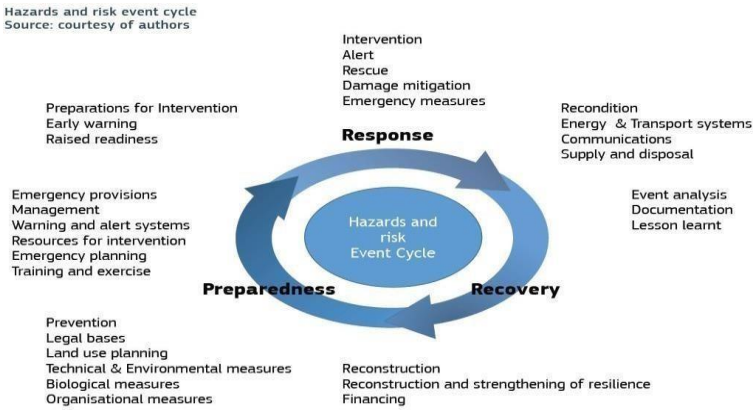


Fig. 5.3 Disaster management cycle

I. Natural disasters: including Floods, hurricanes, earthquakes And volcano eruptions that have immediate impacts on human health and secondary impacts causing further death and suffering from (for example) floods, landslides, fires, tsunamis.

II. Environmental emergencies: including technological or industrial accidents, usually involving the production, use or transportation of hazardous material, and occur where these materials are produced, used or transported, and forest fires caused by humans.

III. Complex emergencies: involving a break-down of authority, looting and attacks on strategic installations, including conflict situations and war.

IV. Pandemic emergencies: involving a sudden onset of contagious disease that affects health, disrupts services and businesses, and brings economic and social costs.

The response part of the plan has distinguished eighteen wide exercises which have been masterminded into a grid to be filled in as a prepared reckner:

- Food and essential supplies
- Correspondence
- Early warning, Maps, Satellite, data sources.
- Clearing of people and animals
- Search and rescue of people and animals
- Clinical care
- Force
- Fuel
- Transportation
- Removal of animal carcasses
- Media relation
- Drinking water/dewatering pumps/satellite facilities.

5.4 Various types of Roads / Intelligent transport system the roads are classified based on many factors as follows.

- Materials
- Location &function
- Traffic volume
- Width
- Economy
- Traffic type
- Rigidity
- Topography

Types of Roads Based on Materials

- Earthen roads
- Gravel roads
- Murrum roads
- Kankar roads
- WBM roads
- Bituminous roads
- Concrete road
- Earthen roads

Earthen Roads

- Earthen roads are laid with soil. They are cheaper of all types of roads. This type of road is provided for less traffic areas and or for countryside areas. Good drainage system should be required which reflects good performance for longer period.

Fig.5.4 Earthen Road

Gravel Roads

- Gravel roads are also low-quality roads but they are good when compared to earthen roads. Compacted mixture of gravel and earth is used as pavement material in this case.

Fig.5.5 Gravel Road

Murrum Roads

- Murrum is a matter obtained from the disintegration of igneous rocks by weathering agencies. This is used to make road scaled as Murrum roads.

Fig.5.6 Murrum Road

Kankar Roads

- Kankar is nothing but impure form of lime stone. Kankar roads are provided where lime is available in good quantity. These are also low quality and performance wise they are similar to gravel and Murrum roads

Fig.5.7 Kankar Road

WBM Roads:

- Water Bound Macadam (WBM) roads contain crushed stone aggregate in its base course. The aggregates are spread on the surface and these are rolled after sprinkling water.

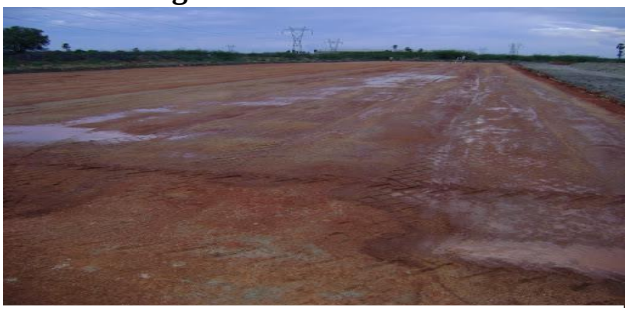


Fig.5.8 WBM Road

- Water Bound Macadam (WBM) roads contain crushed stone aggregate in its base course. The aggregates are spread on the surface and these are rolled after sprinkling water.
- WBM roads provide better performance compared to earthen, gravel, Murrum and Kankar roads.
- WBM roads are laid as layers about10cm

  Thickness of each layer. They are very rough and may disintegrate immediately under traffic.

Bituminous Roads

- Bituminous roads are very popular roads around the world. They are most used roads in the world. They are low in cost and good for driving conditions. They are flexible and thickness of bituminous roads depends upon the Sub grade soil conditions.

Fig.5.9 Bituminous Road

Concrete Roads

- Cement concrete is used to construct the pavements in case of concrete roads. These are very popular and costlier than all other types of roads. They are not flexible so; they require less maintenance. Concrete roads are suitable for high traffic areas.
- Concrete roads are laid with joints and time of construction is more

Fig.5.10 Concrete Road

Types of Roads Based on Location and Function

- National highways
- State highways
- District roads
- Rural roads or village roads

National Highways

- National highways are main roads of a particular country. They connect all major cities to the capital of the country. They run throughout the length and breadth of the country. Minimum two lane road is provided for national highways.

Fig.5.11 National Highways

State Highways

- State highways are second main roads which connect major parts of state within it. State highway ultimately connects to the national highways.

Fig.5.12 State Highways

District Roads

- District roads are provided with in the cities and connect markets and production places to state and national highways. Two types of district roads are there namely,
- Major district roads
- Minor district roads
- Major district roads connect headquarters of neighboring district with main parts of district while minor district roads are laid within the district.

Rural Roads or Village Roads

- Village roads connects the nearby villages with each other. They lead to nearby town or district roads. Usually low-quality roads are provided as village roads because of low traffic.

Types of Roads Based on Traffic Volume

- Light traffic roads
- Medium traffic roads
- High traffic roads

- Light Traffic Roads The roads which are carrying 400 vehicles daily on an average is called light traffic roads.
- Medium Traffic Roads If a road carrying 400 to 1000 vehicles per day then it is said to be medium traffic road.
- HighTrafficRoadsIfaroadiscarryingismorethan1000vehiclesperdaythenitisconsidered as high traffic road.

Types of Roads Based on Economy

- Low cost roads
- Medium cost roads
- High cost roads
- The economy depends upon the location and function of roads and also on the trafficanalysis.

Types of Roads Based on Traffic Type Pedestrian ways

- Cycle tracks
- Motorways
- Pedestrian Ways

5.5 Various type of Environment factors:

I. Wind Impact on structure:

- Wind is a ground- breaking power that has a lot of impact on structures. There are two expansive kind so film acts of wind on structure: static or dynamic. The static burden chiefly prompts flexible bowing and turning of structure. Dynamic examination of wind is needed for high rises, taller, long-range and thin structures. This is on the grounds that whirl winds cause fluctuating power son the structure that actuate huge unique movement, including motions.

II. Effects of solar radiation on buildings:

- UV radiation impacts the sturdiness of many structure materials. The paints blur, plastic-based materials become weak, lumber contorts and moves, and extension and withdrawal attributable to warning and cooling causes weight on different materials, so UV radiation is a significant thought in the structure's manageability.

III. Chemical effluents:

- Effluentsareanotherbyproductofindustrieswhichposesthreattotheenvironment,leatherand

Tanning industries, petroleum industries and chemical manufacturing industries create major waste products which are released directly into nearby streams without treatment, creating river pollution and causing harm to aquatic life.

IV. The population explosion:

- The increasing population creates a load that the entire environment has to support, not only in terms of food and lodging, but also in terms of the amount of waste that it generates and the ability of the environment to sustain this growth. All major activities are carried out to support this growing population, and whilst this is unavoidable, what is required is the proper planning that should come with this explosion.

V. Transport:

- Asthespendingpowerofthepopulationincreasesandascarsbecomeavailablemore, thenumber of vehicles on the road increases. The amount has grown exponentially in countries like India, Brazil and China and this is a point form of pollution which directly affects humans. Smog is a nuisance that is created because of vehicular pollution, and Hydro-Carbons released from engines are the cause of creation of lower level ozone that is harmful to humans.

5.6 E-Waste Disposal:

- This term applies to consumer and business electronic equipment that is near or at the end of its useful life. There is no clear definition for electronic waste (e-waste) at this time, but if you can plug it in to an electrical outlet or it contains circuit boards or chips, it is most likely e-waste. These products can containheavymetalslikecadmium,lead,copper,andchromiumthatcan contaminate theenvironment.DO NOT dispose of these items in the trash or your recycling bins.

Fig.5.13 E-waste Multi bins

- Example of electronic wasteincorporate,

  However not restricted to:

- TVs, PC screens, printers, scanners, consoles, mice, links, circuit loads up, lights, timekeepers, electric lamp, number crunchers, telephones, replying mail, radios.

- Kitchen hardware
- Laboratory hardware
- Broken PC Screens, TV tubes
- StudentE-wasteRecyclingOptionsIfyouliveon-campusyoucandisposeofyourelectronicwaste easily and conveniently by creating a Fix It Ticket or contacting your college maintenance office. Additional information on disposal / recycling of e-waste and other regulated items can be found in all college mailrooms, Graduate Student Housing Mailroom and the Village Laundry Community room. Multi bins are blue cabinets built to collect batteries, small electronics, printer cartridges, and CDs. They are located in every college mailroom.

5.6.1 Methods of E-Waste disposal:

- Landfill
- Incineration
- Acid shower
- Recycle and reuse

5.7 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure

- The durability of concrete structures is influenced by various factors, for example, ecological presentation, electrochemical responses, mechanical stacking, affect harm and others. Of all of these, consumption of the fortification is likely the primary driver for the disintegrationofsteelstrengthencement (RC) structures.Consumptionadministrationisending upprogressivelyimportantbecauseofthedevelopingnumberofmaturingfoundationresources (e.g. spans burrows and so on.) and the expanded prerequisite for impromptu upkeep with a specific end goal to keep these structures operational all through their outline life (andusually, past).
- The primary RC repair, restoration and recovery approaches by and large utilized can be extensively arranged under an) ordinary, b) surface medications, c) electrochemical medicines and d) outline arrangements. The overall point of this examination was to recognize the key consumption administration strategies and embrace exact examinations concentrated on full-scale RC structures to explore their long haul execution.

Causes of defects in concrete structures can be broadly categorized as:

- Structural deficiency resulting from errors in design, loading criteria, unexpected overloading, etc. Structural deficiency due to construction defects.
- Damage due to fire, floods, earthquakes, cyclonesetc.
- Damage due to chemicalattack.
- Damage due to marineenvironments.
- Damage due to abrasion of granularmaterials.
- Movement of concrete due to physicalcharacteristics.
- Structural Defects due to Design andDetailing
- In such case, the design is required to be reviewed in detail and remedial measures worked out by the design team. Once this is done the methods of carrying out the remedial measures will be similar to those arising out of otherdefects.
- Structural Deficiency due to ConstructionDefects
- Defective construction methods form the largest segment of source of distress to the beams. Such defects can be broadly subdivided asfollows:
- Defects due to the quality of rawmaterials.
- Non adoption of designed concretemix.
- Use of defective construction plant for producing, transporting, and placing theconcrete.
- Defectiveworkmanship.
- Inadequate qualitydetailing.
- It is very necessary to choose the right type of cement for the concrete going into the structure under consideration. Ordinary Portland cement is the most common of all cements. Provided the quality of cement conforms to the relevant standard specifications, at the time of use, normally no problem is encountered in respect of ordinary Portlandcement.
- Where the concrete is exposed to aggressive environment, it may be necessary to use special cements, such as, sulphate resisting Portland cement, blast furnace slag cement, low C3A cement. The quality of aggregates, particularly in respect of alkali-aggregate reaction, needsto be taken into account, fortunately cases of defects / failures attributed to alkaliaggregate

Reaction in India is very rare.

- The use of water containing salt for making concrete can also contribute to deterioration of the concrete.
- Thedesignofconcretemixcanbesatisfactorilycarriedoutusingawidevarietyofaggregates. A reasonable continuity of grading of aggregates should beensured.
- Excessive use of water in the concrete mix is the largest single source ofweakness.
- Theaccuracyofweighingthevariouscomponentsisverymuchdependentonthequalityofthe weight batchingsystem,available.Springload eddies sftheweighbatcherscontributetoward$ excessive variability in the quality of weigh-batched concrete inIndia.
- Other contributory factors that add to bad workmanship include segregation, improper placement, inadequate or excessive vibration leakage of mortar through shuttering joints, inadequate concrete cover, in sufficient curingetc.
- Proper detailing of reinforcement, including adequate cover is essential to ensure successful placement of concrete. Bad detailing results in congestion of reinforcement to such an extent that concrete just cannot be placed and compacted properly, even if the concrete isworkable.
- Detailing of reinforcement should be based on a proper appreciation of how the concrete placement and compaction is going to be carriedout.

Chapter 6
Swatch Bharat Abhiyan(Clean India)

6.1 Strategic Technology Options for Swatch Bharat Abhiyan (Clean India)

6.1.1 Swatch Bharat Abhiyan:

- On October 2nd 2014, Prime Minister Narendra Modi officially launched the Swatch Bharat Abhiyan (SBA) at raj path, New Delhi, by taking up the broom to clean aroad.
- The SBA was launched with eight core objectives. The principal objective was to ensure a healthy life for Indian citizens and to improve India's semblance globally.
- SBA has specific goals aimed for the rural as well as urbanareas.
- TheurbanSBAhasatargettobuild1crorehouseholdtoilets,2.5lakhcommunitytoilets,2.6lakh public toilets and solid waste management. Ministries are to build 50,000 toilets in schools by August 2025. The central agency for this work is the urban development and housingministry.
- Gramin SBA, i.e., for the rural areas has a target of 11 Crore household latrines to be installed in villages by 2019. The central agency for this work is the drinking water and sanitaryministry.


Fig.6.1 Swatch Bharat Abhiyan

6.1.2 Strategic:

- The focus of the strategy is to move towards a 'Swatch Bharat' by providing flexibility to state government, as sanitation is a state subject, to decide on their implementation policy and mechanisms, taking into account state specific requirements.
- Itissuggestedthatimplementationframeworkofeachstatebepreparedwitharoadmapof

activities covering the 3 important phases necessary for the programmer:

- Planningphase
- Implementationphase
- Sustainabilityphase

- Eachofthesephaseswillhaveactivitiesthatneedtobespecificallycateredforwithconcreteplans of action, which shall need preparation andplanning.

6.2 Guidelines for the process of the implementation of SBA

- ImplementationofSBMisproposedwith'District'asthebaseunit,withthegoalofcreatingODF GPs.Aprojectproposalshallbepreparedbyadistrict,andscrutinizedandconsolidatedbythestate government into a state plan. Funds are to be made available for these preliminary IEC works including for triggering behavior change.
- 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.
- 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, aanganwadi, toilets and 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.The proliferation of educational facilities in the rural areas provides theopportunity to utilize an approach that should essentially include an element thatinvolvesschoolandcollege children as potential agents of change inhomes.

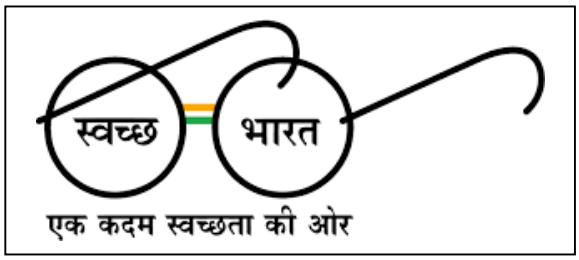


Fig.6.2 logo of Swachh Bharat Abhiyan

- The provision of Incentives forindividual 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.
- TheSchemeshallaimtosaturatecoverageinthefirstinstancetheStates/Districts/GPsinall 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

Chapter 7
Village condition due to Covid-19

Across India, more than 2, 60,000 gram panchayat will have to be prepared and mobilized for grassroots action against COVID-19.

They will work closely with primary health centers, ASHA workers, local health volunteers, and district administrations in the coming months. The following are some action points that gram panchayat can take tosupport their communities, during and after the lockdown.

Fig.7.1 India fights corona

As villages prepare for a long battle, Gram Panchayat will have a critical role to play. These institutions are nearest to the people and aretrustedbycommunities.Grampanchayatsarealsoessentialtoensurethattheresponseagainst the crisis includes consultations with stakeholders and participatory decision-making at the local-level.

The importance of participatory governance and public discussion in times of crisis has also been emphasisedbyAmartyaSenwhosays,"Tacklingasocialcalamityisnotlikefightingawarwhichworksbestwhenaleadercanusetop-downpowertoordereveryonetodowhattheleaderwants— with no need for consultation. In contrast, what is needed for dealing with a social calamity is participatory governance and alert public discussion

7.1 Taken steps in Balva village related to existing situation

- Asmigrantsreturntovillages,theywillneedtobeisolatedtopreventthespreadofthevirus.Gram panchayatsshouldtaketheinitiativetosetuplocalquarantinecentreswithfacilitiessuchasfood, drinking water, and toilets. This will also prevent migrants from hiding in their houses.

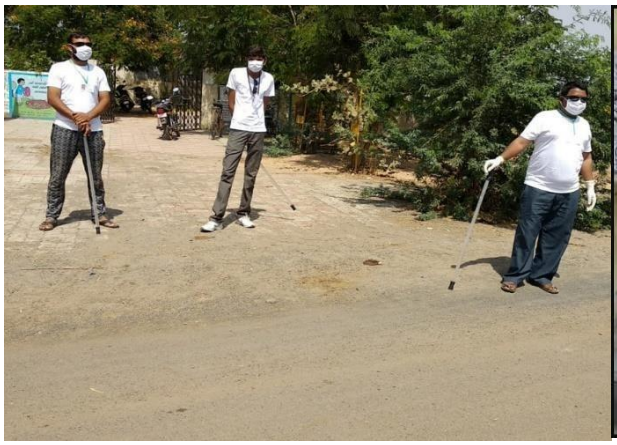


Fig.7.2 local volunteers

Fig.7.3 COVID-19 awareness program

- Gram panchayat, along with local volunteers, nonprofits and other community-based organizations, should undertake awareness generation drives on the symptoms and preventive measures of COVID-19. Additionally, gram Panchayat can also contain the spread of rumors and false information on social media by providing authentic information, reporting fake videos or news to the police, and encouraging the community to check information circulating on social media with the gram panchayat.

Chapter 8

Sustainable Design Proposal

8.1 Design proposals

- Different facilities in Balva village which we observed below:

Physical infrastructure facility

- Piped water supply to dweller and plot
- Water tank
- Underground drainage
- Cement Concrete road
- Transportation facility
- Electricity distribution

Social infrastructure facility

- Aanganwadi
- Primary school
- Secondary school

8.2 Recommendations of the design

- The recommendation for the village is to new arrangement for the bus stop. It should be provide the recreational area. Create road network and drainage system and basic facility like waste management. There should be dustbin at all the shops and each house.

8.3 Suggestions

- For improving education facility we give design of library. So student are easily issue a book.
- There is no recreational facility so we give arboretum design. People are enjoy in that garden.

8.4 Social design

- As a social design we have to decide design an arboretum.

8.4.1 Design of arboretum

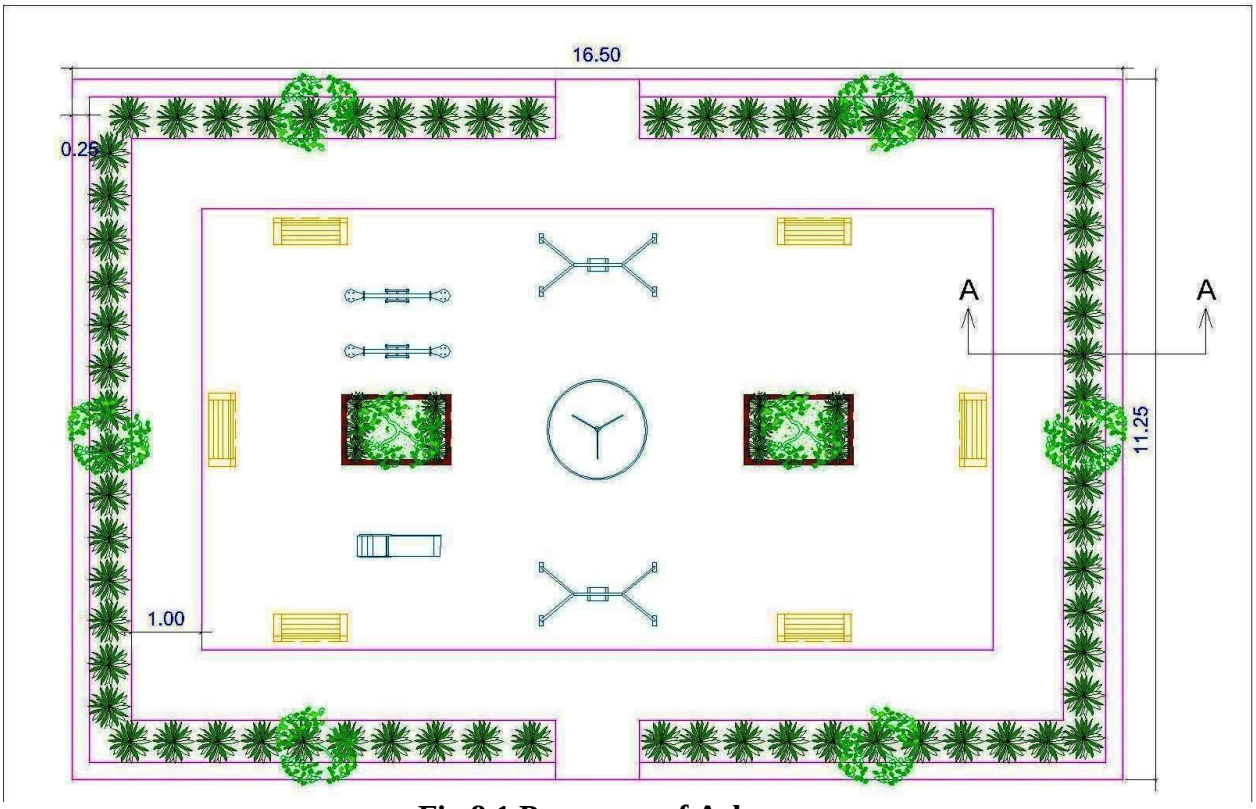


Fig 8.1 Prototype of Arboretum

➢ Measurement sheet of Arboretum:

Sr. No.	Description of item	No	Length m	Breadth m	Height m	Quantity
1	Excavation in foundation	1	90.52	0.91	0.81	66.72m^3
			Total			66.72m^3
2	P.C.C	1	90.52	0.91	0.30	24.71m^3
			Total			24.71m^3
3	Brick work in foundation					
	Step 1	1	90.52	0.61	0.30	16.56m^3
	Step 2	1	90.52	0.51	0.20	9.23m^3
	Step 3	1	90.52	0.41	0.46	17.07m^3
			Total			

4	Brick work in wall	1	99.94	0.23	1.52	34.94m^3
			Total			
5	Deduction					
	M.G	2	3.05	0.23	1.52	2.13m^3
	W	18	3.05	0.23	0.91	13.54m^3
	W1	2	1.98	0.23	0.91	0.83M^3
			Total			
6	Foundation Wall					
	Outer wall		4.43	0.23	1.066	1.09m^3
	Inner wall		1.41	0.23	1.22	0.40M^3
			Total			
7	Plaster					
	Outside & inside	1	181.04	-	1.524	275.90m^3
			Total			
8	Deduction					
	M.G	2	3.048	-	1.524	9.29 m^3
	P.G	4	0.91	-	1.524	5.53m^3
	W	18	3.048	-	0.91	49.92m^3
	W1	2	1.98	-	0.91	3.60m^3
			Total			

Table 8.1 measurement sheet of Arboretum

8.4.2 Design of Bus stand

We observed that bus-stand is not available in village so decide to design bus stand.

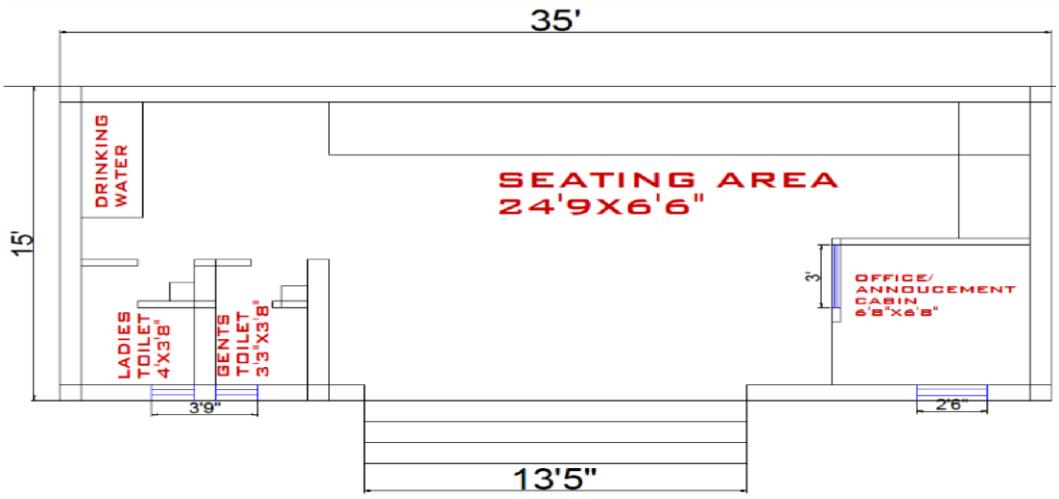


Fig 8.2 design bus stand

Fig 8.3 Elevation of bus stand

➢ Measurement sheet of bus-stand

Total Centre line length						
L=7.66x2=15.32m						
L=7.5x2=15m						
L=1.84x2=3.69m						
L=2.09x1=2.09m						
L=2.10x1=2.10m						
Total Centre line length =38.2m						
Total no of Junction=4						
Sr No.	**Item Description**	**No.**	**Length (m)**	**Width (m)**	**Height (m)**	**Quantity (m^3)**
1	**Excavation In Foundation**					
	Net C.L. Length					
	=38.2-0.5*0.9*4	1	36.4	0.9	1.5	**49.14**
	=36.4 m					
2	**Plain cement concrete in**					
	foundation in 1:3:6	1	36.4	0.9	0.3	**9.82**
3	**Brickwork in foundation**					
	Upto plinth					
	Step 1					
	L=38.2-0.5*0.6*4					
	=37 m	1	37	0.6	0.2	4.44
	Step 2					

	L=38.2-0.5*0.5*4					
	=37.2 m	1	37.2	0.5	0.2	3.72
	Step 3					
	L=38.2-0.5*0.4*4					
	=37.4 m	1	37.4	0.4	0.2	2.99
	Step 4					
	L=38.2-0.5*0.3*4					
	=37.6 m	1	37.6	0.3	1.2	13.53
	h=(1.5-0.3-3*0.2)+0.6					
	=1.2m					
				Total Quantity		**24.68**
3	**Brickwork in super structure**					
	in cement mortar 1:6					
	L=38.2-0.5*0.3*4					
	=37.6 m	1	37.6.74	0.3	3	**33.84**
4	**RCC. Slab**					
		1	12.03	7.3	0.12	**10.53828**
5	**Smoot plaster on inside wall**					
	and celling in C.M. (1:3)					
	Waiting area wall	1	11.43		4	45.72
		2	4.27		4	34.16
		1	2.13		4	8.52
	waiting area ceiling	1	11.43	4.27		48.8061
	Inquiry cabin wall	5	2.13		4	42.6
	Inquiry cabin ceiling	1	2.13	2.13		4.5369
	Toilet wall	3	2.44		4	29.28
		3	1.98		4	23.76
	Toilet ceiling	1	2.44	1.98		4.8312
				Total quantity		**242.2142**
6	**Parapet wall**					
	L=30.76m	1	30.76	0.3	0.91	**8.40**

Table 8.2 Measurement sheet of Bus Stand

Abstract sheet					
Sr No.	**Item Description**	**Quantity**	**Rate**	**Per**	**Amount Rs.**
1	Excavation in foundation	49.14. m^3	85	m_3	4176.9

2	Brick bat cement concrete in foundation	9.82.m^3	3200	m_3	31424
3	First class brickwork up to plinth in C.M. 1:6	24.68 m^3	3200	m_3	78976
4	Brickwork in super structure in C.M. 1:6	33.84 m^3	3500	m_3	118440
5	Brickwork for parapet wall	8.40 m^3	3500	m_3	29400
6	RCC work for slab	10.53 m^3	8800	m_3	92664
7	Smooth plaster on inside walls and ceiling in C.M. 1:3	242.21 m_2	150	m_2	36331.5
				Rs.	391412.4
		Add 5% contingencies			19570.62
				Rs.	**410983.026**

8.4.3 Public Library

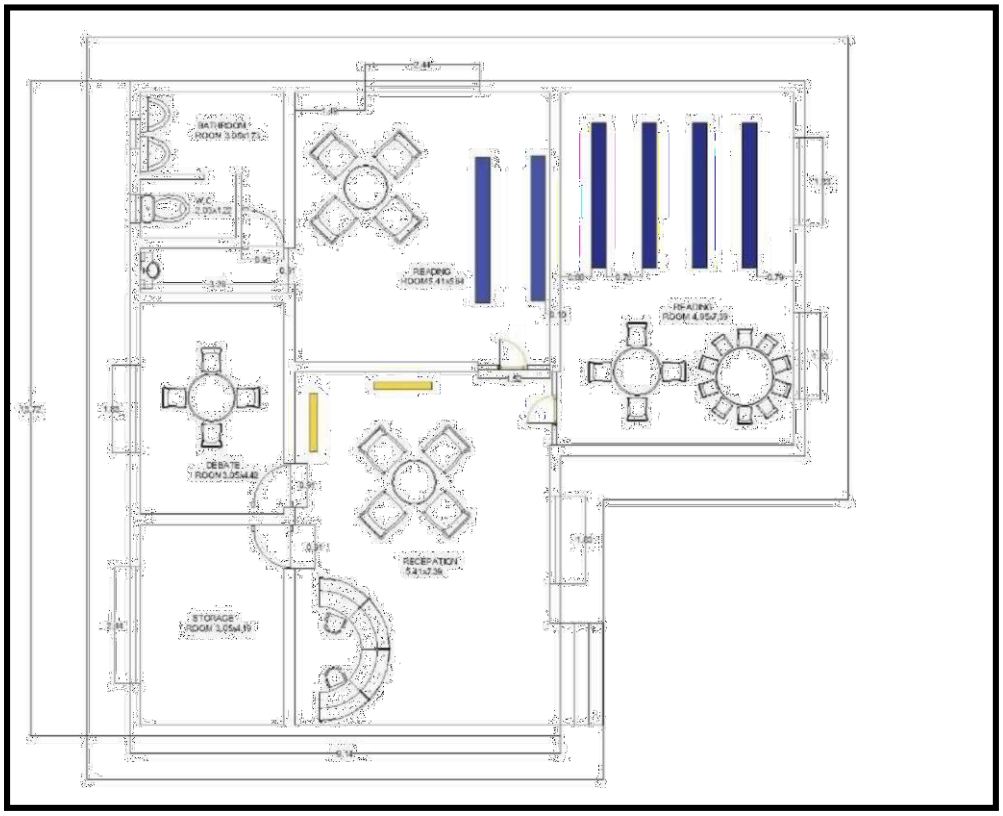


Fig 8.4 Plan of Library

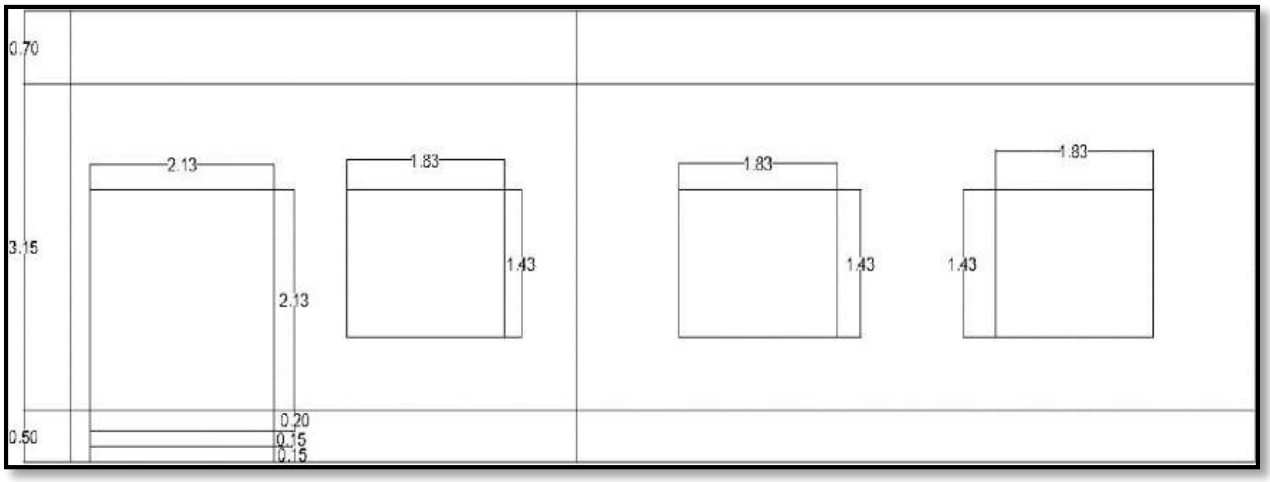


Fig 8.5 Elevation of Library

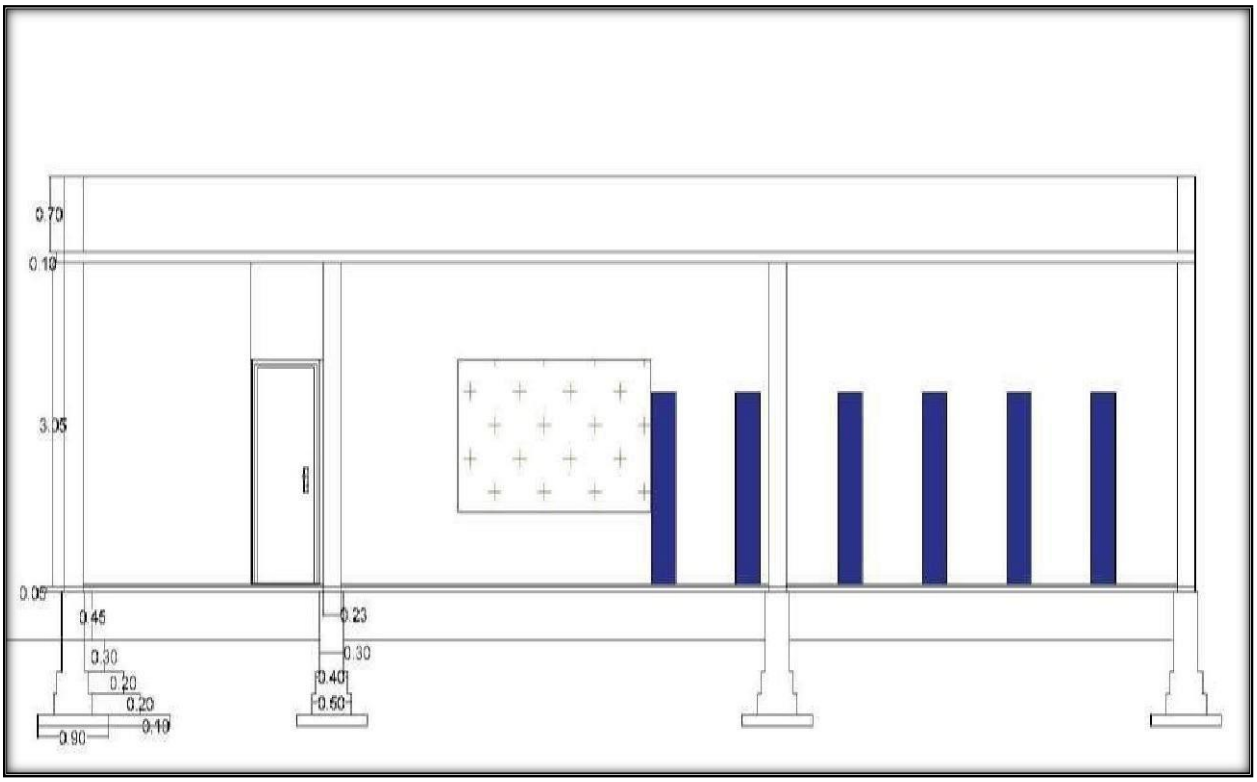


Fig 8.6 Section of Library

➢ Measurement sheet of PublicLibrary

Item	Item Description	No	Length	Width	Height	Quantity

NO.			(m)	(m)	(m)	
1.	Earth work in excavation for foundation	1	80.84	0.9	0.8	58.20 m^3
2.	P.C.C work [1:4:8]	1	80.84	0.9	0.1	7.27 m^3
3.	Brick masonry workup to plinth level cm.[1:6]					
	Step 1:	1	83.04	0.5	0.2	8.30 m^3
	Step 2:	1	83.59	0.4	0.2	6.68 m^3
	Step 3:	1	84.14	0.3	0.75	18.93 m^3
	Total = 33.91 m^3					
4.	Super structure	1	84.52	0.23	3	58.32 m^3
	Deduction door window					8 m^3
	Lintel		25.51	0.23	0.15	0.88 m^3
	Total = 49.44 m^3					
5.	D P C	1	84.14	0.3	-	25.24 m^2
6.	Plaster	1	111.6	-	3	334.8 m^2
	Deduction for door and window					34.73 m^2
	Total = 300.07 m^2					
7.	Parapet wall	1	55.16	0.23	0.70	8.88 m^3
8.	Earth filling in plinth					
	Storage room	1	4.09	2.95	0.45	5.43 m^3
	Meeting room	1	4.32	2.95	0.45	5.73 m^3
	Bath room	1	2.95	2.95	0.45	3.92 m^3
	Reading room 1	1	5.54	5.31	0.45	13.24 m^3
	Reading room 2	1	7.29	4.85	0.45	15.91 m^3
	Reception	1	7.29	5.31	0.45	17.42 m^3
	Drinking water	1	0.81	2.95	0.45	1.07 m^3
	Total = 62.72 m^3					
9.	Door and Window work					
	D	1	2.14	-	2.14	4.58 m^2
	D1	3	0.91	-	2.14	5.84 m^2
	D2	2	1.52	-	2.14	6.51 m^2
	W1	4	1.83	-	1.40	10.25 m^2
	W2	2	2.44	-	1.40	6.83 m^2
	V	2	0.60	-	0.60	0.72 m^2
	Total = 34.73 m^2					

