DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION

VAJDI (VAD) VILLAGE
RAJKOT DISTRICT

PREPARED BY

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FOR DIPLOMA STUDIES

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Prof. Khemendra R. Dattani

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad– 382424 Gujarat

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CHANDKHEDA, AHMEDABAD– 382424 GUJARAT

CERTIFICATE

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

Detail Project Report for,

VILLAGE Vajdi (Vad)

DISTRICT Rajkot

Under

VishwakarmaYojana: Phase-VIII

In partial fulfillment of the project offered by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

During the academic year 2020-21

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

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ABSTRACT

About future scope of the village development Vishwakarma Yojana is one of the initiatives towards Urbanization that is village development by the government of Gujarat, which was allotted as a real time situation type project provides to GTU. In this project the students meet the relevant citizens of village and survey the existing facilities. This includes implementation of engineering skills to prepare detailed project reports for village as a part of final year project work. By this project certain experiences recreates a real work and need of application of an individual technical knowledge on any existing problems.

Vajdi (Vad) is a village located in Lodhika Taluka of Rajkot district. Sarpanch of the village is Abhesingh J. Solanki. Village is located 12 km. away from Rajkot. Total geographical area of village is 613.73 hectares. Total population of village is 3,305 among them 1886 are males and 1419 are females as per census 2011.Total households in Vajdi(Vad) village are 709 as per census 2011.Main occupation of this village is Farming.

In Vajdi (Vad) some physical and social facilities are better like underground drainage, cement concrete road, primary school and aanganwad. In the village lack of basic facilities like public toilet, public garden, supermarkets, government hospital etc.

For the development of Vajdi(Vad) village we are trying to provide facilities like Post office (Physical infrastructure), Public Toilet(Social infrastructure), Public Library (Socio-cultural infrastructure), Soak Pit(Sustainable infrastructure), E-corner(Smart village infrastructure), Museum(Heritage infrastructure).

Based on survey we tried to give provide some of the lacking facilities in the village. These amenities will help in fulfilling the needs of village dwellers. These will help in decreasing rate of migration and reduce urban city pressure.

Key Words: **Urbanization, Rural development, Ideal village, Smart village, Techno-economic survey, Smart village survey, Gap analysis, SAGY survey, Design Provision.**

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ABBREVIATIONS

SHORT NAME/ SYMBOL	FULL NAME
PHC	Primary Health Centre
VCD	Village Development Committe
WSS	Water Supply and Sanitation
TRYSEM	Training Rural Development Program
NREP	National Rural Youths For Self- Employment
SWM	Solid Waste Management
LPCD	Liters per Capita per Day
ATMS	Advance Traffic Management System
TDO	Taluka District Officer
CRSP	Central Rural Sanitation Programmers
CC	Cement Concrete
PHC	Public Health Centre
RCC	Reinforced Cement Concrete
ATM	Automated teller Machine
RHD	Rural Health Development
RYD	Rural Youth Development
FWP	Food For Work Programme
SAGY	Saansad Adarsh Gram Yojna
BBCC	Brick Bate Cement Concrete

Chapter: 1
Ideal Village Visit (Rajsamadhiyara)

In this chapter, we include overall study of ideal village, visit of Ideal Village for the basic approach ideas for our selected village, case study, literature review of ideal village and all other informations.

1.1 Background & Study Area

We visited ideal village Rajsamdhiyara for techno economical survey. Rajsamdhiyara village is situated on 22.187 latitude and 70.950 longitudes .Neartest town from Rajsamdhiyara village is Rajkot and it is 22.6 km away from Rajsamdhiyara. Rajsamdhiyara village is situated in Rajkot District of Gujarat State, India.The current surpanch of this village is Bhavnaben Ashokbhai Vaghera. The population of this village is 1467(732 males and 735 females) and total households is 247. The village follows panchayati raj system. The surrounding nearby villages from Rajsamdhiyara are Lakhpar,Sardhar,Lodhida,Dhandhiya,etc. Indian village code of this village is 512981.

PIN: 360025

District: Rajkot

State: Gujarat

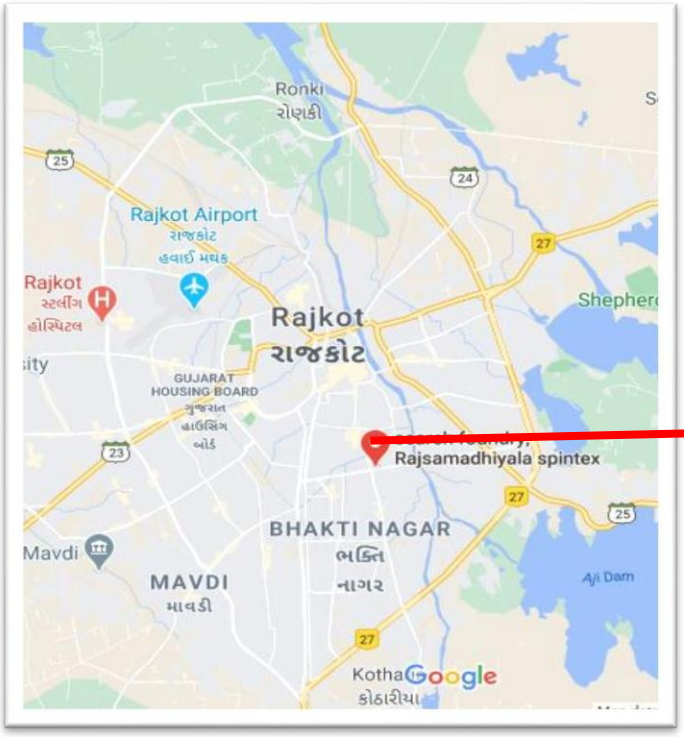


Figure 1: Map of Rajasamdhiyara-1

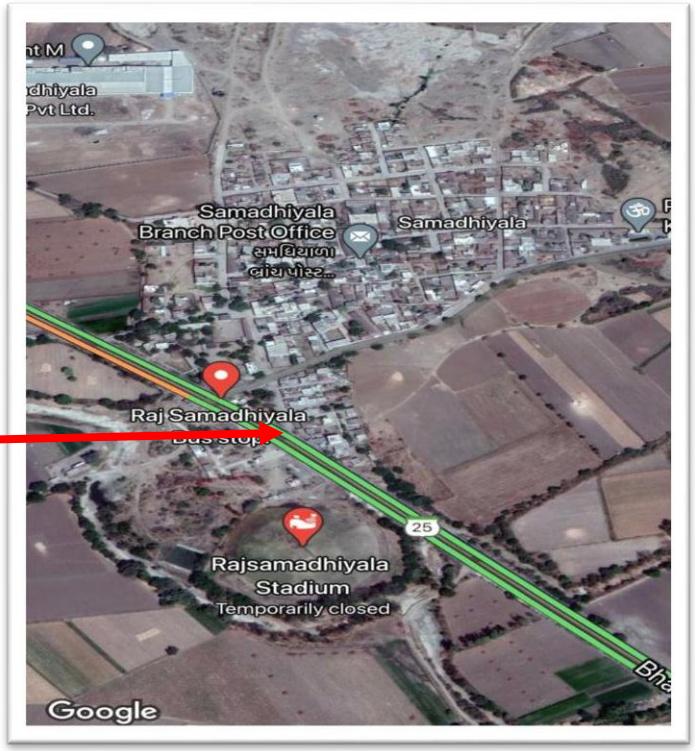


Figure 2: Map of Rajsamadhiyara-2

1.2 Concept: Ideal Village, Normal Village

The village having all facilities like public health centre, education centre, recreation centre, drinking water, vegetable market, good housing, banking and ATM facilities, drainage, sanitation, transportation facilities, tele-communication system, police station, etc. This all facilities decrease migration rate to urban areas.

1.2.1 Objectives

The ideal village has following objectives:

- To reduce decrease migration rate by developing village with a 'rural soul' but with all urban facilities that city may have.
- For sustainable and rapid development.
- For provide easier, faster and cheaper access to urban markets for agriculture production and other marketable commodities produces in such village.
- To encourage people with new technology and beneficial use.

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

Rajsamdhiyara achieved award of "GUJARAT'S FIRST NIRMAL GRAM" in 2005.This village is located 22km away from Rajkot district.20 years ago this village was declared as a desert and arid zone because almost 75% bores in village yielded no water. To face this problem Hardevsinh Jadeja led the villagers to construct 12 check dams between 1986 to 1988. The villagers planted thousands of trees for watershed projects. Today there is sufficient water for villagers.

This village has been developed in past few years. There is no crime in the village, there is no police case registered at present against anyone from the village since 30 years.

Mrs. Bhavnaben Ashokbhai Vaghera, an enthusiastic sarpanch transformed her village with vision of development through cleanliness. Cleanliness of household, streets and entire village was compulsory duty of all villagers.

Some fine and rules to be imposed on villagers to cleanliness, name of buyer is written by shopkeeper on wrappers of any items to detect easily who has thrown and fine should be imposed. First year fine collection is Rs. 30,000 which to yearly 1000-1500 for plastic wrappers.

The village have facilities such as anganwadi, school, public health centre, sub post office, electricity, water supply system, solar street lights, underground drainage system, cement concrete road, cricket ground, overhead tank, RO filter plant, community hall, Wi-Fi system, rain water harvesting system.

ACHIEVEMENTS OF VILLAGE:

- Best Sarpanch Award (District Level Award)
- Best Water Harvester (State Level Award)
- Best Farmer Award (State Level Award)
- Village Development Award (National Award by Oshe Saran Devi Bhatia Trust)
- Nirmal Gram Award
- Tirth Gram Panchayat Award
- Samras Gram Panchayat Award
- Shresth Gram Panchayat Award (District Level)

- Swarnim Gram Award for Sustainable Cleanliness even at date after declared Nirmal Gram

SPECIAL FEATURES OF RAJSAMADHIYARA

- First **"Zero Plastic"** village since 2005.
- 100% regular recovery of government dues and taxes.
- **Zero Crime Rate** from last 30 years, local disputes to be solved at Lok Adalat.
- **Tobacco Selling Banned.**
- **Water Harvesting** through scientific approach by Remote Sensing by Developing Dykes and Lineaments with the help of ISRO.
- More than **65,000 trees** to fight against Global Warming. And pollution free environment.
- Self-sufficiency in drinking and agriculture water from last 30 years even in draught conditions.
- **State Level Cricket Ground**, used also for village children for exercise of Athletics, Cricket etc.
- Water Tank of 25 Lakhs For 20 Lakhs rupees public role in form of money and labour.
- Sports Encouragement to young generation State Level Cricket Ground for local team to compete against under 19 teams from Rajkot, and near villages.
- **Mahila Samaras Gram Panchayat.**
- **No Gram Panchayat** Elections since its establishment.
- Strict implementation of rules framed by village development committee.
- **RO water filter plant** to eradicate water prone diseases.

Figure 3: Plastic free Village

Figure 4: Plastic Rule of Rajsamdhiyara

Figure 5: Main Gate of Rajsamdhiyara

1.2.3The Idea of a model/smart village

As per census 2011, 68.9% of our population lives in rural areas. Through number is probable to fall in the coming years, it is still estimated that more than half of our population would be rural in 2050. Despite there being several past initiatives by government at all levels Central, State, Local in the past, the level of development has not kept pace with the growing aspiration among Indians. On most improvement parameters, there is still a significant gap between rural and urban India.