10.	R.C.C work for slab [1:2:4]					
	Part 1: Storage, reception, meeting, reading 1, W.C.	1	13.72	9.14	0.10	12.54 m^3
	Part 2: Reading room 2	1	7.85	5.18	0.10	4.07 m^3
	Total = 16.61 m^3					
11	Mosaic tiles flooring					
	Storage room	1	3.05	4.19	-	12.78 m^2
	Meeting room	1	3.05	4.42	-	13.48 m^2
	W.C	1				9.03 m^2
	Drinking water	1	3.28	0.91	-	2.98 m^2
	Reading room 1	1	5.41	5.64	-	30.51 m^2
	Reading room 2	1	4.95	7.39	-	36.58 m^2
	Reception	1	5.41	7.39	-	39.98 m^2
	Total = 145.34 m^2					
12	R.C.C chajja					
	W1	4	2.13	0.6	0.10	0.51 m^3
	W2	2	2.74	0.6	0.10	0.33 m^3
	Total = 0.84 m^3					

Table 8.4 Measurement sheet of Public Library

➢ Abstract Sheet of PublicLibrary

Item Description Material	Quantity	Per	Rate	Amount
Excavation of Foundation in Soft Murrum, Soil or Sand from 0.0 meter. To 1.50 meter depth including lifting and laying in 90 meter. lead area as instructed	58.20	m3	96.90	5639.58
P.C.C in foundation in 1:3:6	7.27	m3	1900	13813
Brick masonry up to plinth cm. [1:6]	33.91	m3	4196	142286.36

Filling of Plinth in layers of 0.23 m thick including Murrum and sprinkling of water, compactionetc. complete	62.72	m3	326	20446.72
Brick Masonry Super Structure in proportion of1:6	49.44	m3	3218	159097.92
Cement Plaster 12 mm thick using Cement Mortar in proportion 1:3 with Niru Finishing curing, etc. complete	300.07	m2	182	54612.74
RCC work with varying coat, curing, rough finishing etc. complete in the proportion of 1:2:4	17.45	m3	3897	680002.65
Providing & Fixing Dark Color Mosaic Tiles (Approved quality) with Polishing after bedding Lime: Mortar in proportion of 1:1.5 and fixing it in Cement Paste and with Wax finishing	145.34	m2	351	51014.34
Flush Door 25mm thick with Teak wood frame for Door & window with polishing / oil painting using company viz. Kit ply/ Century /Dura / Everest	34.73	m2	3090	107315.7
Total =1234229.01				
Add 3% contingency =37026.87				
Contractor profit =123422.90				
Add 2% Work charge = 24684.58				
Total cost =1308282.75				

Table 8.5 Abstract sheet of Public Library

8.4.4 Post Office

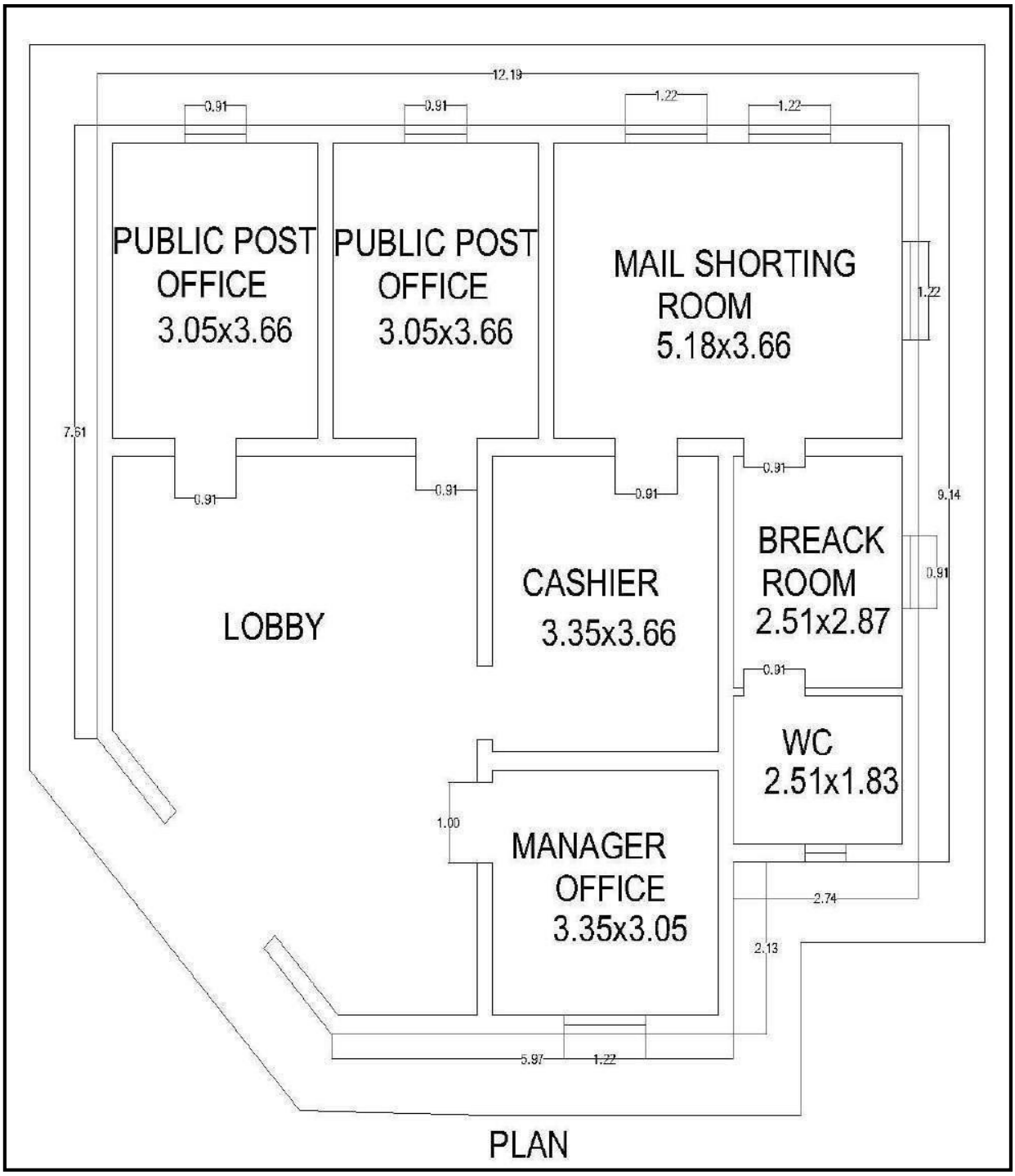


Fig 8.7 Plan of Post Office

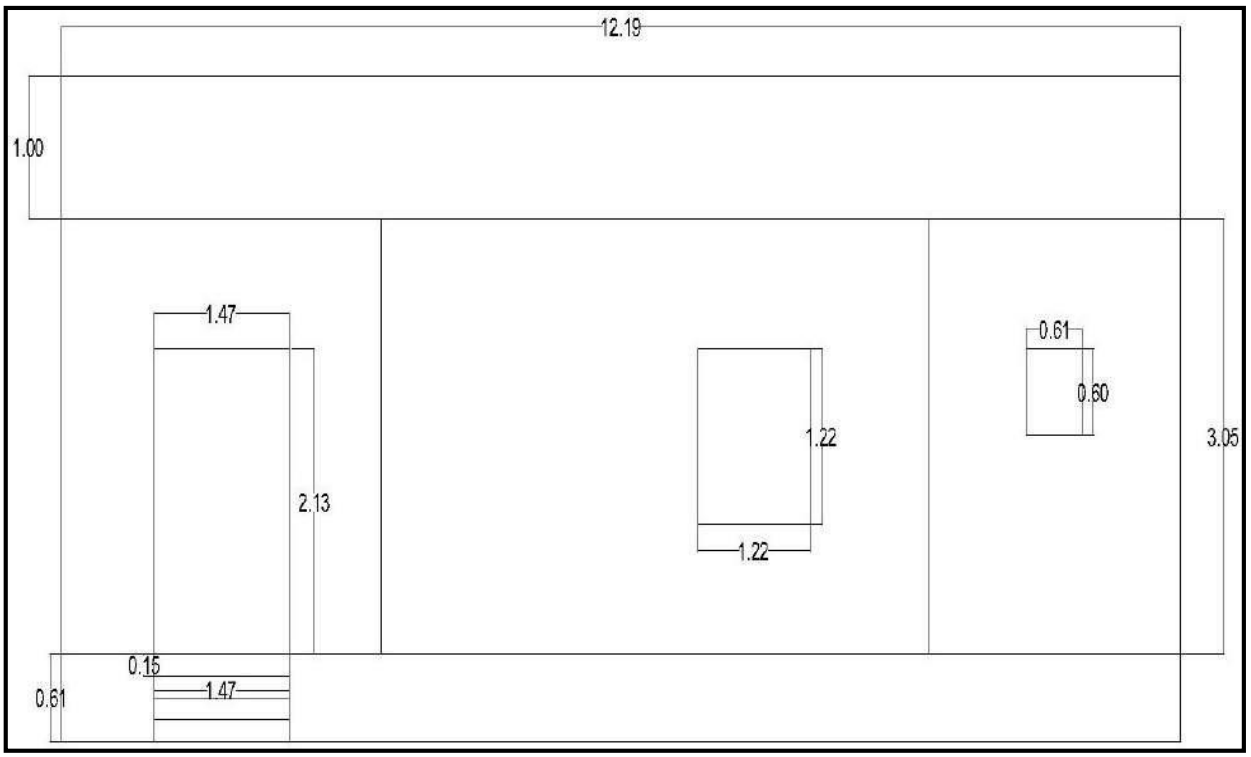


Fig 8.8 Elevation of Post Office

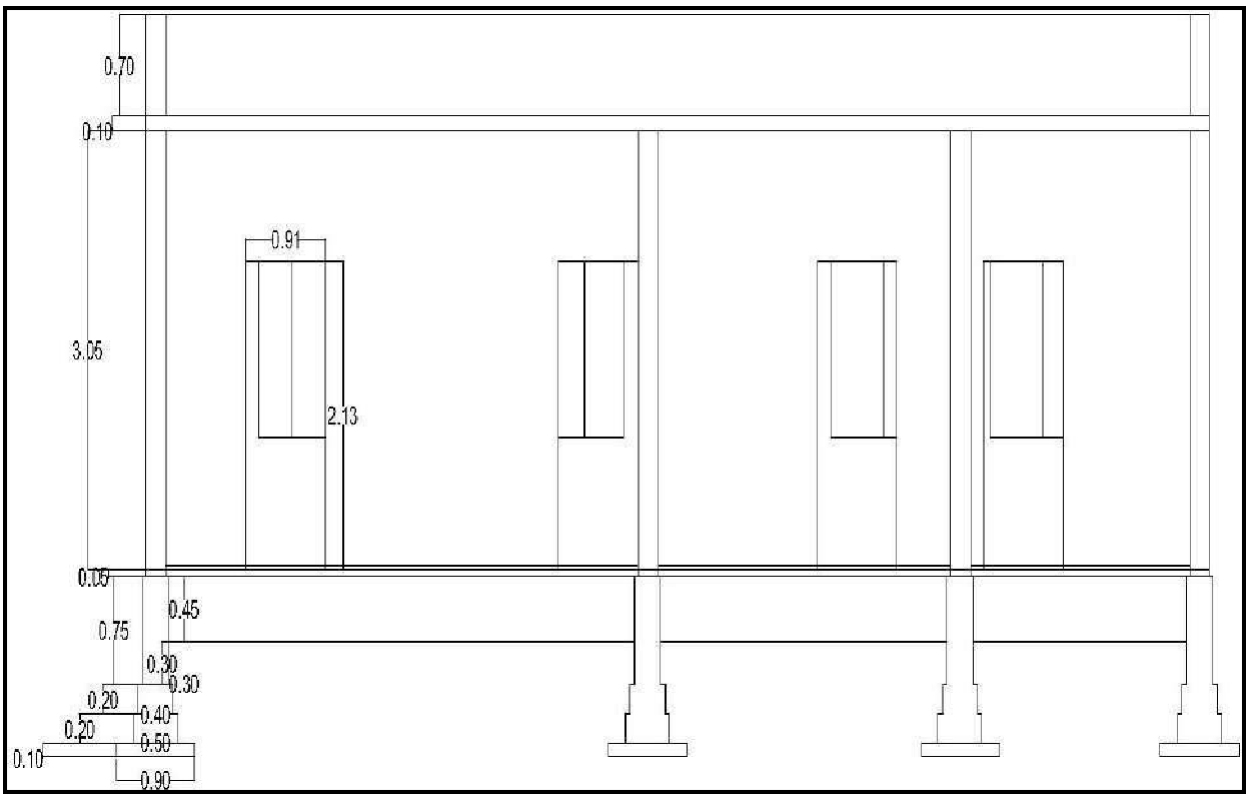


Fig 8.9 Section of Post Office

➢ Measurement sheet of Post Office

Item NO.	Item Description	No	Length	Width	Height	Quantity
1.	Earth work in excavation for foundation	1	73.18	0.9	0.8	52.69 m^3
2.	P.C.C work [1:4:8]	1	73.18	0.9	0.1	6.59 m^3
3.	Brick masonry up to plinth cm. [1:6]					
	Step 1:	1	75.58	0.5	0.20	7.56 m^3
	Step 2:	1	76.18	0.4	0.20	6.09 m^3
	Step 3:	1	76.78	0..3	0.75	17.27 m^3
	Total = 30.92 m^3					
4.	Super structure	1	77.2	0.23	3.05	54.16 m^3
	Deduction for door and window					6.68 m^3
	Lintel		20.71	0.23	0.15	0.71 m^3
	Total = 46.77 m^3					
5.	D.P.C	1	76.78	0.3	-	23.03 m^2
6.	Parapet wall	1	43.47	0.3	0.7	9.13 m^3
7.	Plaster	1	122.37	-	3.05	373.22 m^2
	Deduction for door and window					29.05 m^2
	Total = 344.17 m^2					
8.	Earth filling in plinth					
	Public post	1	3.56	2.95	0.45	4.73 m^3
	Mail shorting	1	3.56	5.08	0.45	8.14 m^3
	Cashier	1	3.56	3.25	0.45	5.21 m^3
	Break room	1	2.77	2.41	0.45	3 m^3
	Manager office	1	2.95	3.25	0.45	4.31 m^3
	W.C	1	1.73	2.41	0.45	1.88 m^3
	Lobby	1				13.67 m^3
	Total = 40.94 m^3					
9.	door and window work					
	D	1	2.14	-	2.14	4.58 m^2
	D1	1	1	-	2.14	2.14 m^2
	D2	6	0.91	-	2.14	11.68 m^2

	W	3	0.91	-	1.40	3.82 m^2
	W1	4	1.22	-	1.40	6.83 m^2
	Total = 29.05 m^2					
10.	R.C.C work for slab [1:2:4]	1	125.07 m^2		0.10	12.51 m^3
11.	R.C.C chajja					
	W	3	1.21	0.6	0.10	0.22 m^3
	W1	4	1.52	0.6	0.10	0.36 m^3
	Total = 0.58 m^3					
12.	Mosaic tiles flooring					
	Public post	2	3.05	3.66	-	22.33 m^2
	Mail shorting	1	5.18	3.66	-	18.96 m^2
	Cashier	1	3.35	3.66	-	12.26 m^2
	Break room	1	2.51	2.87	-	7.20 m^2
	W.C	1	2.51	1.83	-	4.59 m^2
	Manager office	1	3.35	3.05	-	10.22 m^2
	Lobby Part 1:	1	5.41	3.40	-	18.39 m^2
	Part 2:		3.73	3.53	-	13.17 m^2
	Total = 107.12 m^2					

Table 8.6 Measurement sheet of Post Office

➢ Abstract Sheet of PostOffice

Item Description Material	Quantity	Per	Rate	Amount
Excavation of Foundation in Soft Murrum, Soil or Sand from 0.0 meter. to 1.50 meter depth including lifting and laying in 90 meter. lead area as instructed	52.69	m3	96.90	5105.66
P.C.C in foundation in 1:3:6	6.59	m3	1900	12521
Brick masonry up to plinth cm. [1:6]	30.92	m3	4196	129740.32
Filling of Plinth in layersof 0.23 m thick including murrum and sprinkling of water, compaction etc.	40.94	m3	326	13346.44

complete				
brick Masonry Super Structure in proportion of 1:6	46.77	m3	3218	150505.86
Cement Plaster 12 mm thick using Cement Mortar in proportion 1:3 with Niru Finishing curing, etc. complete	344.17	m2	182	62638.94
RCC work with varying coat, curing, rough finishing etc. complete in the proportion of 1:2:4	13.09	m3	3897	51011.73
Providing & Fixing Dark Color Mosaic Tiles (Approved quality) with Polishing after bedding Lime: Mortar in proportion of 1:1.5 and fixing it in Cement Paste and with Wax finishing	107.12	m2	351	37599.12
Flush Door 25mm thick with Teak wood frame for Door & window with polishing / oil painting using company viz. Kit ply/ Century / Dura / Everest	29.05	m2	3090	89764.5
Total = 552233.57				
Add 3% contingency =16567.00				
Contractor profit =55223.35				
Add 2% Work charge = 11044.67				
Total cost =585367.57				

Table 8.7 Abstract sheet of Post Office

8.4.5 Design of Septic Tank

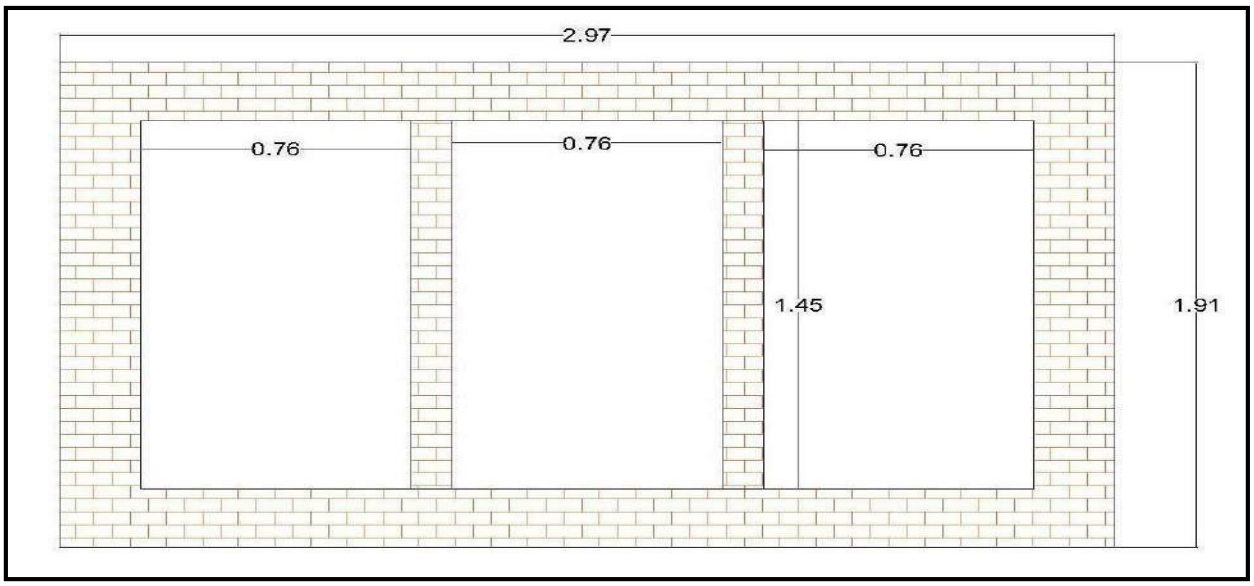


Fig 8.10 Plan of Septic Tank

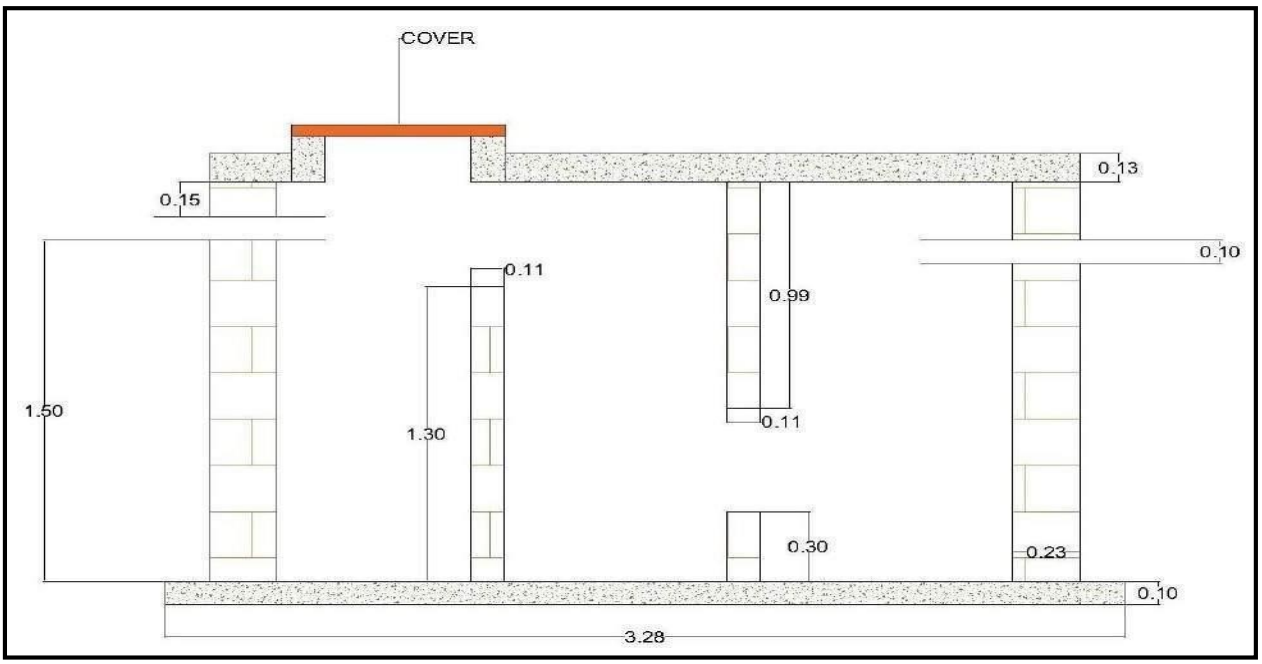


Fig 8.11 Section of Septic Tank

➢ Measurement sheet of Septic Tank

Item no	Item Description	No.	Length	Width	Height	Quantity
1	P.C.C work [1:4:8]	1	2.97	1.91	0.1	0.56727
2	first class brick masonry in C.M(1:6)					
	main wall 9"	1	4.6	0.23	1.55	1.6399
	partition wall 4"	1	3.36	0.11	2.59	0.957264
	total =					2.597164
3	R.C.C slab (1:2:4)	1	2.97	1.91	0.13	0.737451
4	20MM plaster					
	main wall 9"	1	7.46		1.75	13.055
	partition wall 4"	1	5.8		2.59	15.022
	total =					28.077
5	1% steel is provide					
	weight of steel = volume of steel					
	(0.0073*7850) = 57.30kg					57.30 kg
6	earth work up to depth	1	2.97	1.91	2.11	11.9694

Table 8.8 Measurement sheet of Septic Tank

➢ Abstract Sheet of SepticTank

Item Description Material	Quantity	Per	Rate	Amount
Excavation of Foundation in Hard Murrum from 1.51 meter. to 3.0 meter depth including lifting and laying in 90 meter. lead area as instructed	11.96	m3	117.30	1402.90
P.C.C in foundation in 1:3:6	0.57	m3	1900	1083
Brick Masonry working Cement: Mortar 1:6	2.59	m3	3218	8334.62

Water Proof Cement Plaster 20 mm thick using Water Proofing Compound and in the ratio of 1:3 with necessary finishing	28.07	m2	203	5698.21
RCC work with varying coat, curing, rough finishing etc.	0.73	m3	3897	2844.81
complete in the proportion of 1:2:4				
RCC precast cover supply, fitting, fixing with complete as per specification 5ton size 550/550/90mm	1	nos	776.25	776.25
Supplying, Cutting, Bedding, Binding and Hooking and binding with wire for RCC work Tor steel TMT round bar including all cost	57.30	Kg	57	3266.1
Total = 23405.89				
Add 3% contingency = 702.18				
Contractor profit 10% =2340.59				
Add 2% Work charge = 468.12				
Total cost = 26916.78				

Table 8.9 Abstract sheet of Septic Tank

8.4.6 Design of Agro Storage Unit

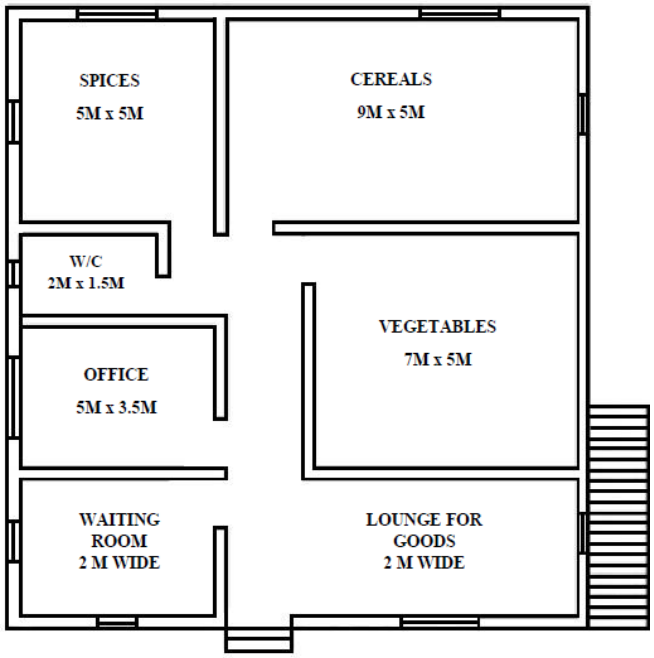


Fig 8.12 Plan for Agro storage

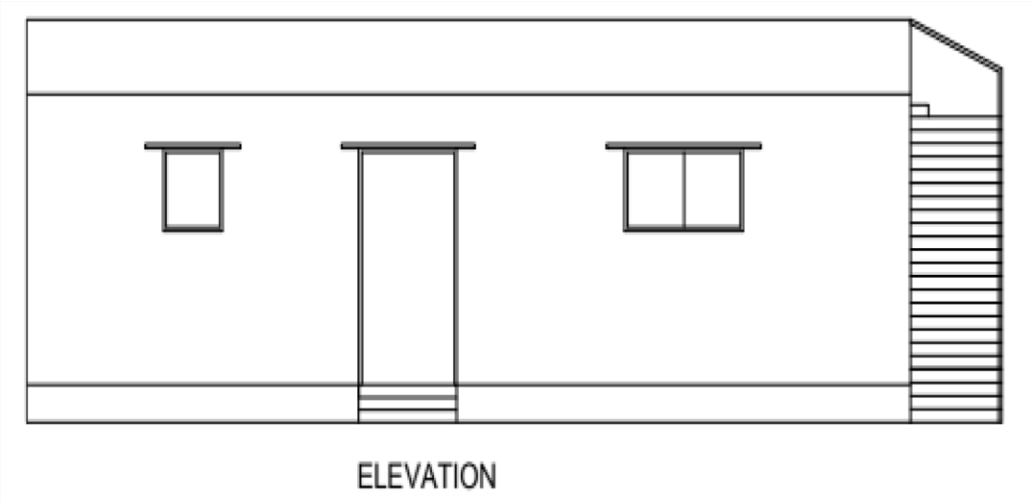


Fig 8.13 Elevation for Agro Storage

➢ Measurement sheet of Agro StorageUnit

Sr.No	Item Description	No.	Length	Width	Height	Quantity
1	**Earthwork in Excavation in Foundation:**					
	Excavation for foundation	16	4	4	1.5	38 4.00
	Excavation for step	1	2.4	0.7	0.2	0. 34
				TOTA L QTY.		38 4.34
2	**P.C.C in Excavation in Foundation:**					
	P.C.C. for foundation	16	4	4	0.1	25 .60
	P.C.C. for steps	1	2	0.7	0.1	0. 14
				TOTA L QTY.		25 .74
3	**R.C.C. for foundation**					
		16	0.19			3. 04
				TOTA L QTY.		3. 04
	R.C.C for beam					
	steps 1	16	5.23	0.23	0.3	5.77
	steps 2	4	4	0.23	0.3	1.10
	steps 3	4	2.23	0.23	0.3	0.62
				TOTA L QTY.		7.49
4	**Brick Masonry in super structure**					
	Long wall 1 L=12m	3	12	0.23	3.5	28.98
	Long wall 2 L= 5m	1	5	0.23	3.5	4.03
	Short wall 1 S=14m	4	14	0.23	3.5	45.08
	Short wall 1 S=5m	1	5	0.23	3.5	4.03
	Brick masonry steps					

	step 1	1	2	0.7	0.3	0.42
	step2	1	2	0.35	0.3	0.21
				TOTA L QTY.		82.74
	Deduction for Door					
	& window					
	D	1	1.85	0.23	2.1	0.89
	D1	4	1.2	0.23	2.1	2.32
	D2	1	0.9	0.23	2.1	0.43
	W	6	2	0.23	1.2	3.31
	W1	3	1	0.23	1.2	0.83
	V1	1	0.6	0.23	1.2	0.17
				TOTAL QTY.(m3)		7.95
5	**Flooring**					
	Kota stone					
	Room 1	1	5	5		25.00
	Room 2	1	9	5		45.00
	Room 3	1	7	5		35.00
				TOTAL QTY.(m2)		105.00
	Marble					
	Office	1	5	3		15.00
	Verandah	1	2.4	3		7.20
	open area 1	1	2	5		10.00
	open area 2	1	5	1.5		7.50
				TOTAL QTY.(m2)		39.70
6	**R.C.C. for slab**					
	(1:1.5:3)	1	13	15	0.5	97.50
					TOTAL QTY.(m3)	97.50

7	**outside plaster**					
	L2(13+15)	1	56	3.5		196.00
					TOTAL QTY.(m2)	196.00
	Deduction					
	D	1	1.85		2.1	3.89
	W	6	2		1.2	14.40
	W1	3	1		1.2	3.60
					TOTAL QTY.(m2)	21.89
8	**Inside plaster (1:4)**					
	Long wall 1	4	12		3.5	168.00
	Long wall 2	1	5		3.5	17.50
	short wall 1	6	14		3.5	294.00
	short wall 2	1	5		3.5	17.50
					TOTAL QTY.(m2)	497.00
	Deduction					
	D	1	1.85		2.1	3.89
	D1	10	1.2		2.1	25.20
	D2	2	0.9		2.1	3.78
	W	5	2		1.2	12.00
	W1	3	1		1.2	3.60
					TOTAL QTY.(m2)	48.47
9	**color outside**					
	L=2(13+15)	1	56		3.5	196.00
					TOTAL QTY.(m2)	196.00
	Deduction					
	D	1	1.85		2.1	3.89
	W	6	2		1.2	14.40
	W1	3	1		1.2	3.60
					TOTAL QTY.(m2)	21.89

10	**Color inside**					
	long wall 1	4	12		3.5	168.00
	long wall 2	1	5		3.5	17.50
	Short wall 1	6	14		3.5	294.00
	Short wall 2	1	5		3.5	17.50
				TOTAL QTY.(m2)		497.00
	Deduction					
	D	1	1.85		2.1	3.89
	D1	10	1.2		2.1	25.20
	D2	2	0.9		2.1	3.78
	W	5	2		1.2	12.00
	W1	3	1		1.2	3.60
				TOTAL QTY.(m2)		48.47
11	**Wood work**					
	Door (400 thick) & Window					
	D	1	1.85		2.1	3.89
	D1	5	1.2		2.1	12.60
	D2	1	0.9		2.1	1.89
	W	6	2		1.2	14.40
	W1	3	1		1.2	3.60
				TOTAL QTY.(m3)		36.38
12	**R.C.C. Chajja**					
	W	5	2.4	0.65	0.1	0.78
	W1	3	1.6	0.65	0.1	0.31
	W3	1	5	0.65	0.1	0.33
				TOTAL QTY.(m3)		1.42
13	**R.C.C. Column**	16	0.23	0.23	5	4.23
				TOTAL QTY.(m3)		4.23

Table 8.10 Measurement sheet of Agro Storage Unit

CHAPTER: 9
Future Development of the Village

- Thestudyisaimedtoknowthebasicscenarioofvillagethroughtechnoeconomicsurveyandgap analysis form
- Our master development plan might include provisions of all the facilities suggest by us, the our focus will be on the improvement in the existing amenities.
- Our aim is to work according to the new upcoming town planning scheme in Balvavillage.
- Basedontheseplans,ournexttargetwillbetoprovideregularmaintenanceprogram,whichhelps in sustaining the structure for longerduration.
- The village still lacks in maintenance of the building and various structures. Taking this into consideration the estimation of its rehabilitation with other necessary amenities will be designed in the next semester are:

Bio-gas plant

- The gases methane, hydrogen, and carbon monoxide (CO) can be combusted or oxidized with oxygen. This energy release allows biogas to be used as a fuel; it can be used for any heating purpose, such as cooking. It can also be used in a gas engine to convert the energy in the gas into electricity and heat.

Community hall

- A community center is a place that is specially provided for the people, groups, andorganizations inaparticulararea,wheretheycangoinordertomeetoneanotheranddothingssuch as marriage functions, birthday‘s, funeral activitiesetc.

Clinic (P.H.C. Center)

- A clinic (or outpatient clinic or ambulatory care clinic) is a healthcare facility that is primarily focused on the care of outpatients. Clinics can be privately operated or publicly managed and funded. They typically cover the primary health care needs of populations in local communities, in contrast to larger hospitals which offer specialized treatments and admit inpatients for over night’s days.

Chapter-10

Conclusion

- For India's economy to be strong, the rural economy needs to grow. Rural areas are still plagued by problems of malnourishment, illiteracy, unemployment and lack of basic infrastructure like schools, hospitals, sanitation, etc. Our villages need to grow in tandem with cities and standard of life has to improve there for inclusive growth to happen. If rural India is poor, India is poor.
- While we have latest services and products available in our cities now, villagers are still coping with age old products.
- While we have international fully air conditioned schools in our cities, the schools in villages still don't have benches and chairs, leave alone computers. We have a huge shortage of teachers in rural areas, and the school dropout rate is huge.
- Incities,wehave wider roads,flyover, sand underpasseswhilemany villages tilldon'thaveproper roads. Urban-rural road links can play a vital role in rural growth.
- Employment opportunities are hardly there in villages which forces youth to move to cities creating imbalance in the ecosystem and leaving the villages deprived.
- While we may have numerous hospitals, nursing homes and medical facilities in cities, villages' neitherhavehealthawarenessnorhealthfacilities.SeetheconditionofmajorhospitalslikeAIIMS to know how many villagers have to flock to cities for even basic treatments.
- Vishwakarmayojanaaimstoprocuredevelopmentinvillageswithoutlosingessence.Afterallthe way to uplift our country is through developing the villages. The scheme would reinforce wellbeing of people and further quality of living standard

Chapter-11

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Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

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

Name of District:	Gandhinagar
Name of Taluka:	Mansa
Name of Village:	Balva
Name of Institute:	Shankersinh Vaghela Bapu Ins. of Tech.
Nodal Officer Name & Contact Detail:	Prof. Jay Pandya Mo:. 8460401404
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Peradbhai Shivabhai Chaudhary.
Date of Survey:	03/10/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	6504	3390	3114	1330

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1305 Hectors 23.3525° N, 72.6596° E
2.	Forest Area (In hect.)	0
3.	Agricultural Land Area (In hect.)	
4.	Residential Area (In hect.)	
5.	Other Area (In hect.)	
6.	Distance to the nearest railway station (in kilometers):	

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7.	Name of Nearest Town with Distance:	Mansa (14 KM)
8.	Distance to the nearest bus station (in kilometers):	Balva chokdi BUS stop (1.9 KM)
9.	Whether village is connected to all road for the any facility or town or City?	yes

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1. Farming 2. Dairy 3. Animal Husbandry
Major crops grown in the village:	1. Cotton 2. Tuvero 3. Divela

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

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Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: 3 lac Lt	Adequate		
	Underground Sump	Capacity: 3 lac Lt	Adequate		
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	Open with outlet			
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Black Topped pucca			
	Main road	Black Topped pucca			
	Internal streets	kutchha			
	Nearest NH/SH/MDR/ODR Dist. in kms.	Black topped pucca			
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Bavla chokdi (1.9 KM)			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto, Private vehicles			
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Govt. More than 6 hours			24 hr available

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	Power supply for Domestic Use	Yes			
	Power supply for Agricultural Use	Yes			
	Power supply for Commercial Use	Yes			
	Road/ Street Lights	50 %			
	Electrification in Government Buildings/ Schools/ Hospitals				
	Renewable Energy Source Facilities (Y/ N)	NO			
	LED Facilities	NO			

Suggestions if any:

G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	Not available			
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	NO			
	Solid & liquid waste Disposal system available	out of village			
	Any facility for Waste collection from road	Regular collection			

Suggestions if any:

H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL. OTHER (SPECIFY)	POND, Tube Well			

Suggestions if any:

I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	60 % P 40 % K			

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi) Sub-Centre PHC BLOCK PHC CHC/RH District/ Govt. Hospital Govt. Dispensary Private Clinic Private Hospital/ Nursing Home AYUSH Health Facility sonography /ultrasound facility	ICDS, PHC, Ayush Health Facility	Adequate		
	If any of the above Facility is not available in village than approx. distance from village: ...14...kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	8	Adequate		
	Primary School	1	Adequate		
	Secondary school	1	Adequate		
	Higher sec. School	1	Adequate		
	ITI college/ vocational Training Center				
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities				
	If any of the above Facility is not available in village than approx. distance from village: ...16...kms.				

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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)				
	Public Garden				No
	Village Pond	Publication is needed	At the border of vl.	Yes	
	Recreation Center				No
	Cinema/ Video Hall				No
	Assembly Polling Station				No
	Birth & Death Registration				

If any of the above Facility is not available in village than approx. distance from village: ..14....kms.

Suggestions if any:

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

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

Suggestions if any:

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

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VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	Some houses have roof top solar system		Inadequate	
2.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	NO NO NO			
3.	Any Other				

VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

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1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	Maintenance is required in Gram Panchayat building	
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?	Around 6-10 times	

IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	Public Toilet, Pond Renovation etc.	

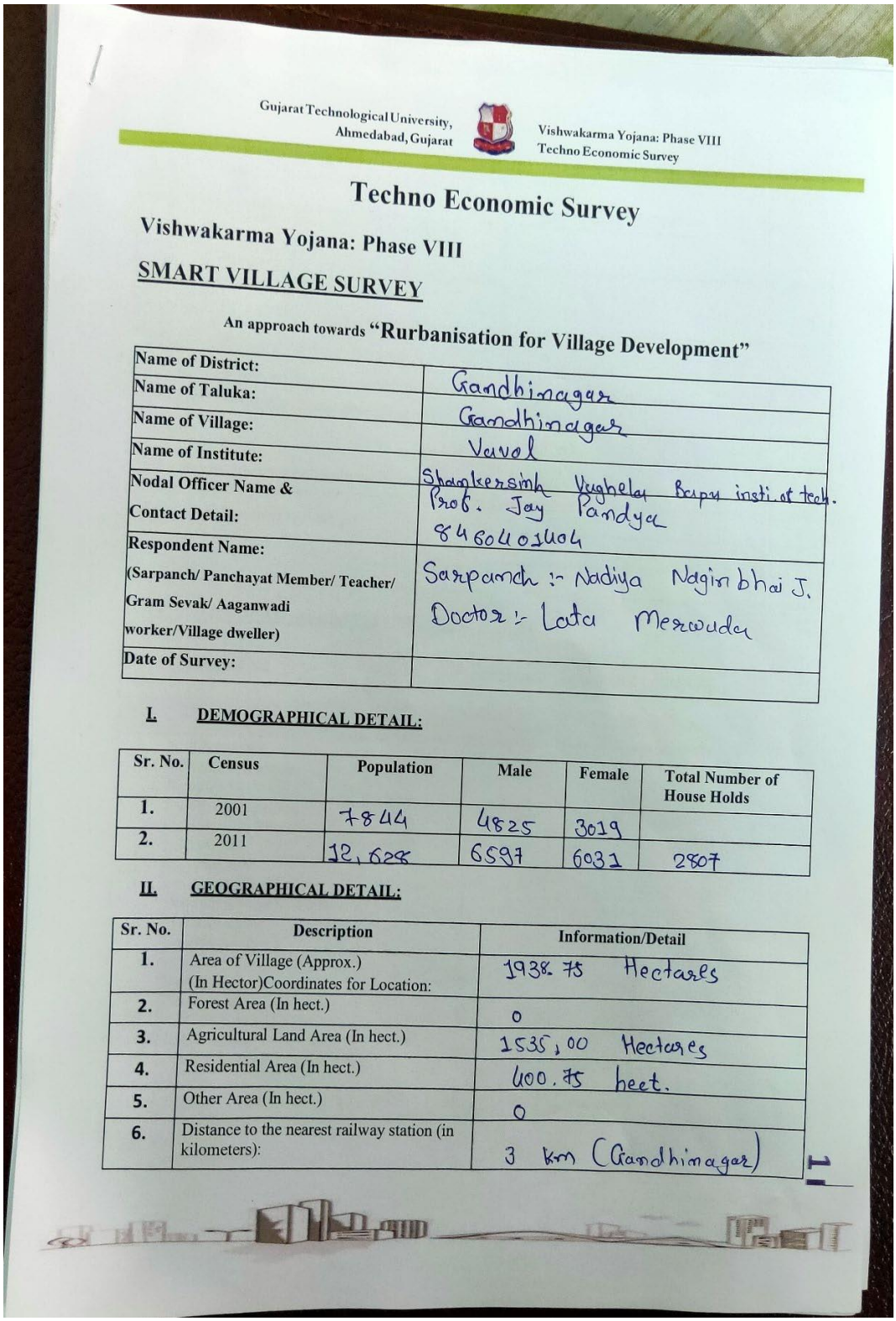
Note: Photographs/ Video/ Drawings of all existing Infrastructure facilities & conditions should be taken by students of respective villages for their record and information.

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

V. N. Patel

TALATI CUM MANTRI
BALVA GRAM PANCHAYAT
TA. KALOL, DIST. GANDHINAGAR

BALVA GRAM PANCHAYAT • TA. KALOL DIST.GANDHINAGA •



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SMART VILLAGE SURVEY

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

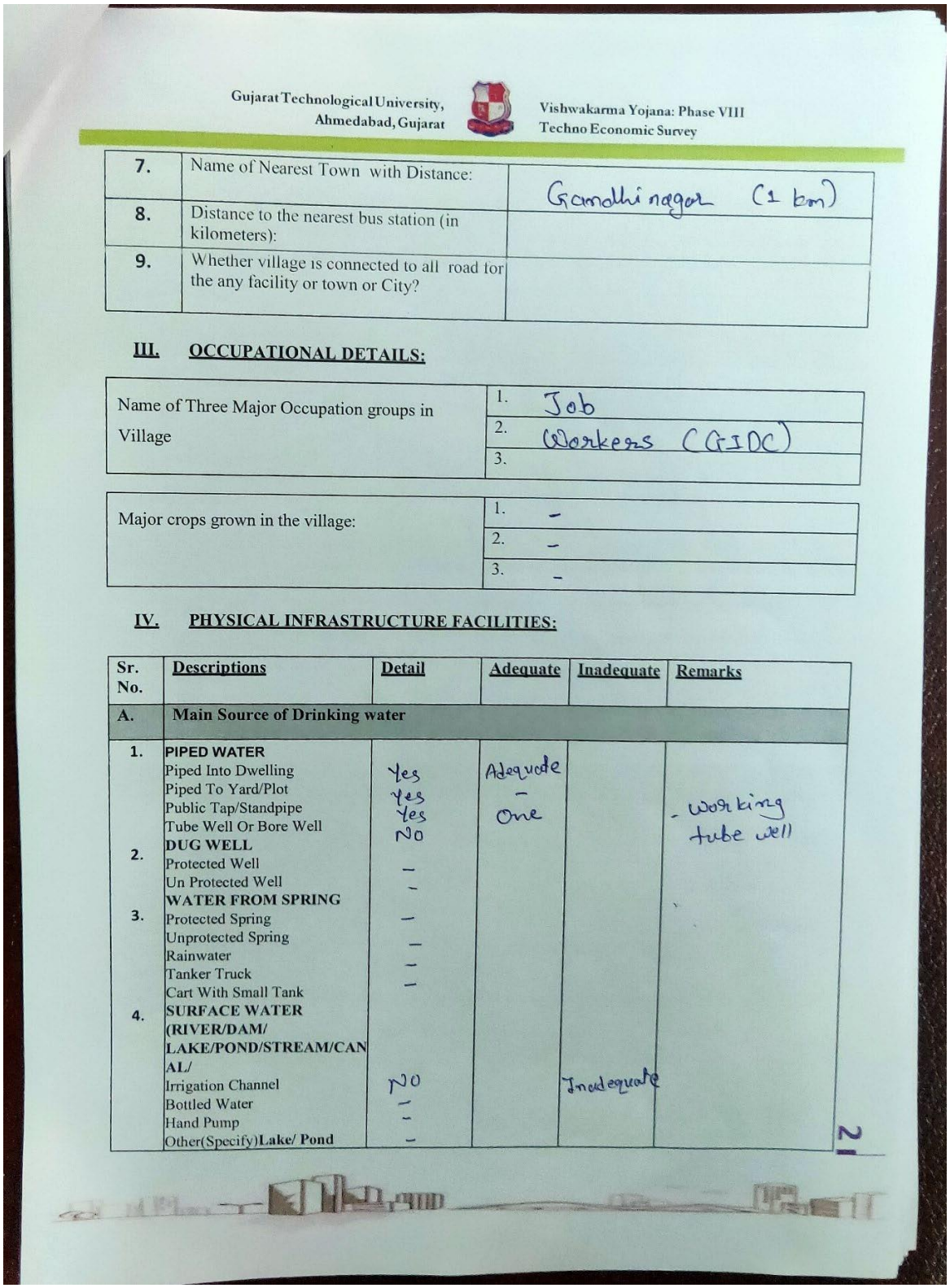
Name of District:	Gandhinagar
Name of Taluka:	Gandhinagar
Name of Village:	Vavol
Name of Institute:	Shankersinh Vaghela Bapu insti. of tech.
Nodal Officer Name & Contact Detail:	Prof. Jay Pandya 8460401404
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Sarpanch :- Nadiya Naginbhai J. Doctor :- Lata Merwada
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	7844	4825	3019	
2.	2011	12,628	6597	6031	2807

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1938.75 Hectares
2.	Forest Area (In hect.)	0
3.	Agricultural Land Area (In hect.)	1535,00 Hectares
4.	Residential Area (In hect.)	400.75 heet.
5.	Other Area (In hect.)	0
6.	Distance to the nearest railway station (in kilometers):	3 km (Gandhinagar)



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7.	Name of Nearest Town with Distance:	Gandhinagar (1 km)
8.	Distance to the nearest bus station (in kilometers):	
9.	Whether village is connected to all road for the any facility or town or City?	

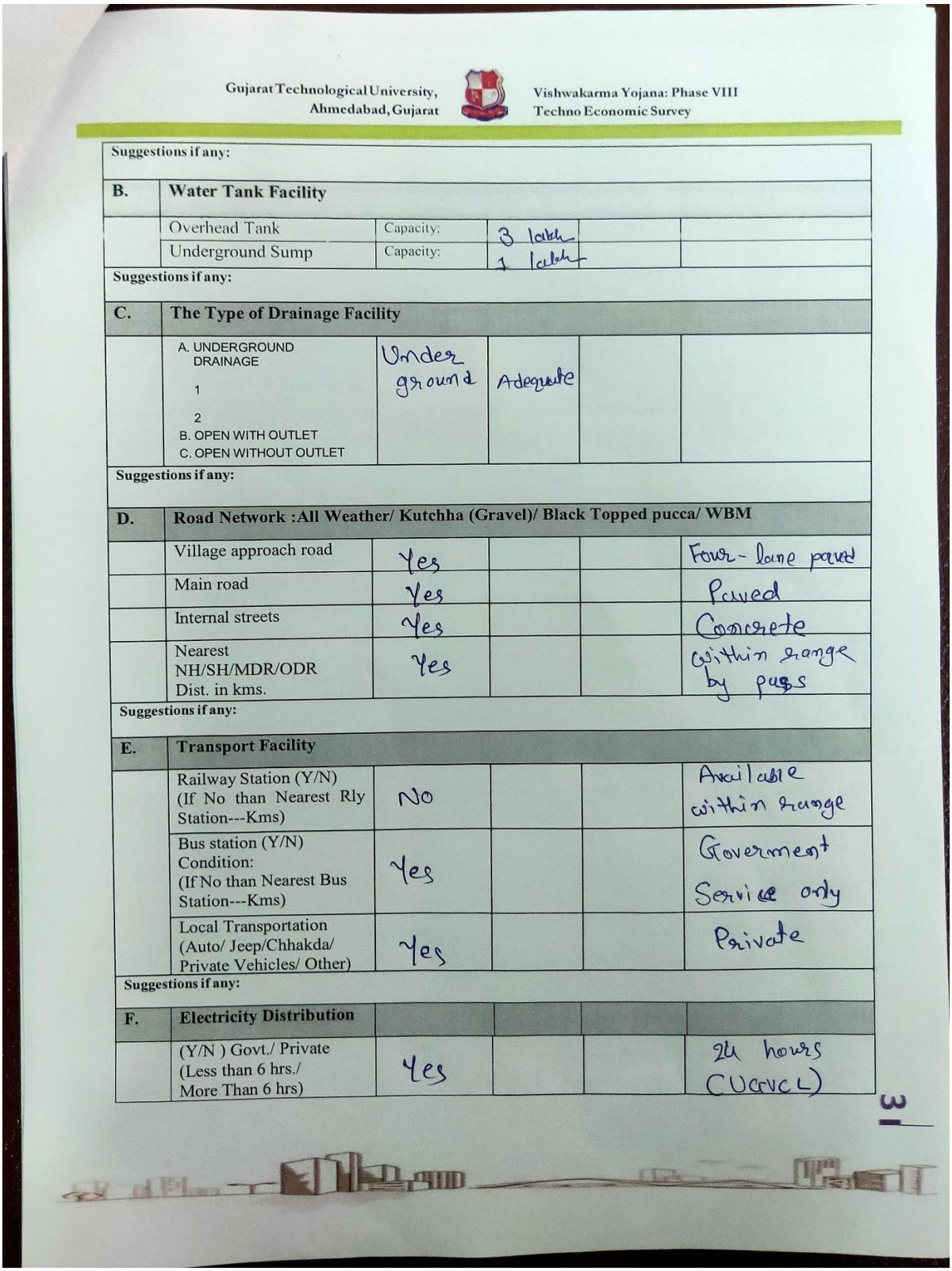
III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Job
	2.	Workers (GIDC)
	3.	

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

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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



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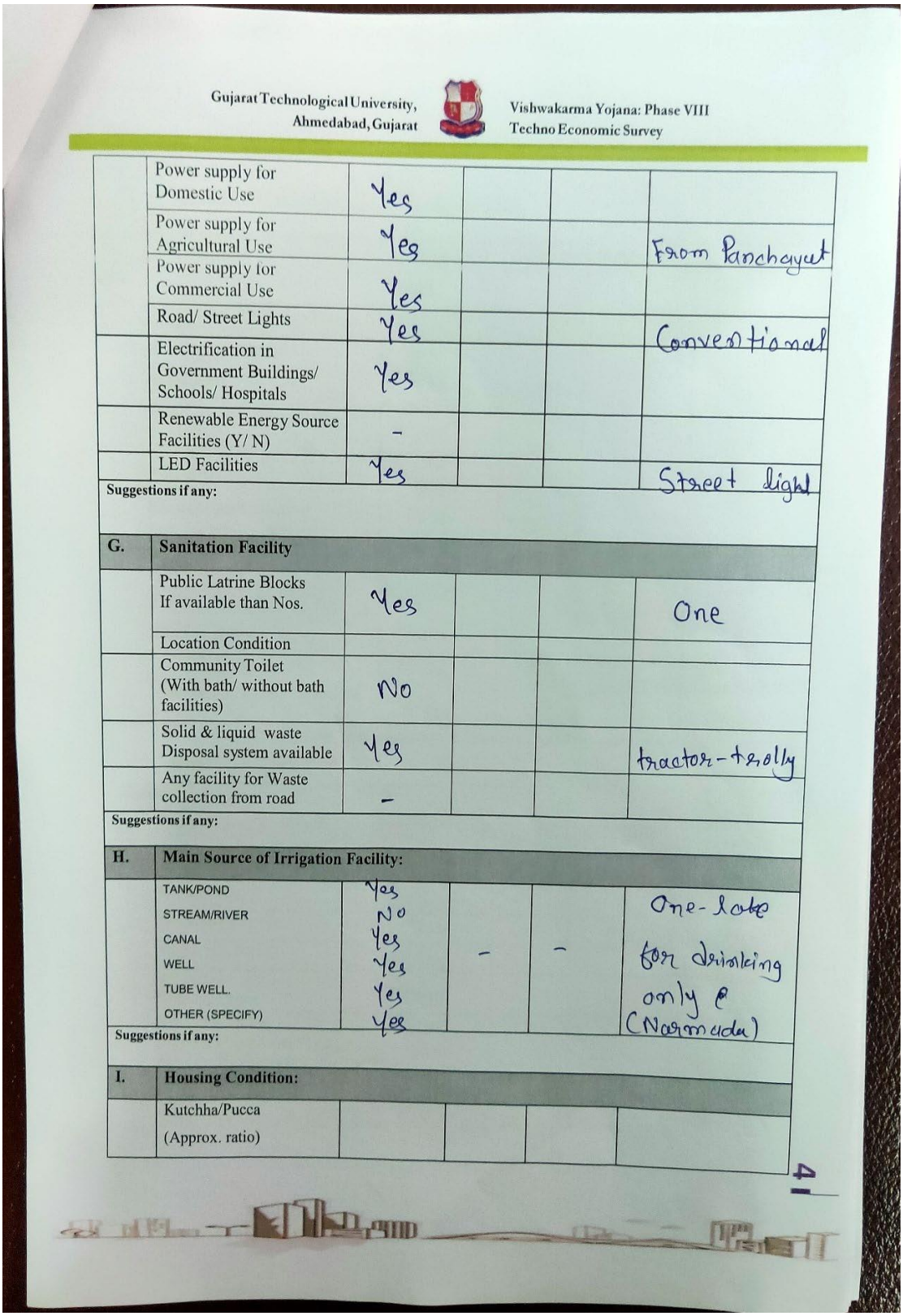
Suggestions if any:						
B.	**Water Tank Facility**					
	Overhead Tank	Capacity:	3 lakh			
	Underground Sump	Capacity:	1 lakh			
Suggestions if any:						
C.	**The Type of Drainage Facility**					
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	Under ground	Adequate			
Suggestions if any:						
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**					
	Village approach road	Yes			Four-lane paved	
	Main road	Yes			Paved	
	Internal streets	Yes			Concrete	
	Nearest NH/SH/MDR/ODR Dist. in kms.	Yes			within range by pass	
Suggestions if any:						
E.	**Transport Facility**					
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No			Available within range	
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes			Goverment Service only	
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes			Private	
Suggestions if any:						
F.	**Electricity Distribution**					
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes			24 hours (UGVCL)	

3



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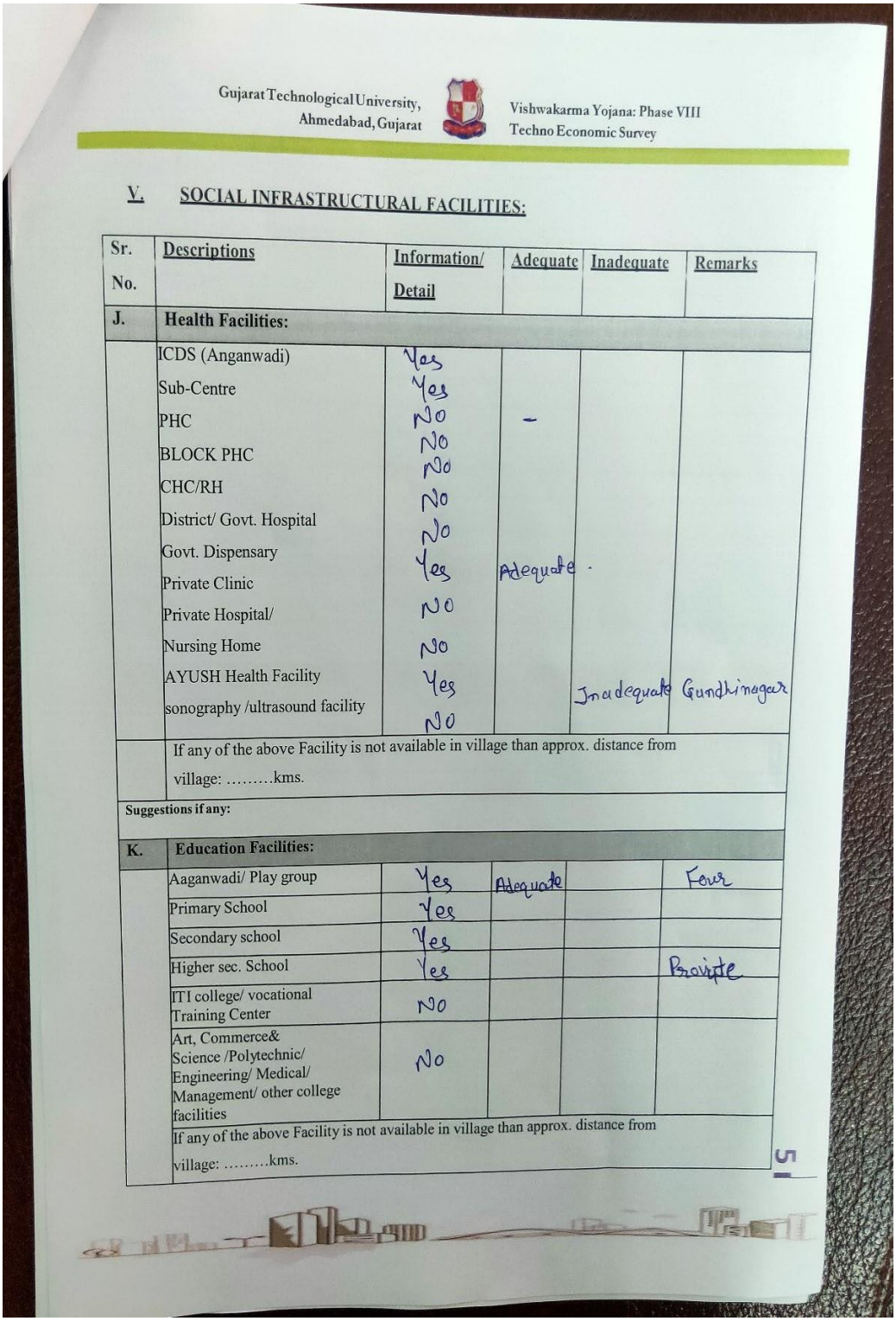
	Power supply for Domestic Use	Yes			
	Power supply for Agricultural Use	Yes			From Panchayat
	Power supply for Commercial Use	Yes			
	Road/ Street Lights	Yes			Conventional
	Electrification in Government Buildings/ Schools/ Hospitals	Yes			
	Renewable Energy Source Facilities (Y/ N)	-			
	LED Facilities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



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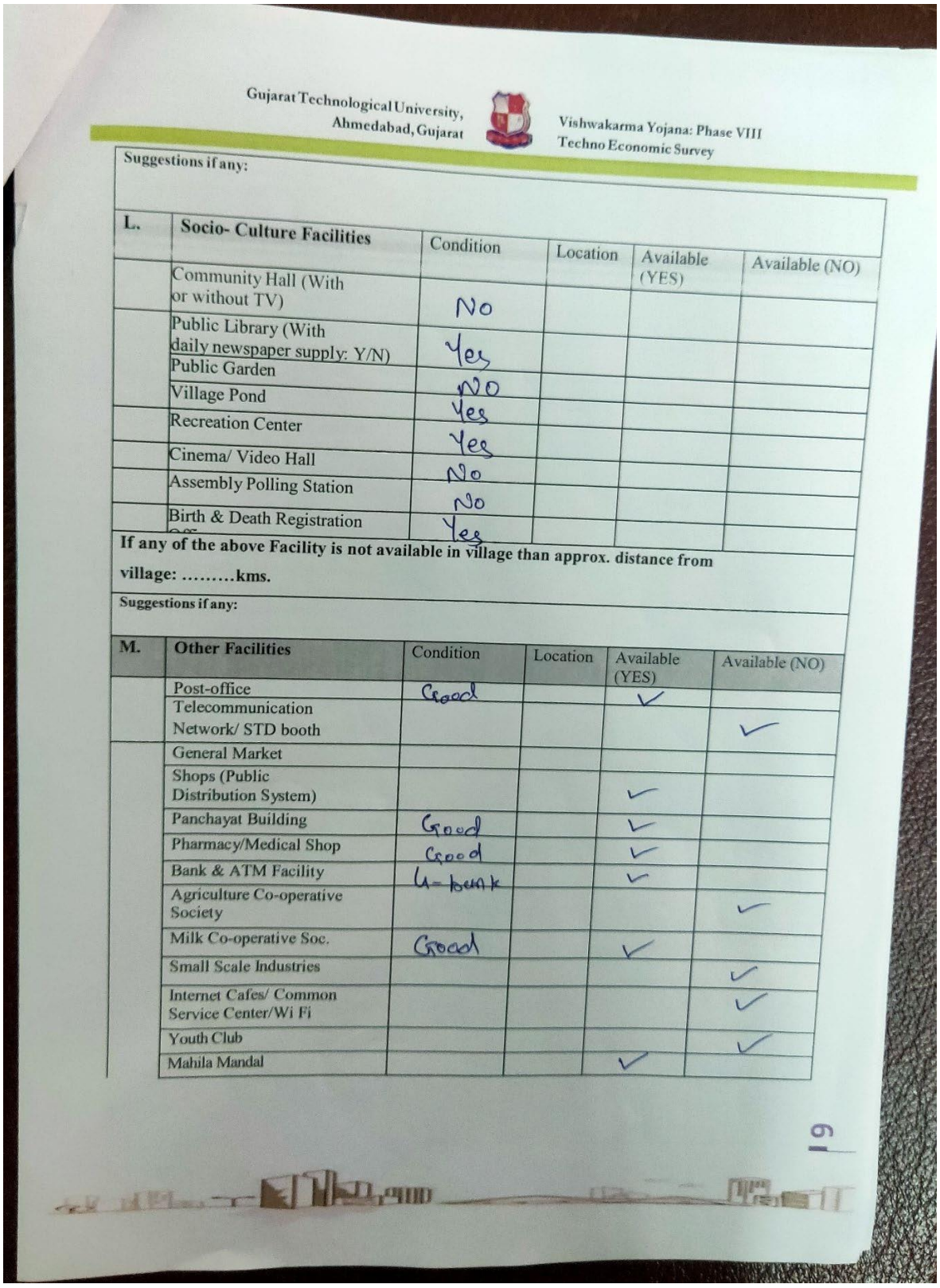
V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	Yes			
	Sub-Centre	Yes			
	PHC	No	-		
	BLOCK PHC	No			
	CHC/RH	No			
	District/ Govt. Hospital	No			
	Govt. Dispensary	Yes	Adequate.		
	Private Clinic	No			
	Private Hospital/	No			
	Nursing Home	No			
	AYUSH Health Facility	Yes		Inadequate	Gandhinagar
	sonography /ultrasound facility	No			
	If any of the above Facility is not available in village than approx. distance from village: ……kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	Yes	Adequate		Four
	Primary School	Yes			
	Secondary school	Yes			
	Higher sec. School	Yes			Private
	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.				

5



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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)	Yes			
	Public Garden	NO			
	Village Pond	Yes			
	Recreation Center	Yes			
	Cinema/ Video Hall	No			
	Assembly Polling Station	No			
	Birth & Death Registration	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		✓	
	Telecommunication Network/ STD booth				✓
	General Market				
	Shops (Public Distribution System)			✓	
	Panchayat Building	Good		✓	
	Pharmacy/Medical Shop	Good		✓	
	Bank & ATM Facility	4- bank		✓	
	Agriculture Co-operative Society				✓
	Milk Co-operative Soc.	Good		✓	
	Small Scale Industries				✓
	Internet Cafes/ Common Service Center/Wi Fi				✓
	Youth Club				✓
	Mahila Mandal			✓	

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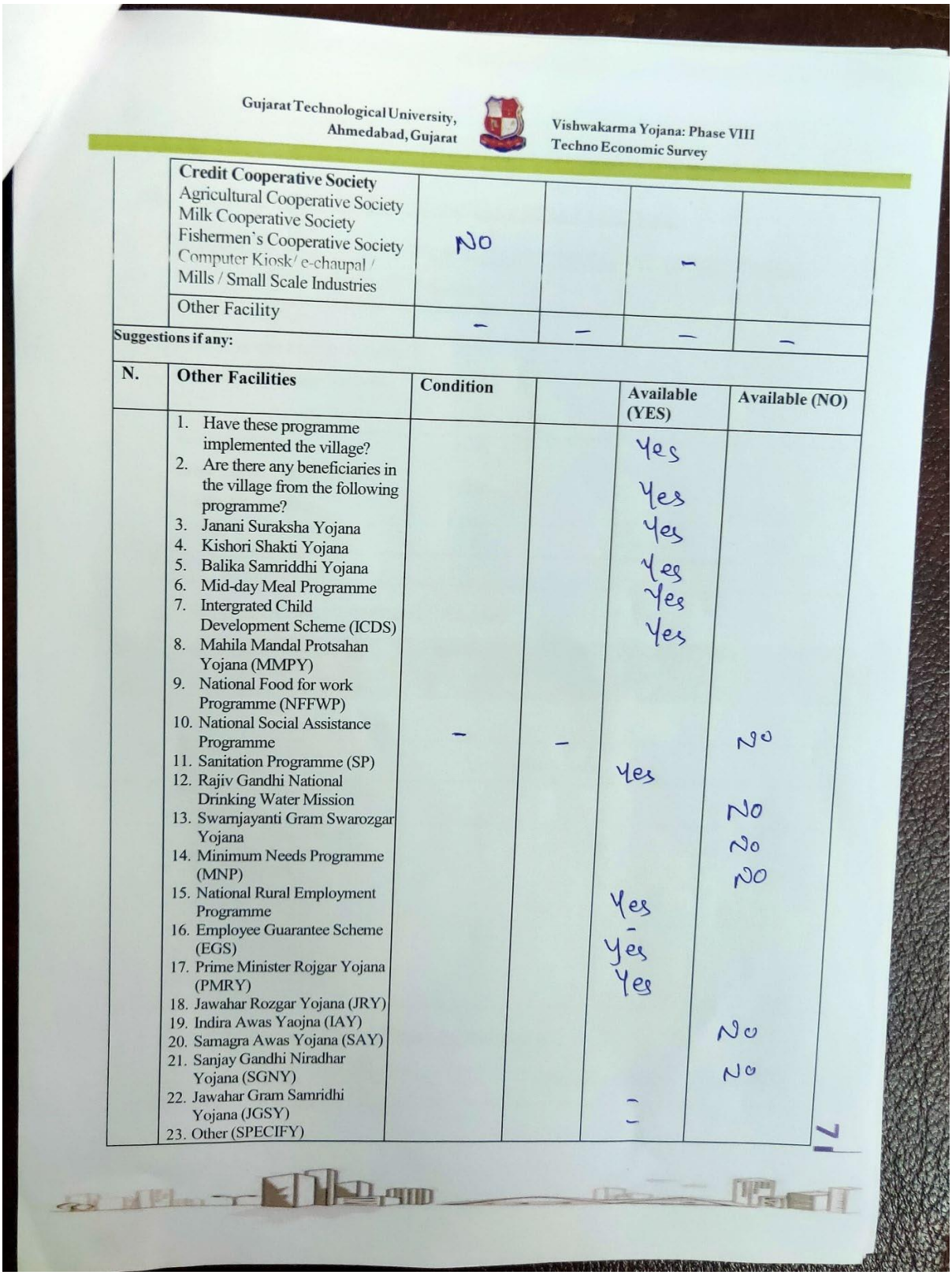

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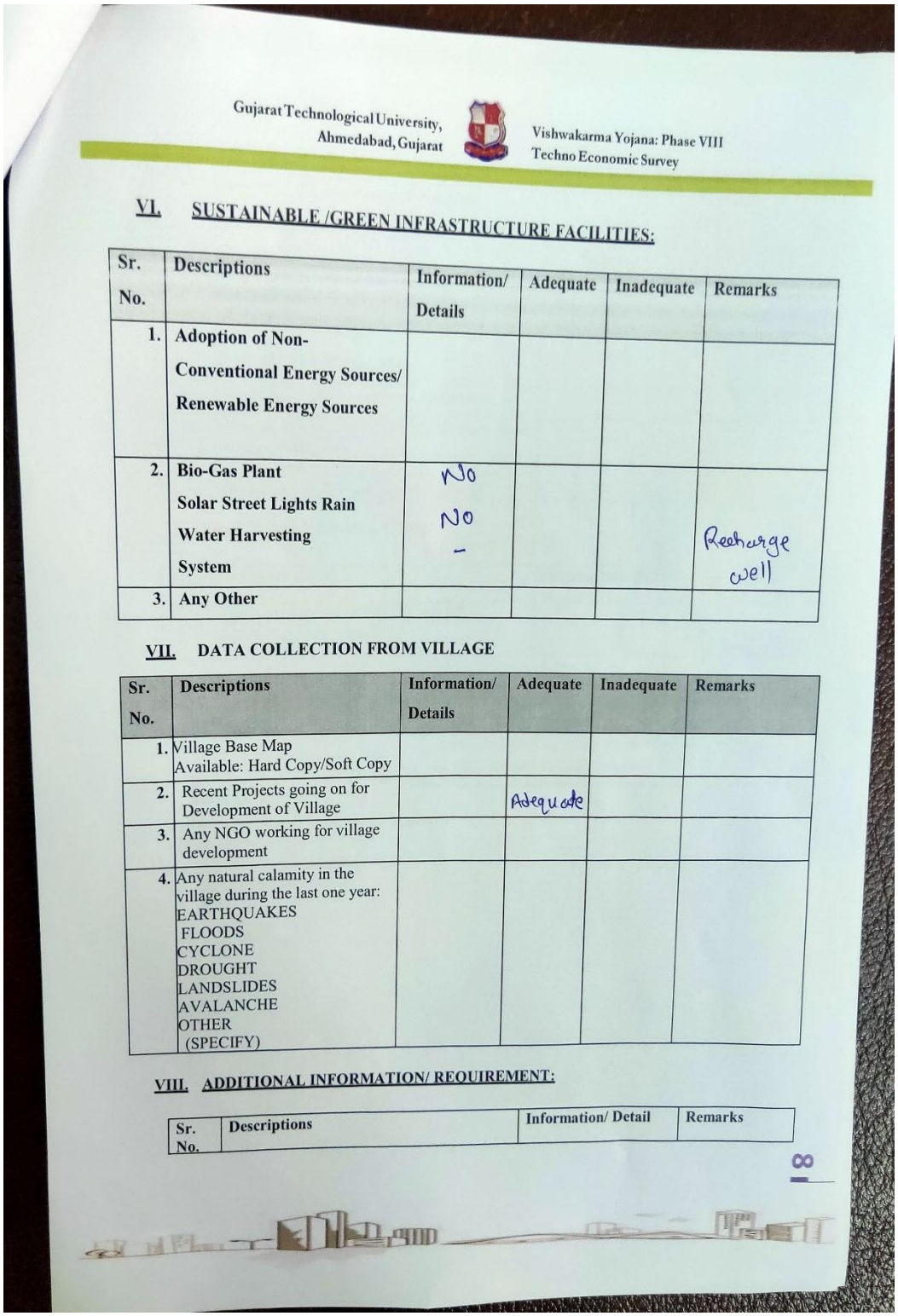
	Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-chaupal / Mills / Small Scale Industries	NO		-	
	Other Facility	-	-	-	-

Suggestions if any:

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



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VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

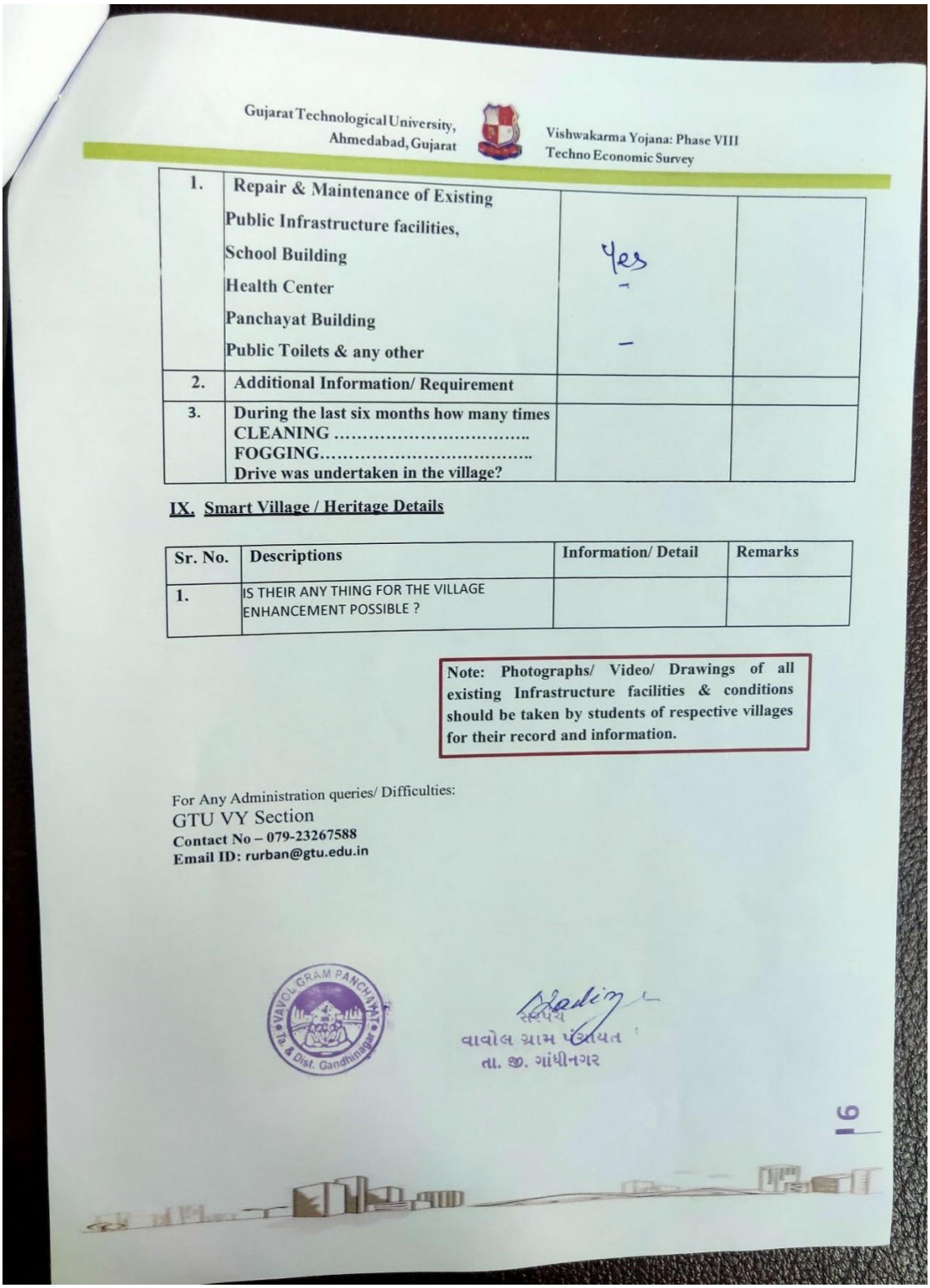
VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

8



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1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	Yes - -	
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

VAVOL GRAM PANCHAYAT Ta. & Dist. Gandhinagar

સરપંચ
વાવોલ ગ્રામ પંચાયત
તા. જી. ગાંધીનગર

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Vishwakarma Yojana: Phase VIII
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For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	Punsari
Name of Taluka:	Talod
Name of District:	Sabarkantha
Name of Institute:	Shankersinh Vaghela Bapu Ins. of Tech.
Nodal Officer Name & Contact Detail:	Prof. Jay Pandya Mo:- 8460401404
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	HIMANSHU PATEL
Date of Survey:	

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	4681			
ii)	2011	5500	2653	2447	1109

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector)	6500 Hectors.
	Coordinates for Location:	3°20' 59.46"N, 73°8' 12.48" E
	Forest Area (In hect.)	-
	Agricultural Land Area (In hect.)	6 Hectors
	Residential Area (In hect.)	
	Other Area (In hect.)	
	Water bodies	
	Nearest Town with Distance:	