Figure 6: Rules Board of Rajsamdhiyara

Sector	Parameter	Urban	Rural
Expenditure Poverty	% people below poverty line (2011-12)(Tendulkar estimates)	14%	26%
	% people below poverty line (2011-12)(Rangarajan estimates)	27.2%	31.3%
Education	Literacy Rate-2011#	85%	60.9%
	Average years of school education of working population*	8.42	4.72
Health	In fact Mortality Rate (IMR)-2011#	28	46
	Life Expectancy at birth-2002-06*	68.8	62.1

Table 1: Various parameter of urban and rural

Note:
Source: Census 2011,
* Source: NSS 2009-10, Rural-Urban Divide in India, Hnatkovka and Lahiri, 2012,
**Source: Family Welfare Statistics in India 2011,
Source: National Health Profile, CBHI

1.2.4 Ancient History Civil Concept

It is difficult to determine the history of emergence and beginning of civil engineering, however, that the history of civil engineering is a mirror of the human beings on this earth. Man used the old shelter caves to protect themselves of weather and harsh environment, and used a tree trunk to cross the river, which being the demonstration of ancient age civil engineering.

Civil engineering has been an aspect of life since the beginnings of human existence. The earliest practices of Civil engineering may have commenced between 4000 and 2000 BC in Ancient Egypt and Mesopotamia (Ancient Iraq) when humans started to abandon a nomadic existence, thus causing a need for the construction of shelter. During this time, Transportation became increasingly important leading to the development of the wheel and sailing.

Until modern times there was no clear distinction between civil engineering and architecture, and the term engineer and architect were mainly geographical variations referring to the same person, often used interchangeably. The construction of pyramids in Egypt (circa 2700-2500 BC) might be considered the first instances of large structure constructions.

Around 2550 BC, Imhotep, the first documented engineer, built a famous stepped pyramid for King Djoser located at Saqqara Necropolis. With simple tools and mathematics he created a monument that stands to this day. His greatest contribution to engineering was his discovery of the art of building with shaped stones. Those who followed him carried engineering to remarkable heights using skill and imagination.

Ancient historic civil engineering constructions include the Qanat water management system (the oldest older than 3000 years & longer than 71 km) the Parthenon by Iktions in Ancient Greece (447-438 BC), the Appian Way by Roman engineers (c.312 BC), the Great wall of China by General Meng T'ien under orders from ch'in Emperor Shih Huang Ti (c.220 BC) and the stupas constructed in ancient sri Lanka like the Jetavanaramaya and the extensive irrigation works in especially aqueducts, insulae, harbours, bridges, dams and roads.

1.3 Detail study (Socio economic, Physical, Demographic and Infrastructure details) of Ideal village

Socio Economic Details:

In Rajsamdhiyara village all cast people are available. Around 98% people are Hindu in this village, among them 50% are Patel, 5% are Darbar, 20% are Rajputs, 15% are scheduled castes and 10% are belongs to different categories. All people are living like family. This village has own Lok Adalat for solving problems of villagers. And also has a Village Development Committee (VDC) for the effective growth of the village. Around 90% people of this village is Educated. And income of

around 65% people is depends on Agricultural activity. There are rules in village is compulsory to be occupied in employment person by Village Development Committee.

Physical & Demographical Details:

Rajsamdhiyara village total population is 1467 among 732 are males and 735 are females as per the census 2011. The population of children with age 0-6 is 172 which is 11.72% of total population. There are about 247 houses in this village and average family size is 5 members. Literacy rate of this village was 87.26% as per census 2011. The geographical area of village is 1089 hectare. Rajkot is the nearest town to this village which is approx 22.6 km away from Rajkot. Rajsamdhiyara village has sufficient physical infrastructure facilities like 48 check dams and 7 lakes for main sources of drinking water, water tank, underground drainage, good roads network, transportation facility and electricity distribution.

Infrastructure facilities:

The following are various important facilities in this village.

- **Drinking water facility:**
  Main supply for drinking is Narmada water through pipe line in gap of 3 days. There are 10,000 litter water tank as a reserve water.
- **Road Network facilities:**
  All the road in village is cement concrete road with underground drainage facility. There is one bus station with good condition & local transportation also available in this village.
- **CCTV cameras:**
  In all important junction and places of the village 28 CCTV cameras are installed for safety purpose.
- **Solar Street Light:**
  At all required roads and streets solar lights are installed as a renewable resources of energy.
- **Recreation Facilities:**
  In this village there are 3 temple and one state level cricket ground for refreshment and sports encouragement to young generation.
- **Community Hall:**
  In this village there is one community hall with projector for meeting and communication.

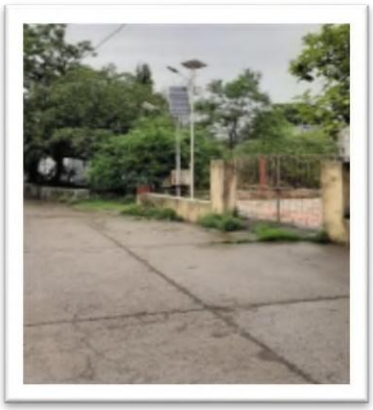


Figure 7: C.C.Road

Figure 8: CCTV Camera

Figure 9: Solar Light

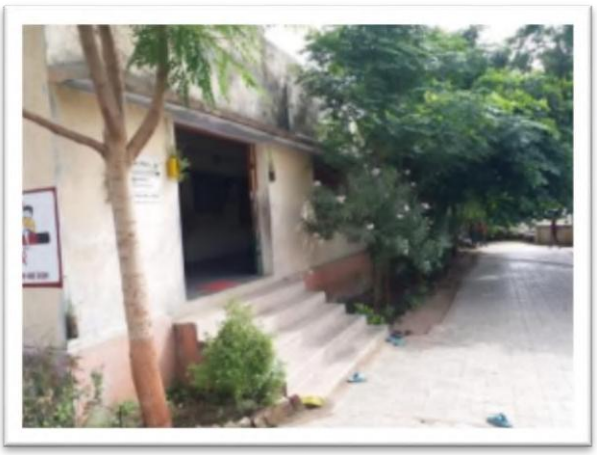


Figure 10: Anganwadi

Figure 11: Primary School

Figure 12: Health Centre

Figure 13: Temple

1.4 SWOT analysis of Ideal village

Strengths	• Good Road network • Good education system • Recreation facility • Renewable sources
Weakness	• No general market • No cinema/video hall
Opportunity	• Government scheme • Use morden technology like water harvesting system
Threats	• No banking facility

Table 2: SWOT analysis

1.5 Future prospects of village

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

1.6 Benefits of the visits of Ideal village

During the Rajsamdhiyara village visit we discussed various authorities of villages as well as the people of village. We have visited various places of village like gram panchayat, bus stand, temples, community hall, cricket ground and other amenities.

Chapter: 2
Literature Review

2.1 Introduction: Urban & Rural

Urban:

The Urban terms include large population, house development and more facilities, the urban area having below characteristics:

- Minimum population is 5000.
- Population density is 400 persons per square kilometer or height.
- Minimum 75% of population is working with non-agriculture activity.

Rural:

Rural area has a very low population density and very less facilities are available, the rural area having below characteristics:

- Population density up to 400 persons per square kilometer.
- Minimum 75% of population is working with agriculture activity.
- Village has no municipal board.

2.2 Importance of the Rural development

Rural development is necessary not only for an over-whelming majority of the population living in villages but the development of rural activities is essential to accelerate the pace of overall economic development of the country.

Rural development has assumed greater importance in India today than in the earlier period in the process of the development of the country. It is a strategy package seeking to achieve enhanced rural production and productivity, greater socio-economic equity, and aspiration, balance in social and economic development.

The primary task is to mitigate the hunger of about 70% of the rural population, providing adequate and nutritious food. Then follow an adequate provision of clothing and footwear, a clean house in a clean environment, medical care, recreational facility, education, transport and communication.

The rural development involves the development of number of aspects, these include, irrigation facilities, expansion of electricity, improvements in the techniques of cultivation, enhancements in the system of education, health care and medical centers.

2.3 Ancient Villages/Different Definition of: Rural Urban Villages

A village can be defined as a small community or clustered human settlement which is larger than hamlet but smaller then town with small population in which 75% male workers population is engaged with agriculture activity. Village is face some lack of facilities like water, transportation facility, education facility, employment and other technological facility, etc.

2.4 Scenario: Rural/Urban village of India population Growth

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

Population (in Crore)

Table 3: Census data of urban and rural

- For the first time since Independence, the absolute increase in population is more in urban areas that in rural areas.
- Rural- urban distribution: 68.84% & 31.16%
- Level of urbanization increased from 27.81% in 2001 Census to 31.16% in 2011 Census.
- The population of rural population declined from 72.19% to 68.84%

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

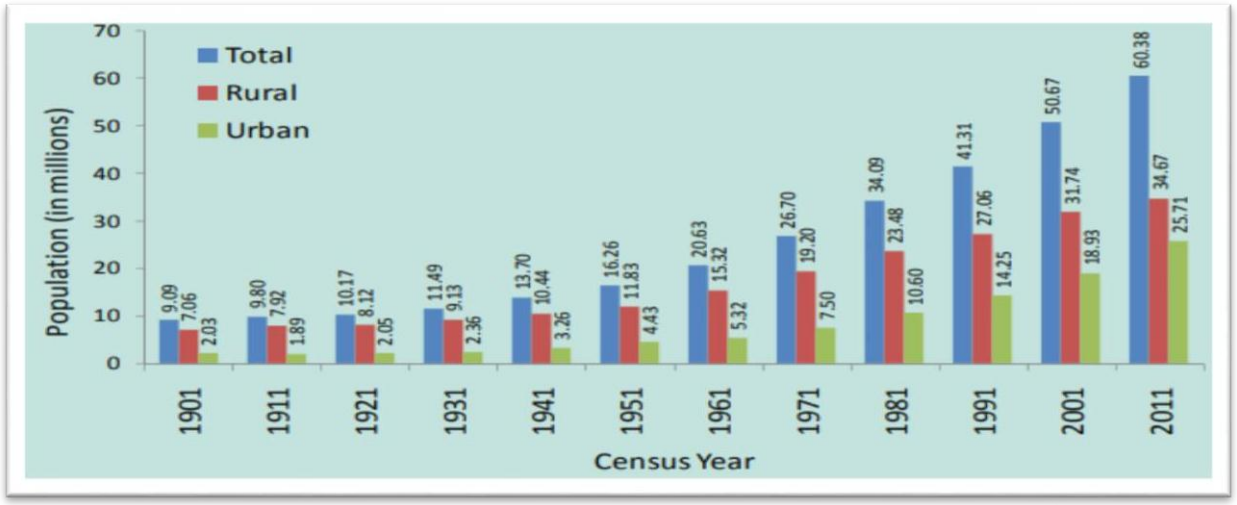


Figure 14: Total Population (in millions) by Residence, Gujarat (1901-2011)

Gujarat Urban population 2011

Out of total population of Gujarat, 42.60% people live in urban regions. The total figure of population living in urban areas is 25,745,083 of which 13,692,101 are males and while remaining 12,052,982 are females. The urban population in the last 10 years has increased by 42.60 percent.

Gujarat Rural Population 2011

Of the total population of Gujarat state, around 57.40 percent live in the village of rural areas. In actual numbers, males and females were 17,799,159 and 16,895,450 respectively. Total population of rural areas of Gujarat state was 34,694,609. The population growth rate recorded for this decade (2001-2011) was 57.40%.

2.6 Rural Development issues-Concerns-Measures

Crime Free/Dispute free:

Rural Crime & Community Safety makes a significant contribution to crime science and integrates a range of theories to understand patterns of crime and perceived safety in rural areas. People fear crime less in rural areas than they do in urban urban areas. It is submitted that this fact represents a partial picture of perceived safety, because people can fear greatly even if they perceive a slim likelihood of crime actually occurring.

As a solution we can give the facility of police station, develop village committee, CCTV cameras and other facilities which indirectly reduce crime like employment, refreshment and recreation facilities.