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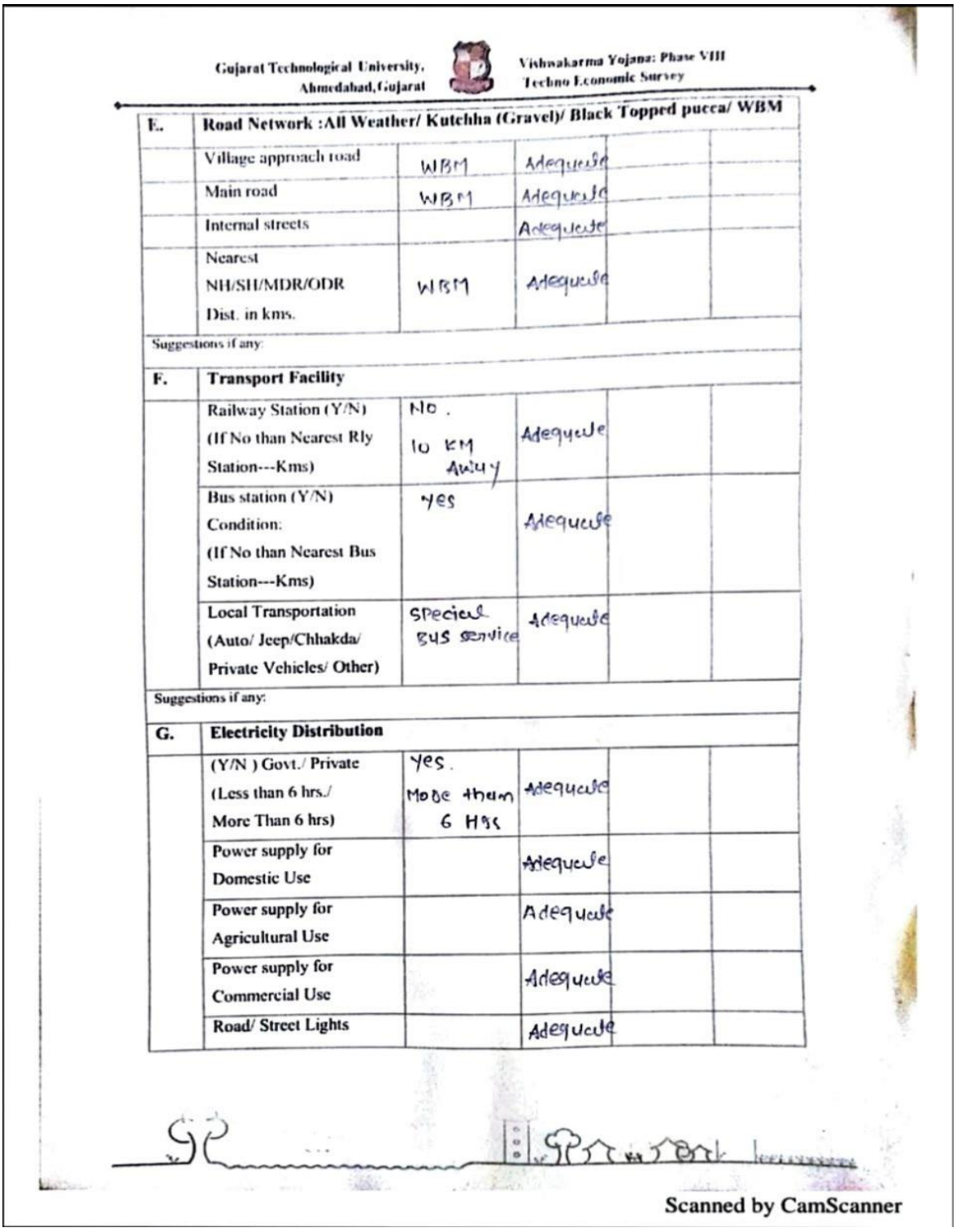
3. **Occupational Details:**

Name of Three Major Occupation groups in Village	1.	Farming
	2.	Dairy
	3.	Animal Husbandry

4. **Physical Infrastructure Facilities:**

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



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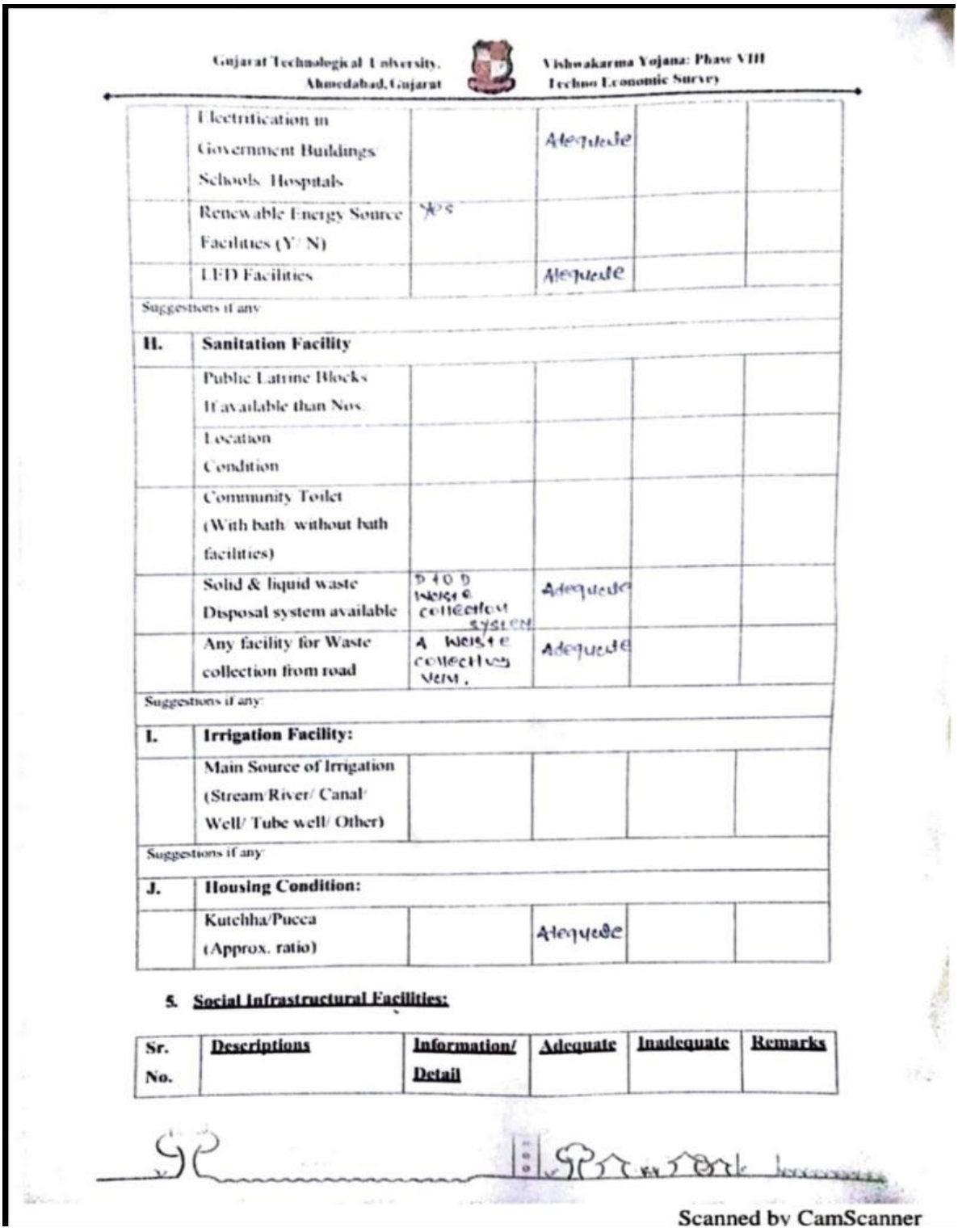
E.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	WBM	Adequate		
	Main road	WBM	Adequate		
	Internal streets		Adequate		
	Nearest NH/SH/MDR/ODR Dist. in kms.	WBM	Adequate		
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No. 10 KM Away	Adequate		
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	yes	Adequate		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Special Bus service	Adequate		
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	yes. More than 6 Hrs	Adequate		
	Power supply for Domestic Use		Adequate		
	Power supply for Agricultural Use		Adequate		
	Power supply for Commercial Use		Adequate		
	Road/ Street Lights		Adequate		



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	Electrification in Government Buildings/ Schools/ Hospitals		Adequate		
	Renewable Energy Source Facilities (Y/ N)	Yes			
	LED Facilities		Adequate		
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.				
	Location Condition				
	Community Toilet (With bath/ without bath facilities)				
	Solid & liquid waste Disposal system available	D to D waste collection system	Adequate		
	Any facility for Waste collection from road	A waste collection van.	Adequate		
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/ River/ Canal/ Well/ Tube well/ Other)				
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)		Adequate		

5. Social Infrastructural Facilities:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

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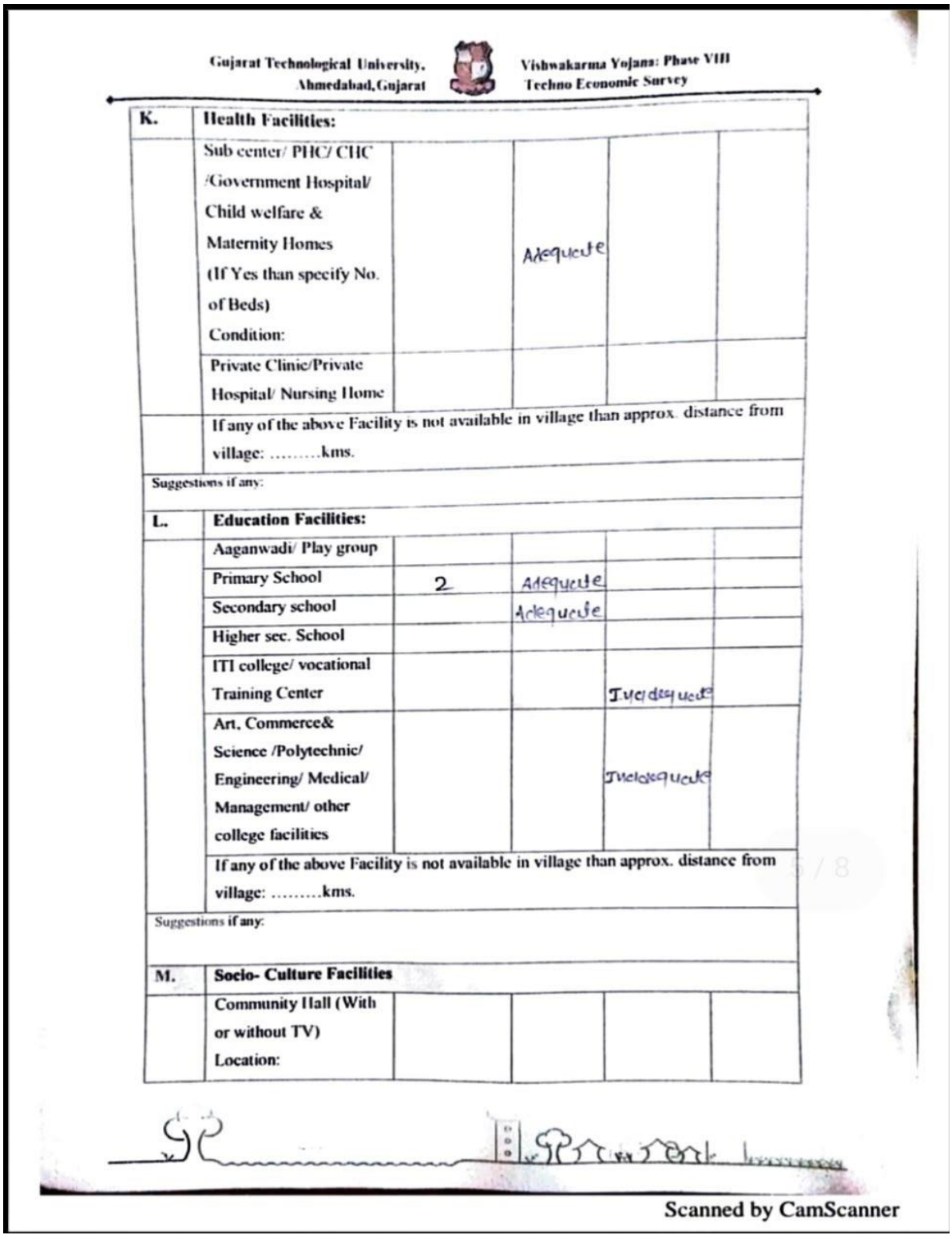

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K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:		Adequate		
	Private Clinic/Private Hospital/ Nursing Home				
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
L.	**Education Facilities:**				
	Aaganwadi/ Play group				
	Primary School	2	Adequate		
	Secondary school		Adequate		
	Higher sec. School				
	ITI college/ vocational Training Center			Inadequate	
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities			Inadequate	
	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:				

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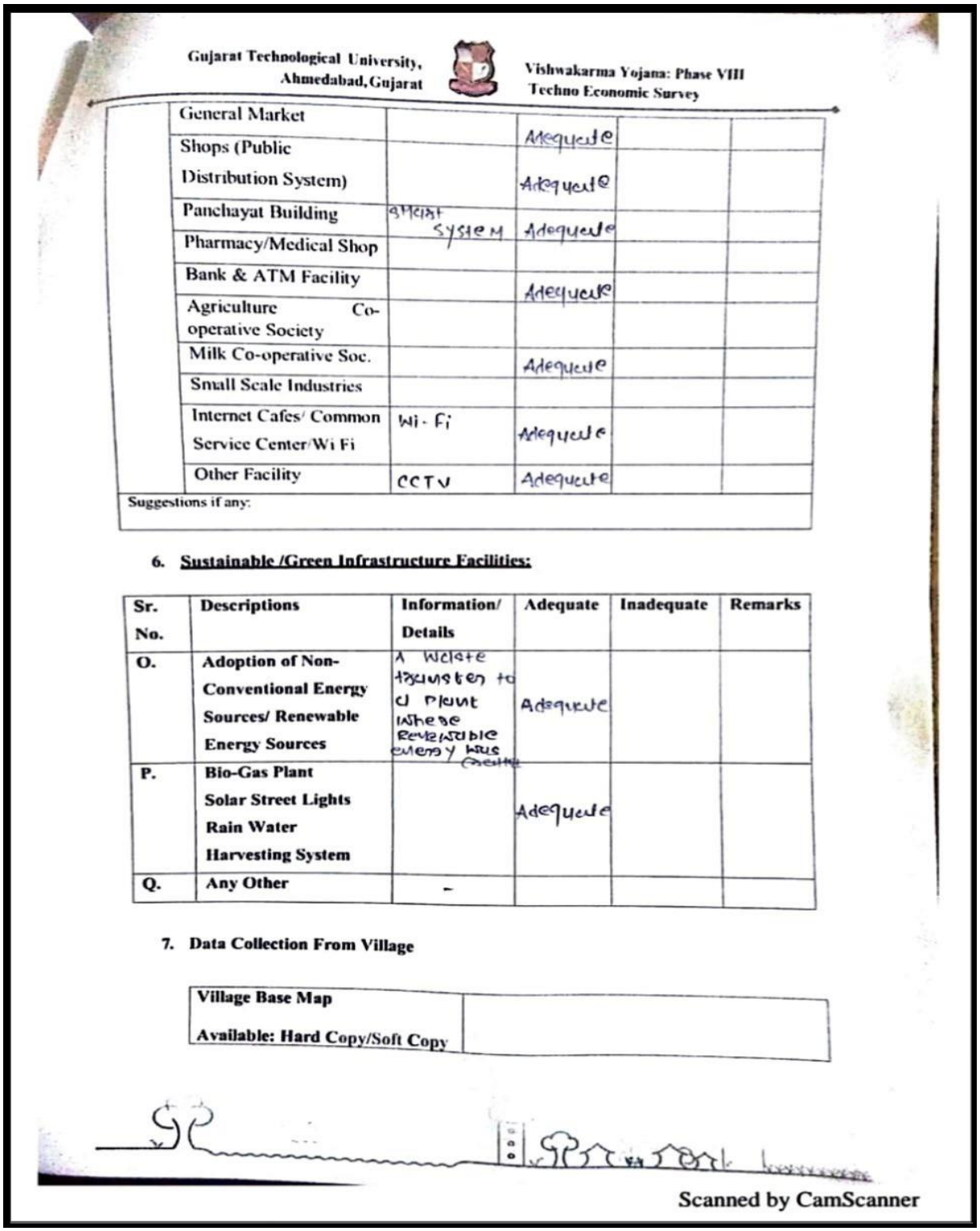
	Condition:				
	Public Library (With daily newspaper supply: Y/N) Location: Condition:				
	Public Garden Location: Condition:				
	Village Pond Location: Condition:				
	Recreation Center Location: Condition:				
	Cinema/ Video Hall Location: Condition:				
	Assembly Polling Station Location: Condition: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



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	General Market		Adequate		
	Shops (Public Distribution System)		Adequate		
	Panchayat Building	Smart System	Adequate		
	Pharmacy/Medical Shop				
	Bank & ATM Facility		Adequate		
	Agriculture Co-operative Society				
	Milk Co-operative Soc.		Adequate		
	Small Scale Industries				
	Internet Cafes/ Common Service Center/Wi Fi	Wi-Fi	Adequate		
	Other Facility	CCTV	Adequate		
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	A Waste treatment to oil plant where Renewable energy was Generate	Adequate		
P.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System		Adequate		
Q.	Any Other	-			

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	

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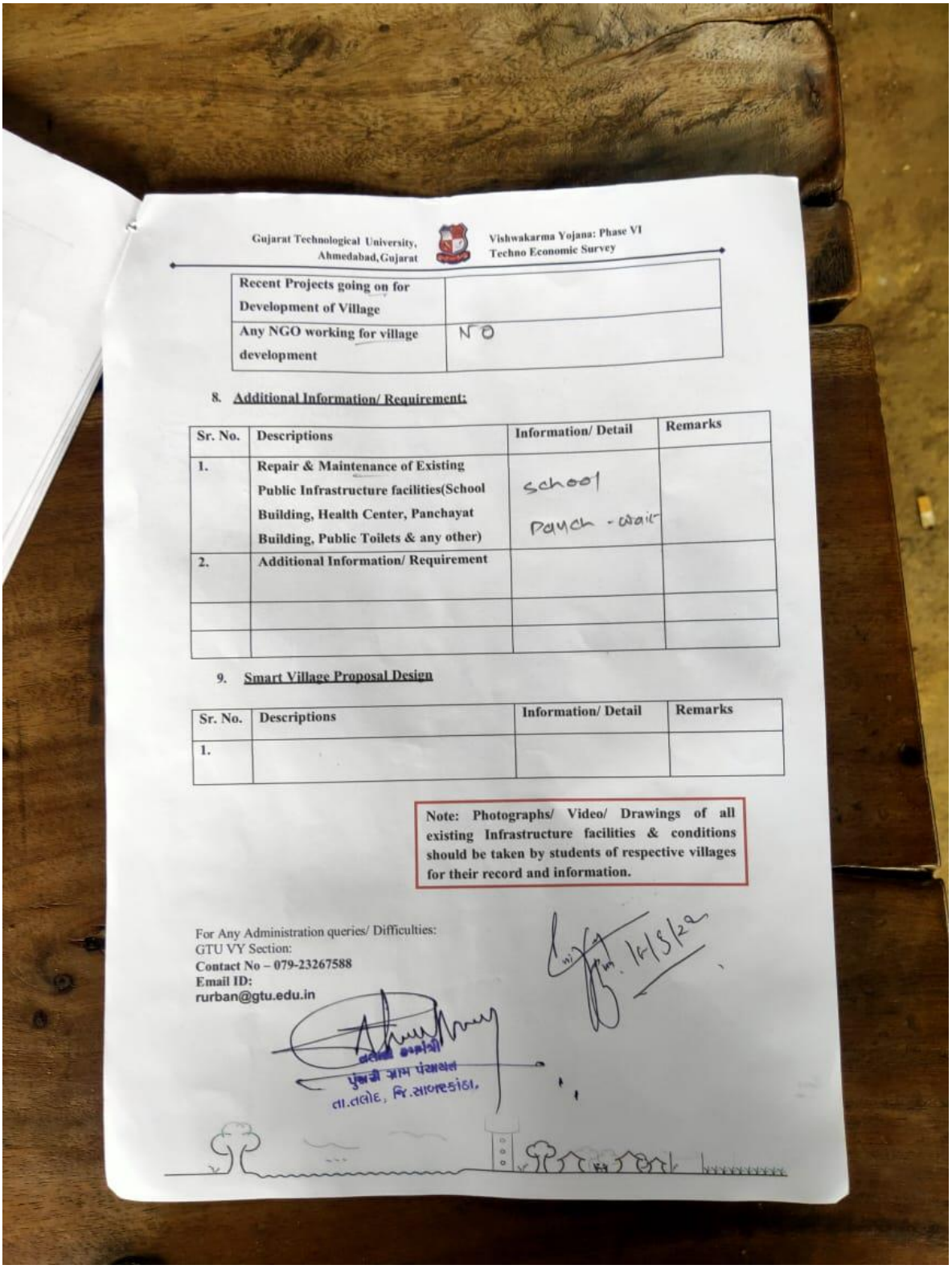

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Vishwakarma Yojana: Phase VI
Techno Economic Survey

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

8. Additional Information/ Requirement:

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

16/5/20

પુંજાજી ગ્રામ પંચાયત
તા.તલોદ, જિ.સાબરકાંઠા.

PART-II

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

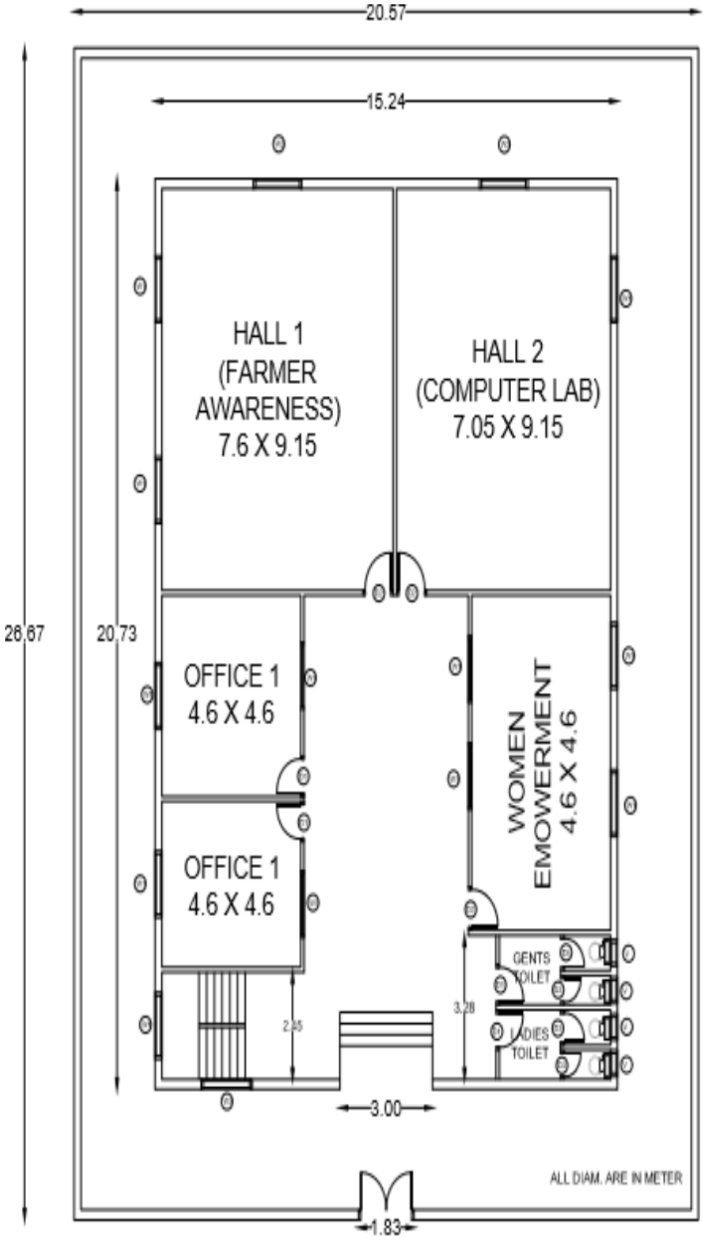
In the Vishwakarma Yojana Phase-VII Part – II we have given total six design according To the village need and useful for the villagers. The design proposals are:-

- Skill development centre
- Bio-Gas Plant
- Co- Operative Bank
- Community Hall
- Medical Store
- Cross- Section of road

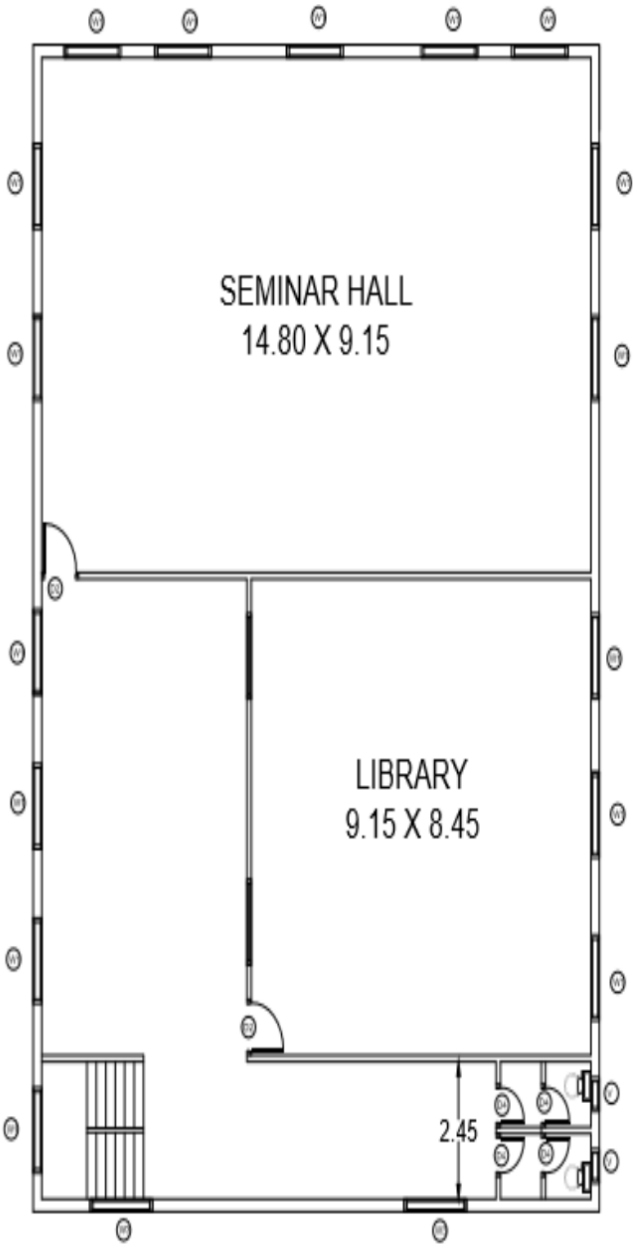
13.1.1 Skill development centre

- Programmer:-

1. Skill Development Enhancement
2. Encourage Entrepreneurship
3. Soft Skills



Ground Floor Plan of
Skill Development Centre



First Floor Plan of Skill
Development Centre

Fig. 13.1 Plan of Skill Development Centre

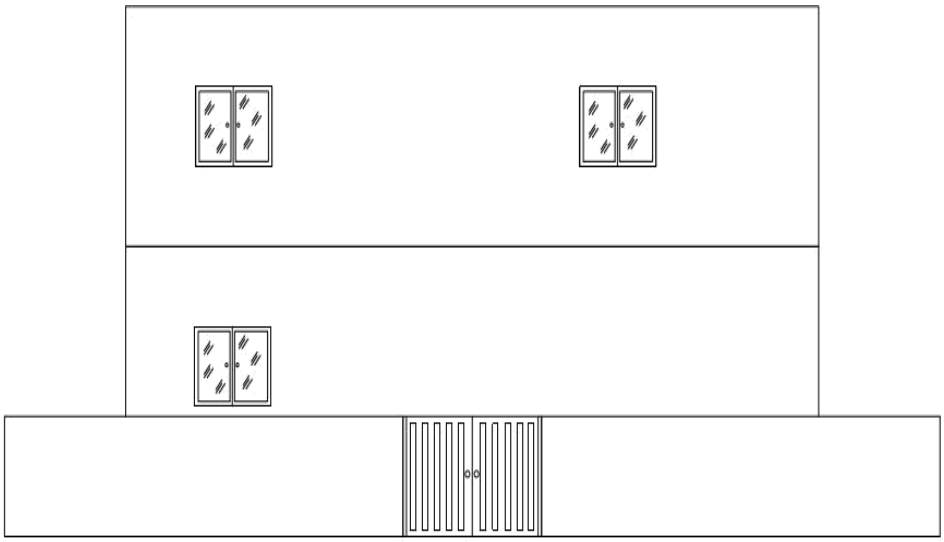


Fig. 13.2 Elevation of Skill Development Centre

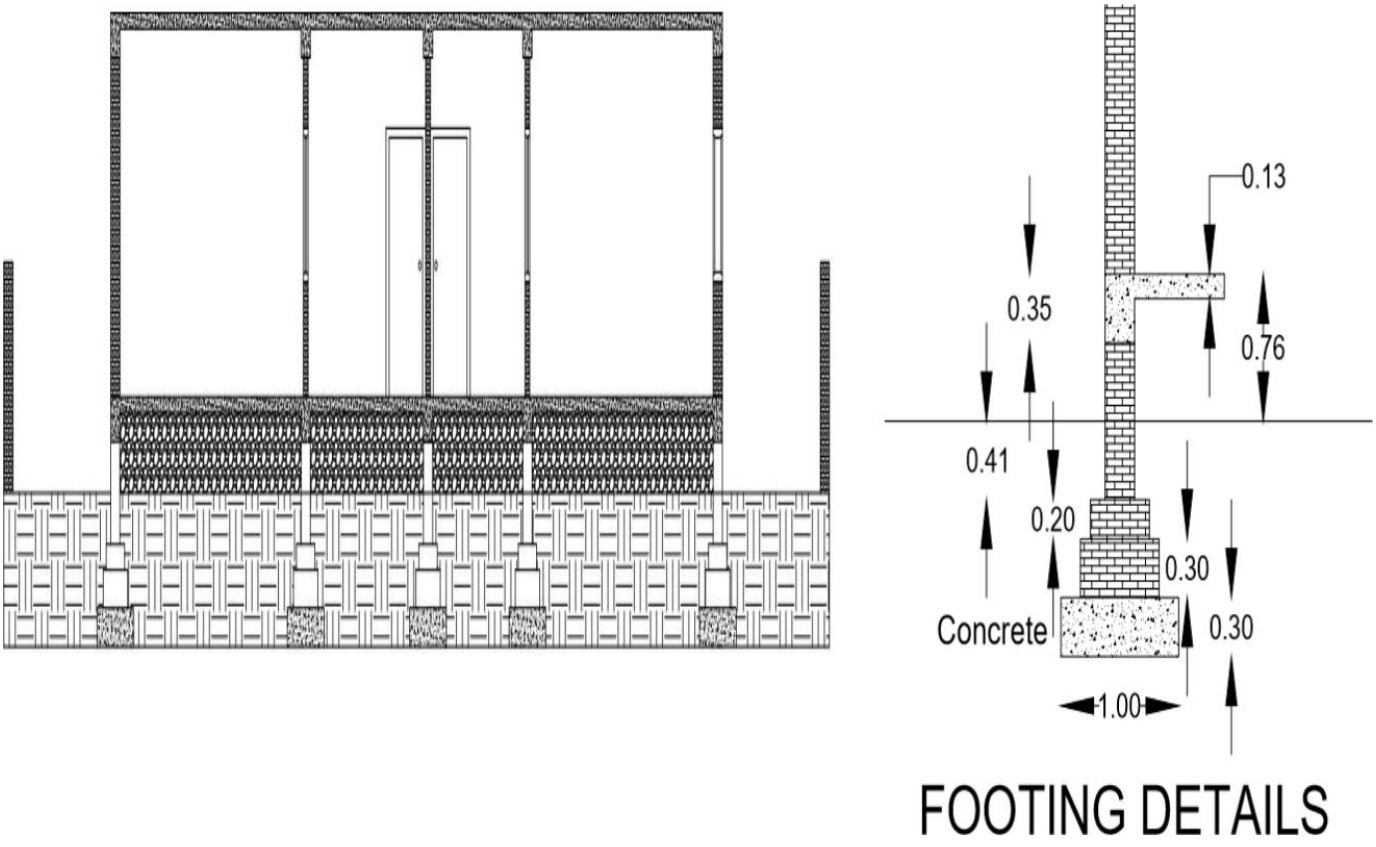


Fig. 13.3 Section of Skill Development Centre

➢ Measurement sheet of Skill Development Centre

SR. NO.	DESCRIPTION	NO.	LENGTH (M)	BREADTH (M)	HEIGHT (M)	QUANTITY
1	**Excavation in Foundation**					
	For compound wall					
	L= (26.67+20.57)*2 =94.48 m	1	94.48	0.9	0.3	25.50 m^3
	For building					
	Total C.L= 164.406 m					
	Actual Length= 157.21	1	157.21	0.9	1.2	169.78 m^3
	Total					**195.28 m^3**
2	**Plain cement concrete(P.C.C) in Foundation(1:4:8)**					
	For Compound Wall	1	94.48	0.9	0.3	25.50 m^3
	For Building	1	157.21	0.9	0.3	42.44 m^3
	Total					**67.94 m^3**
3	**Brickwork in Foundation up to Plinth level** First step	1	159.6	0.6	0.3	28.728 m^3
	Second step	1	161.21	0.4	0.2	12.89 m^3
	Third step	1	162.59	0.228	0.8	29.65 m^3
	Total					**71.268 m^3**
4	**Brickwork in superstructure in cement mortar 1:6**					
	For Ground Floor External Wall	1	71	0.228	4.0	64.75 m^3
	Internal Wall	1	91.58	0.112	4	41.02 m^3
						105.77 m^3
	Brick steps: First step	1	3.0	0.9	0.15	0.405 m^3
	Second step	1	3.0	0.6	0.15	0.135 m^3
	Third step	1	3.0	0.3	0.15	0.135 m^3
						0.81 m^3

SR. NO.	DESCRIPTION	NO	LENGTH (M)	BREADTH (M)	HEIGHT (M)	QUANTITY
	Deduction for Door/Windows :					
	D1	4	0.9	0.112	2.1	0.84 m^3
	D2	3	1.0	0.112	2.1	0.7 m^3
	W1	4	1.52	0.112	1.22	0.83 m^3
		8	1.52	0.228	1.22	3.38 m^3
	W2	2	1.6	0.228	1.22	0.89 m^3
	W3	1	1.67	0.228	1.22	0.46 m^3
	V	4	0.6	0.228	0.6	0.328 m^3
						(-)7.428 m^3
	Deduction for lintels:					
	Bearing = 0.15 m					
	D1	4	1.2	0.112	0.15	0.08
	D2	3	1.3	0.112	0.15	0.06
	W1	4	1.82	0.112	0.15	0.12
		8	1.82	0.228	0.15	0.49
	W2	2	1.9	0.228	0.15	0.129
	W3	1	1.97	0.228	0.15	0.06
	V	4	0.9	0.228	0.15	0.123
						(-)1.062 m^3
	Total					**98.09 m^3**
	Parapet Wall:	1	71	0.228	0.9	**14.57 m^3**
	For First Floor					
	External Wall	1	71	0.228	4.0	64.75 m^3
	Internal Wall	1	34.30	0.112	4	15.36 m^3
						80.11 m^3
	Deduction for Door/Windows :					
	D2	2	1.0	0.112	2.1	0.47 m^3
	D4	4	0.7	0.112	2.1	0.65 m^3
	W1	16	1.52	0.228	1.22	6.76 m^3
		2	1.52	0.112	1.22	0.41 m^3
	W3	2	1.67	0.228	1.22	0.92 m^3
	V	2	0.6	0.228	0.6	0.164 m^3
						(-)9.37 m^3

SR. NO.	DESCRIPTION	NO.	LENGTH (M)	BREADTH (M)	HEIGHT (M)	QUANTITY
	Deduction for lintels:					
	Bearing = 0.15 m					
	D2	2	1.3	0.112	0.15	0.043
	D4	4	1.0	0.112	0.15	0.06
	W1	16	1.82	0.228	0.15	0.99
		2	1.82	0.112	0.15	0.06
	W3	2	1.97	0.228	0.15	0.13
	V	2	0.9	0.228	0.15	0.06
						(-)1.34 m^3
	Total					**69.4 m^3**
	Total Brickwork					**182.06 m^3**
5	**RCC Work**					
	Slab	3	20.73	15.25	0.12	113.80
	Lintel					1.28
	Stairs					0.94
6	**Total 2 cm thick marble flooring**					**116.02 m^3**
	Hall 1		7.62	9.14		69.64
	Hall 2		7.04	9.14		64.34
	Hall 3		4.57	7.62		34.82
	Office 1		4.57	4.57		20.88
	Office 2		3.77	4.57		17.22
	Open area at G.F					69.81
	Seminar Hall		13.7	9.14		125.21
	Library		9.14	8.22		75.13
	Open are at F.F					82.79
	Total area					**559.84 m^2**
7	**Smooth plaster on inside walls and ceiling in cm.(1:3)**					
	Hall 1 Wall	2	7.62		4	60.96
		2	9.14		4	73.12
	Ceiling	1	7.62	9.14		69.64
	Hall 2 Wall	2	7.04		4	56.32
		2	9.14		4	73.12

SR. NO.	DESCRIPTION		NO.	LENGTH (M)	BREADTH (M)	HEIGHT (M)	QUANTITY
	Hall 3	Wall	2	4.57		4	36.56
			2	7.62		4	60.96
		Ceiling	1	4.57	7.62		34.82
	Office 1	Wall	2	4.57		4	36.56
			2	4.57		4	36.56
		Ceiling	1	4.57	4.57		20.88
	Office 2	Wall	2	3.77		4	30.16
			2	4.57		4	36.56
		Ceiling	1	3.77	4.57		17.22
	Seminar Hall	Wall	2	13.7		4	109.6
			2	9.14		4	73.12
		Ceiling	1	13.7	9.14		125.21
	Library	Wall	2	9.14		4	73.12
			2	8.22		4	65.76
		Ceiling	1	9.14	8.22		82.79
	Total						**1292.82 m^2**
8	**Earth filling in plinth**						
	Hall 1			7.62	9.14	0.62	43.18
	Hall 2			7.04	9.14	0.62	39.89
	Hall 3			4.57	7.62	0.62	21.59
	Office 1			4.57	4.57	0.62	12.94
	Office 2			3.77	4.57	0.62	10.68
	Open area at G.F					0.62	42.58
	Seminar Hall			13.7	9.14	0.62	77.64
	Library			9.14	8.22	0.62	46.58
	Open are at F.F						31.33
	Total area						**325.14 m^3**
9	**Earth filling in Excavation**						
	Total excavation for walls						195.28 m^3
	Brickwork up to G.L.						(-)71.268 m^3
	PCC						(-)67.94 m^3
	Total						**56.072 m^3**

Table 13.1Measurement sheet of Skill Development Centre

➢ Abstract sheet of Skill Development Centre

SR. NO.	PARTICULARS	QUANTITY	UNIT	RATE	PER	AMOUNT
1	**Excavation in foundation**	195.28	m^3	85	m^3	16,598.8
2	**Plain Cement Concrete (P.C.C.) in Foundation (1:4:8)**	67.94	m^3	3000	m^3	2,03,820
3	**Brickwork in Foundation up to Plinth level**	71.268	m3	3200	m3	2,28,057.6
4	**Brickwork in superstructure in cement mortar**	182.06	m^3	3500	m^3	6,37,210
5	**R.C.C. Work**	116.02	m3	8800	m3	10,20,976
6	**2 cm thick marble flooring**	559.84	m^2	500	m^2	2,79,920
7	**2 cm thick marble flooring**	559.84	m^2	500	m^2	2,79,920
8	**Earth filling in plinth**	325.14	m^3	50	m^3	16,257
9	**Earth filling**	56.072	m3	50	m3	2,803.6
	Total					**25,99,566 Rs.**
	Add 5% Contingencies					**1,29,978.3 Rs.**
	Grand Total					**27,29,544.3 Rs.**
					say	**27,30,000 Rs.**

Table 13.2 Abstract sheet of Skill Development Centre

13.1.2 Biogas plant

Design:

Total no. of animals in village = 150.

As per standard data assume per day dung of animals = 10.5 kg so, total dung per day

= 150 x 10.5

= 1575 Kg/day

Design of Digester:

Assume retention period (R) = 70 days

Now total amount of slurry per day (S) = Total dung per day + water amount

= 1575+ 2(1575)

= 4725 kg/day= 47.25m^3/day

Digester Volume = S x R = 47.25 x 30 = 1417.5 = 1417m^3 Assume cylinder shape biogas plant.

Providetotal2no.ofunitindifferentarea.

So, digester volume becomes =1417 /2 = 708.5 m^3 Provide = 640 m^3 Total digester volume (Vd) = $\pi r^2 h$

640 =πr^2assume h = 10 m r = 4.51m So, dimensions are h = 10 m, r = 4

Design of Gas Holder:

Assume digester temperature = 26-28^oC Now, Specific Gas Production (Gd) = 37 liter/day Daily Gas Production G = Gd x Feed Volume

= 37 x 12870 = 675990 lit = 676 m^3

Now, Assume Gas Holder capacity = 60%

Gas Holder Volume = Daily Gas Production X Capacity of Holder

= 676 x 0.60

= 406 m^3

So, take gas holder volume = 300 m^3

Now, for 6 units provide volume of holder each unit = 300 m^3 / 2 = 150 m^3 Provide cylinder shaped,

Therefore, Volume = $\pi r^2 h$

$150=\pi r^2$ (1) assume h = 1 r = 6.91m

So, dimension of the gas holder: h = 1 m, r = 7 m

Design of Inlet and Outlet:

Total Volume of slurry mix deposit = 18.27 / 2 = 9.135 m^3 / day Assume two-time filling operation in plant.

So, take total volume of slurry = 9.135 / 2 = 4.567 m^3 / day = 4 m^3 / day Provide Rectangular tank.

So, Total volume for one time mixing of slurry = L x B x H 5 = L x B x 1

Dimensions of inlet: L = 3 m B = 2 m H = 1 m

Here, 5 m^3 / day required < 6 m^3 /day provided . Hence.ok

Provide same size of outlet also.

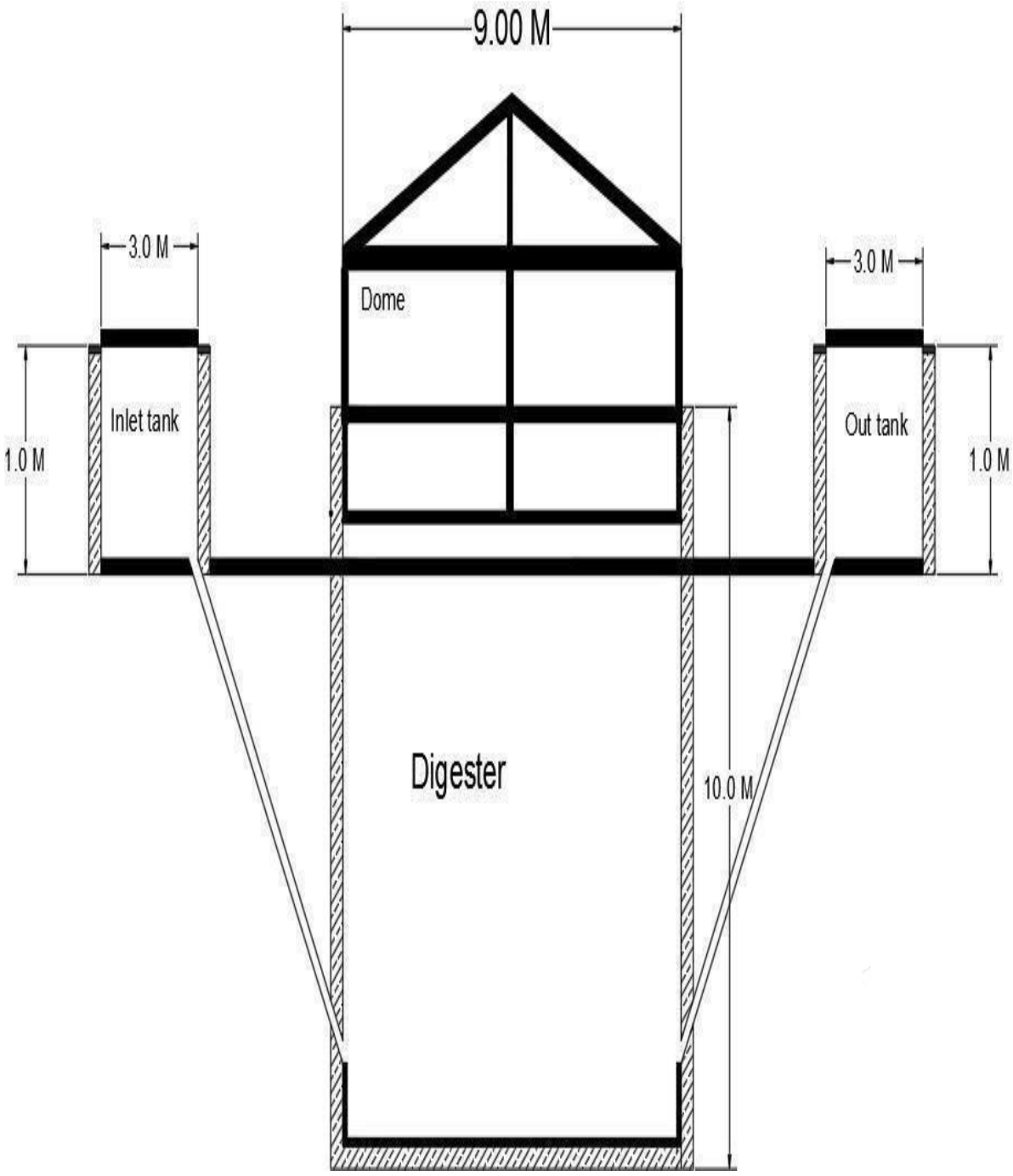


Fig.13.4 Plan of Biogas plant

➢ Measurement sheet of Biogas plant

Sr. No.	Item Particular	Nos.	L (M)	B (M)	H (M)	Quantity	Total Quantity
1	Excavation for Foundation for depth more than 3.3m including sorting out and stacking of useful material anddisposing off the excavated stuffup to 50 m lead	1	17.5	17.5	3.5	1071.8 m^3	1071.8 m^3
2	Providing and laying Cement Concrete 1:3:6 (1 cement: 3coarsesand: 6 stone aggregate 40 mm nominal size) and curing completeexcluding cost of formwork in foundation	1	17.5	17.5	0.10	30.625 m^3	30.625 m^3
3	Providing and laying controlled cement concrete M15 for curing complete excluding the cost of formwork & reinforcement including curing Wallslab	4 2	17.5 17.5	3.5 17.5	0.10 0.10	24.50m^3 61.25m^3	85.75 m^3
4	Deduction of Manholes from the topslab	2	0.6	0.60	0.10	0.072 m^3	61.25-0.072 = 61.178m^3
5	Providing H.Y.S.D barreinforcement for R.C.C work including bendingbinding andplacing in position	85.67 m^3	@	70 kg/m^3		6000 kg	6000 kg

Table13.3 Measurement sheet of Biogas plant

➢ Abstract sheet of Biogas plant

Sr. No.	Particular or Item	Quantity	Rate (in Rs.)	Per	Amount (in Rs.)
1.	For Excavation of Foundation	1071.8	124.00	Cum	132903.20
2.	Providing and laying P.C.C (1:3:6) excluding cost of formwork	30.625	2932.00	Cum	89792.50
3.	Providing and laying controlled cement concrete M15 for the walls excluding cost of reinforcement	24.50	4077.00	Cum	99886.50
4.	Providing and laying concrete and finishing smooth curing including the cost of formwork but excluding the cost of reinforcement in R.C.C slab	61.25	5927.00	Cum	363028.75
5.	Reinforcement	6000	40.00	Kg	24000.00

Total Construction Cost including Labour Cost = 7, 09,614 Rupees.
Contractor's Profit = 1, 06,442 Rupees(15%).
Water charges =10,645Rupees(1.5%).
Total Cost without considering wastage: 7, 09,614+1, 06,442+10,645=8, 26,701
So, the cost is said to be **8, 26,701Rupees**

Table 13.4Abstract sheet of Biogas plant

13.1.3 Co-Operative Bank

To provide finance facilities to farmers to provide banking facilities to villagers for the economic development of village

To guide villagers about new monetary policies and governmental schemes

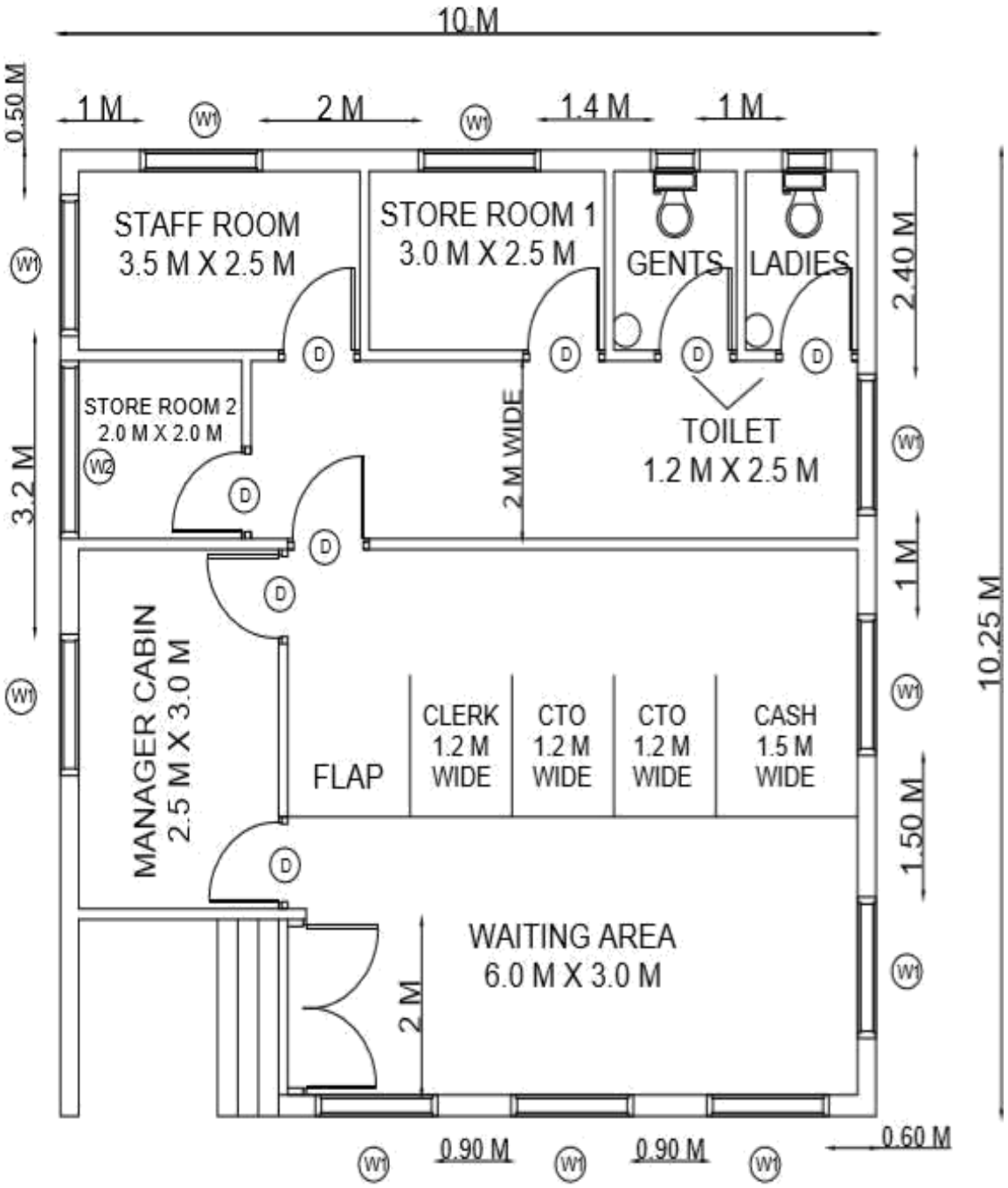


Fig. 13.5 Plan of Co-Operative Bank

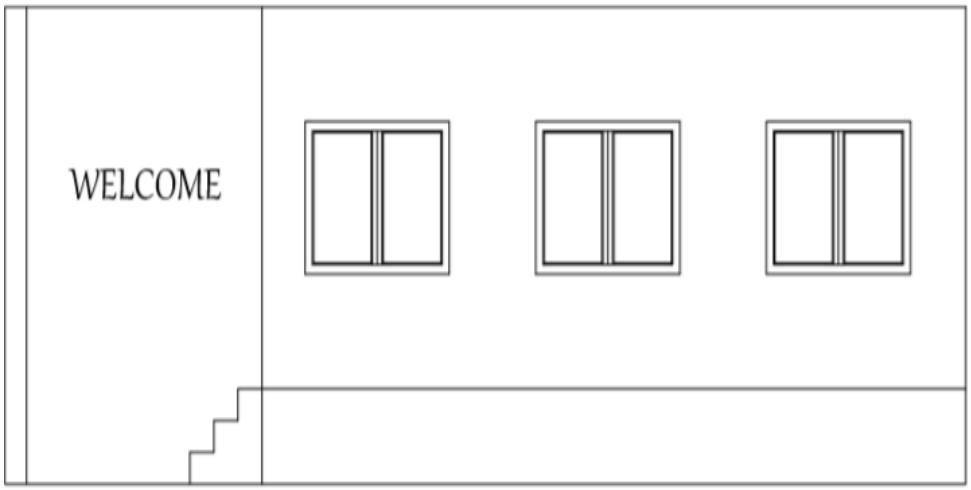


Fig. 13.6 Elevation of Co-Operative Bank

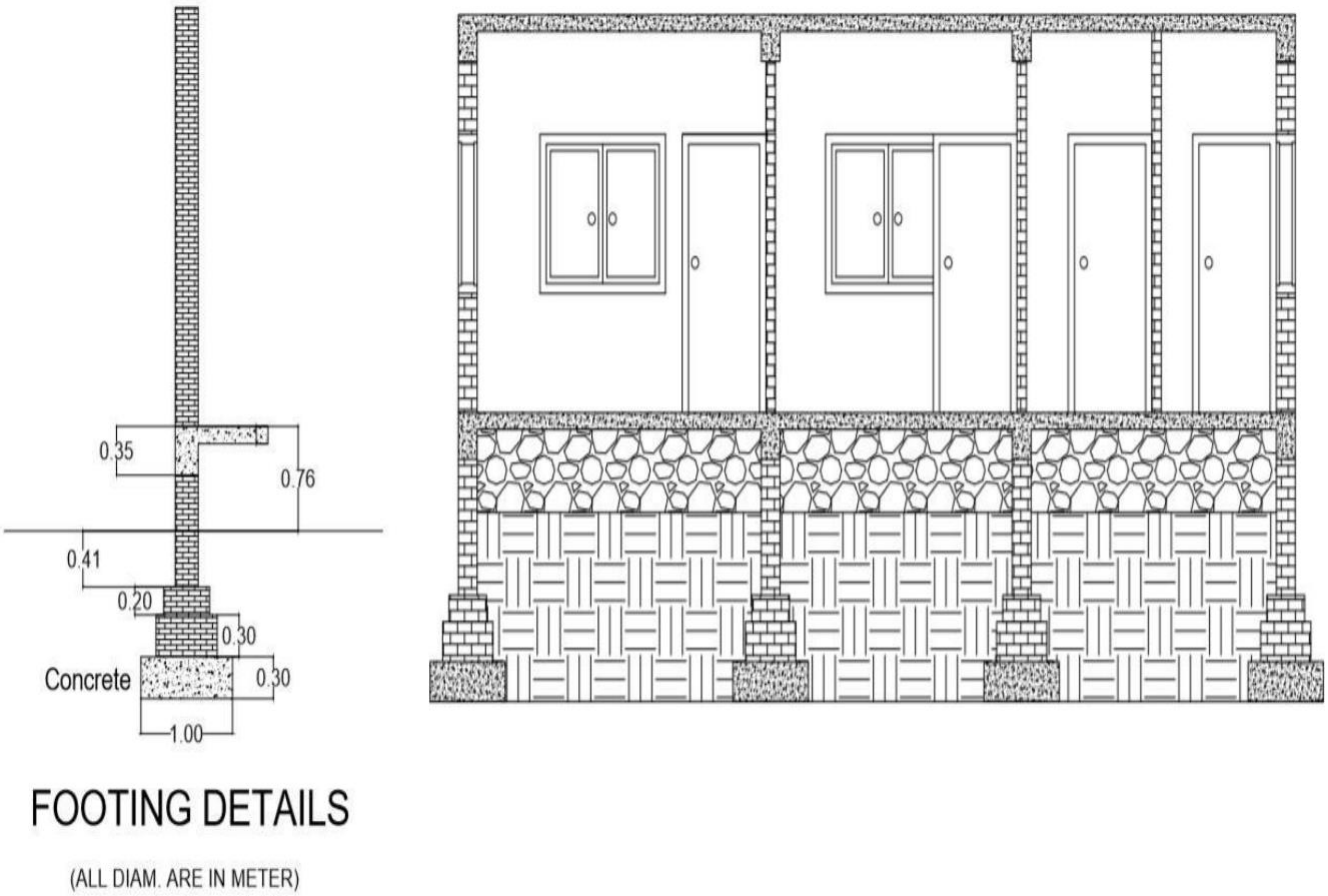


Fig. 13.7 Section of Co-Operative Bank

➢ Measurement sheet of Co-operative Bank

SR. NO.	DESCRIPTION	NO.	LENGTH (M)	BREADTH (M)	HEIGHT (M)	QUANTITY
1	**Excavation in Foundation**					
	Total C.L=58 m					
	Actual Length=54.4 m	1	54.4	0.9	1.2	58.75 m^3
	Total					**58.75 m^3**
2	**Plain cement concrete(P.C.C) in Foundation(1:4:8)**					
	PCC	1	54.4	0.9	0.3	14.68 m^3
	Total					**14.68 m^3**
3	**Brickwork in Foundation up to Plinth level**					
	First step	1	55.6	0.6	0.3	10 m^3
	Second step	1	56.8	0.3	0.2	3.4 m^3
	Third step	1	57	0.228	0.8	10.39 m^3
	Total					**23.79 m^3**
4	**Brickwork in superstructure in cement mortar 1:6**					
	For Ground Floor					
	External Wall	1	57	0.228	3	38.98 m^3
						38.98 m^3
	Deduction for Door/Ventilation :					
	D1	1	1.2	0228	2.1	0.57 m^3
	D2	5	1.0	0.228	2.1	2.394 m^3
	D3	2	0.8	0.228	2.1	0.766 m^3
	W1	3	0.8	0.228	1.2	0.656 m^3
	W2	3	0.6	0.228	1.2	0.49 m^3
	V	4	0.6	0.228	0.6	0.32 m^3
						(-) 5.196 m^3
	Deduction for lintels:					

	Bearing = 0.15 m					
	D1	1	1.5	0.228	0.15	0.051
	D2	5	1.3	0.228	0.15	0.222
	D3	2	1.1	0.228	0.15	0.075
	W1	3	1.1	0.228	0.15	0.112
	W2	3	0.9	0.228	0.15	0.092
	V	4	0.9	0.228	0.15	0.123
						(-)0.675 m^3
	Total					**33.11 m^3**
5	**RCC Work**					
	Slab	**2**	**10.25**	**10**	**0.12**	**24.6**
	Lintel					**0.675**
	Total					**25.275 m^3**
6	**2 cm thick marble flooring**					
	Rooms	2	3.5	2.5		17.5
	Toilet	2	2.5	1.2		6
	Passage	1	7.5	10		75
	Total area					**98.5 m^2**
7	**Smooth plaster on inside walls and ceiling in cm.(1:3)**					
	Wall	2	10.25		3	61.5
		2	10		3	60
		3	2.5		3	22.5
		1	3.5		3	10.5
		1	3.0		3	9
	Ceiling	1	7.5	10		75
		2	3.5	2.5		17.5
		2	2.5	1.2		6
	Total					**262 m^2**
9	**Earth filling in Excavation**					
	Total excavation for walls					58.75 m^3
	Brickwork up to G.L.					(-)23.79 m^3
	PCC					(-)14.68 m3
	Total					**20.28** m^3

Table 13.5 Measurement sheet

➢ Abstract sheet of Co-operative Bank

SR. NO.	PARTICULARS	QUANTITY	UNIT	RATE	PER	AMOUNT
1	**Excavation in Foundation**	58.75	m^3	85	m^3	4994
2	**Plain cement concrete(P.C.C) in Foundation(1:4:8)**	14.68	m^3	3000	m^3	44040
3	**Brickwork in Foundation up to Plinth level**	23.79	m^3	3200	m^3	76128
4	**Brickwork in superstructure in cement mortar 1:6**	33.11	m^3	3500	m^3	136430
5	**RCC Work**	25.275	m^3	8800	m^3	222420
6	**2 cm thick marble flooring**	98.5	m^2	500	m^2	49250
7	**Smooth plaster on inside walls and ceiling in cm.(1:3)**	262	m^2	150	m^2	39300
8	**Earth filling in Excavation**	20.28	m^2	50	m^2	1014
	Total					**5,73,576 Rs.**
	Add 5% contingencies					**28,679 RS.**
	Grand Total					**6,02,254 Rs.**
					say	**6,10,000 Rs.**

Table 13.6 Abstract sheet

13.1.4 Community hall

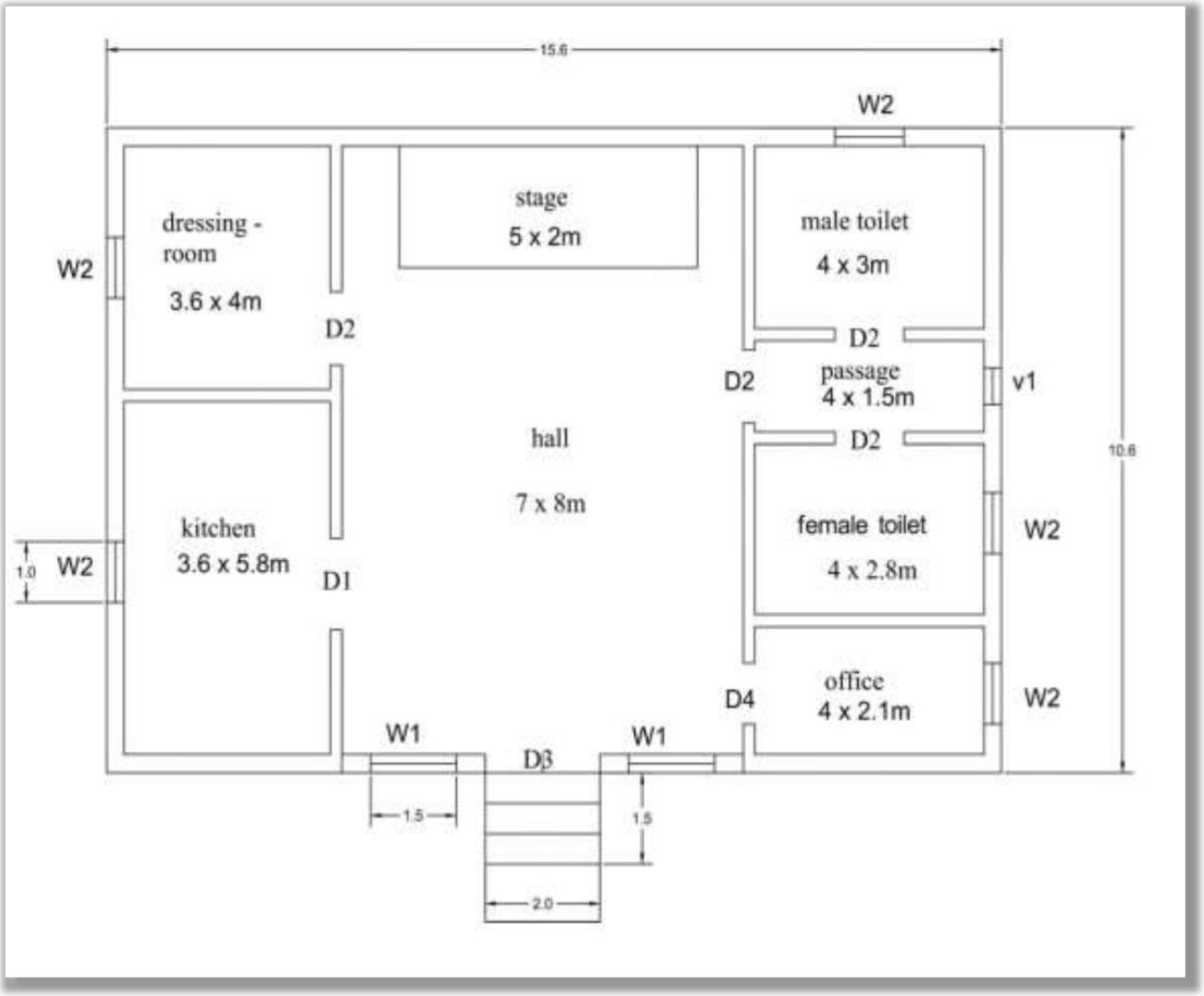


Fig.13.8. Plan of Community Hall

D1 = 2 x 2.1m
D2 = 1.2 x 2.1m
W1 = 1.5 x 1.2m
W2 = 1 x 2.1m
V1 = 0.5 x 0.6m
D3 = 1.5 x 2.1m
D4 = 1 x 2.1m

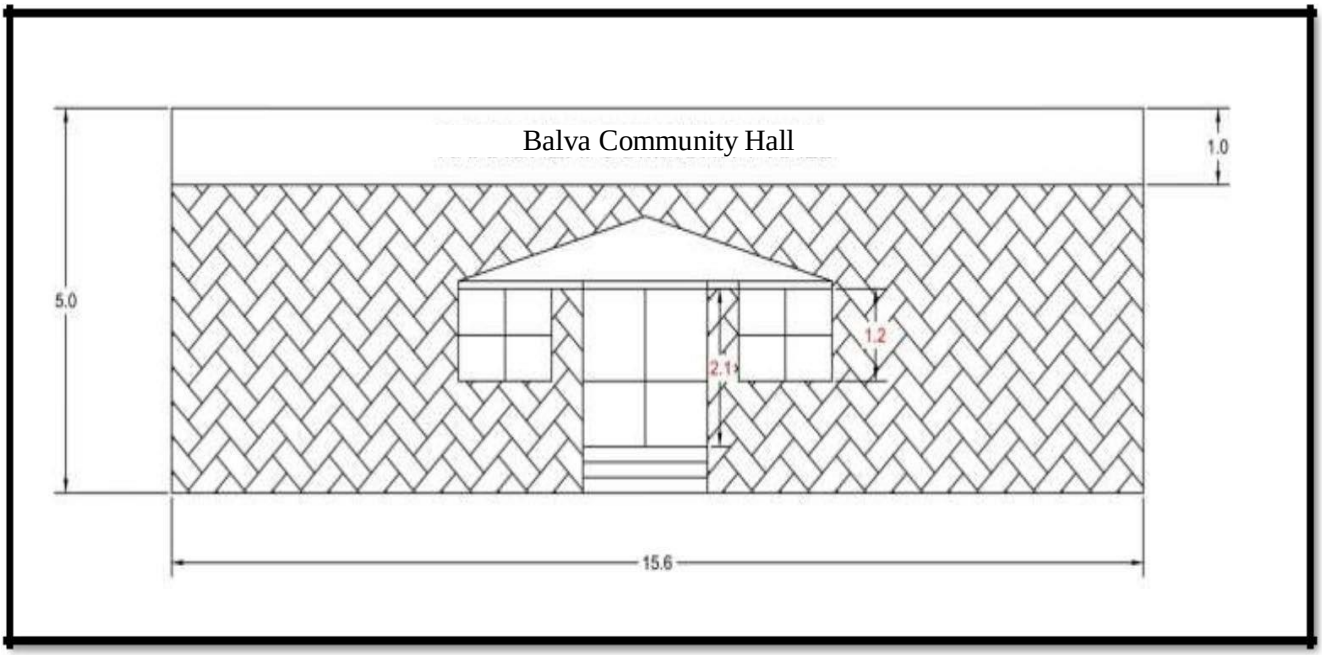


Fig. 13.9 Elevation of Community Hall

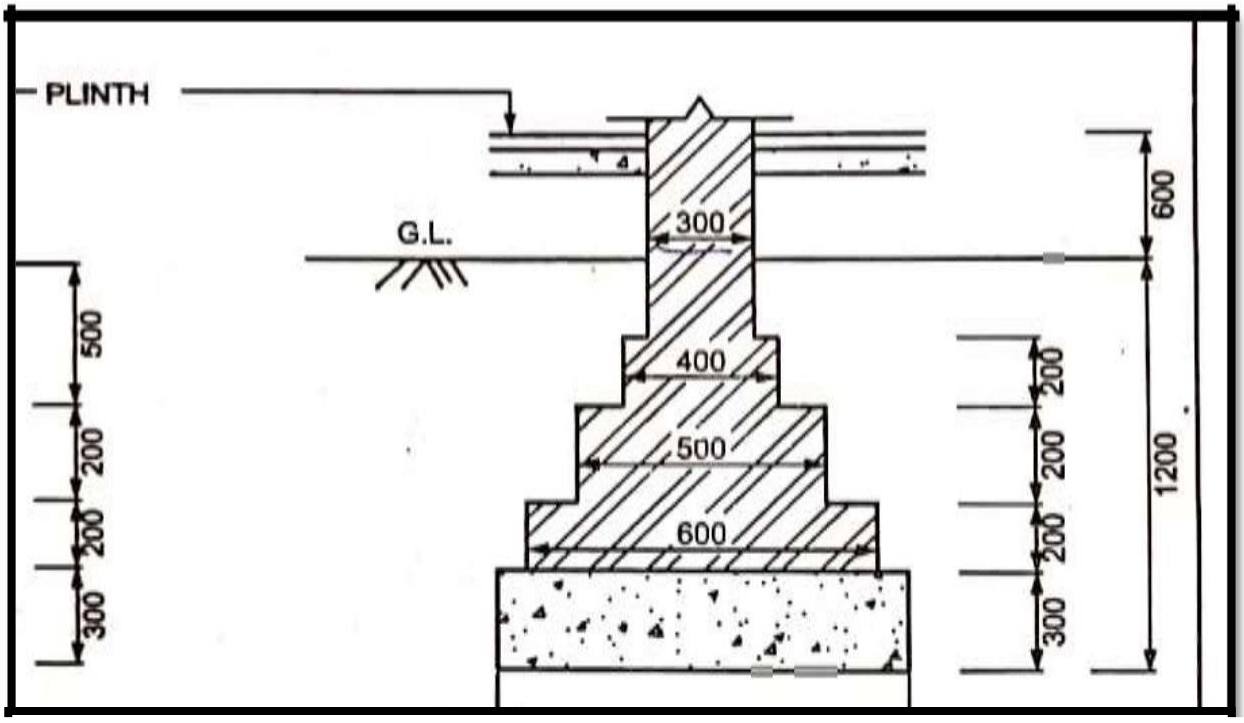


Fig. 13.10 Section of Community Hall

➢ Measurement sheet of Community Hall

Sr no.	Description of item	no	length	breadth	height	Qty ($m^{3)}$	Total qty
1	**EXCAVATION FOR FOUNDATION**						
	Lw1 = 3.9+0.9	3	4.8	0.9	1.5	19.44	127.46 m^3
	Lw2 =7.2+0.9	2	8.1	0.9	1.5	22.14	
	Lw3 = 4.3+0.9	5	5.2	0.9	1.5	35.1	
	Sw1= 10.3-0.9	4	9.4	0.9	1.5	50.78	
	Total					127.46	
2	**P.C.C.**						
	Lw1 = 3.9+0.9	3	4.8	0.9	0.3	3.88	2.17 m^3
	Lw2 =7.2+0.9	2	8.1	0.9	0.3	4.374	
	Lw3 = 4.3+0.9	5	5.2	0.9	0.3	7.02	
	Sw1= 10.3-0.9	4	9.4	0.9	0.3	10.15	
3	**BRICKWORK UP TO PLINTH**						
	STEP1						
	Lw1 = 3.9+0.6	3	4.5	0.6	0.2	1.62	11.68 m^3
	Lw2 =7.2+0.6	2	7.8	0.6	0.2	1.87	
	Lw3 = 4.3+0.6	5	4.9	0.6	0.2	2.94	
	Sw1= 10.3-0.6	4	9.7	0.6	0.2	4.65	
	STEP2						
	Lw1 = 3.9+0.5	3	4.4	0.5	0.2	1.32	9.17 m^3
	Lw2 =7.2+0.5	2	7.7	0.5	0.2	1.54	
	Lw3 = 4.3+0.5	5	4.8	0.5	0.2	2.4	
	Sw1= 10.3-0.5	4	9.8	0.5	0.2	3.92	
	STEP3						
	Lw1 = 3.9+0.4	3	4.3	0.4	0.2	1.03	6.26 m^3
	Lw2 =7.2+0.4	2	7.6	0.4	0.2	1.19	
	Lw3 = 4.3+0.4	5	4.7	0.4	0.2	1.88	
	Sw1= 10.3-0.4	4	9.9	0.4	0.2	3.16	
	STEP4						
	Lw1 = 3.9+0.3	3	4.2	0.3	0.2	4.53	32.73 m^3
	Lw2 =7.2+0.3	2	7.5	0.3	0.2	5.54	
	Lw3 = 4.3+0.3	5	4.6	0.3	0.2	8.28	
	Sw1= 10.3-0.3	4	10	0.3	0.2	14.4	
	TOTAL BRICKWORK UP TO PLINTH =59.84 m^3						
4	**BRICK MASONRY FOR SUPERSTRUCTURE**						

	Lw1 = 3.9+0.3	3	4.2	0.3	3	11.34	
	Lw2 =7.2+0.3	2	7.5	0.3	3	13.82	81.9
	Lw3 = 4.3+0.3	5	4.6	0.3	3	20.7	m^3
	Sw1= 10.3-0.3	4	10	0.3	3	1436	
	DEUCTION FOR DOORS AND WINDOW						
	D1	1	1.5	0.3	2.1	2.85	
	D2	4	1.2	0.3	2.1	3.024	
	D3	1	2	0.3	2.1	1.26	10.734
	D4	1	1	0.3	2.1	0.63	m^3
	W1	2	1.5	0.3	1.2	1.08	
	W2	3	1	0.3	1.2	1.08	
	V	1	0.6	0.3	0.45	0.81	
	DEUCTION FOR lintel						
	D1	1	1.8	0.3	0.1	0.054	
	D2	4	1.5	0.3	0.1	0.18	
	D3	1	2.3	0.3	0.1	0.069	0.567
	D4	1	1.3	0.3	0.1	0.039	m^3
	W1	2	1.8	0.3	0.1	0.108	
	W2	3	1.3	0.3	0.1	0.117	
	Total = 81.9-10.734-0.567 = 70.60 m^3						
5	**RCC SLAB,LINTEL & CHAJJA**						
	SLAB	1	15.6	10.6	0.12	26.32	
	CHAJJA						
	D1	1	1.5	0.6	0.15	1.35	
	D2	4	1.2	0.6	0.15	0.432	
	D3	1	2	0.6	0.15	0.18	2.646
	D4	1	1	0.6	0.15	0.09	m^3
	W1	2	1.5	0.6	0.15	0.27	
	W2	3	1	0.6	0.15	0.27	
	V	1	0.6	0.6	0.15	0.054	
	LINTEL = 0.567m^3						
	TOTAL RCC = 0.567+2.646+26.32 =29.533 m3						
6	**SMOOTH PLASTERING**						
	ROOM						
	LW	2	3.6	-	3	21.6	45.6
	SW	2	4	-	3	24	m^2
	HALL						
	LW	2	7	-	3	42	
	SW	2	10.6	-	3	60	102

	KITCHEN						
	LW	2	3.6	-	3	21.6	56.4 m^2
	SW	2	5.8	-	3	34.8	
	TIOLET						
	LW	4	4	-	3	48	84 m^2
	SW	4	3	-	3	36	
	PASSAGE						
	LW	2	4	-	3	24	33 m^2
	SW	2	1.5	-	3	9	
	OFFICE						
	LW	2	4	-	3	24	36.6 m^2
	SW	2	2.1	-	3	12.6	
	CEILING						
	ROOM	1	3.6	4	-	14.4	142.88 m2
	KITCHEN	1	3.6	5.8	-	20.88	
	HALL	1	7	10	-	70	
	M TIOLET	1	4	3	-	12	
	F TIOLET	1	4	2.8	-	11.12	
	PASSAGE	1	4	1.5	-	6	
	OFFICE	1	4	2.1	-	8.4	
	TOTAL SURFACE PLASTER= 499.28 m^2						
7	**THICK FLOORING**						
	ROOM	1	3.6	4	-	14.4	142.88 m^2
	KITCHEN	1	3.6	5.8	-	20.88	
	HALL	1	7	10	-	70	
	M TIOLET	1	4	3	-	12	
	F TIOLET	1	4	1.5	-	6	
	PASSAGE	1	4	2.8	-	11.2	
	OFFICE	1	4	2.1	-	8.4	
8	**EARTH FILLING IN PLINTH**						
	ROOM	1	3.6	4	0.45	6.91	38.33 m^3
	KITCHEN	1	3.6	5.8	0.45	10.02	
	HALL	1	7	10	0.45	3.36	
	M TIOLET	1	4	3	0.45	5.76	
	F TIOLET	1	4	1.5	0.45	2.88	
	PASSAFE	1	4	2.8	0.45	5.37	
	OFFICE	1	4	2.1	0.45	4.03	

Table 13.7 Measurement sheet of Community Hall

➢ Abstract sheet of Community Hall

Item no.	Particulars of item	quantity	per	rate	Amount (Rs.)
1	**Excavation for foundation**	127.46 m^3	m^3	85	10834.1
2	**P.C.C.**	2.17 m^3	m^3	3200	6944
3	**Brick masonry for foundation**	59.84 m^3	m^3	3200	191488
4	**Brickwork in superstructure**	70.6m^3	m^3	3500	247100
5	**R.C.C for slab, lintel, chajja**	29.533m^3	m^3	8800	259890.4
6	**Smooth plaster**	499.28m^2	m^2	150	74892
7	**Flooring**	142.88m^2	m^2	500	71440
8	**Earth filling in plinth**	38.33m^3	m^3	50	19165
				Total	881753.5 Rs.