Resources:

It is clear that the structural changes in the distribution of the country's population, from rural to urban has implications for both locations. On the one hand increasing level of urbanization particularly of the main cities and large towns will result in depopulation and socio-economic decline of our traditional countryside. On the other hand continued expansion of the urban areas, in particular the Greater Dublin Area will result in unbalanced growth, diseconomies of scale and urban congestion.

The other resources we can define as below,

- Skill development initiatives and micro entrepreneurship development program (MEDP) training.
- Agriculture and farming training.
- Self Help Groups and Women Empowerment.
- Rural Health Development.
- Rural Youth Development.

Literacy:

As per 2011 census, literacy rate in India has been reported as 74.04% with a 14% increase to that in 2001, where the hike is maximum for rural women at 26% in last decade, which may

be attributed to literacy mission of Government of India. The female literacy levels according to the Literacy Rate 2011 census are 65.46%, where the male literacy is over 80%

Year	Rural			Urban			Combined		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
2001	46.7	71.4	59.4	73.2	86.7	80.3	53.67	75.26	64.83
2011	58.75	78.57	67.8	79.92	89.67	84.1	65.46	82.14	74.04

Source: Census of India, office of Registrar General, India

Table 4: Literacy Rate in Urban and Rural

Health and Hygiene:

Personal hygiene and good habits are important aspects of community hygiene. Community health invariability depends on health and habits of people. But it is observed everywhere in rural areas that most of people do not take care of their personal and house hygiene. Rural housing is far from satisfactory. Most of the houses in Rural areas are Kachcha houses. There is no separate living space for all. We hardly find separate bathrooms, latrines and kitchens. There is no drainage system, there are open drainage which are blocked with mud and many other things. This renders the rural environment smelling foul. Most of people in rural areas hardly take note of importance of health and hygiene.

Women Empowerment:

Woman's empowerment is a process in which women gain greater share of control over resources-material, human and intellectual like knowledge, information, ideas and financial resources like money and access to money and control over decision, making in the home, community, society and nation and to gain power.

2.7 Various infrastructure & guidelines with the Norms for villages for the provisions of different infrastructure facilities

Facilities	Planning Commission/UDPFI Norms	Required as per Norms
Education Facility		
Aganwadi	Each Village	1
Primary School	Each Village	1
Secondary School	Per 7,500 population	2
Higher Secondary School	Per 15,000 population	1
College	Per 125,000 population	1
Tech. Training Institute	Per 100,000 population	1
Agriculture Research Centre	Per 100,000 population	1
Medical Facility		
Gov./Panchayat Dispensary or Sub PHC or Health Centre	Each Village	1
PHC & CHC	Per 20,000 population	1
Child Welfare & Maternity Home	Per 10,000 Population	1
Hospital	Per 10,000 Population	1

Transportation Facility		
Pucca Village Approach road	Each Village	
Bus/Auto Stand Provision	All Villages connected by PT (ST Bus or Auto)	1
Other Facility		
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	40 to 50
Cremation Ground	Per 20,000 Population	1
Post Office	Per 10,000 Population	1
Gram Panchayat Building	Each individual/group Panchayat	1
APMC	Per 100,000 Population	1
Fire Station	Per 100,000 Population	1
Police Station	Per 15,000 Population	1
Community Hall	Per 10,000 Population	1

Table 5: Guidelines/Norms for Villages for the provisions of different infrastructure facilities

2.8 Other Projects/ Schemes of Gujarat/ Indian government

Provision of Urban Amenities in Rural Areas (PURA) (2004):

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

Central rural Sanitation Programme (1986):

This scheme aims at improving the quality of life of rural people and to provide privacy and dignity to women in rural areas. It led to the formulation of 'total sanitation Camping' approach in 1999.

Chapter: 3
Smart Cities & Village Concept Idea and its visit

3.1 Introduction: Concepts, Definitions and Practices

Concepts

Village is a bundle of dozens of services delivered effectively and efficiently to the residents and businesses. These services could be location specific depending on the demography of the village and occupation of the residents.

New designs, technologies and management models should be used to upgrade the existing services such as Power, Water, Buildings, Retail, Health care etc.

Definitions

Smart village means village have all the necessaries facilities and fulfil the basic need of people like good education, sufficient water, health care facility, good sanitation facility, resources of energy, land availability, etc.

Practices

Provide basic infrastructure.

- Transportation facility
- Water management
- Health centre facility
- Library facility
- Waste management
- Rain water harvesting system
- Recreation facility etc.

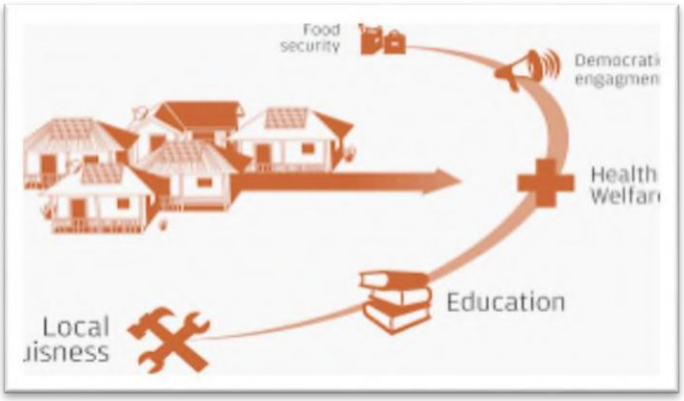


Figure 15: Smart village concept

3.2 Vision-Goals, Standards and Performance Measurement Indicators

Vision-Goals

Vision:

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

Goals:

- **Sustainable Infrastructure:** Provide basic amenities as well as sustainable and smart infrastructure and increasing citizen accountability towards it.
- **Quality of Life:** Improved quality of life through improved physical and social infrastructure and clean and green environment.
- **Efficient Governance:** Citizen first and accountable governance.
- **Safe City:** Safer city for all groups and sections of the city.

Standards

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

Strategic- Aimed at the process of developing a clear and effective overall smart city strategy:

- ISO 37120: Sustainable development of communities – Indicators for city sevices and quality of life.
- ISO 37101: Sustainable development & resilience of communities- Management system- General principles 7 requirements.

Process- Procuring and managing smart city projects

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

Performance Measurement Indicators

By analyze the existing facilities and key performance indicators we can measure performance of any smart city.

The dimensions of Key Performance Indicators can be categorized as below,

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

- **Physical infrastructure**: piped water, sewage systems, electricity, waste management, knowledge infrastructure, health infrastructure, transport, roads and buildings.

3.3 Technological Options

LED lights

LED lights to replace streetlights, pelican crossing, 3Dzebra crossing, street furniture, Wi-Fi network, CCTV cameras and environment sensors. In Delhi, pilot on Mother Teresa Crescent road.

Digital libraries

Digital libraries in schools across the city. Some 13 schools in Delhi have been selected for this. 3D printing labs have been set up in 10 schools.

Smart toilets

These smart toilets will have water ATM, vending machine and sanitary napkin vending machine.

3.4 Road Map and Safe guards

- Study the society: Before decide to build a stylish city, first we need to be acquainted with why. This can be done by important the payback of such a proposal. Study the society to know the citizens, the business's needs- know the populace and the community's unique character, such as the age of citizens, their teaching, hobby and attraction of the city.
- Development a smart city policy: Develop a policy to drive the initiative, when roles, farm duties, objectives and goals can be defined. Creat plans and policy on how the goal will be realize.
- Connect the citizens: This can be done by gorgeous the citizens from side to side the use of e-administration initiative, open data, sport events, etc.

3.5 Issues & Challenges

Governmental Issues

Government and policy makers are facing challenges such as increase in urban population from rural areas and huge gaps in infrastructure. Smart city would be a city with facilities like smart people, smart technology, smart energy, smart transportation, smart IT and communication and above all smart governance. This paper is an attempt to focus on the key issues and the challenges to develop new cities or improve the infrastructure facilities in our existing cities which are over populated and not properly managed.

Education/Job Opportunity Development

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

3.6 Smart Infrastructure-Intelligent Traffic Management

Smart infrastructure comprise several operators from different domains of activity, such as energy, public transport, public safety. They deploy and operate "cyber-physical systems", that are data-controlled equipment which interact with the physical world. They collaborate and exchange data under several schemes, depending on their level of maturity.

Intelligent Traffic Management:

In present day time, the number of vehicles has increased drastically, but in contrast, the capabilities of our roads and transportation systems still remain underdeveloped and as a result, fail to cope with this upsurge in the number of vehicles. As a consequence, traffic jamming, road accidents, increase in pollution levels are some of the common traits that can be observed in our new age cities. With the emergence of the internet of things and its applicability in smart cities, creates a perfect platform for addressing traffic-related issues, thus leading to the establishment of intelligent traffic management system.

Figure 16: Traffic Management

3.7 Cyber Security

Hybrid cloud workload protection platforms (CWPP) provide information security leaders with an integrated way to protect these workloads using a single management console and a single way to express security policy, regardless of where the workload runs.

Main areas sheltered in cyber security are:

- Application Security

Figure 17: Cyber Security

- Information Security
- Disaster recovery
- Network Security

3.8 Retrofitting-Redevelopment-Greenfield Development Ditrict Cooling

Retrofitting

It will introduce planning in an existing built-up area to achieve smart city objectives, along with other objectives to make the existing area more efficient and liveable. In retrofitting an area consisting of more than 500 acres will be identified by the city in consultation with citizens. Since existing structures are largely to remain intact in this model, it is expected that more intensive infrastructure service levels and a large number of smart application will be packed into a retrofitted smart city.

Redevelopment

It will effect a replacement of the existing built-up environment and enable co-creation of a new layout with enhanced infrastructure using mixed land use and increased density. Redevelopment envisages an area of more than 50 acres, identified by Urban Local Bodies (ULBs) in consultation with citizen. Two examples of redevelopment model are the Saifee Burhani Upliftment Project in Mumbai and redevelopment of East Kidwai Nagar in New Delhi being undertaken by the National Building Construction Corporation.

Figure 18: Bhendi Bazaar

Greenfield development

It will introduce most of smart solutions in a previously vacant area (more than 250 acres) using innovative planning, plan financing and plan implementation tools (e.g. land pooling/ land reconstitution) with provision for affordable housing, especially for the poor. Greenfield developments are required around cities in order to address the needs of the expanding population. One well known example is the GIFT City in Gujarat. Unlike retrofitting & redevelopment.

Figure 19: GIFT City of Gujarat

District Cooling System

It distributes cooling capacity in be the form of chilled water or other medium from a central source to multiple buildings through a network of underground pipes for user purchases chilled water for their building from the district cooling system operator and do not need to install their own chiller plants. For this system, a central chiller plant, a pump house and a distribution pipeline network are required.

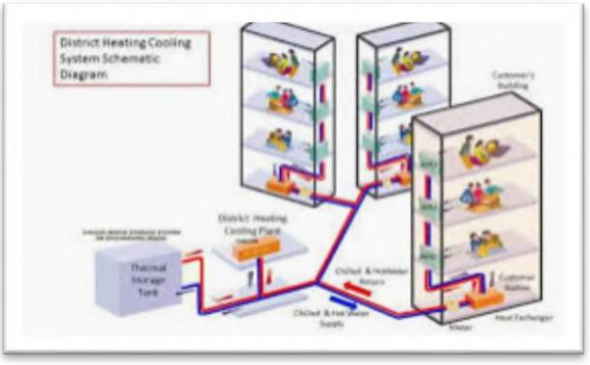


Figure 20: District Cooling System

A typical DCS comprises the following components:

- Central Chiller Plant-generate chilled water for cooling purposes
- Distribution Network- distribute chilled water to buildings
- Consumer Substation- interface with buildings' own air- conditioning circuit

3.9 Strategic Options for Fast Development

The strategic components of area-based development in the Smart Cities Mission are city improvement (retrofitting), city renewal (redevelopment) and city extension (green field development) plus a Pan-City initiative in which Smart Solutions are applied covering larger parts of the city.Pan-city initiative in which at least one smart solution is applied city-wide.