Add 3%

contingencies Rs. = 26452.60
Add 2% work charge Rs. = 17635.07
Grand total = 925841.17Rs

Table 13.8 Abstract sheet of community hall

13.1.5 Medical Store

Advantages of providing medical shop

- Virus injection such as dengue can easily available at medical shop.
- They do not want to go away in city for search of medicine.
- Death ratio also decrease if proper medicine given to patients on time.
- People can get medicine easily.

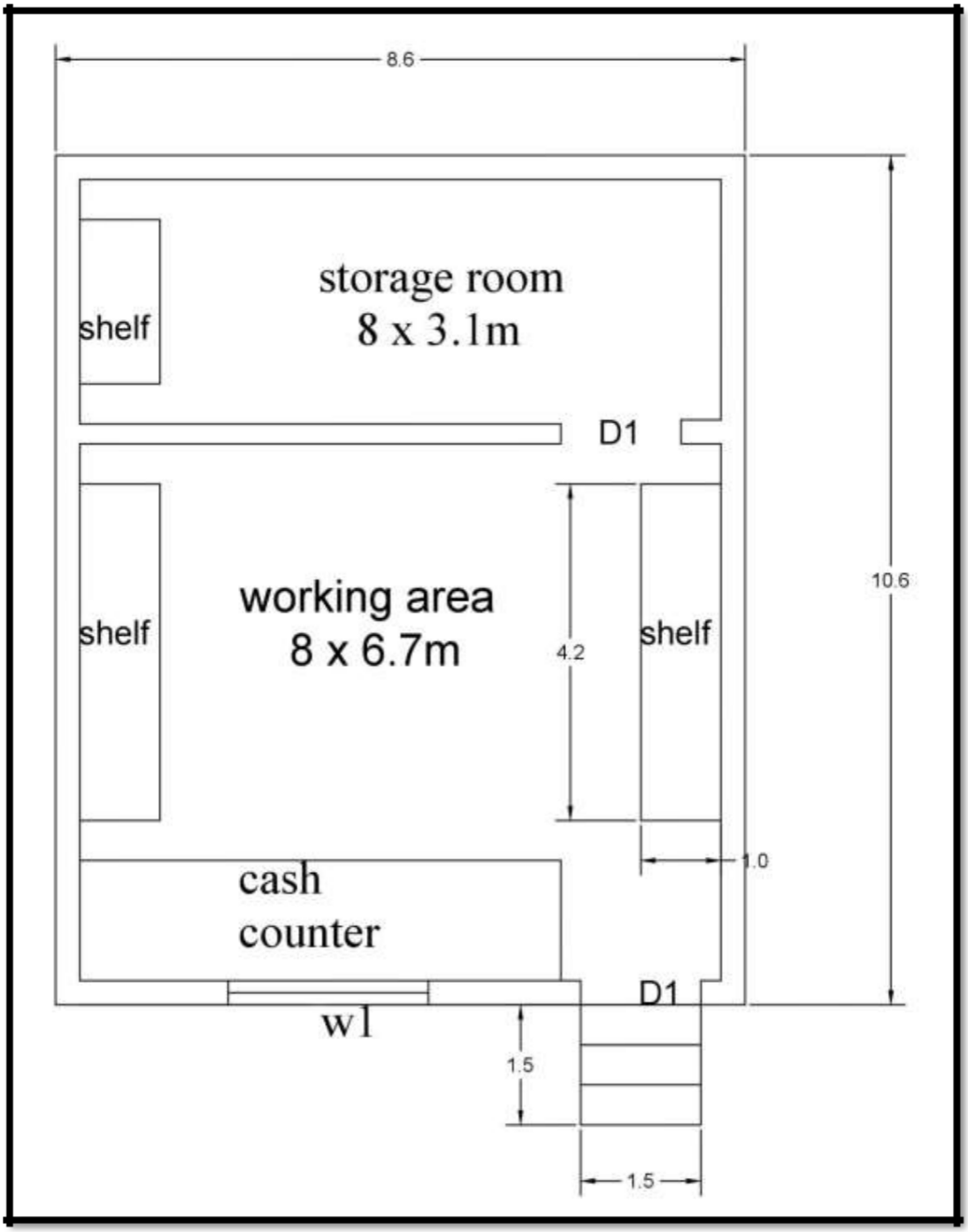


Fig. 13.11 Plan of Medical shop

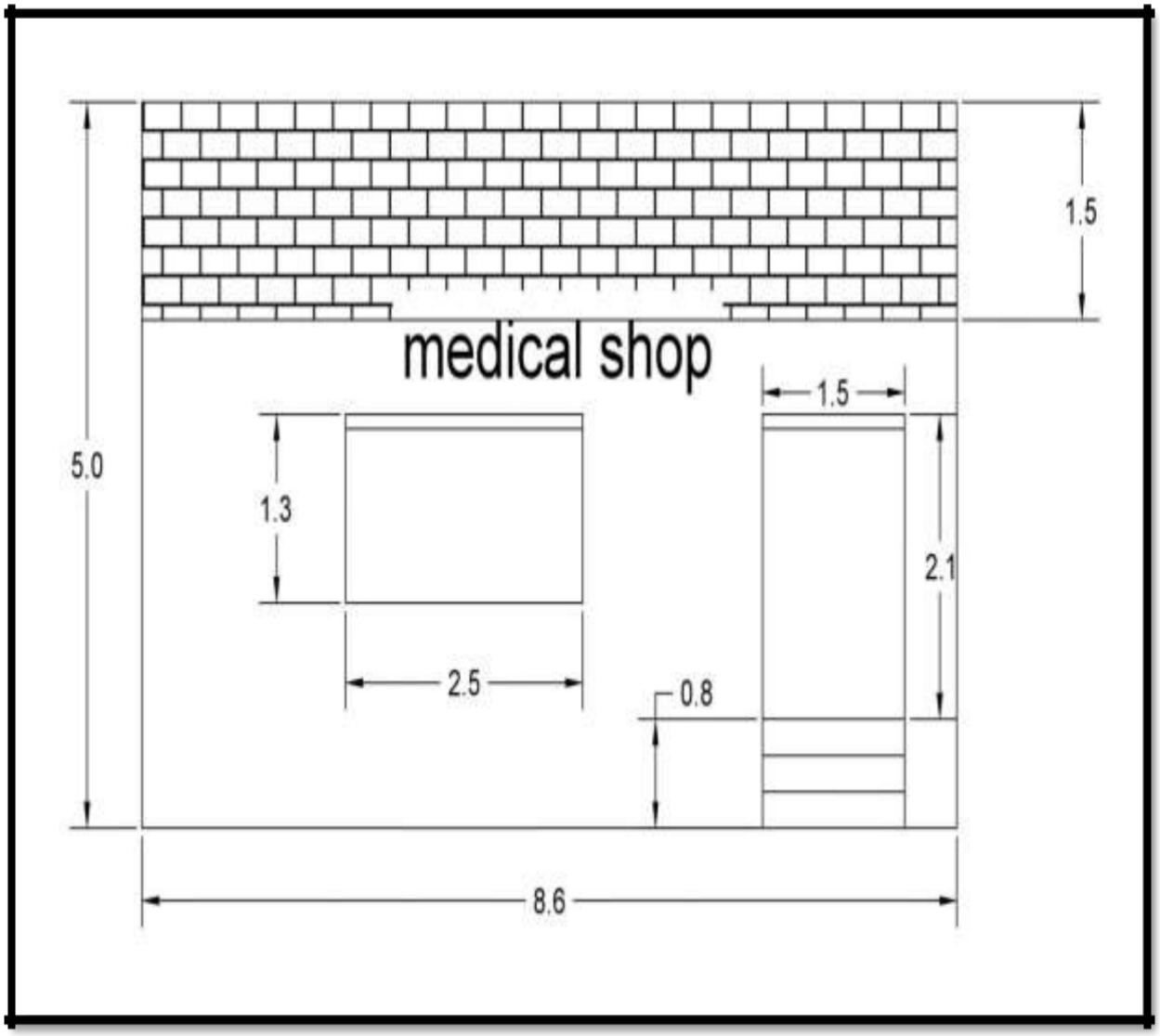


Fig. 13.12 Elevation of Medical shop

➢ Measurement sheet of Medical shop

Sr no.	Description of item	no	length	breadth	height	Qty (m^3)	Total qty
1	**EXCAVATION FOR FOUNDATION**						
	LW=8.3+0.9	1	9.2	0.9	1.5	12.42	25.11 m^3
	SW=10.3-0.9	1	9.4	0.9	1.5	12.69	
2	**P.C.C.**						
	LW=8.3+0.9	1	9.2	0.9	0.3	2.48	5.01 m^3
	SW=10.3-0.9	1	9.4	0.9	0.3	2.53	
3	**BRICK MASONRY FOR FOUNDATION**						
	STEP 1						
	LW= 8.3+0.6	1	8.9	0.6	0.2	1.06	2.22 m^3
	SW=10.3-0.6	1	9.7	0.6	0.2	1.16	
	STEP2						
	LW=8.3+0.5	1	8.8	0.5	0.2	0.88	1.86 m^3
	SW10.3-0.5	1	9.8	0.5	0.2	0.98	
	STEP3						
	LW=8.3+0.4	1	8.7	0.5	0.2	0.69	1.68 m^3
	SW=10.3-0.4	1	9.9	0.5	0.2	0.99	
	STEP4						
	LW=8.3+0.3	1	8.6	0.5	0.2	0.51	1.51 m^3
	SW=10.3-0.3	1	10	0.5	0.2	1	
4	Total brick masonry for foundation = 7.27m^3 **BRICK MASONRY FOR SUPERSTRUCTURE**						
	LW=8.3+0.3	1	8.6	0.3	3	7.74	16.65 m^3
	SW=10.3-0.3	1	9.9	0.3	3	8.91	
	Deduction for doors and window						
	D1	2	1.5	0.3	2.1	1.88	2.78 m^3
	W1	1	2.5	0.3	1.2	0.9	
	Deduction for lintel						
	D1	2	1.8	0.3	0.1	0.108	0.192 m^3
	W1	1	2.8	0.3	0.1	0.084	
5	**R.C.C FOR SLAB, LINTEL, CHAJJA**						
	Slab	1	8.6	10.6	0.12	11.01	
	chajja						
	W1	1	2.5	0.6	0.1	0.15	0.33 m^3
	D1	1	1.5	0.6	0.1	0.18	

	Lintel = 0.192m^3						
6	**SMOOTH PLASTERING FOR WALLS AND CEILING**						
	Storage room walls						
	Lw1	2	8	-	3	48	66.6
	Sw1	2	3.1	-	3	18.6	m^2
	Working area walls						
	Lw1	2	8	-	3	48	88.2
	Sw1	2	6.7	-	3	40.2	m^2
	Storage room ceiling						
		1	8	3.1	-	24.8	78.4
		1	8	6.7	-	57.6	m^2
	Deduction for doors & window =12m^3						
7	**FLOORING**						
	Storage room	1	8	3.1	-	24.8	78.4
	Working area	1	8	6.7	-	53.6	m^2
	Addition to sill level						
	D1	2	1.5	2.1	-	6.30	
8	**EARTH FILLING IN PLINTH**						
	Storage room	1	8	3.1	0.48	11.9	37.62
	Working area	1	8	6.7	0.48	25.72	m^3

Table 13.9 Measurement sheet of Medical shop

➢ Abstract sheet of Medical shop

Item no.	Particulars of item	quantity	per	rate	Amount (Rs.)
1	**Excavation for foundation**	25.11m^3	m^3	85	2134.35
2	**P.C.C.**	5.01m^3	m^3	3200	16000
3	**Brick masonry for foundation**	7.27 m^3	m^3	3200	23264
4	**Brickwork in superstructure**	13.67 m^3	m^3	3500	47873
5	**R.C.C for slab, lintel, chajja**	11.532m^3	m^3	8800	101481.6
6	**Smooth plaster**	221.2 m^2	m^2	150	33180
7	**Flooring**	84.7 m^2	m^2	500	42350
8	**Earth filling in plinth**	37.62 m^3	m^3	50	1881

Total Rs. = 268163.95

Add 3% contingencies Rs. = 8044.9185
Add 2% work charge Rs. = 5363.279
Grand total = 281572.145Rs

Table 13.10 Abstract sheet of Medical shop

13.1.6 Internal road

But as we show the condition of internal roads are very bed. The bituminous road existing in the village as a part of internal reads is relatively bed. So, proper repair work is required.

- Design Details:

- Providing proper filling materials
- Providing proper bituminous cover

- **Proposed Site:**

The existing internal roads which connect the streets of dwellings. The existing condition of roads is shown in figure bellow. The repair work is required to the approximate 2 KM stretch of road. A good road facility is very essential for a villager for better transformation and better movement

Fig. 13.13 Internal roads of Balva village

- **Design:**

- 150 mm size boulders for soling.
- 50 mm size stone ballast for intercoat.
- 20 mm size stone grit for first paintingcoat
- Road tar for firstpainting.

➢ Cross section of road

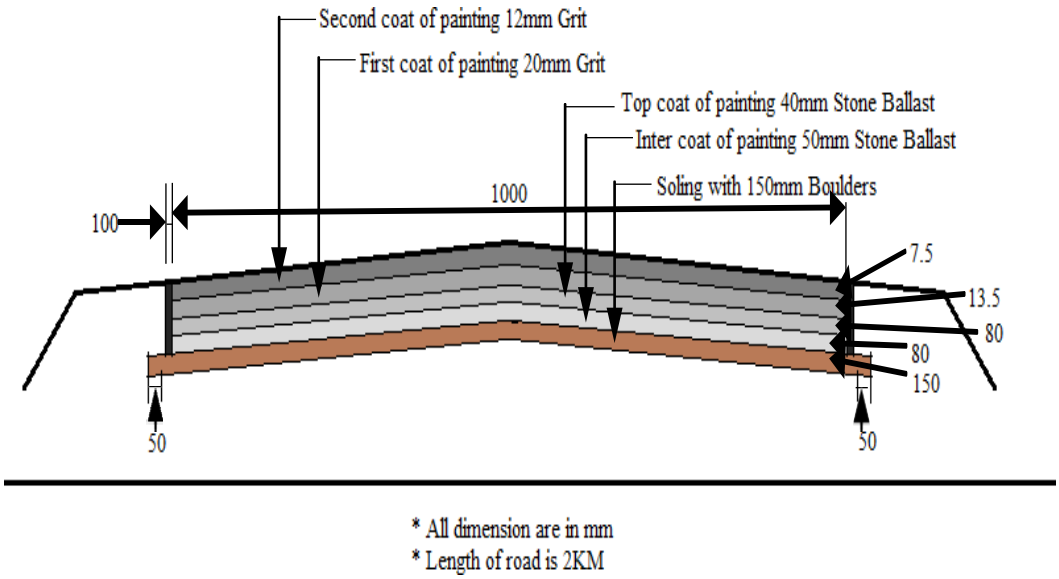


Fig. 13.14 Design of cross section of road

➢ Estimate of internal road

Sr. No.	Description	No	L(m)	B(m)	D(m)	Quantity(m^3)	Unit
1	150 mm size boulder for soling						
	B= 10 + 15 + 0.15 =10.30 m	1	2000	10.30	0.15	3090	m^3
2	50 mm size stone ballast for inter coat						
	For 8 mm thick compacted layer, thickness of loose layer = 8 * 1.5 = 12cm	1	2000	10	12	2400	m^3
3	20 mm size stone grit for first painting coat						
	1.35 m^3 per 100 m^2	1	2000	10	1.35/100	270	m^3
4	Road tar for first painting coat						
	220 kg per 100 m^2	1	2000	10	220/100	44000	Kg

Table 13.11 Estimate of internal road

➢ Abstract sheet of Internal road

Sr. No.	Description	Quantity	Rate (Rs)	Per	Amount (Rs)
1	150 mm size boulder for soling	3090 m^3	100	m^3	3,09,000
2	50 mm size stone ballast for inter coat	2400 m^3	200	m^3	8,40,000
3	20 mm size stone grit for first painting coat	270 m^3	230	m^3	62,100
4	Road tar for first painting coat	44000 Kg 44 tone	11000	Tone	44,000
	Total Cost =				12,55,100 Rs.

Add 3 % contingency = 37,653 Rs 12, 92,753 Rs.

Add 2 % establishment charge= 25,856 Rs

Total Cost = 13, 18,610 Rs

Table 13.21 Abstract sheet of internal road

13.2 Reason for Students Recommending this Design

Skill development Centre

To aware the farmers of village about research in agricultural field and explain them new methods of farming and irrigation and also aware them about new government schemes. Also skill development centre will have women empowerment programmer, computer lab, library, seminar hall.

Solar pump system

Make use of renewable energy in pumping system and reduce the running cost

Co-Operative Bank

There is no any financial institution in village. As it is agricultural village there should be provision of finance to farmers for agricultural growth.

13.3 About designs Suggestions / Benefit of the villagers

Skill Development Centre

Skill development centre enables to develop different skills of villagers 'which results in employment opportunities.
Skill development centre will have farmer awareness programme which helps farmers in different ways.
It will also have women empowerment programme to enable women of village to learn different skills and become self-dependent.
Computer lab of skill development centre will provide basic computer skills to villagerswho enable them to compete with outer world and create employment.
As there is not any public library in a village, so we also proposed library in a skill development centre so that villagers can develop reading skills and get all the information of world through books, magazines, newspapers etc.

Solar pump system

Using Renewable Energy
Easy pumping of water
Reduction in running cost

Co-Operative bank

To provide finance facilities to farmers
To provide banking facilities to villagers
For the economic development of village
To guide villagers about new monetary policies and governmental schemes

Community Hall

All the cultural programs and gov. meetings are held in sarpanch office due to lack of community hall, so, we have provided designs of a new community hall for the majority population of village with a stage and washrooms for the programs held in village.

Medical Store

A design for building of new medical store is provided by us, which will be a government medical store and will have generic medicines which will be free of charge or almost no cost and will be helpful for the health of villagers.

Internal road

Village is lacking in facilities like improper internal roads. So, we have provide design of internal roads where village people can comfortably go anywhere for the purpose of job, teaching, communication, etc.

Chapter-14
Technical Options with Case Studies (EXPLAIN ALL TOPIC AND FOR MINIMUM ONE TOPIC EXPLAIN NEW CONCEPT, DESIGN, PROTOTYPE MODEL WITH ACTUAL COST ESTIMATION)

14.1 Civil Engineering

14.1.1 Advanced Earthquake Resistant

Earthquake-resistant structures are structures designed to protect buildings 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. 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. The conventional approach to earthquake resistant design of buildings depends upon providing the building with strength, stiffness and inelastic deformation capacity which are great enough to withstand a given level of earthquake-generated force. This is generally accomplished through the selection of an appropriate structural configuration and the careful detailing of structural members, such as beams and columns, and the connections between them. But more advanced techniques for earthquake resistance is not to strengthen the building, but to reduce the earthquake-generated forces acting upon it.

14.1.2 Seismic Retrofitting of Buildings

Seismic Retrofitting Techniques are required for concrete constructions which are vulnerable to

damage and failures by seismic forces. In the past thirty years, moderate to severe earthquakes occurs around the world every year. Such events lead to damage to the concrete structures as well as failures. Thus the aim is to Focus on a few specific procedures which may improve the practice for the evaluation of seismic vulnerability of existing

reinforced concrete buildings of more importance and for their seismic retrofitting by means of various innovative techniques such as base isolation and mass reduction. So Seismic Retrofitting is a collection of mitigation technique for Earthquake engineering. It is of utmost importance for historic monuments, areas prone to severe earthquakes and tall or expensive structures.

Keywords: Retrofitting, Base Isolation, Retrofitting Techniques, Jacketing, Earthquake Resistance

14.1.2.1 Introduction to Seismic Retrofitting Techniques:

- Earthquake creates great devastation in terms of life, money and failures of structures.
- Upgrading of certain building systems (existing structures) to make them more resistant to seismic activity (earthquake resistance) is really of more importance.
- Structures can be (a) Earthquake damaged, (b) Earthquake vulnerable
- Retrofitting proves to be a better economic consideration and immediate shelter to problems rather than replacement of building.

14.1.2.2 Seismic Retrofitting of Concrete Structures:

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

14.1.2.3 Need for Seismic Retrofitting:

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

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

- Advanced construction technologies are described as including(amongst many others) advanced forms of:
- 3D Printing
- Materials
- Building Information Modeling
- Cladding systems
- Computer aided design and computer aided manufacturing (CAD/CAM)
- Computer Numerical Control
- Construction Innovation Hub.

Fig 14.1 Civil Construction

14.1.3.1AdvanceConstruction Techniques:

- The Construction industry is repeatedly criticized 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 c construction industry is not straight forward.
- The term "Advance Construction Technology" covers a wide range of modern techniques and practices that encompass the latest development in material technology, design procedure, quantity surveying, facilities management, service and

  structural analysis management studies.

Fig 14.2 ACE Techniques

14.1.4 Engineering Aspects of Soil mechanics-Environmental Impact Assessment

- Shear Strength of **Soils**.
- Mohr-Coulomb Failure Criterion.
- Direct Shear Test.
- Triaxial Test.
- Total Stress Strength Parameters.

- Effective Stress Strength Parameters.
- Pore Water Pressure Parameters.
- Stress-Strain Behaviors of Sands.

The term "**soil**" can have different meanings, depending upon the field in which it is considered.

To a geologist, it is the material in the relative thin zone of the Earth's surface within which roots occur, and which are formed as the products of past surface processes. The rest of the crust is grouped under the term "rock".

To a pedologist, it is the substance existing on the surface, which supports plant life.

To an engineer, it is a material that can be:

- **built on:** foundations of buildings, bridges
- **built in:** basements, culverts, tunnels
- **built with:** embankments, roads, dams
- **supported:** retaining walls

Soil Mechanics is a discipline of Civil Engineering involving the study of soil, its behaviour and application as an engineering material.

Soil Mechanics is the application of laws of mechanics and hydraulics to engineering problems dealing with sediments and other unconsolidated accumulations of solid particles, which are produced by the mechanical and chemical disintegration of rocks, regardless of whether or not they contain an admixture of organic constituents.

Soil consists of a multiphase aggregation of solid particles, water, and air. This fundamental composition gives rise to unique engineering properties, and the description of its mechanical behavior requires some of the most classic principles of engineering mechanics.

Engineers are concerned with soil's mechanical properties: permeability, stiffness, and strength. These depend primarily on the nature of the soil grains, the current stress, the water content and unit weight

14.1.4.1 Environment Impact Assessment

- Environmental Impact Assessment (EIA) is a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse.
- UNEP defines Environmental Impact Assessment (EIA) as a tool used to identify the environmental, social and economic impacts of a project prior to decision-making. It aims to predict environmental impacts at an early stage in project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers.

- Environment Impact Assessment in India is statutorily backed by **the Environment Protection Act, 1986** which contains various provisions on EIA methodology and process.

14.1.4.2 Importance of EIA

- EIA links environment with development for environmentally safe and sustainable development.
- EIA provides a cost effective method to eliminate or minimize the adverse impact of developmental projects.
- EIA enables the decision makers to analyze the effect of developmental activities on the environment well before the developmental project is implemented.
- EIA encourages the adaptation of mitigation strategies in the developmental plan.
- EIA makes sure that the developmental plan is environmentally sound and within the limits of the capacity of assimilation and regeneration of the ecosystem.

14.1.4.3 Stakeholders in the EIA Process

- Those who propose the project
- The environmental consultant who prepare EIA on behalf of project proponent
- Pollution Control Board (State or National)
- Public has the right to express their opinion
- The Impact Assessment Agency
- Regional centre of the MoEFCC

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

14.1.5.1 Water supply Techniques

14.1.5.1.1 Design of plumbing systems for multi-storey buildings

For plumbing purposes, the term “multi-storey” is applied to buildings that are too tall to be supplied throughout by the normal pressure in the public water mains. These buildings have particular needs in the design of their sanitary drainage and venting systems. Water main supply pressures of 8–12 meters (25– 40 feet) can supply a typical two-storey building, but higher buildings may need pressure booster systems. In hilly areas, the drinking-

water supply pressures will vary depending on the ground elevation. In these cases, the water authority may have to specify areas where particular supply pressures can be relied upon for the design and operation of buildings. Where a building of three or more storey’s is proposed a certificate should be obtained from the drinking-water supply authority guaranteeing that the

present and future public drinking-water supply pressure will be adequate to serve the building. If the public water pressure is inadequate, suitable means shall be provided within the building to boost the water pressure.

14.1.5.1.2 Systems for boosting water pressure

Pressure-boosting systems can be of several different types:

• pumping from a ground level or basement gravity tank to a gravity roof tank;

• pumping from a gravity storage tank or public water main into a hydro pneumatic pressure tank that uses captive air pressure to provide adequate drinking-water supply pressure;
Installation of boosterpumpsets consisting of multiple staged pumps or variable speed pumps that draw water directly from a gravity storage tank or the public water main. Multistage booster pump sets typically include discharge pressure regulating valves to maintain a constant drinking-water supply pressure.

14.1.5.2 Sewerage system techniques

All the liquid waste from the toilet, bathroom, laundry and sink goes into pipes which carry it to a septic tank. The effluent from the tank is then disposed of through effluent disposal drains often referred to as leach or French drains. Both of these methods of disposing of liquid waste are on-site disposal **systems.**

Every community should have a way of disposing of sewage so that people, animals and flies cannot touch it. This is called a **sewage system.**

There are different types of sewage systems which can be described as **on-site systems** and **sewage** or **effluent systems.**

An on-site system is one which treats the sewage in a septic tank so that most of the sewage becomes effluent and is disposed of in an area close to the house or buildings. An example of an on-site disposal system consists of a septic tank and leach drains.

A sewage or wastewater system disposes of the effluent from a community at a central place usually called a **sewage lagoon** or **effluent pond**. The sewage can be treated:

- in a septic tank at each building
- just before the lagoon in a large septic tank or macerator system, or
- in the lagoon itself

14.1.5.3 Waste water techniques

Four Effective Processes to Treat Wastewater

- Physical Water Treatment. In this stage, physical methods are used for cleaning the wastewater.
- Biological Water Treatment. This uses various biological processes to break down the organic matter present in wastewater, such as soap, human waste, oils and food. ...
- **Chemical** Water Treatment. ...

Chapter-15

Smart and/or Sustainable features of Chapter 8 & 13 designs, Impact on society. (For Allocated village development, villager's happiness, comfortable and for enhancement of the village) (With the Smart village development Concept as per Your Idea and Village Visit, modern technology with innovation). With doing small changes, Period, Amount Expenditure and Benefit – a) Immediately b) Within 1 year c) Long term (3-5 years) along with cost estimation. b) If possible, List the sources of the funding available with the Village gram panchayat

1.) Smart Energy:

Provision of clean and sustainable, energy is central to almost all other dimensions of rural development. Energy security is the secret mantra, which enables development in agriculture, health-care, education and skilling of rural communities with a wide variety of solar, wind, biomass and biogas technologies now available at competitive costs; we are at the cusp of witnessing energy disruption and creating an abundant energy economy. For rural energy supply and management, the element of 'smart' refers to creation and management of mini, micro and nano grids within the energy eco-system of a village or a group of villages It is particularly relevant to rural areas with no or unreliable grid connectivity. Energy is the golden thread that connects economic growth, increased social equity, and an environment that allows the planet to thrive.

2.) Smart Connectivity:

Smart connectivity has two distinct connotations for smart village concept. One is to provide

reliable and high-quality broadband and voice communications. And the second, probably more importantly, through a range of Information and Communication Technology (ICT) solutions, applications and services, be an integral part of smart technology solutions for all other domains like smart agriculture, smart water management, smart education, smart health-care and so on

Rural communities tend to be politically disenfranchised due to their relative remoteness. Consequently, they lack information on societal issues and have difficulty becoming actively involved in debates about how to address them

3.) Smart health:

At the most basic level, households in smart villages will be able to consume potable water and a more nutritious diet due to the reduced cost of boiling water and cooking food, and enhanced agricultural productivity arising from associated development initiatives and reduced wastage.ICT-enabled m-health initiatives can enable mobile health diagnostic solutions, requiring relatively low levels of local medical skill and providing access to specialist health-care services based in urban communities where necessary. Epidemiological data can be gathered, providing the opportunity for more effective interventions and early warning capability to address health related challenges such as malnourishment, underweight childbirth, anemic mother etc.

4.) Smart Environment:

Smart villages can be stewards of the environment aided by technologies to monitor key environmental indicators such as forest health, water quality, soil conditions and changes to the landscape. They can also reduce pressure on deforestation using efficient cook stoves to decrease the need for traditional biomass energy sources such as charcoal and wood a key driver of unsustainable forest use. Smart villages can host community-run recycling facilities ranging from those equipped to recycle wastewater and organic waste from agro-processing, to next generation facilities for the recycling of e-waste, including energy-storage and generation technologies such as batteries and solar panels. Depending on geographical endowments, some smart villages will be able to operate as regional ecotourism hubs, an activity that can improve the welfare and connectivity of rural and urban communities.

Smart sewage management system & sanitation

No village or group of villages can be termed truly ‘smart’ without an effective sewage management system and there is a need for framing a proper sanitation plan for towns intended to become smart. Management of large quantity of household waste and garbage had become major headache for local managing bodies. Also dumping such garbage in locality is affecting common people’s health. To solve the problem related with sewage management, an urgent and effective action plan is required. The knowledge enhancement and capacity building on sanitation diagnostics, town sanitation planning and decision making and analysis of cost effective and sustainable waste water treatment technologies for mainstreaming faucal sludge should be main focus for developing smart villages. Preparing our mind set for sewage management at personal level will be more fruitful. Every individual can have dust bin outside their home where they can put their household garbage instead of throwing in open space. Different colored dust bins can be chosen for different categories of wastes like dry and wet, decomposable and non-decomposable waste, etc. Ample number of waste collecting vehicles so called ‘Ghantagadi’ can be availed for

each village to collect it. Waste material dumping yards shall be far away from civilization and shall have provision for categorizing and recycling of collected waste. Also similar types of actions are required to manage bio waste generated in hospitals as well as e waste generated.

Renewable energy sources and solar energy

Traditional sources of energy like wood, coal, diesel, petrol, oil, natural gas, etc are now on the verge of ending. Also excessive use of these sources is polluting earth's environment and is responsible for remarkable adverse effects, like abrupt climate change, drought and odd situation, green house effects, melting of ice caps on poles, de-thickening of ozone layer in atmosphere collectively known as global warming. Due to fast growing development of urban civilization, forests are reducing with greater rate. By the 1990s, the excess use of traditional sources in developing countries was marked as a leading environmental threat, with negative impacts linked with deforestation, decortications and widespread soil erosion. Thus to save our earth from the threat of global warming, alternative energy sources which burns less carbon are required to be invented and solar energy source can play vital role to overcome these global environmental effects.

Smart and Efficient transportation System

Lack of transportation facility is the major reason behind isolating villages from rest of the world. Since last 70 years of freedom, roads and train network in rural part of India could not be spread to our expectations. There are thousands of villages in our country to which as such no transportation is available. The direct impact of this is on accessibility of villagers to urban areas, market and lack of any other facilities which is only available in big cities. To overcome this problem, smart transportation can be main melody for development of smart villages.

With doing small changes, Period, Amount Expenditure and Benefit – a) Immediately b) Within 1 year c) Long term (3-5 years) along with cost estimation. b) If possible, List the sources of the funding available with the Village gram panchayat

Sr. No	Design Name	Period	Amount Expenditure(Rs.)	Benefit
1	Skill Development Centre	Long Term (3-5 years)	27,30,000	The emphasis is to skill the youths in such a way so that they get employment and also improve entrepreneurship. Provides training, support and guidance to farmers.

				To provide skills to women so that they become self-dependent. To initiate start-ups in village.
2	Solar pump system	Within 1 year	61000	Using Renewable Energy Easy pumping of water Reduction in running cost
3	Co-Operative Bank	Within 1 year	6,10,000	It will provide finance to farmers and students It will provide banking facilities to villager
4	Medical Store		113,000	Medical store will provide medicines.
5	Community Hall		7,41,000	It will help in organizing cultural programs.
6	Cyber Cafe		2, 14,000	It will provide internet facility

Table 15.1 Cost Estimation

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?		By Agriculture, & Job
2	What are the chances of employment in village?		
3	What are the special technical facilities in village?	yes	D to D waste collection
4	Is any debt on village dwellers?		
5	Are village people getting agricultural help?	yes	some people
6	Is women health awareness Program organized in village?	NO	
7	Are women having opportunity to work and income?	yes	some women
8	Child girl education is appreciated in village?	yes	
9	Facility of vaccination to child is available in village?	yes	
10	Are village people aware about child vaccination and done to each and every child as per norms?	yes	
11	Women help line number information is provided to village people?	yes	
12	Is water scarcity in village? How many days per year?	No	
13	Is village under any debt?		
14	Is any serious issue due to debt from bank or any person happened in village?		
15	Is any suicide like incident observed in village due to government policy, debt or threatening?		
16	Is any death of patient occurred due to unavailability of medical facility in village?		
17	How many disabled (physically challenged) is observed in village? Provide list with Male/female/girl/boy with age and type of disability and reason of disability.		
18	Is village improvement is observed in comparative scenario from past to present?		
19	Is any unavoidable difficulty village people are facing? Any natural calamity is there?		
20	Life Living standard of girls and women is appreciated and uplifted in village?		

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

सरपंचश्री
બાલવા ગ્રામ પંચાયત
તા. કલોલ, જી. ગાંધીનગર.

Chapter-17

Irrigation / Agriculture Activities and Agro Industry, Alternate Techniques and Solution

17.1 Irrigation Activities

Irrigation helps to grow agricultural crops, maintain landscapes, and re vegetate disturbed soils in dry areas and during periods of less than average Rainfall. Irrigation also has other uses in crop production, including frost protection, suppressing weed growth in grain fields and preventing soil consolidation.

Fig. 17.1 irrigation process

Surface irrigation, also known as gravity irrigation, is the oldest form of irrigation and has been in use for thousands of years. In *surface* (*furrow, flood*, or *level basin*) irrigation systems, water moves across the surface of an agricultural lands, in order to wet it and infiltrate into the soil. Water moves by following gravity or the slope of the land. Surface irrigation can be subdivided into furrow, *border strip or basin irrigation*. It is often called *flood irrigation* when the irrigation results in flooding or near flooding of the cultivated land. Historically, surface irrigation has been the most common method of irrigating agricultural land and is still used in most parts of the world.

Where water levels from the irrigation source permit, the levels are controlled by dikes, usually plugged by soil. This is often seen in terraced rice fields (rice paddies), where the method is used to flood or control the level of water in each distinct field. In some cases, the water is pumped, or lifted by human or animal power to the level of the land. The water application efficiency of surface irrigation is typically lower than other forms of irrigation.

17.2 Agriculture activities

The economic activities included in agriculture proper are (i) growing of field crops, fruits, nuts, seeds and vegetables, (ii) management of tea, coffee and rubber plantations, (iii) agricultural and horticultural services on a fee or on contract basis such as harvesting, baling and thrashing, preparation of tobacco...


Fig.17.2, 17.3 Agricultural activities

The important agricultural systems which are practiced around the world are discussed below:

- Nomadic Herding.
- **Shifting Cultivation**. ...
- Intensive **Subsistence Agriculture**. ...
- Commercial Dairy Farming. ...
- Commercial Grain Cultivation. ...
- **Livestock** Ranching. ...
- Mediterranean Agriculture. ...
- Mixed Farming.

17.3 Agro industry

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

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

Biotechnology as applied to food processing makes use of microbial inoculants to enhance properties such as the taste, aroma, shelf-life, texture and nutritional value of foods. The process by which micro-organisms and their enzymes bring about these desirable changes in food materials is known as fermentation. Fermentation processing is also widely applied in the production of microbial cultures, enzymes, flavors, fragrances, food additives and a range of other high value-added products.

Fermentation is often one step in a sequence of food processing operations, which may include cleaning, size reduction, soaking, and cooking. Microbes associated with the raw food material and the processing environment serve as inoculants in spontaneous fermentation, while inoculants containing high concentrations of live micro-organisms, called starter cultures, are used to initiate and accelerate fermentation in non-spontaneous or controlled fermentation processes. Microbial starter cultures vary widely in quality and purity.

Fermentation processing as practiced in most developing countries is more art than science, and, in low-income economies, often makes use of a rudimentary technological base with poor process control, resulting in low yields and products of variable quality. Spontaneous fermentations and those which make use of "appropriate" starter cultures produced largely through backslopping (a process which makes use of samples of a previous batch of a fermented product as inoculants) are widely applied at the household and village level in developing countries. With increasing research and development, a number of precultured single or mixed strains of micro-organisms, called "defined starter cultures", have been developed and are being used by small manufacturers in their fermentation processing operations. Defined starter cultures are also imported by a number of developing countries for use in processing operations.