Figure 21: Pan City Details

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

Urban Water and Sanitation Challenges

More than 90% of the urban population has access to drinking water and more than 60% of the population has access to basic sanitation. However, access to reliable, sustainable and affordable water supply and sanitation service is lagging behind. Indian city receives piped water 24 hours a day, 7 days a week. Piped water is never distributed for more than a few hours per day, regardless of the quantity available. Raw sewage often overflows into open drains. Less than 50% urban population has access to piped water. The Non- Revenue Water (NRW) means due to leakages, unauthorized connections, billing and collection

inefficiencies, etc. is huge between 40-70% of the water distributed. Operation and maintenance cost recovery through user charges is hardly 30-40%. Most urban operations survive on large operating subsidies and capital grants.

Role of Indigenous Technologies

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

Figure 22: Water & Sanitation

3.11 Initiative in village development by local self-government

Transforming existing Indian cities into smart cities or building new ones is a colossal task. Cities need to be able to assess their current situation and determine the critical capabilities needed to enable a smart city. To help cities address these issues, the All India Institute of Local Self-Government (AIILSG) is assisting Raipur, Bilapur, Chandigath, Karnal and Faridabad in preparing for the proposal for the nationwide ‘City Challenge’ being contested among 100 potential smart cities.

3.12 Smart Initiatives by District Municipal Corporation

Recently Rajkot Municipal corporation is take a step for developing toward smart city and its vision to develop Rajkot as smart, liveable and iconic city of Gujarat with inclusive growth and sustainable development by leveraging its historical strengths and proving state of the art infrastructure, delivery of services and empowering ecosystem by enabling citizes to realize their dreams.

Figure 23: Vision of Smart City

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

Saansad Adarsh Gram Yojana

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

Goals:

1. To trigger processes which lead to holistic development of the indentified Gram Panchayats.
2. To substantially improve the standartd of living and quality of life of all sections of the population through.
    - Improved basic amenities
    - Higher productivity
    - Enhanced disparities
    - Better live hood opportunities
    - Reduced disparities
    - Access to rights and entitlements
    - Wider social mobilization
    - Enriched social capital

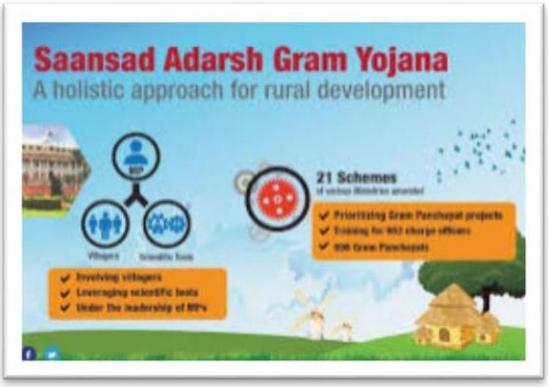


Figure 24: Saansad Adarsh Yojana

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

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

Figure 25: India needs smart villages

Chapter: 4

About Vajdi (Vad)

4.1 Introduction

4.1.1 Introduction about Vajdi (Vad) Village details

Vajdi (Vad) is located in Lodhika taluka of Rajkot district in Gujarat, India. It is situated 13kms away from Rajkot. The total geographical area of the village is 613.73 hectors. Vajdi (Vad) has total population about 1889 as per census of 2011. There are about 262 houses in Vajdi (Vad). Rajkot is nearest town to Vajdi (Vad).

4.1.2 Justification/ need of study

In India there are around 718 districts (170 backward) and about 664,369 villages (121,700 backward). The government takes responsibility for the upliftment of poor and rural regions. There is lot of people also spending to improve the infrastructure, water and sanitation facilities in these areas. But not much improvement achieved in most of the villages. Vishwakarma yojna helps in better and fast development of rural areas. By providing urban facilities in rural areas we can reduce the rate of migration and improve the standard of living for villagers.

The basic social and physical infrastructural facilities are needed to be provided so for this purpose information of village is collected like drainage facilities, education, and health and transport facilities. Banking, toilet, transportation facilities are also needed to be surveyed. This will be a good job opportunity for many of them. And the development of village will directly affect the GDP of India therefore it is much necessary to improve the villages of India.

4.1.3 Study Area (Broadly define)

From the study and survey of our village Vajdi (Vad) we came to know that it has larger area but lacking of infrastructures and facilities. The village has facility of primary school but doesn't have secondary school. The village had underground drainage system. All the streets and roads have LED street lights. All the roads are made up of cement concrete. There are some lacking facilities like super market, public garden, etc.

4.1.4 Objectives of the Study

- To study the existing facilities and parameters of village.
- To identify the issues and problems of the village.
- To analyze existing social and physical utilities as well as infrastructure.

- To design and planning for village basic facilities and needs.
- To 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 the study

- To reduce urban city pressure and lower the migration rate.
- Due to providing urban facilities development of village will be possible.
- To improve health and livelihood of people.
- To improve education facility.

4.1.6 Methodology frame work for development of your village

Figure 26: Methodology of Vajdi (Vad)

4.1.7 Available Methodology for development of related to civil

Vajdi (Vad) village has some basic facilities as below:

- Primary school
- WBM and cement concrete roads

- Anganwadi
- Underground drainage
- Water tank facility
- Street lights
- Village map

4.2 Vajdi (Vad) village study Area Profile

4.2.1 Study Area Location with brief history land use details

We visited allocated village Vajdi (Vad). According to census 2011 information the location code or village code of Vajdi (Vad) is 360021. It is located in Lodhika taluka of Rajkot district. It is approximately 13 km away from the Rajkot. It has total geographical area of 613.73 hectors. The total population is about 1889.The total number of house are 261.It comes under the Rajkot Parliamentary constituency.

Vajdi (Vad) is situated in Lodhika taluka of Rajkot district in Gujarat. The State capital of Vajdi(Vad) is Gandhinagar. The latitude of village is 22.2645986 and longtitude of village is 70.7132226999999. The native language of Vajdi (Vad) is Gujarati. The people living here are mostly Gujarati. They also communicate easily with Gujarati language.

Taluka: Lodhika

District: Rajkot

State: Gujarat

Figure 27: Gate of Vajdi (Vad)

Figure 28: Cows shed

4.2.2 Base location map, Land map, Gram Tal map

Figure 29: Land Map

Figure 30: Base Location Map

4.2.3 Physical and demographical growth

Vajdi(Vad) is located 12km away in Lodhika taluka of Rajkot district. Village has the population of 1889 in which there are 1086 male and 803 female. There are total 261 no. of households. The population of children(0-6 age) is 447. The literacy rate of the village is 80-90%. The employment rate of village is 43.8%, there are 35.4% male and 8.3% female. The literacy rate has increased in comparision to previous years. The average sex ratio of Vajdi(Vad) is 752.

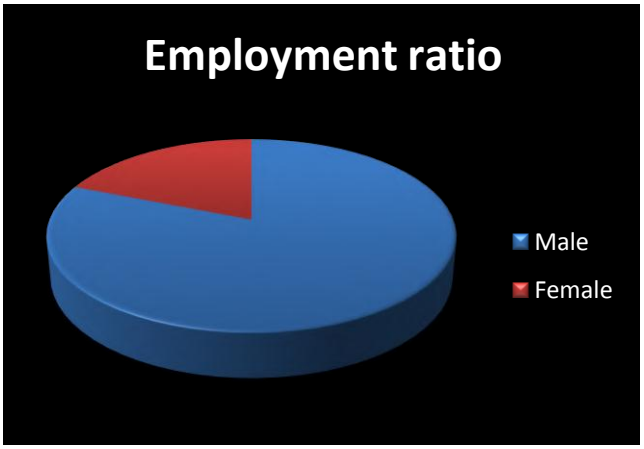


Figure 31: Employment chart

4.2.4 Economic generation profile/ Bank

The village's major activity is agriculture, farming and cottage industries. 43.7% of the village population is employed.Some of the major crops grown in the village are as follow:

- Groundnuts
- Cotton
- Wheat

4.2.5 Actual problem faced by villagers and smart solution

The problems faced by the villagers are that they are not having the facility of public toilet, post office, super-market etc. they need to go outside of the village for its usage. Now a days everyone have facilities like toilet at their home but few people who are facing the economical problem or any other problems lack this facility. So the better solution for the cleanliness and development of village is to provide the lacking aminities to them.

4.2.6 Social Scenario-Preservation of traditions, Festivals, Cuisine

We observed that the villagers are not well connected with modern technology due to their busy schedules and works. But due to the facility of smart phones and televisions they are trying to join the trend and todays technology.

4.2.7 Migration Reasons/ Trends

The basic and common reasons for migration are lack of job, for higher studies, etc. as the village doesn't have facility of higher education the villagers need to move to city or urban area. Now not every person can earn by cottage industry or farming so to find a better job or business they move to other village, city, country or state. Some of the other reasons are health issues, family problems etc.

4.3 Data collection of Vajdi (Vad) village

4.3.1 Describe Methods for data collection

We conducted techno-economic survey for data collection of Vajdi (Vad). We met Sarpanch, Talati mantra and village dwellers for information and for knowing the existing condition of village. Following facilities are available in village:

- Demographical details
- Geographical details
- Occupational details
- Physical infrastructure facilities like sources of water, road network, transportation facility, sanitation facility, housing condition, etc.
- Social infrastructure facilities like primary school, primary health center, etc.
- Socio culture facility like public garden is present there but not in good condition.
- Other facilities like gram panchayat office, telecommunication network, etc.

4.3.2 Primary survey details

Vajdi (Vad) is located in Lodhika taluka of Rajkot district. It is approximate 12-13km away from Rajkot district, which is both district & sub-district headquarter of village. This village also has their gram-panchayat.

4.3.3 Average size of the house-Geo tagging of house

The average population of village is 1889. So the numbers of households are 261. There are about 90% pakka house and 10% kacha house.

Figure 32: Pakka house

Figure 33: Kacha house

4.3.4 No. of Human being in one House

There are 3-4 people in each house.

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

The materials like sand, stones, black soil, woods etc. are easily available locally in the village. But some materials like bricks, reinforcement concrete, etc. are needed to be out sourced from outside of the village.

4.3.6 Geographical Details

It is 13km away from Rajkot district. The surrounding villages are Virda Vajdi, Metoda, Chhapra, etc. The total village area is approx. 613.73 hector.

4.3.7 Demographical Detail- Cast Wise Population Details/ Which ID using by villagers

Villagers use their Election card, Aadhar card, PAN card as their ID proof.

Particular	Total	Male	Female
Population	1889	1086	803
General	1298	752	546
Schedule Caste	591	365	226
Schedule Tribe	0	0	0

Table 6: Population classification

4.3.8 Occupational detail-Occupation wise Details/ Majority business

The major population of village is engaged with the activity of agriculture and farming.

- Farming-70%
- Daily wages- 30%

4.3.9 Agriculture details/ Organic Farming/ Fishery

There is no organic farming or fishery in the village. But they are only following regular agriculture. They grow crops like wheat, cotton, and groundnut. The crops they grow there are adequate for the local village use so they don't need to import them from outside.

4.3.10 Physical Infrastructure facilities-Manufacturing Hub/ Ware Houses

There are no facilities like manufacturing hub or ware houses in the village.

4.3.11 Tourism Development available in the village for attracting the tourist

Vajdi (Vad) doesn't have any attraction for the tourist. It has few temples which are visited by the villagers and other village people.