Chapter-18

Social Activities – Any Activates Planned By Students e.g. Teaching Learning activities, awareness camp, business idea for SELF HELP GROUP OR ANY OTHER

Education facility:

Education is the most important part of a person‘s life where they get an opportunity to learn and experience many new things. Education also results to increase in social status, social health, and economic growth and helps the nation as a entire. Smart school is a concept which uses technologies or some modern equipment in the classrooms which allows in giving better learning experience to the students. This also helps in attracting more students to school and also will help in decreasing school dropouts. Introducing smart school systems will helps in making education more interesting as everything will be taught with images and videos which make the class more interactive and learning.

Health facility:

Smart Health has to be designed keeping in mind to improve the health and wellness of village dweller. Smart Health should be able to provides comprehensive medical coverage including medical screenings, providing health care assistance and monitor various vital parameters of patients like subtle changes in pulse, respiration, heart condition, temperature and preventive warning on early onset of pneumonia in small children or other life threatening problems, inside hospitals and at remote patient location with old people's home and ambulance.

Chapter-19

<> SAGY Questionnaire Survey form with the Sarpanch Signature (Scanned copy attachment in the soft copy report and Original copy in hardbound report)

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Balva Gram Panchayat: Balva Ward No.

Block: District: Gandhinagar

State: Gujrat L S Constituency:

1. Family Identity and Size

Name of Head of Household	Shankersinh G. Bhati							Male/ Female	M
SECC Survey ID:		Family Size	4	Over 18	4	6 to 18	-	Under 6	-

2. Category & Entitlement Details (Tick as appropriate)

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

2. Adults (above 18 years)

Name	Age	Sex M/F/O	Disability Status Y/N	Marital Status[3]	Education Status[4]	Adhaar Card (Y/ N)	Bank A/C (Y/N)	Social Security Pension[5]
Bhupendrasinh Bhati	52	M	N	Y		Y	Y	0
Natversinh Bhati	49	M	N	Y		Y	Y	0
Sailesh sinh Bhati	35	M	N	Y		Y	Y	0
Jitendra sinh Bhati	30	M	N	Y		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	yes	-
Children	-	-

9. House & Homestead Data

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

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

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

11. Source of Lighting and Power

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

12. Landholding (Acres)

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

13. Principal Occupations in the Household

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

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

15. Agriculture Inputs

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

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

Name	Unit	Quantity
Cotton		
Wheat		
TUMBAKU		

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
Cricket, Marbles etc

19. Do children play musical instrument (mention)

Schedule Filled By: સરપંચશ્રી
Principal Respondent: બલવા ગ્રામ પંચાયત
Date of Survey: તા. કલોલ, જી. ગાંધીનગર.

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: Balva

b. Block: _____

c. District: Gandhinagar

d. State: Gujarat

e. Lok Sabha Constituency: Gandhinagar

f. Number of Wards in the Gram Panchayat: _____

g. Number of Villages in the Gram Panchayat: 1

h. Names of Villages: Balva

Demographic Information

Number of Households_____ Total Population_____ Male _____ Female _____

SC HHs_____ ST HHs_____ OBC HHs_____ Other HHs_____

I. Access to Infrastructure / Facilities / Services

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
a.	ANM/ Health Sub Centre		
b.	Nearest Primary Health Centre (PHC)	Y	
c.	Nearest Community Health Centre (CHC)		
d.	Nearest Post Office		
e.	Nearest Bank Branch (Any)	Y	
f.	Nearest Bank with CBS Facility		
g.	Nearest ATM	Y	
h.	Nearest Primary School	Y	
i.	Nearest Middle School	Y	
j.	Nearest Secondary School	Y	
k.	Nearest Higher Secondary School / +2 College	NO	Gandhinagar - 8 KM
l.	Nearest Graduate College	No	Kalol - 3 KM
m	Nearest ITI / Polytechnic Centre	NO	Gandhinagar - 8 KM
n	Kisan Seva Kendra	NO	Gandhinagar - 8 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	
p	Nearest Agro Service Centre	N	
p	MSP based Government Procurement Centre	N	
q	Milk Cooperative /Collection Centre	Y	
r	Veterinary Care Centre		
s	Ayurveda Centre		
t	E – Seva Kendra		
u	Bus Stop	Y	
v	Railway Station	N	
w	Library	N	
x	Common Service Centre	N	

IV. Sports Facilities in the Gram Panchayat

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

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 7

b. Number of villages without Angan Wadi Centres -

Names of such villages: _____

c. Schools (Number)

Primary Private: ____ Primary Govt.: 1

Middle Private: _____ Middle Govt.: _____

Secondary Private: _____ Secondary Govt.: 1

Higher Secondary Private: _____ Higher Secondary Govt: _____

VI. Public Distribution System

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

2

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

VII. Coverage of Villages under different Facilities & Services

	Parameter	Villages Status[1]	Names of Villages Covered	Names of Villages not Covered
a.	Piped Water Supply Coverage to Villages	Covered Yes / Not Covered	Balva	
b.	Hand Pump Coverage in Villages:	Covered / Not Covered No	-	
c.	Coverage under Covered Drains:	Covered / Not Covered NO	-	
d.	Coverage under Open Drains:	Covered / Not Covered NO	-	
e.	Villages with Household Electricity Connection (Numbers)	Connected Yes / Not Connected	Balva	

VIII. Land and Irrigation

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

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

3

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire
(Note: Please aggregate information from village level questionnaires wherever relevant)

IX. Parameters relating to Households & Institutions

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

Name and Signature of Surveyor and Respondent'

Surveyor	PRI Respondent (Preferably Gram Panchayat Chairperson)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey
	સરપંચશ્રી બાલવા ગ્રામ પંચાયત તા. કલોલ, જી. ગાંધીનગર.		

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

4

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: Balva
b. Ward Number: _____
c. Gram Panchayat: _____
d. Block: _____
e. District: Gandhinagar
f. State: Gujarat
g. Lok Sabha Constituency: _____
h. Number of Habitations / Hamlets in the Gram Panchayat: _____
i. Names of Habitations / Hamlets:

Demographic Information

Number of Households_____ Total Population_____ Male _____ Female _____

SC HHs_____ ST HHs_____ OBC HHs_____ Other HHs_____

II. Access to Infrastructure/Amenities etc.

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

[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		
m	Common Service Centre		
n	Veterinary Care Centre		

ii. Road Connectivity

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

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

iii. Drinking Water Facilities

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

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

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

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

b. Coverage under Open Drains: 3 *(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: 3

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: 1

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

If 3 mention the name of the habitations not covered: 1

vi. Sports Facilities in the Village

a.Number of Play Grounds in the Village (minimum size 200 square meters): 1

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

vii. Education, ICDS

a. Number of Anganwadi Centres: 7

c. Schools (Number)

Primary Private: ____ Primary Govt.: 1

Middle Private: ____ Middle Govt.: 1

Secondary Private: ____ Secondary Govt.: 1

Higher Secondary Private: _____ Higher Secondary Govt: _____

2

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

ix. Entitlement Related Parameters		
1	Number of active Job Card holders under MGNREGA	
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	
6	Number of IAY beneficiaries	
7	Number of FRA beneficiaries	
8	Number of common sanitation complexes	
9	Number of SHGs	
10	Number of active SHGs	
11	Existence of SHG Federation in the Village (Yes / No)	
12	Number of Youth Clubs	
13	Number of Bharat Nirman Volunteers	

Name and Signature of Surveyor and Respondent'

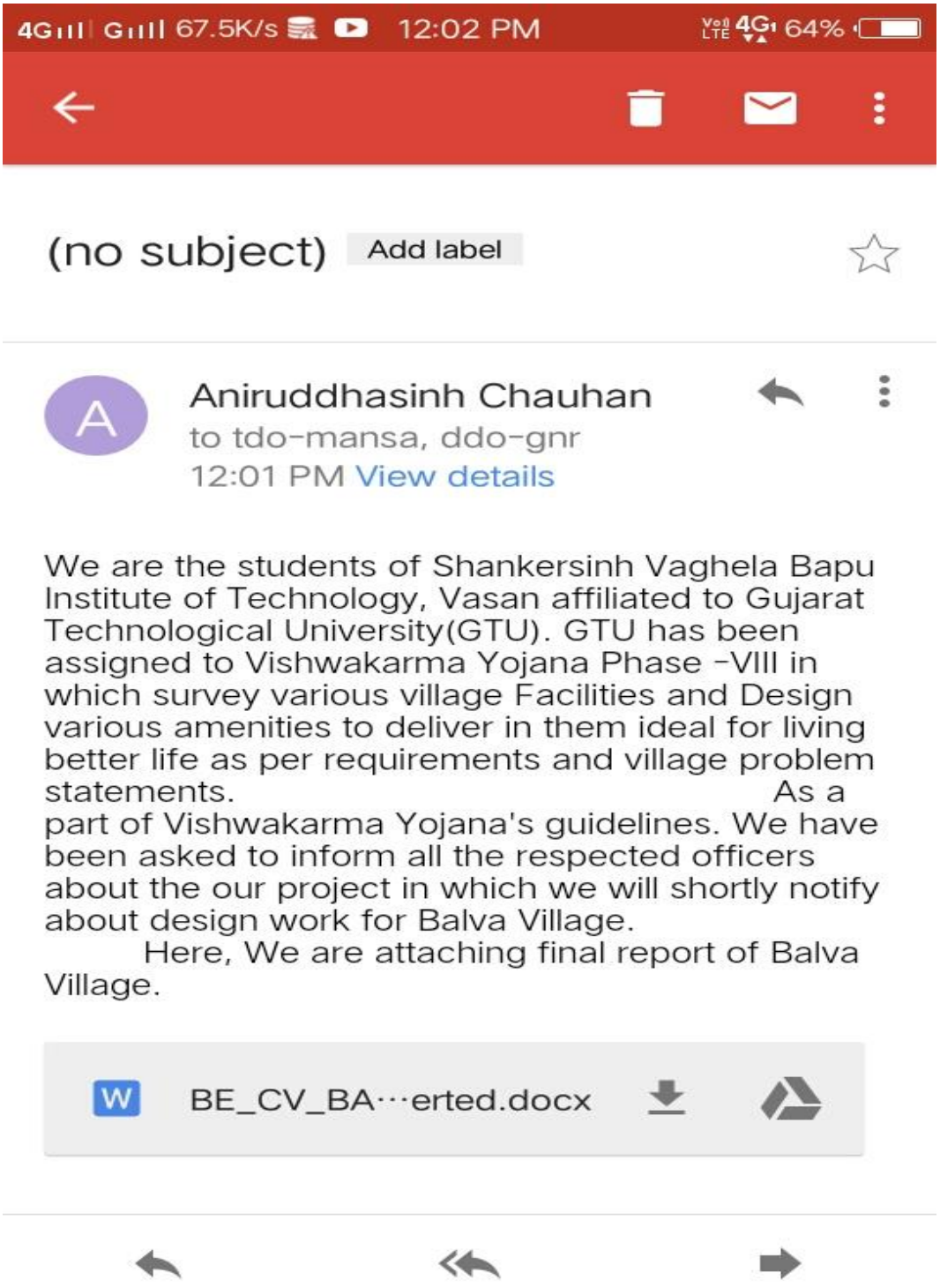
Surveyor	PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey

સરપંચશ્રી
બાલવા ગ્રામ પંચાયત
તા. કલોલ, જી. ગાંધીનગર.

3

Chapter-20

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



4G 67.5K/s 12:02 PM 64%

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Aniruddhasinh Chauhan
to tdo-mansa, ddo-gnr
12:01 PM View details

We are the students of Shankersinh Vaghela Bapu Institute of Technology, Vasan affiliated to Gujarat Technological University(GTU). GTU has been assigned to Vishwakarma Yojana Phase -VIII in which survey various village Facilities and Design various amenities to deliver in them ideal for living better life as per requirements and village problem statements. As a part of Vishwakarma Yojana's guidelines. We have been asked to inform all the respected officers about the our project in which we will shortly notify about design work for Balva Village.

Here, We are attaching final report of Balva Village.

BE_CV_BA···erted.docx

Chapter-21

Compressive report for the entire village

Sr no.	Village name	Discipline	Part -1	Part-2
1.	Balva	Civil	Public toilet	Garden
			Bus stop	Community Hall
			WBM road	Lake purification
			Skill development class	Residential house
			Chabutro	Post office
			PHC	Bridge over lake
2.	Punsari	Civil	Cybercafe	Skill development class
			Garden	Community Hall
			Bank	Chabutro
			Water tank	Post office
			Rain water harvesting	Krishi Kendra
			ATM	PHC
3.	Vavol	Civil	Community Hall	School
			Rain water harvesting	ATM
			Garden	Solid Waste management
			Pond purification	Public toilet

APPROVAL LETTER

APPROVAL OF DESIGN PROPOSAL FROM SARPANCH AND TALATI

Vishwakarma Yojana Phase-VIII
Balva Village, Gandhinagar
Pin Code: 382735

Subject: - approval of design proposal for Balva village from Talati and Sarpanch

I Sarpanch/Talati of Balva village undersigned give approval to the

1) Chauhan Aniruddhasinh D. (170750106004)

2) Shekh Mohin H. (170750106027)

Student of SVBIT, Working for Balva Village under Vishwakarma Yojana project phase-viii to design essential infrastructure and facilities for villagers of Balva and assure that their proposed design will ensure efficient progress of village to achieve idea of ideal village in future. I Sarpanch/Talati will help them in all possible aspect to meet their requirement for design of infrastructure from civil point of view.

Signature:

સરપંચશ્રી
બાલવા ગ્રામ પંચાયત
તા. કલોલ, જી. ગાંધીનગર.

INTERACTION LETTER

INTERACTION WITH SARPANCH AND TALATI

Vishwakarma Yojana Phase- VIII
Balva Village, Gandhinagar
Pin Code: 382735

Subject: - Interaction for Vishwakarma Yojana initiative of GTU with Talati and Sarpanch

I Sarpanch/Talati of Balva village undersigned give approval to the

1) Chauhan Aniruddhasinh D. (170750106004)
2) Shekh Mohin H. (170750106027)

Student of SVBIT, Working on Balva Village under Vishwakarma Yojana project phase-viii to interact with villagers of Balva and assure that their village visit will be under my guidance with proper safety precaution against novel corona virus & I will help them with all possible way to meet their ideal expectation from me.

Signature

સરપંચશ્રી
બાલવા ગ્રામ પંચાયત
તા. કલોલ, જી. ગાંધીનગર.

APPROVAL LETTER

APPROVAL OF AWARENESS ACTIVITY FOR SWACHHTA AND CORONA VIRUS

Vishwakarma Yojana Phase- VIII

Balva Village, Gandhinagar

Pin Code: 382735

Subject: Approval to Carry out Awareness activity for SWACHCH BHARAT ABHIYAN And fight against corona virus from Talati and Sarpanch.

I Sarpanch/Talati of Balva village under signed give approval to the

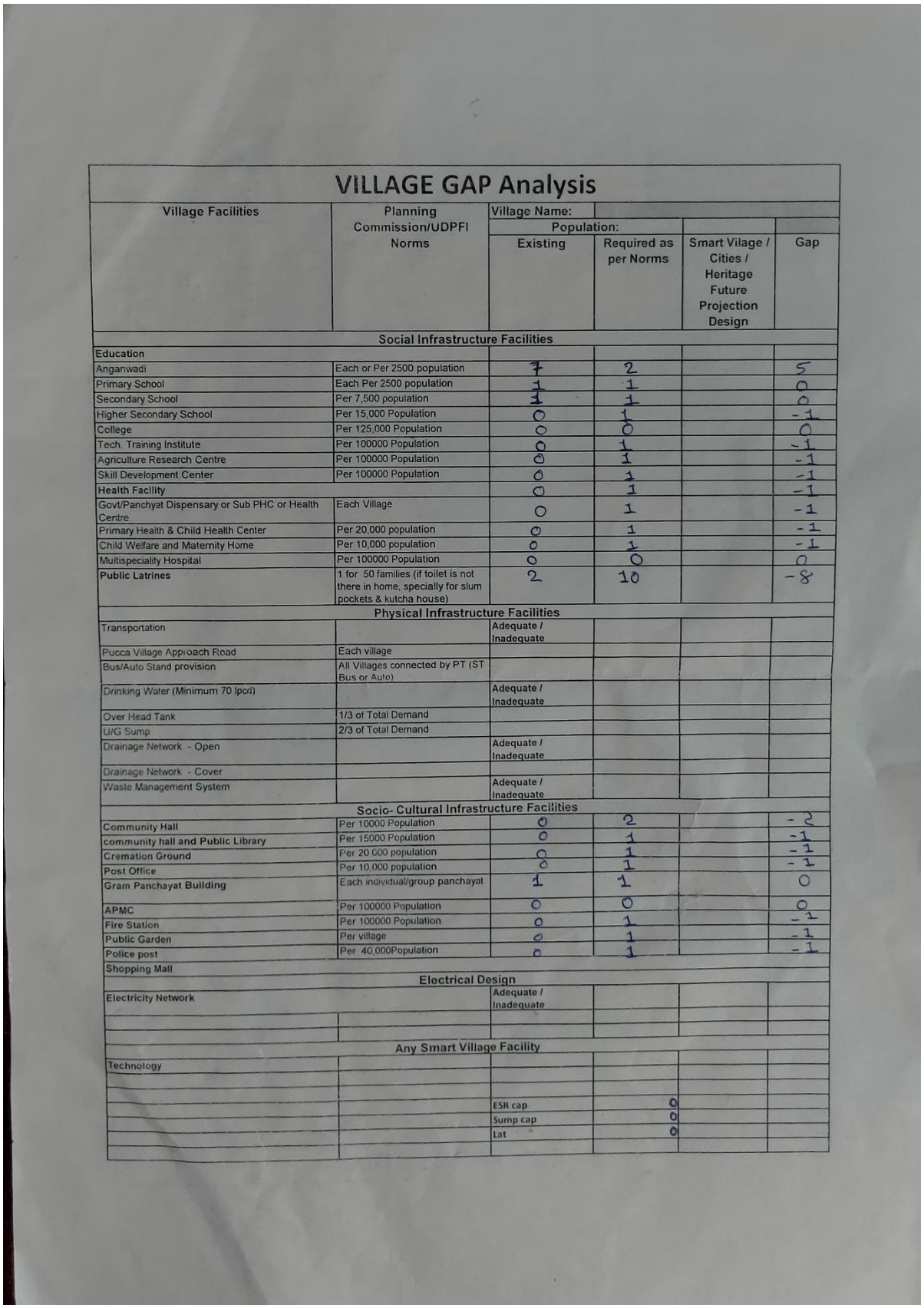
1) Chauhan Aniruddhasinh D. (170750106004)
2) Shekh Mohin H. (170750106027)

Student of SVBIT, Working on Balva Village under Vishwakarma Yojana project phase-viii to carry out awareness activity under banner of SWACHH BHARAT ABHIYAN and fight against corona virus with villagers of Balva and assure that their village activity will be under my guidance & I will help them with all possible way to meet their ideal expectation from me.

Signature

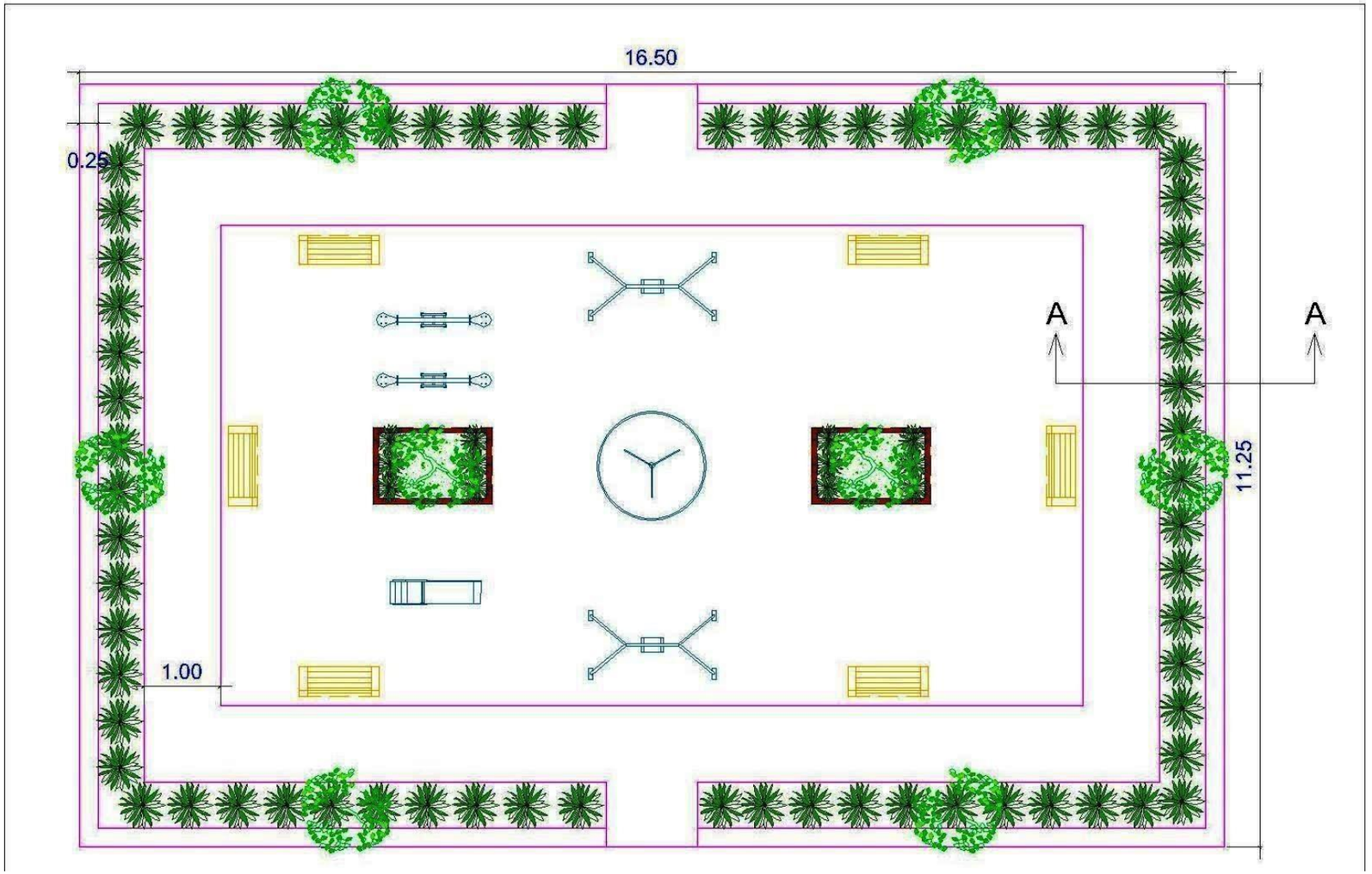
સરપંચશ્રી
બાલવા ગ્રામ પંચાયત
તા. કલોલ, જી. ગાંધીનગર.

Village gap analysis



VILLAGE GAP Analysis

Village Facilities	Planning Commission/UDPFI Norms	Village Name: / Population: Existing	Required as per Norms	Smart Vilage / Cities / Heritage Future Projection Design	Gap
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	7	2		5
Primary School	Each Per 2500 population	1	1		0
Secondary School	Per 7,500 population	1	1		0
Higher Secondary School	Per 15,000 Population	0	1		-1
College	Per 125,000 Population	0	0		0
Tech. Training Institute	Per 100000 Population	0	1		-1
Agriculture Research Centre	Per 100000 Population	0	1		-1
Skill Development Center	Per 100000 Population	0	1		-1
Health Facility		0	1		-1
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	0	1		-1
Primary Health & Child Health Center	Per 20,000 population	0	1		-1
Child Welfare and Maternity Home	Per 10,000 population	0	1		-1
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)	2	10		-8
Physical Infrastructure Facilities					
Transportation		Adequate / Inadequate			
Pucca Village Approach Road	Each village				
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)				
Drinking Water (Minimum 70 lpcd)		Adequate / Inadequate			
Over Head Tank	1/3 of Total Demand				
U/G Sump	2/3 of Total Demand				
Drainage Network - Open		Adequate / Inadequate			
Drainage Network - Cover					
Waste Management System		Adequate / Inadequate			
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	0	2		-2
community hall and Public Library	Per 15000 Population	0	1		-1
Cremation Ground	Per 20,000 population	0	1		-1
Post Office	Per 10,000 population	0	1		-1
Gram Panchayat Building	Each individual/group panchayat	1	1		0
APMC	Per 100000 Population	0	0		0
Fire Station	Per 100000 Population	0	1		-1
Public Garden	Per village	0	1		-1
Police post	Per 40,000Population	0	1		-1
Shopping Mall					
Electrical Design					
Electricity Network		Adequate / Inadequate			
Any Smart Village Facility					
Technology					
		ESR cap	0		
		Sump cap	0		
		Lat	0		



Design of arboretum

GUJARAT TECHNOLOGICAL UNIVERSITY

- All dimension in meter.
- Drawing should be read not to scale.
- Design is prepared onlyforeducationpurpose.
- Corrected all data must becheckbeforeuse.

Shankersinh Vaghela Bapu Institute of Technology

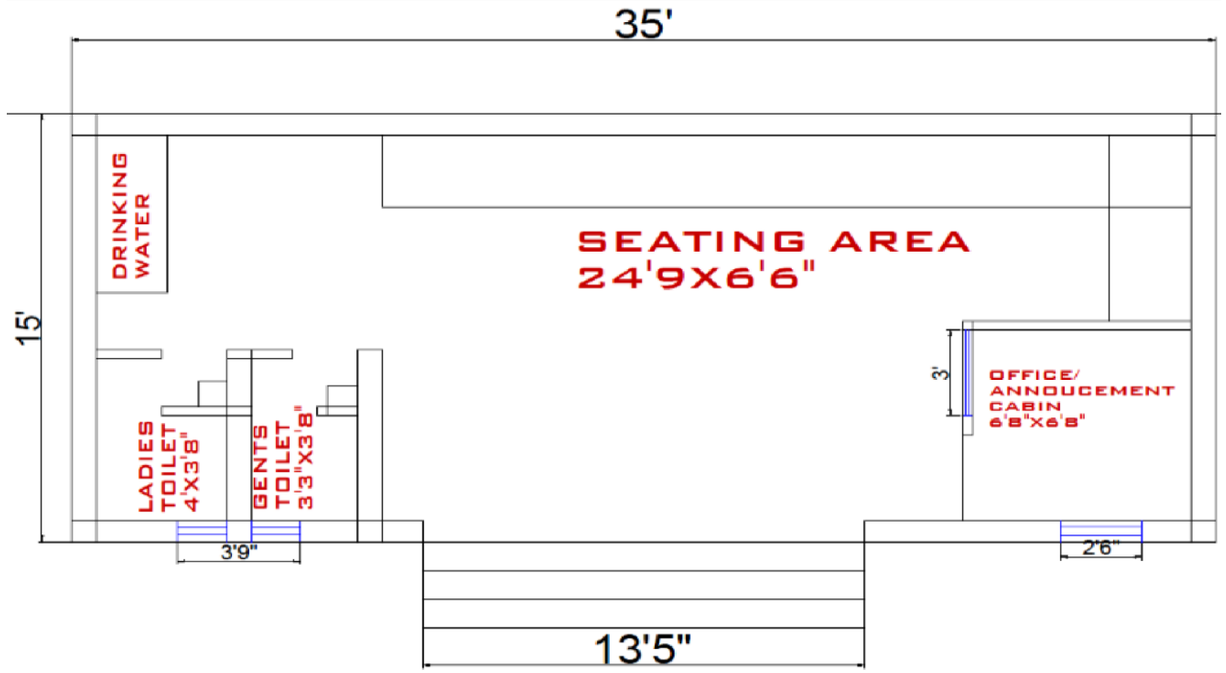
Design By: ANIRUDDHASINH D.CHAUHAN
SHEKH MOHIN HUMAYU

Vishwakarma Yojana: Phase VIII

Balva Village, Gandhinagar District

Design number : 1

Arboretum



Plan and Elevation of bus stand

GUJARAT TECHNOLOGICAL UNIVERSITY

- All dimension in meter.
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श्रमम् विना न किमपि साध्यम्
BAPU GUJARAT KNOWLEDGE VILLAGE

Shankersinh Vaghela Bapu Institute of Technology

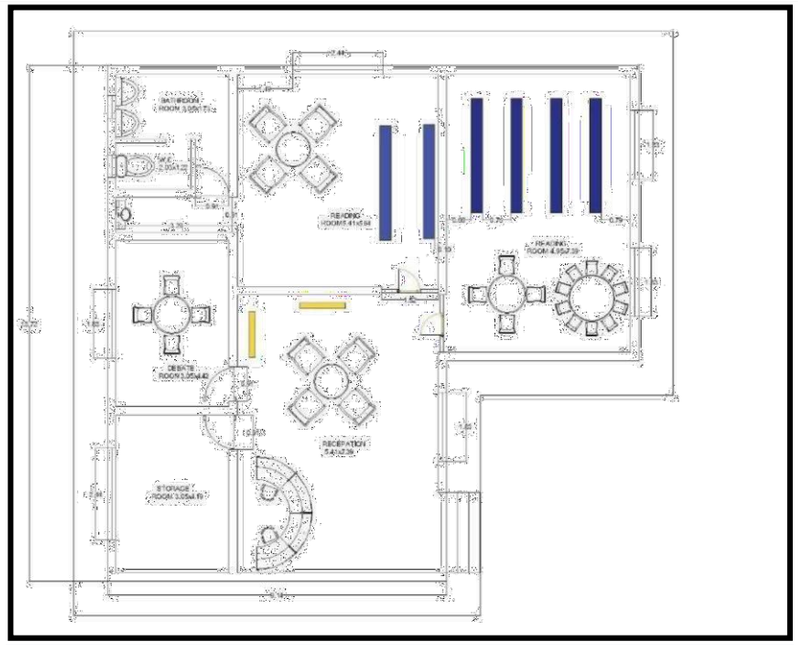
Design By: ANIRUDDHASINH D.CHAUHAN
SHEKH MOHIN HUMAYU

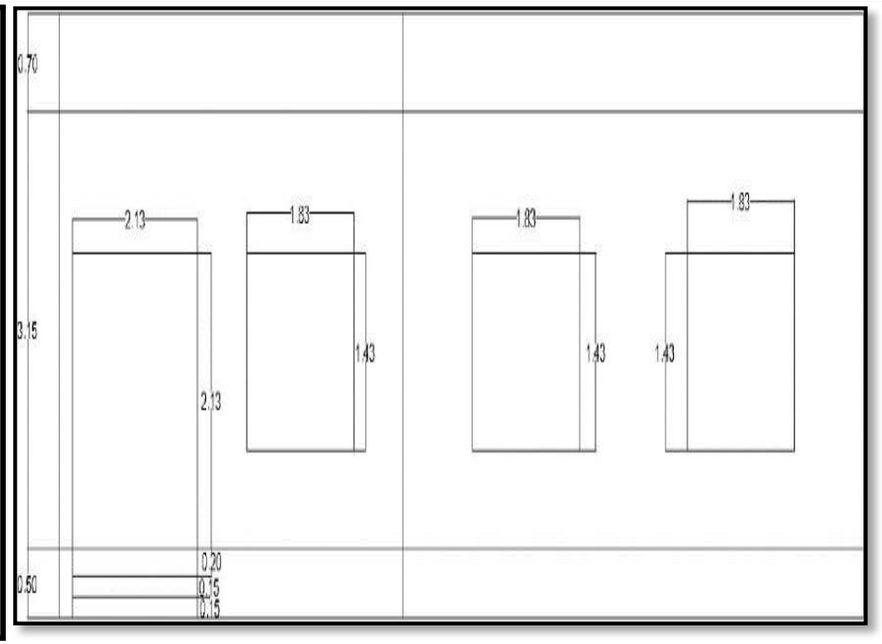
Vishwakarma Yojana: Phase VIII

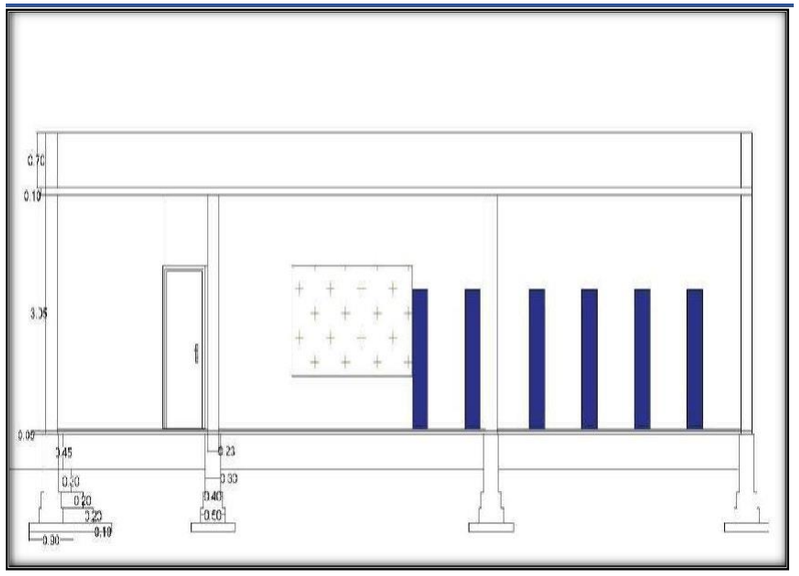
Balva Village, Gandhinagar District

Design number : 2

Bus Stand







Plan, Elevation & Section of Library

GUJARAT TECHNOLOGICAL UNIVERSITY

- All dimension in meter.
- Drawing should be read not to scale.
- Design is prepared onlyforeducationpurpose.
- Corrected all data must becheckbeforeuse.

Shankersinh Vaghela Bapu Institute of Technology

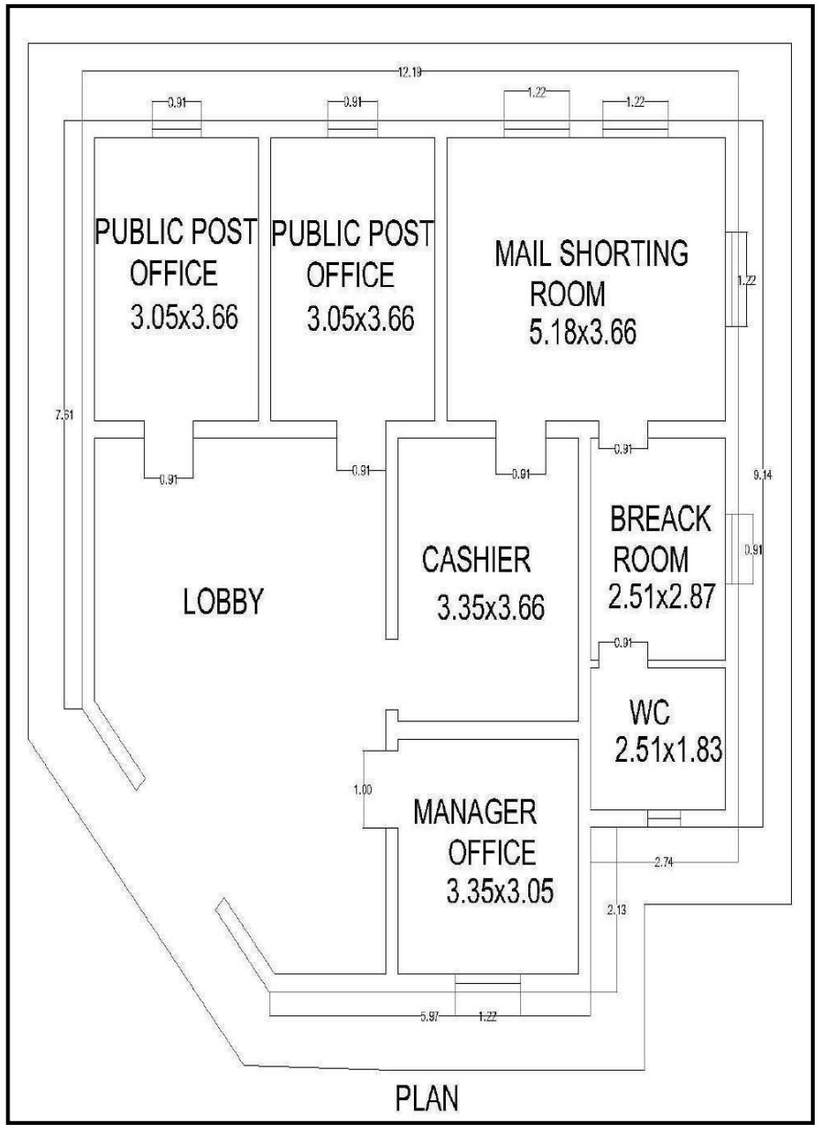
Design By: ANIRUDDHASINH D.CHAUHAN
SHEKH MOHIN HUMAYU

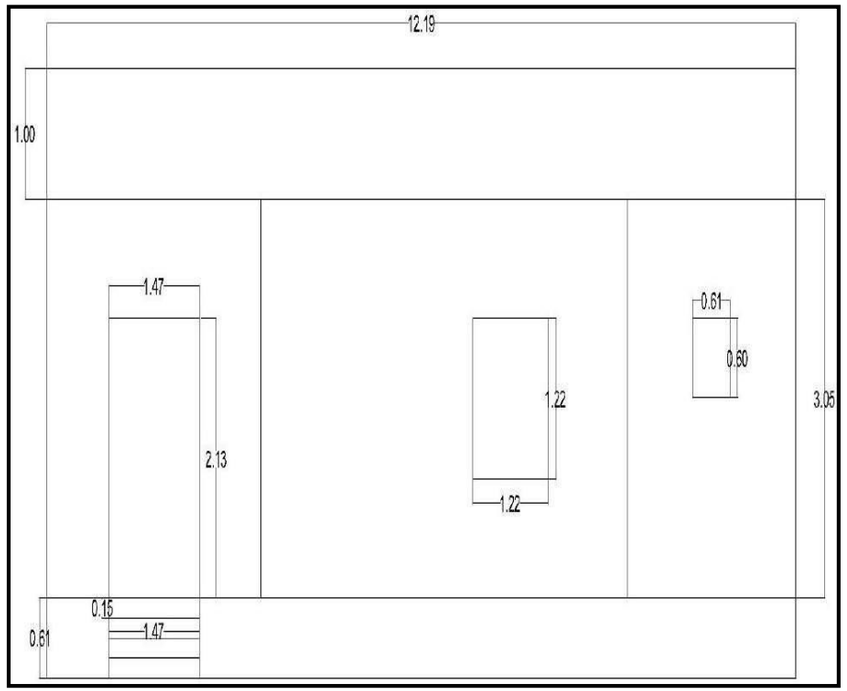
Vishwakarma Yojana: Phase VIII

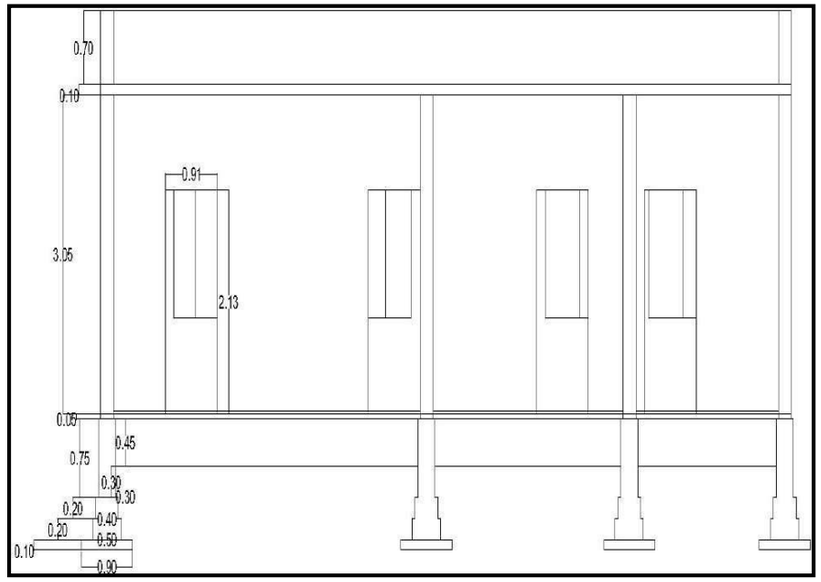
Balva Village, Gandhinagar District

Design number : 3

Library







Plan, Elevation and section of PostOffice

GUJARAT TECHNOLOGICAL UNIVERSITY

- All dimension in meter.
- Drawing should be read not to scale.
- Design is prepared onlyforeducationpurpose.
- Corrected all data must becheckbeforeuse.