4.4 Infrastructure Details (With Existing Village Photograph)

4.4.1 Drinking Water/ Water Management Facilities

The village has the facility of pure drinking water. Every house has the RO system facility for pure drinking water. So they don't suffer from water borne diseases.

4.4.2 Drainage Network/ Sanitation Facility

The village has the upgraded facility of underground drainage system. The village is very clean and very hygiene. They clean the drainage periodically to maintain the cleanliness.

4.4.3 Transportation& Road Network

The village doesn't have any local railway station. Village has smooth RCC roads. For railways, villagers go to the nearest Railway station in the Rajkot. And for the bus facility they have the bus stop on the highway which is around 2-3 km from village. For local transportation they use rickshaws, bikes, cars, etc.

Figure 34: RCC roads

4.4.4 Housing condition

The village has 90% of pakka house and 10% of kacha house. They have good conditions and planning of households with great maintenance.

4.4.5 Social Infrastructure facility facilities, Health, Education, Community hall, Library

The village has the infrastructure facility like primary health center. For education village has Anganwadi and primary school. Village doesn't have facility of high school or college. There is lack of facilities like community hall and public library.

Figure 35: Public Health Center

Figure 36: Primary School

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

The public building like gram panchayat, public health center, Farmer training center etc. are maintained in good condition.

Figure 37: Gram panchayat

Figure 38: Farmer's Training center

4.4.7 Technology Mobile/ WIFI/ Internet Usage Details

According to the generation and the technology almost every single person holds a smartphone. They have the networks of mobile data/ internet easily available in village. They don't have any internet cafes or WIFI spot.

4.4.8 Sports activity as Gram panchayat

Village doesn't arrange any sport activities for villagers or dwellers. They children only get chance in the sport activities arranged by the school and Anganwadi.

4.4.9 Socio-Culture Facilities, Public Garden/ Park/ Playground/ Pond/ Other recreation Facility

No Socio-Culture facility like public Library is present in the village.

They have the public garden but the condition is not so good. It needs the recreation.

The village also doesn't have any pond, playground facility etc.

Figure 39: Public Garden

4.4.10 Other Facilities:

The village has LED street lights on each roads and streets.

Figure 40: Street Lights

4.5 Existing Institution like- Village Administration- Detail Profile

4.5.1 Bachat Mandali

There is no such mandali working in the village.

4.5.2 Dudh Mandali

There is not any mandali working in the village but, people collect the milk from place to place and supply it to the dairies in the village or sell in the other villages or cities.

4.5.3 Mahila forum

A group of some old age women is active in the village activities. They perform bhajans and other devotional activities. The fund they collect by these activities, they donate it in the cow sheds or any other village activities.

4.5.4 Plantation for the Air Pollution

There is no specific plantation for air pollution. There are only some of the trees planted in specific distance.

4.5.5 Rain Water Harvesting- Waste water Recycling

The rain water is wasted and not collected is any specific way. It is wasted and reuse of rain water is avoided.

4.5.6 Agricultural Development

For agricultural development there is a farmer training center. In which they give basic and advance training to the farmers for agriculture.

Chapter: 5
Technical Options with Case Studies

5.1 Concept

5.1.1 Advance sustainable construction techniques

Solar Power:

Solar power has been increasingly exploited as sustainable construction technology. In green construction, it can be utilize in two ways, one pertains to active solar energy and another is passive solar power.

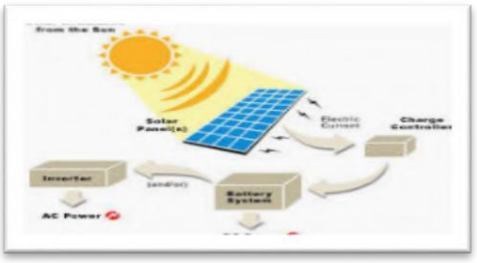


Figure 41: solar power

Biodegradable Materials:

The use of biodegradable materials is an eco-friendly means of making construction sustainable. Most traditional construction materials lead to the accumulation of waste products and toxic chemicals, the majority of which take hundreds of years to break down. And even after they degrade, they contaminate and harm the environment.

Figure 42: eco-friendly building

Cool Roofs:

Cool roofs are one of the sustainable green design technologies that aim at reflecting heat and sunlight away. It helps in keeping homes and buildings at the standard room temperatures by lowering heat absorption and thermal emittance.

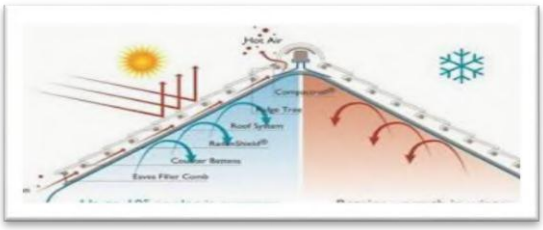


Figure 43: cool roof

Sustainable Resource Sourcing:

Sustainable resource sourcing is the key element of sustainable construction technology because it ensures the use of construction materials designed and created from recycled products, and that should be environmentally friendly.

5.1.2 Soil Liquefaction

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

There are two types of soil liquefaction.

1. Flow liquefaction
2. Cyclic Mobility

How does Soil Liquefaction Work:

The soil is a mixture of soil particles that stay connected together. These particles naturally rest upon each other due to gravity and from grids based on its properties. Each particle produces its own contact forces by the surrounding particle. These contact forces together hold all the individual soil particles in their space. Soil liquefaction occurs due to sudden and rapid load on the soil particle. Once the soil loses its cohesion, it gets softened, weak and loses its solid properties that are converted to liquid properties.

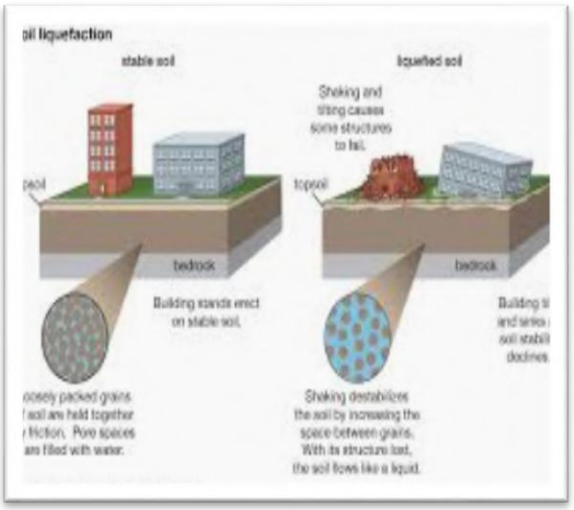


Figure 44: Qualities of stable soil

Importance of Soil Liquefaction:

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

Methods to reduce damage due to Soil Liquefaction:

- By avoiding construction on saturated soils.
- Liquefaction-proof structural system.
- Improving soil condition.

5.1.3 Sustainable Sanitation

It is a simple approach is the most basic principle is that it considers wastewater and excreta not as a waste, but as a resource, that sanitation has to be socially acceptable and should be as economically viable as possible.

Figure 45: Health & Hygiene

Sustainability criteria:

The main objective of a sanitation system is to protect and promote human health by providing a clean environment and breaking the cycle of disease. In order to be sustainable a sanitation system has to be not only economically viable, socially acceptable, and technically and institutionally appropriate, but it should also protect the environment and natural resources.

Objectives:

- Build the capacity of sustainable sanitation implementers, planners and practitioners through training, knowledge management and translating knowledge management and translating knowledge into tailored and user-friendly materials.
- Strengthen the knowledge base through new research and analysis, including elaborating and piloting new implementation models.
- Offer policy advice and guidance on scaling up sustainable sanitation.

Vision:

Sustainable sanitation systems become mainstream choices for sanitation development and accessible to all.

Mission:

To boost sustainable sanitation provision at scale in low and middle income countries, through research, knowledge exchange, capacity development, policy dialogue, with a focus on productive sanitation approaches that yield multiple economic, social and environmental co-benefits.

5.1.4 Transport Infrastructure

Transport infrastructure is composed of the fixed installations of canals, waterways, airways, railways, seaports, refuelling deports, trucking terminals, warehouses, bus stations, railway station, and airports.

Roads:

Roads in itself are not an interesting security target, but blocking a road will cause problems with the traffic flow and reach ability of certain parts of the city or area. This can be

prevented by designing a robust road system and to detect a disruption and minimize the consequences.

Rails:

Rails are the infrastructure for rail transport. A rail road which connects two locations is also called rail lines. Rails on itself are not an interesting security target, but blocking a railroad will cause large problems with the rail transport.

Urban Waterways:

Inter and intra urban transport over waterways such as canals, rivers or other waterways from smaller although still important aspect of the urban transport system. For port cities the waterway system is of vital importance for their economic development.

Figure 46: Waterway

Importance of Transport Infrastructure:

Transport infrastructure is a critical ingredient in economic development at all levels of income. It supports personal well-being and economic growth. Transport infrastructure plays a role as a capital input into production and wealth generation.

Objectives of Transport infrastructure:

- Enhancement of road network capacity that supports economic activities.
- Promotion of public transport use.
- Intermodal development/transit oriented development.
- Mitigation of atmospheric pollution and noise.
- Improved of transport safety.

5.1.5 Vertical Farming

Vertical farming is the practice of producing food and medicine in vertically stacked layers, vertically inclined surface and integrated in other structures (such as in a skyscraper, used warehouse, or shipping container) by,

Morden methods of farming:-

- Hydroponics
- Aeroponics
- Aquaponics

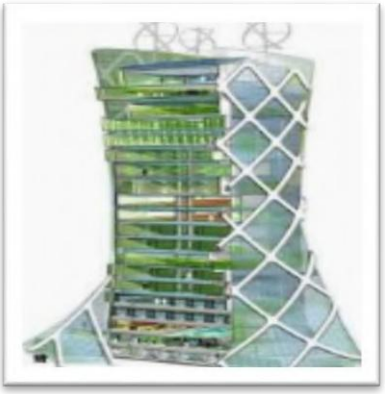


Figure 47: Vertical Farming

Fig. 35 resembles model of vertical farming skyscraper. In this figure it is shown that the crops and vegetation is done in vertically stacked layer. The building includes several floors of particular heights. The morden ideas of vertical farming use indoor farming techniques and

controlled environment agriculture (CEA) technology, where all environment factors can be controlled. These facilities utilize artificial control of light, environmental control and fertigation.

Motivation:

1. Passion for sustainable future
2. Increase in pollution
3. Scarcity of fresh vegetables as presently we are eating food made with chemicals and injections.
4. Maintaining environment oxygen level.

Vertical farming can be done using following techniques of morden farming:-

- Hydroponics system
- Aeroponics system
- Aquaponics system

Hydroponics System:

This system is useful for providing a continuous of flow nutrient solution to the roots of plants. The system includes a tubular assembly of horizontally inclined members interconnected to each elbow joints, and comprising cutouts configured to receive the roots of the plants, and having a top entry and a bottom exit. A pump is placed to pump the nutrient solution to the top entry of the tubular assembly, where in the angles of horizontally inclined members let the solution to flow downwards through the tubular assembly before leaving through the bottom to return back to the pump.

Aeroponics System:

The principles of Aeroponics are based on the possibility of cultivating vegetables whose roots are not inserted in a substratum or soil but in containers filled with flowing plant nutrition. In these containers roots can find the best condition regarding oxygenation and moisture. These conditions allow for better plant nutrition. Most agriculture plants need a direct exposure to the sun during the first vegetative development.

Aquaponics System:

Aquaponics is a production system that combines fish farming with soil-less vegetable production in one recirculating system.

Nitrifying bacteria convert fish waste into plant food. The same nitrification process that happens in soil also happens in the aquaponic system.

The most important part of aquaponics, the bacteria, is invisible to the naked eye.

Layout for the Building to be proposed

TERRACE
11
10
9
8
7
6
5
4
3
2
1
GROUND FLOOR

Vertical farming structure

Vertical Farming Structure	
NO. OF FLOORS	**DESCRIPTION**
1 (Ground)	Rain Water Storage Tank
1 (floor 1)	Food Processing & Control Room
1 (floor 2)	Cleaning Room & Staff Room
4 (floor 3,4,5,6)	Farming
1 (floor 7)	Environment control
3 (floor 8,9,10)	Farming
1 (floor 11)	Water Tank
Terrace	Solar Panels
Total:13 (including ground floor)	Vertical Farming Structure

Table 7: Description of all floors

Rate Analysis:

Energy Cost	Operating Cost	Total Cost
4$ per sq. feet	21$ per sq. feet	25$ per sq. feet
Here we count for 20,000 sq. Feet		
20,000×4×73.89= 5911200 Rs.	20,000×21×73.89= 31033800 Rs.	**90145800 Rs.**

Table 8: Rate Analysis of Vertical Farming

Here some glimpse of vertical farming equipment:

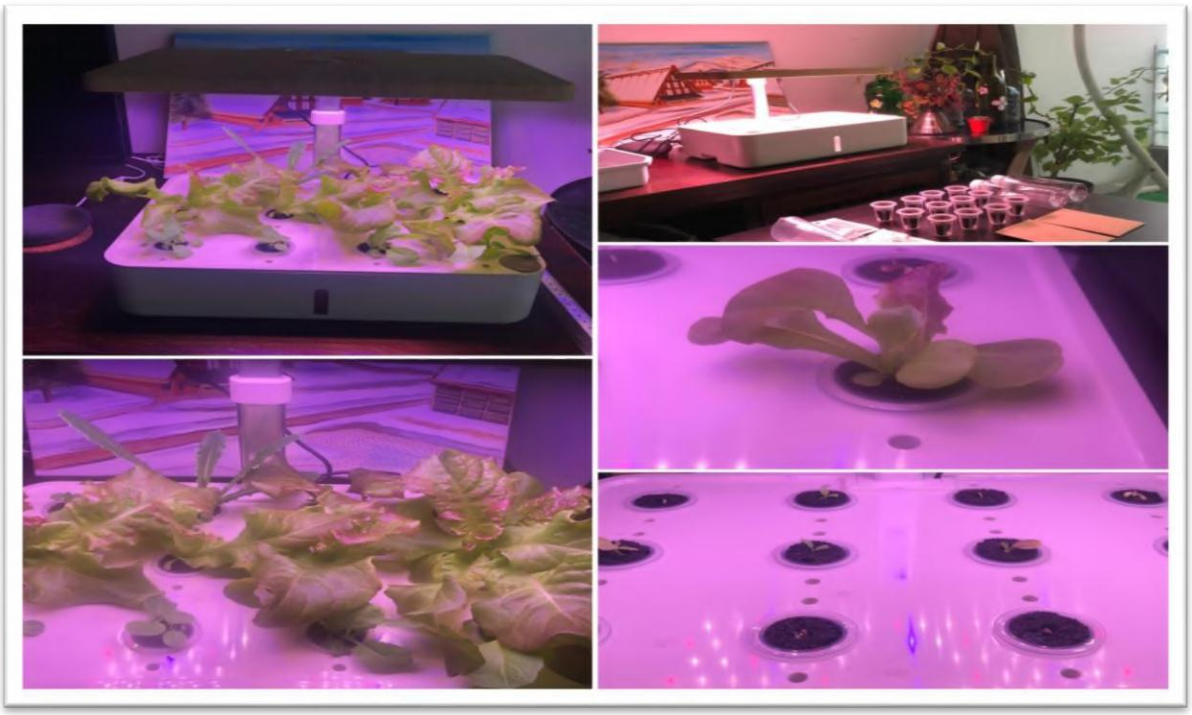


Figure 48: Glimpse of vertical farming equipment

5.1.6 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure

Corrosion of concrete involves an electrochemical process in which both flow of electrical currents and chemical reactions occur. The steel in reinforced concrete structures is in passive conditions and are protected by a thin layer of oxide which is due to the alkalinity of concrete (pH between 12 to 13).

Figure 49: corrosion in slab

To repair is defined as “to replace or refix parts, compensating for loss or exhaustion.” One definition of the word rehabilitate a structure, we want to restore it, not necessarily to its original conditions, because if we do, it may fail again because of intrinsic flaws. We want to establish its ‘proper’ condition that is, resistant to corrosion. In other words, to rehabilitate

the structure we may need to improve it compared to its original condition. To repair is merely fixing the damage. This implies that deterioration may continue. Patch repairs are just what we they say. They repair the damaged concrete. They will not stop future deterioration and may accelerate it. Cathodic protection and other electrochemical techniques can rehabilitate the structure.

5.1.7 Sewage treatment plant

Sewage treatment is the process of removing contaminates from wastewater and household sewage water. It includes physical, biological and sometimes chemical processes to remove pollutants. Its aim is to produce an environmentally safe sewage water, called effluent, and a solid waste, called sludge or bioslids, suitable for disposal or reuse. Reuse is often for agricultural purpose, but more recently, sludge is being used as a fuel source.

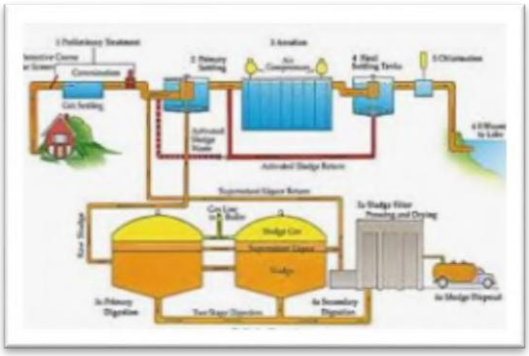


Figure 50: Sewage treatment plant

The features of wastewater treatment treatment systems are determined by:

1. The nature of the municipal and industrial wastes that are conveyed to them by the sewers.
2. The amount of treatment required to keep the quality of the receiving streams and rivers.

Discharges from treatment plants are usually diluted in rivers, lakes or estuaries. They also may, after sterillisation, be used for certain types of irrigation, transported to lagoons where they are evaporated or discharged through underground outfalls into the sea.

Sewage treatment plant processes fall into two basic types:

- Anaerobic Sewage Treatment
- Aerobic Sewage Treatment

Chapter: 6

Swatchh Bharat Abhiyaan(Clean India)

As whole India is following the Swatchh Bharat Abhiyaan, we also took part in this activity by maintaining the cleanliness of our village. Here are some details about this topic.

Figure 51: Swatchh Bharat

6.1 Swatchhta needed in allocated village- Existing Situation with photograph

When we entered the village we saw that the surroundings were so clean. The people there were so much conscious about the hygiene and cleanliness.

According to our survey we came to know that the village is having the much updated facility called underground drainage system.

The village also has the facility of the door-to-door Garbage collection. They have also gave the duty to some of the workers, sweepers etc. to keep the village clean.

They sweeps and clean the village every alternate day. They play the major role after the villagers in keeping the village clean.

Not a single street was having the dirty smell of garbage or any heaps of garbage or any other waste.
We can freely feel the fresh air from the plants and nature in every breathe.

6.2 Guidelines-Implementation in allocated village with photograph

As we studied, this village has the upgraded facility of underground drainage system but they didn't have facility of the waste disposal.

We kindly wish that we could provide a decomposition tank or area to the village. The village does not have good sewer management.

They dispose all the waste in the lake/river, it may cause harm to nature. The water pollution takes place which may be harmful for water animals and to the people using that water.

In some countries they provide a trash net at the end of the sewage pipe. So the solid waste gets stuck in the net and can be separated easily.

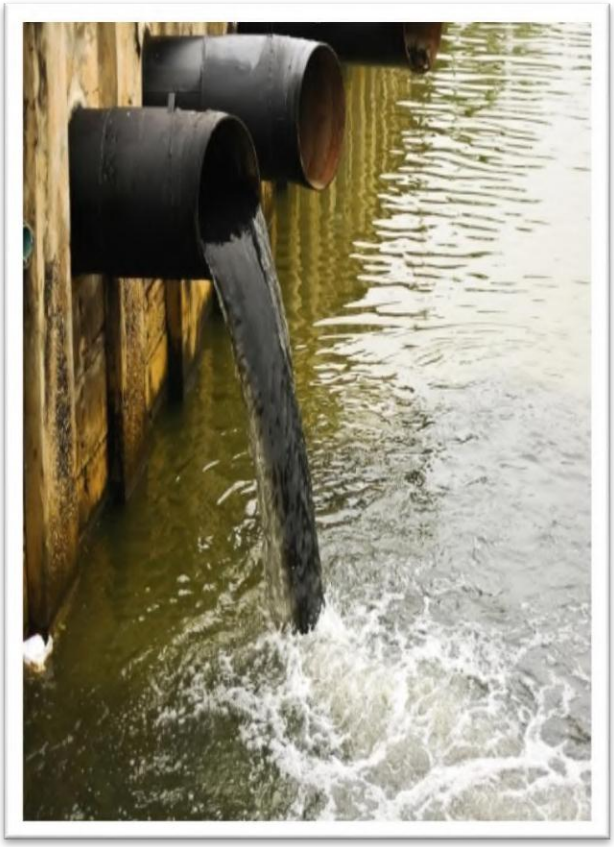


Figure 52: Waste water disposal

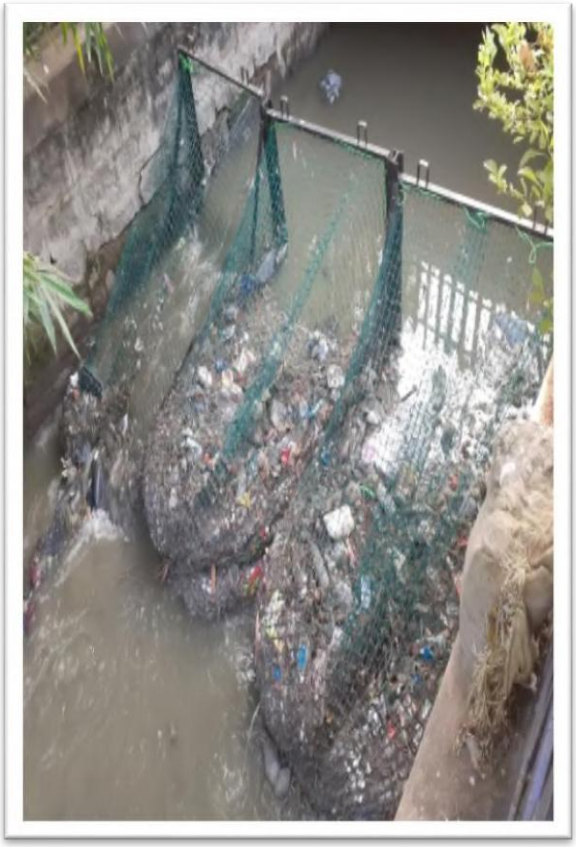


Figure 53: Trash Net

6.3 Activities done by students for allocated village with photographs

When we visited the village we first of all sanitized ourselves. Then we saw that the ground was having some heaps of garbage, dry plants, etc. Some of the waste was degradable and some that was non-degradable waste. So in order to keep surroundings clean we decided to clean that area. And we helped the villagers to clean that. After a little hard work we cleaned that area and breathe some fresh air. Here are some of our photographs of helping the nature for healing.