Shankersinh Vaghela Bapu Institute of Technology

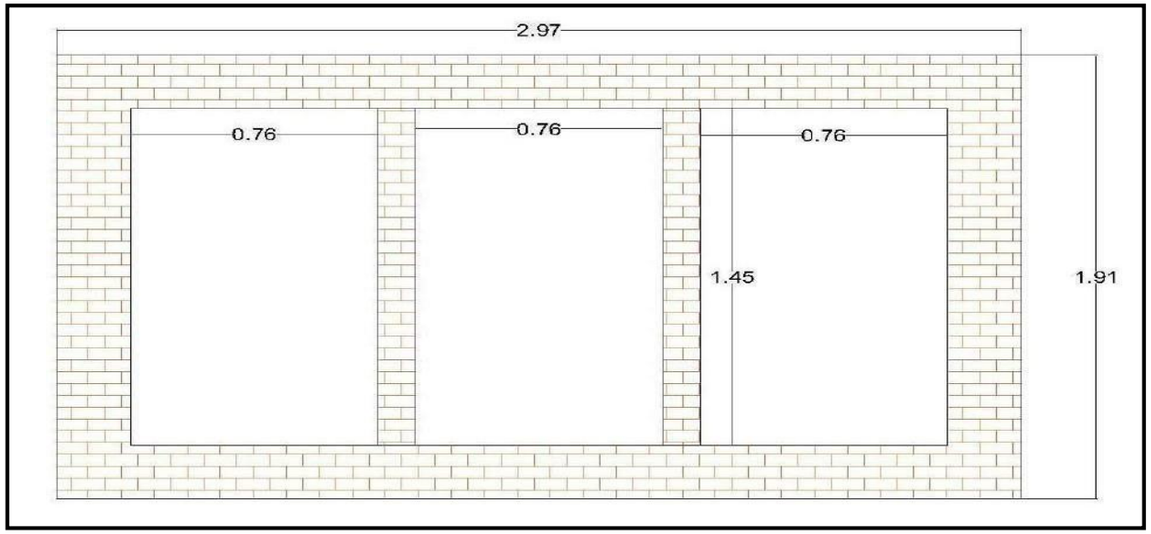
Design By: ANIRUDDHASINH D.CHAUHAN
SHEKH MOHIN HUMAYU

Vishwakarma Yojana: Phase VIII

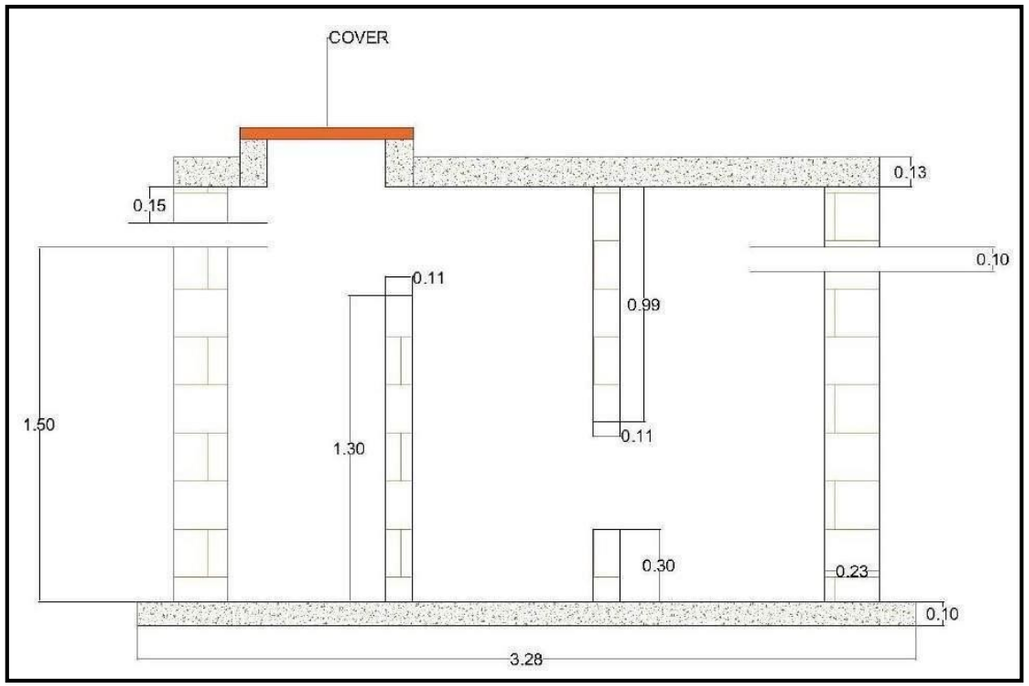
Balva Village, Gandhinagar District

Design number : 4

Post Office



Plan & Elevation ofSeptic Tank



GUJARAT TECHNOLOGICAL UNIVERSITY

- All dimension inmeter.
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श्रमम् विना न किमपि साध्यम्
BAPU GUJARAT KNOWLEDGE VILLAGE

Shankersinh Vaghela Bapu Institute of Technology

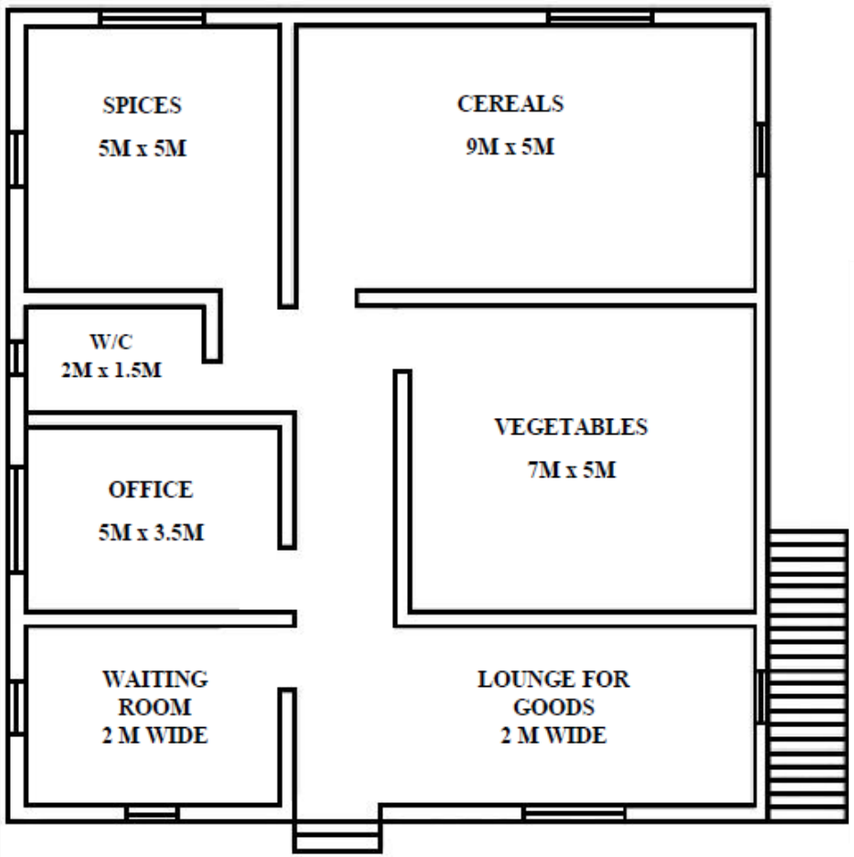
Design By: ANIRUDDHASINH D.CHAUHAN
SHEKH MOHIN HUMAYU

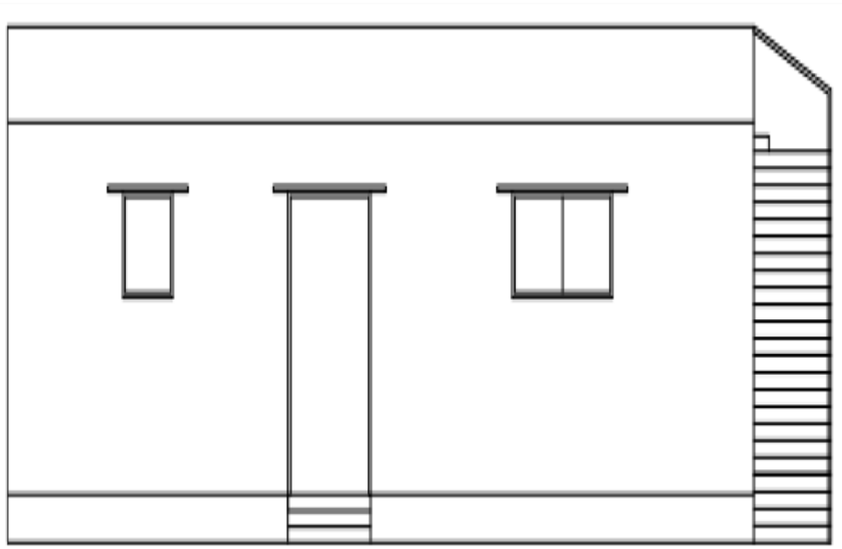
Vishwakarma Yojana: Phase VIII

Balva Village, Gandhinagar District

Design number :5

Plan & Elevation of Septic Tank





Plan & Elevation for Agro Storage

GUJARAT TECHNOLOGICAL UNIVERSITY

- All dimension inmeter.
- Drawing should be read notto scale.
- Design is prepared onlyforeducationpurpose.
- Corrected all data must becheckbeforeuse.

श्रमम् विना न किमपि साध्यम्
BAPU GUJARAT
KNOWLEDGE VILLAGE

Shankersinh Vaghela Bapu Institute of Technology

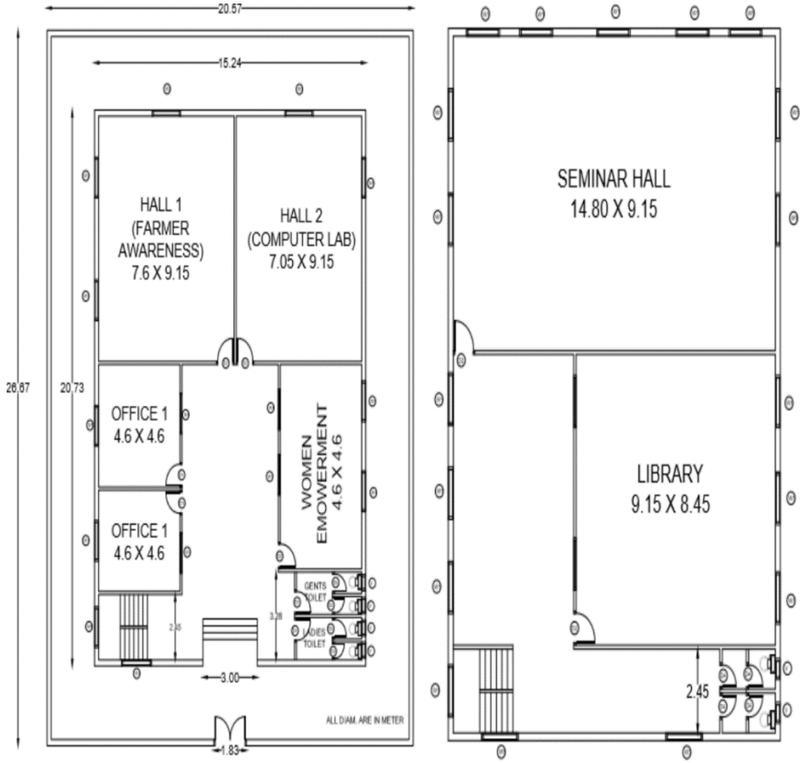
Design By: ANIRUDDHASINH D.CHAUHAN
SHEKH MOHIN HUMAYU

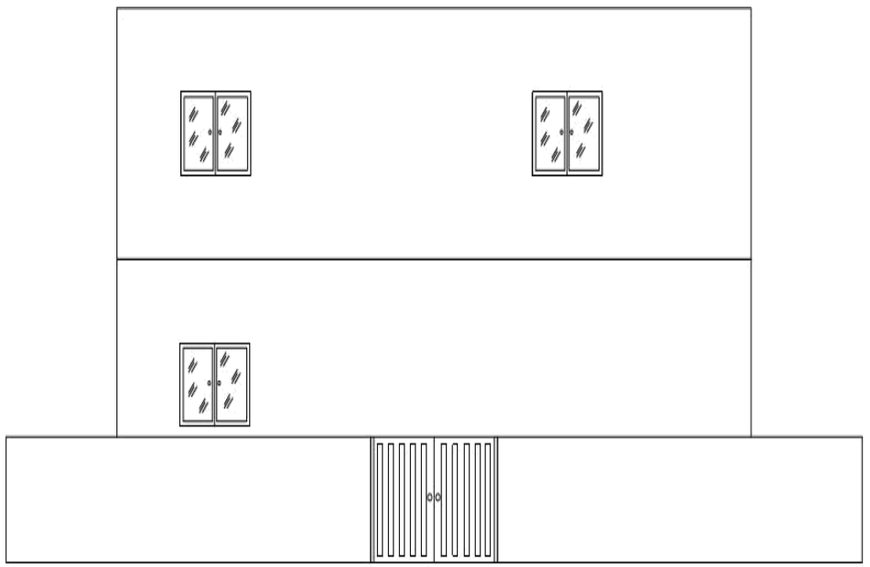
Vishwakarma Yojana: Phase VIII

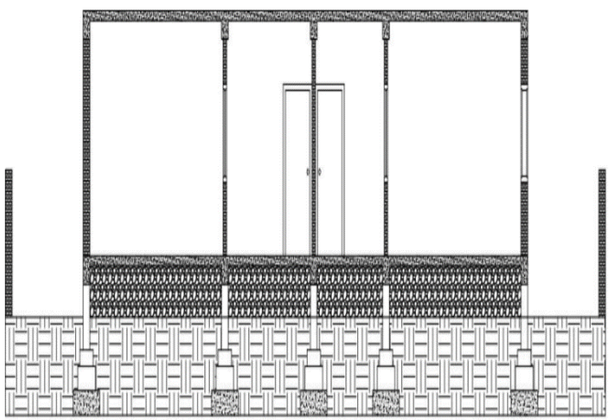
Balva Village, Gandhinagar District

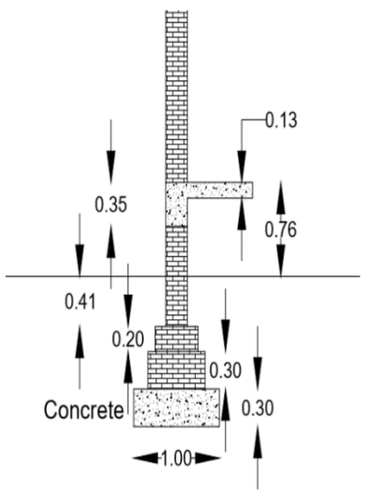
Design number :6

Plan & Elevation for Agro Storage









FOOTING DETAILS

Plan, Elevation & Section of Biogas plant

GUJARAT TECHNOLOGICAL UNIVERSITY

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

श्रमम् विना न किमपि साध्यम्
BAPU GUJARAT
KNOWLEDGE VILLAGE

Shankersinh Vaghela Bapu Institute of Technology

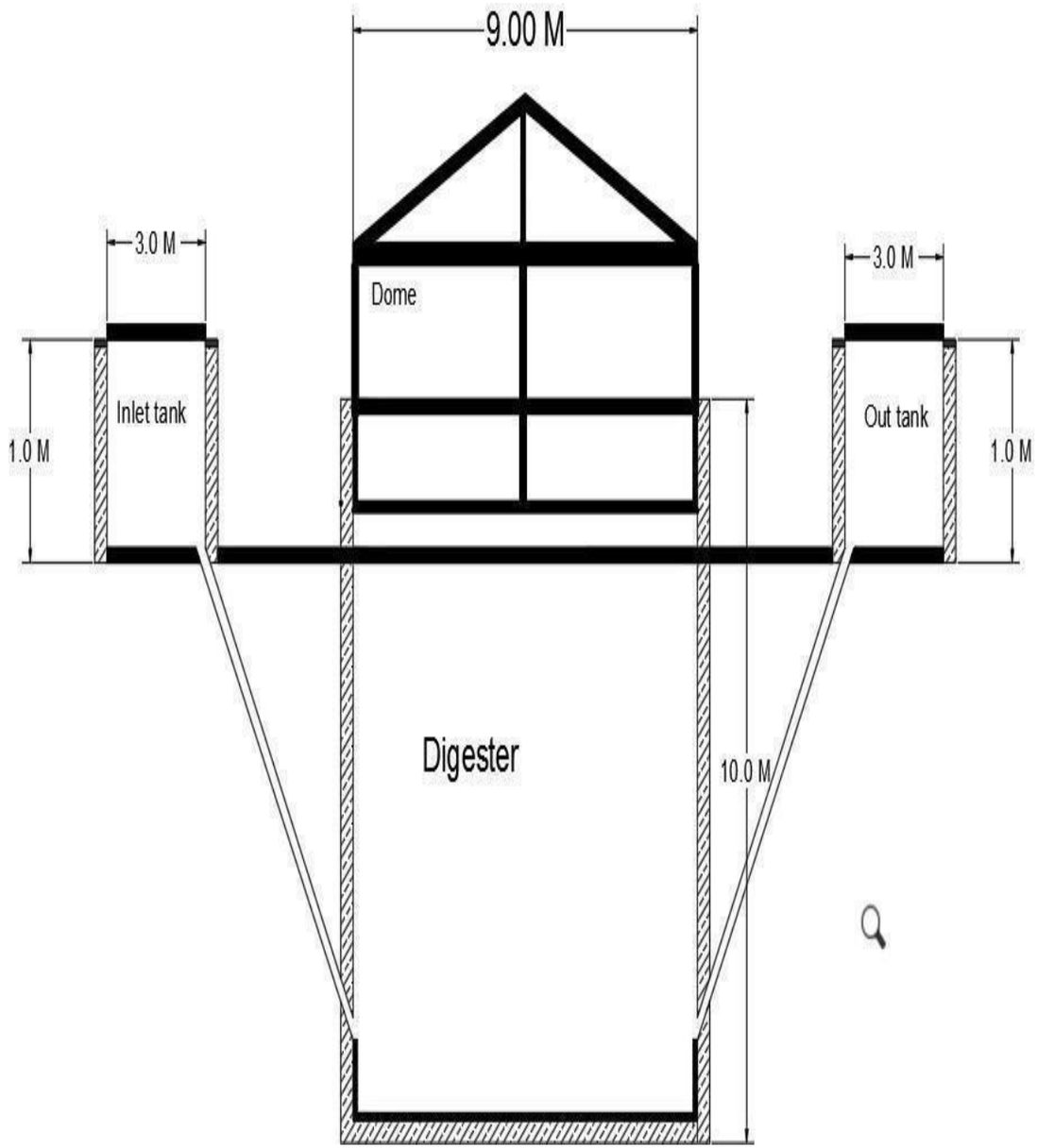
Design By: ANIRUDDHASINH D.CHAUHAN
SHEKH MOHIN HUMAYU

Vishwakarma Yojana: Phase VIII

Balva Village, Gandhinagar District

Design number :7

Plan, Elevation and section of skill development centre



Plan of Bio-gas plant

GUJARAT TECHNOLOGICAL UNIVERSITY

- All dimension in meter.
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BAPU GUJARAT KNOWLEDGE VILLAGE

Shankersinh Vaghela Bapu Institute of Technology

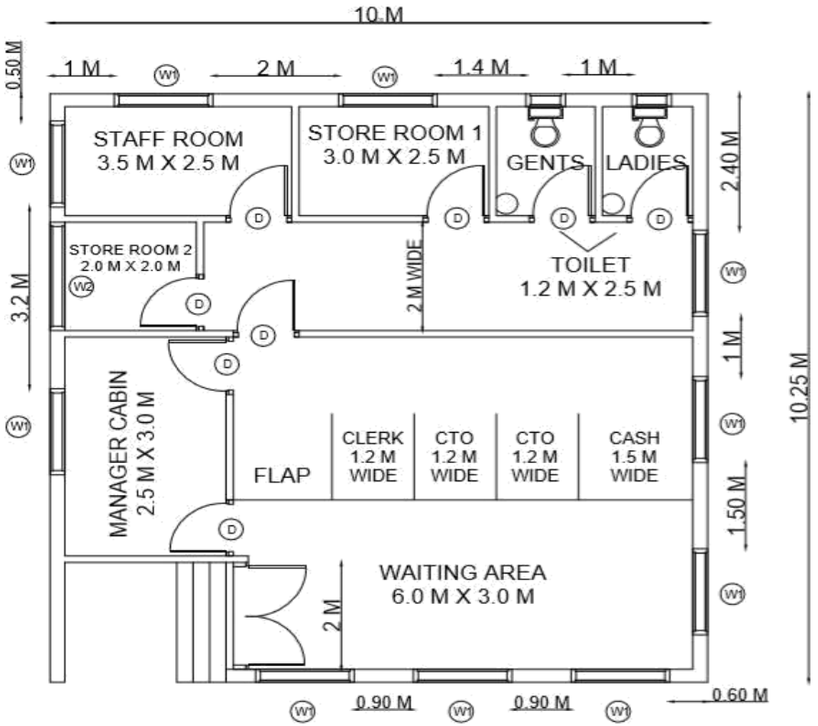
Design By: ANIRUDDHASINH D.CHAUHAN
SHEKH MOHIN HUMAYU

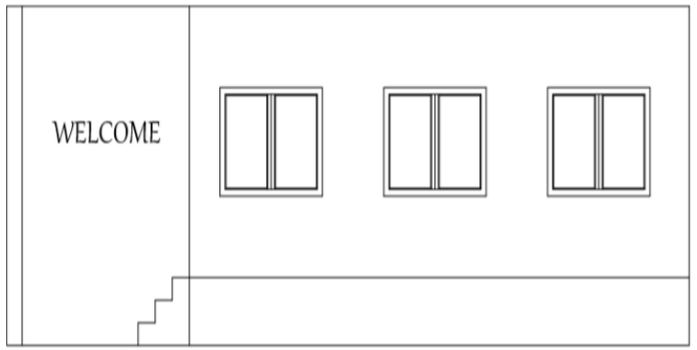
Vishwakarma Yojana: Phase VIII

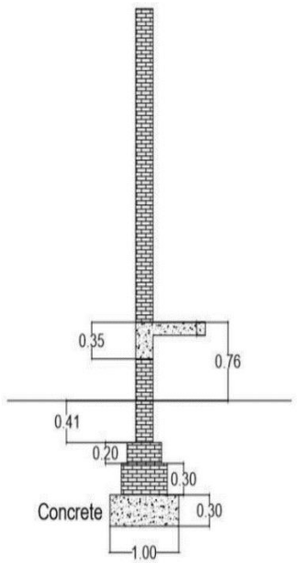
Balva Village, Gandhinagar District

Design number :8

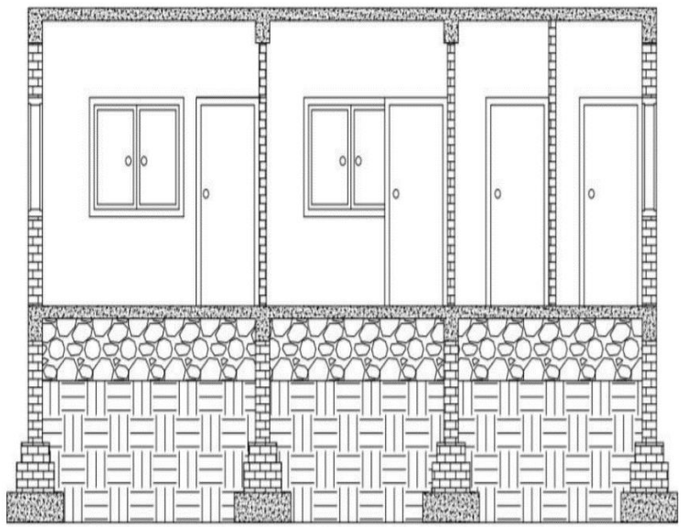
Bio-gas plant







FOOTING DETAILS



Plan, Elevation& Section of Co-operative Bank

GUJARAT TECHNOLOGICAL UNIVERSITY

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

श्रमम् विना न किमपि साध्यम्
BAPU GUJARAT KNOWLEDGE VILLAGE

Shankersinh Vaghela Bapu Institute of Technology

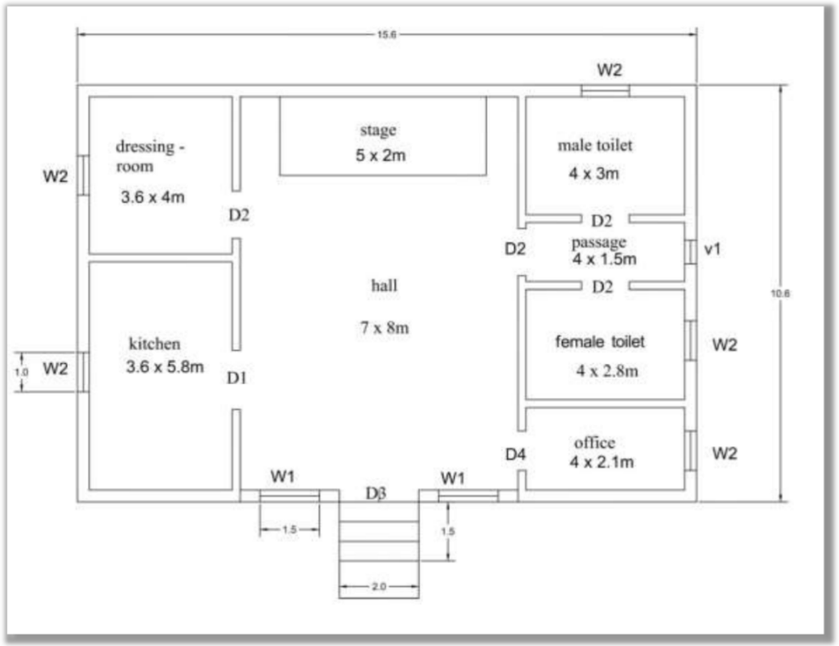
Design By: ANIRUDDHASINH D.CHAUHAN
SHEKH MOHIN HUMAYU

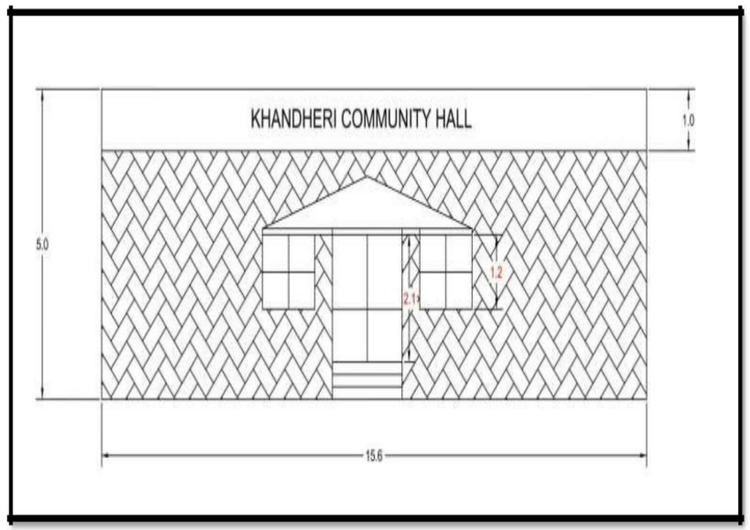
Vishwakarma Yojana: Phase VIII

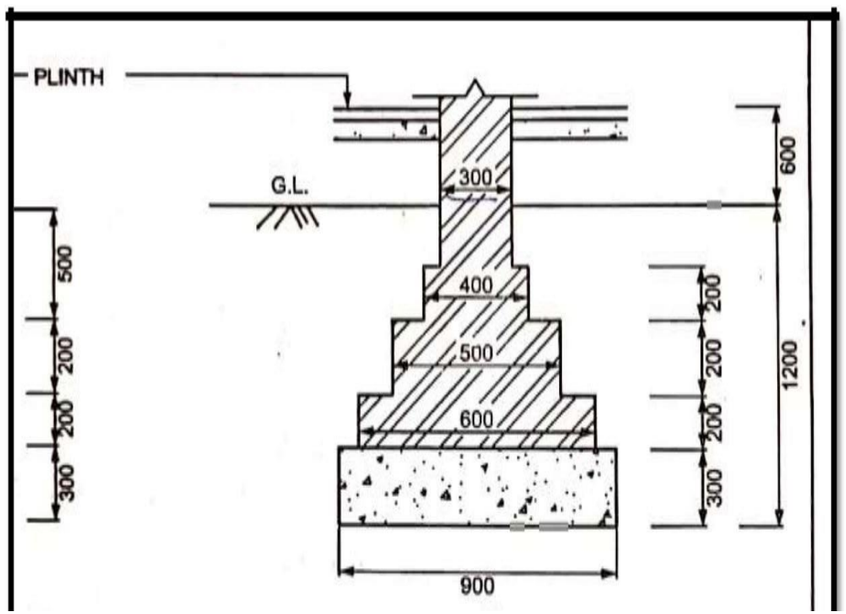
Balva Village, Gandhinagar District

Design number :9

Plan Elevation and section of C0-operative Bank







Plan, Elevation& Section of Community Hall

GUJARAT TECHNOLOGICAL UNIVERSITY

- All dimension in meter.
- Drawing should be read not to scale.
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- Corrected all data must be check before use.

श्रमम् विना न किमपि साध्यम्
BAPU GUJARAT KNOWLEDGE VILLAGE

Shankersinh Vaghela Bapu Institute of Technology

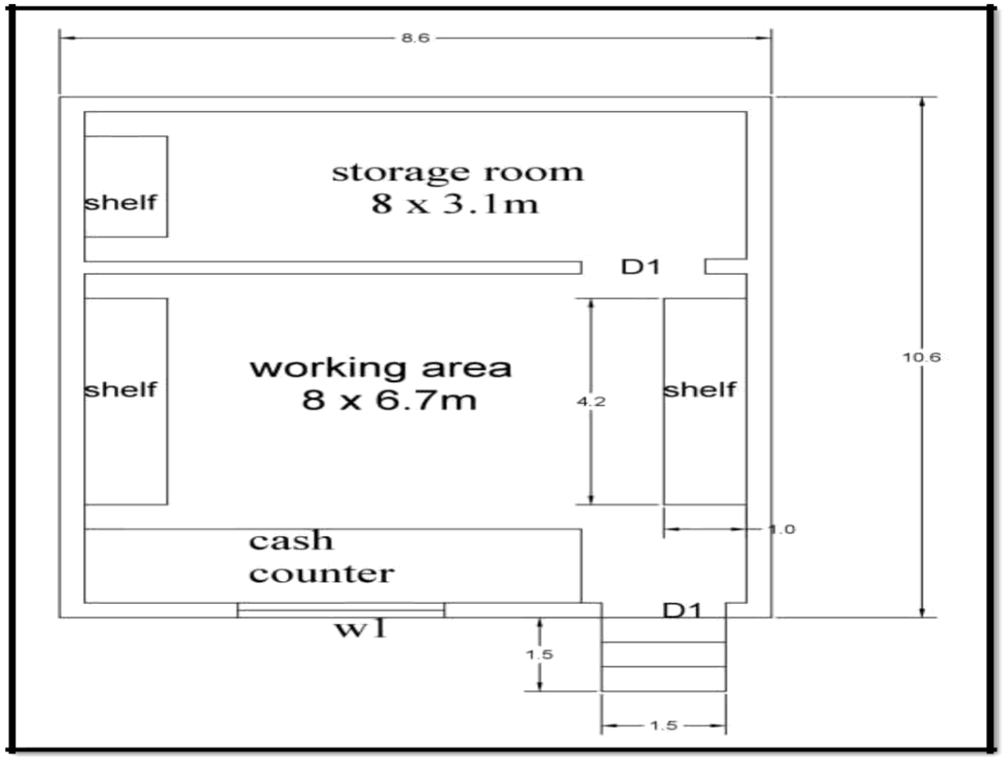
Design By: ANIRUDDHASINH D.CHAUHAN
SHEKH MOHIN HUMAYU

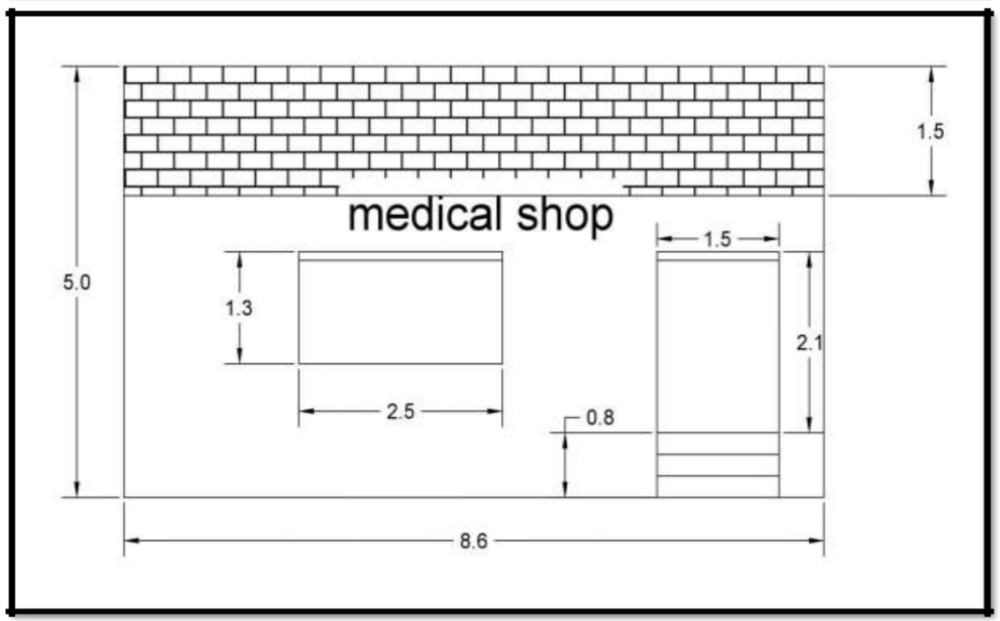
Vishwakarma Yojana: Phase VIII

Balva Village, Gandhinagar District

Design number :10

Plan Elevation and section of Community hall





Plan & Elevation of Medical shop

GUJARAT TECHNOLOGICAL UNIVERSITY

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

श्रमम् विना न किमपि साध्यम्
BAPU GUJARAT KNOWLEDGE VILLAGE

Shankersinh Vaghela Bapu Institute of Technology

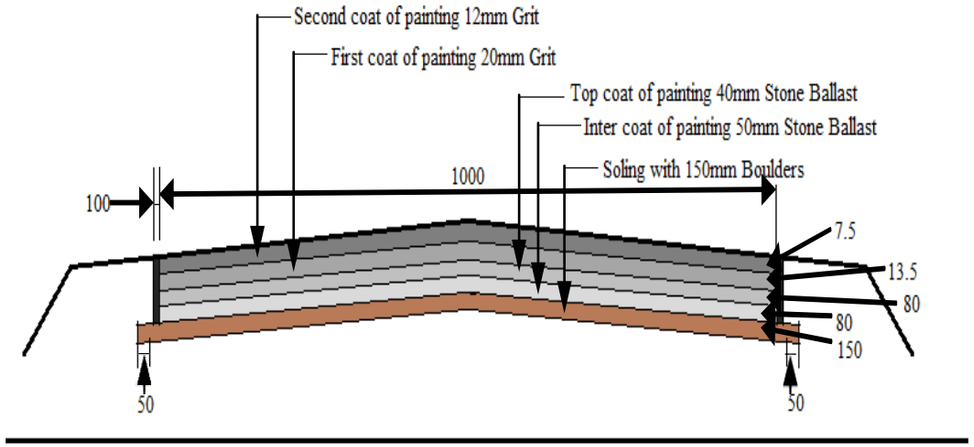
Design By: ANIRUDDHASINH D.CHAUHAN
SHEKH MOHIN HUMAYU

Vishwakarma Yojana: Phase VIII

Balva Village, Gandhinagar District

Design number :11

Plan and Elevation of Medical Shop



* All dimension are in mm
* Length of road is 2KM

design of road

GUJARAT TECHNOLOGICAL UNIVERSITY

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- Drawing should be read not to scale.
- Design is prepared only for education purpose.
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श्रमम् विना न किमपि साध्यम्
BAPU GUJARAT KNOWLEDGE VILLAGE

Shankersinh Vaghela Bapu Institute of Technology

Design By: ANIRUDDHASINH D.CHAUHAN
SHEKH MOHIN HUMAYU

Vishwakarma **Yojana: Phase VIII**

Balva Village, Gandhinagar District

Design number :12

Design of road