Figure 54: Activity done by students

Chapter: 7

Village condition due to Covid-19

In this chapter, we have mentioned about the situation of village due to covid-19. The problems village dwellers are facing due to pandemic time.

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

We visited our allocated village Vajdi (Vad) for collecting the information and details. After a meet with the villagers and sarpanch we came to know about the situation they were facing due to covid-19. As it is a small and clean village it doesn't need much cleaning. This village also has underground drainage facility so by that the hygiene is maintained. Although they have took few basic steps for this disease. They have the facility of collecting door-to-door garbage. They perform the activity of road cleaning and cleaning of village once in week. As they don't have much case they have done the fogging twice or thrice in 4-5 months. These are some basic needs for sanitization of village.

Figure 55: Sanitation

Figure 56: Fogging

7.2 Activities Done by Students for allocated village with Photographs

When we visited the village we first of all sanitized ourselves. Then we saw that the ground was having some heaps of garbage, dry plants, etc. Some of the waste was degradable and some that was non-degradable waste. So in order to keep surroundings clean we decided to clean that area. And we helped the villagers to clean that. After a little hard work we cleaned that area and breathe some fresh air. Here are some of our photographs of helping the nature for healing.

Figure 57: Activities by students

7.3 Any other steps taken by the students/villagers

When we talked to the sarpanch for the details of village and development, we also asked him about the steps taken by them or by the villagers for the safety from covid-19.

They organized a meeting in which the Talati of Metoda village came to address the people about covid-19. He motivated people and advised them not to bother about this disease. He told the villagers for following the simple and basic rules like keep social distancing, sanitize you self, keep hygiene and mainly wear mask.

One should visit the doctor immediately if they feel any symptoms like cough, cold, fever etc. and start the treatment for it. The village sarpanch had made a rule that during covid not any stranger can rent a house or place in the village.

If any vendor does this he will be fined 500rs. Or if any businessman keeps it on rent he will be fined 1000rs.

Figure 58: Covid notice board

Chapter: 8

Design Proposals

8.1 Design Proposals

8.1.1 Sustainable Design

DESIGN OF SOAK PIT

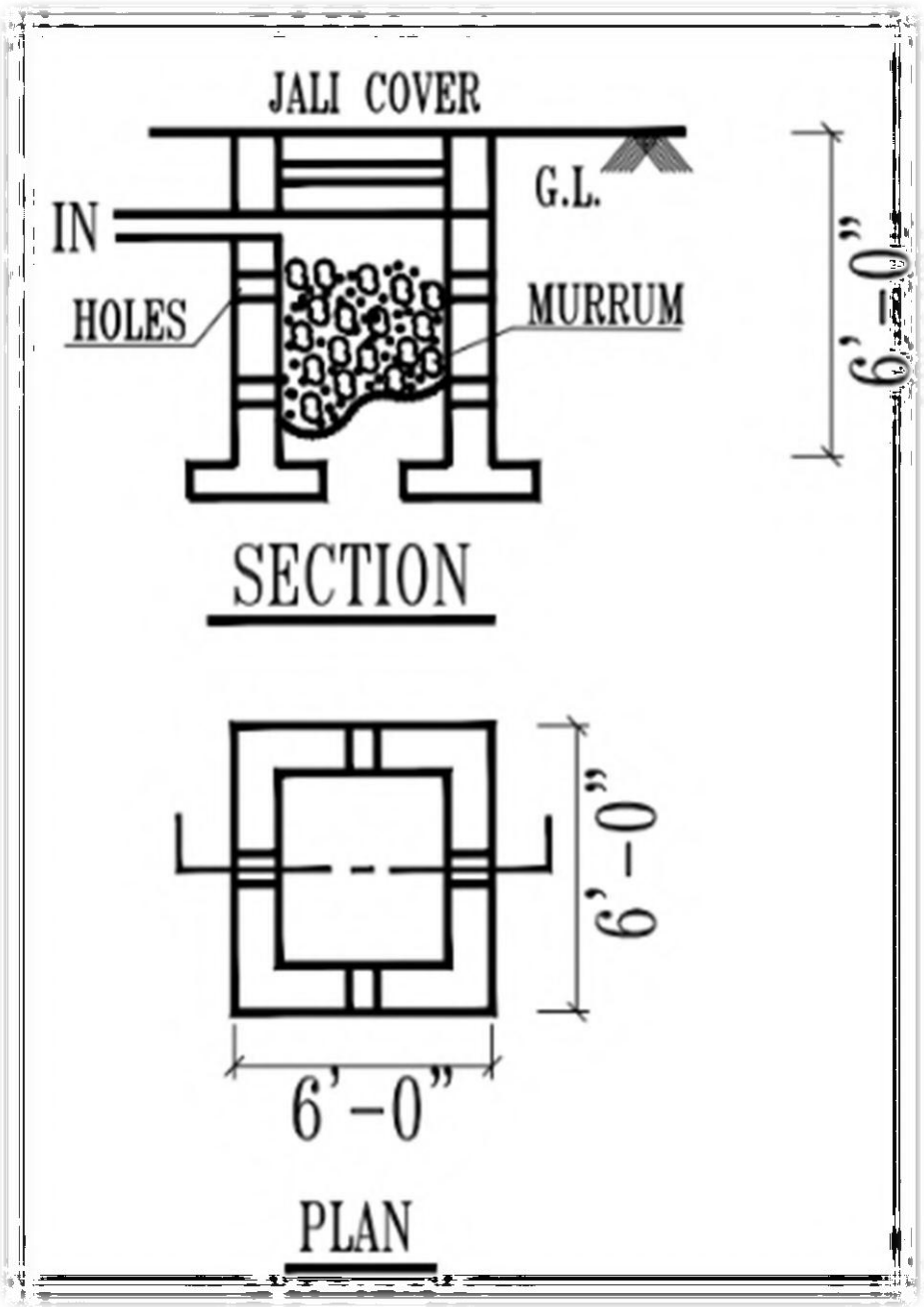


Figure 59: soak pit

MEASUREMENT SHEET							
Soak Pit							
Item no.	Item Description	No.	Length (ft.)	Breadth (ft.)	Height (ft.)	Quantity (ft.)	Total
1	Excavation	1	7'	7'	7.5'	367.5 cu.ft.	
2	Quantity of dry brick masonry						
	i)Lower	1	7'	7'	1.5'	73.5 cu.ft.	
	ii)Upper	4	6'	0.5'	6'	72 cu.ft.	
							145.5 cu.ft.
3	Quantity of brick bat	4	6'	0.75'	6'	108 cu.ft.	
4	Quantity of R.C.C. jail (4")	1	6'	6'	0.33'	12 cu.ft	

[NOTE: ALL DIMENSIONS ARE IN FEET AND INCHES]

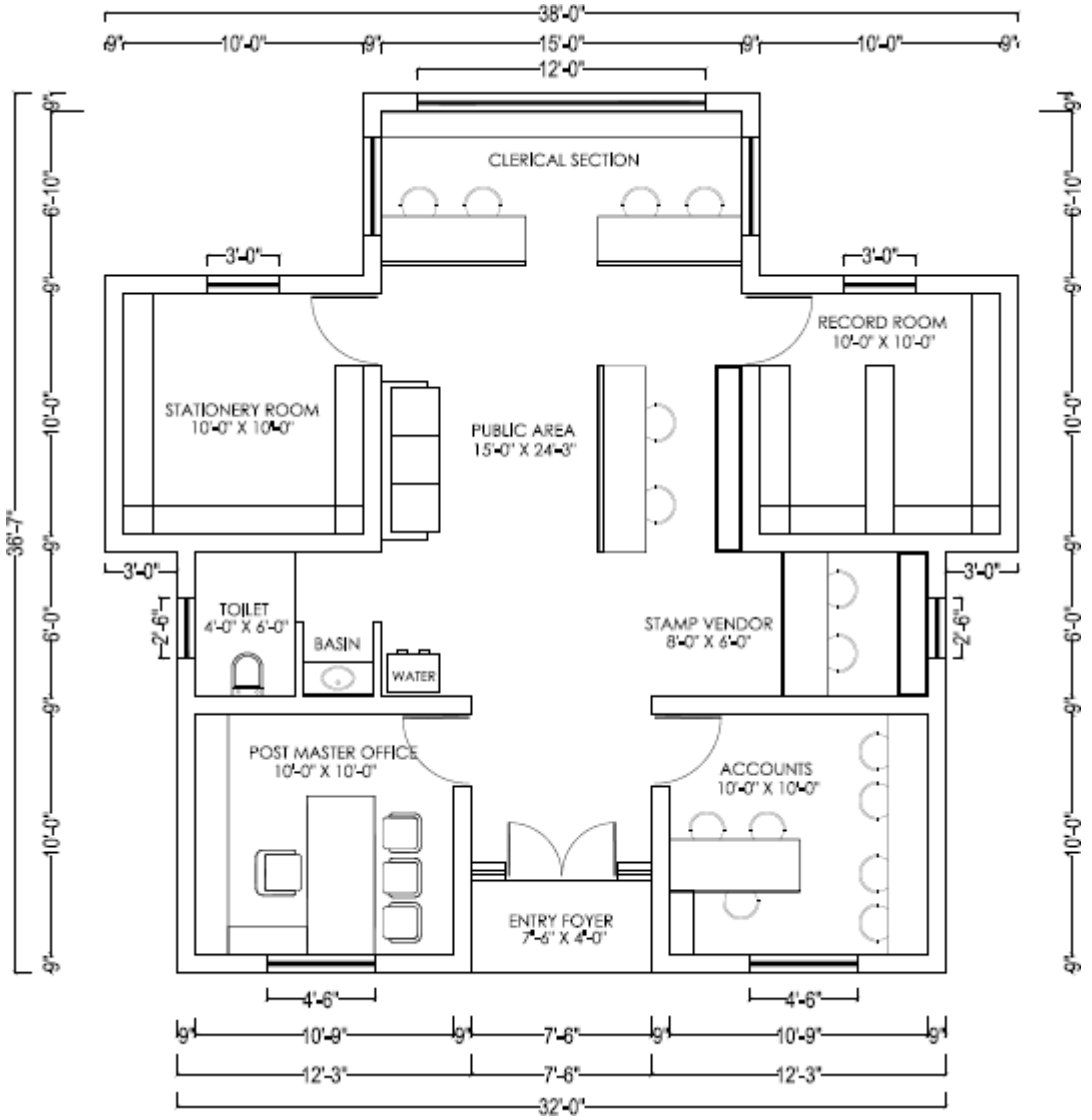
Table 9: measurement sheet of soak pit

ABSTRACT SHEET					
Soak Pit					
Item no.	Item Description	Quantity	Rate	Per	Amount
1	Excavation	367.5	10	cu.ft.	**3675**
2	RCC jail	12	120	cu.ft.	**1440**
3	Brick work	108	65	cu.ft.	**7020**
				Total	**12,135**

Table 10: Abstract sheet of Soak Pit

8.1.2 Physical design

DESIGN OF POST OFFICE



POST OFFICE BUILDING
1120 SQ.FT.

HEIGHTS : SLAB 10'-0"
PLINTH 1'-6" LINTEL 7'-0"
SILL 3'-6"

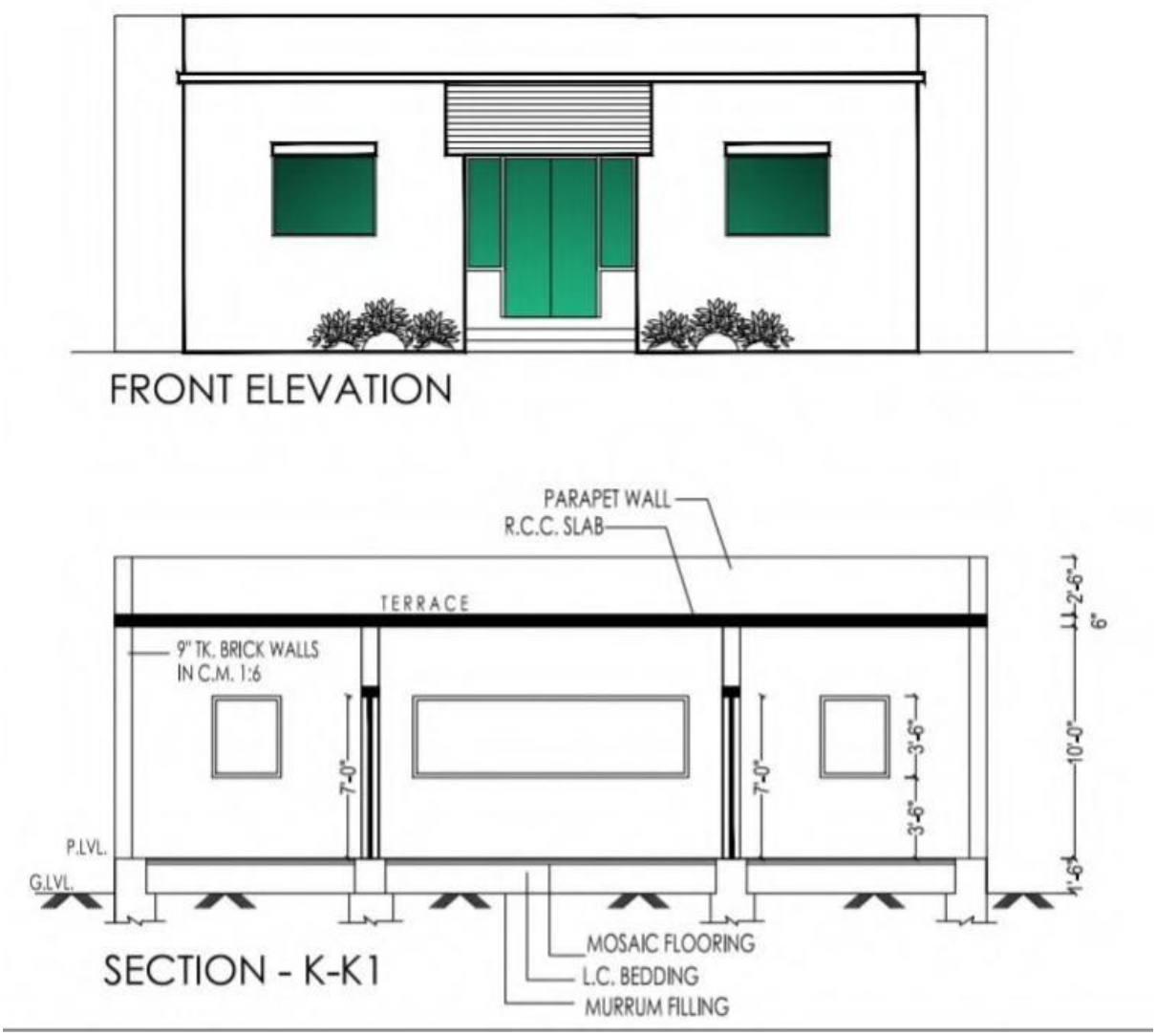


Figure 60: Post office

MEASUREMENT SHEET							
Post Office							
Item No.	Item Description	No.	Length (ft.)	Breadth (ft.)	Height (ft.)	Quantity	Total
	L1= 15' 9"	1					
	L2= 10' 9"	4					
	L3= 11' 3"	4					
	S1= 7' 7"	2					
	S2=10' 9"	4					
	S3=6' 9"	2					
	S4=10' 9"	4					
1	Excavation in foundation					(cu.ft.)	
	L1	1	15' 9"	2'	4'	126	
	L2	4	10' 9"	2'	4'	344	

	L3	4	11' 9"	2'	4'	360	1747.28 cu. ft.
	S1	2	7' 7"	2'	4'	121.28	
	S2	4	10' 9"	2'	4'	344	
	S3	2	6' 9"	2'	4'	108	
	S4	4	10' 9"	2'	4'	344	
2	PCC work in foundation					(sq.ft.)	
	L1	1	15' 9"	2'	-	31.5	436.82 sq. ft.
	L2	4	10' 9"	2'	-	86	
	L3	4	11' 9"	2'	-	90	
	S1	2	7' 7"	2'	-	30.32	
	S2	4	10' 9"	2'	-	86	
	S3	2	6' 9"	2'	-	27	
	S4	4	10' 9"	2'	-	86	
3	Rubble masonry					(cu.ft.)	
	L1	1	15' 9"	2'	4'	126	1747.28 cu.ft
	L2	4	10' 9"	2'	4'	344	
	L3	4	11' 9"	2'	4'	360	
	S1	2	7' 7"	2'	4'	121.28	
	S2	4	10' 9"	2'	4'	344	
	S3	2	6' 9"	2'	4'	108	
	S4	4	10' 9"	2'	4'	344	
4	Brick work upto plinth level					(cu.ft.)	
	L1	1	15' 9"	1' 6"	1' 6"	35.43	491.41 cu. ft.
	L2	4	10' 9"	1' 6"	1' 6"	96.75	
	L3	4	11' 9"	1' 6	1' 6	101.25	
	S1	2	7' 7"	1' 6"	1' 6"	34.11	
	S2	4	10' 9"	1' 6"	1' 6"	96.75	
	S3	2	6' 9"	1' 6	1' 6	30.37	
	S4	4	10' 9"	1' 6"	1' 6"	96.75	
5	C.C. Coping					(cu.ft.)	
	L1	1	15' 9"	1' 6"	1' 6"	35.43	
	L2	4	10' 9"	1' 6"	1' 6"	96.75	
	L3	4	11' 9"	1' 6	1' 6	101.25	
	S1	2	7' 7"	1' 6"	1' 6"	34.11	491.41 cu. ft.
	S2	4	10' 9"	1' 6"	1' 6"	96.75	

	S3	2	6' 9"	1' 6	1' 6	30.37	
	S4	4	10' 9"	1' 6"	1' 6"	96.75	
6	9" thick brick masonry					(sq.ft.)	
	L1	1	15' 9"	-	10'	157.5	2184.1 sq. ft.
	L2	4	10' 9"	-	10'	430	
	L3	4	11' 9"	-	10'	450	
	S1	2	7' 7"	-	10'	151.6	
	S2	4	10' 9"	-	10'	430	
	S3	2	6' 9"	-	10'	135	
	S4	4	10' 9"	-	10'	430	
7	Deduction of openings					(sq.ft.)	
	W1	1	12"	-	3' 6"	42	286.25 sq. ft.
	W2	2	4'	-	3' 6"	28	
	W3	2	3'	-	3' 6"	21	
	W4	1	2' 6"	-	3' 6"	8.75	
	W5	2	5'	-	3' 6"	35	
	W6	2	1' 3"	-	3' 6"	8.75	
	V	1	2' 6"	-	2' 6"	6.25	
	D1	4	3'	-	7'	84	
	D2	1	2' 6"	-	7'	17.5	
	D3	1	5'	-	7'	35	
8	RCC lintel	(add both side 6")					
	W1	1	4'	-	-	-	50.75
	W2	2	3' 6"	-	-	-	
	W3	2	6'	-	-	-	
	W4	1	13'	-	-	-	
	W5	2	5'	-	-	-	
	W6	2	4'	-	-	-	
	V	1	3' 6"	-	-	-	
	D1	4	6'	-	-	-	
	D2	1	2' 3"	-	-	-	
	D3	1	3' 6"	-	-	-	
9	Flooring (vitrified)					(sq.ft.)	

	Stationery Room, Post master room, Accounts, Record room	4	10'	10'	-	400	
	Toilet	1	4'	6'	-	24	835.75 sq.ft.
	Stamp vendor	1	8'	6'	-	48	
	Public area	1	15'	24' 3"	-	363.75	
10	RCC slab						
	38×36' 7"= 1390.4-(10' 9" ×7' 7")×2-(17' 6"×3')×2						1122.07 sq.ft.
11	Aluminium section						
	W1	1	12"	-	3' 6"	42	286.25 sq. ft
	W2	2	4'	-	3' 6"	28	
	W3	2	3'	-	3' 6"	21	
	W4	1	2' 6"	-	3' 6"	8.75	
	W5	2	5'	-	3' 6"	35	
	W6	2	1' 3"	-	3' 6"	8.75	
	V	1	2' 6"	-	2' 6"	6.25	
	D1	4	3'	-	7'	84	
	D2	1	2' 6"	-	7'	17.5	
	D3	1	5'	-	7'	35	
12	Parapet wall						
	Addition of all walls		32'+20'+20'+11' 6"+11' 6"+11' 6"+10' 9"+10' 9"+7' 7"+ 16' 6"	-	2' 6"	-	370.4 sq.ft.
14	Overhead Tank	1	Capacity-500L				
15	Anglo Indian	1	-	-	-	-	-
16	Urinal	1	-	-	-	-	-
17	Wash basin	1	-	-	-	-	-

[NOTE:ALL DIMENSIONS ARE IN FEET AND INCHES]

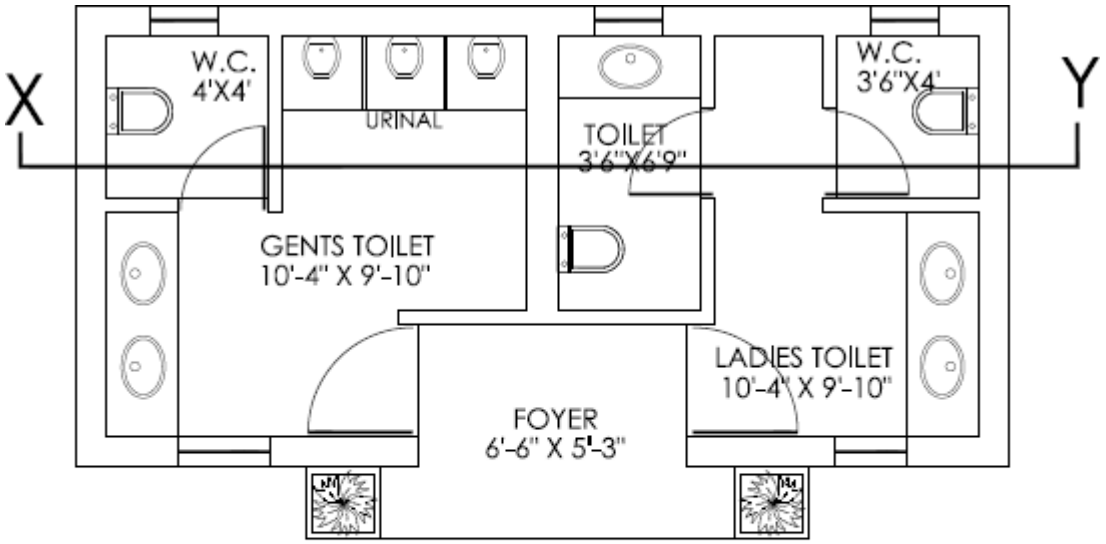
Table 11: Measurement sheet of Post office

ABSTRACT SHEET					
Post Office					
Item no.	Item Description	Quantity	Rate	Per	Amount
1	Excavation	1747.28	10	Cu. ft.	**17,473**
2	RCC	1122.07	210	Sq. ft.	**2,35,635**
3	Brick Work	2184.1	65	sq. ft.	**1,41,967**
4	Flooring	835.75	65	Sq. ft.	**45,967**
5	Glass	286.25	400	Sq. ft.	**1,14,500**
6	Wash Basin	1	1200	No.	**1200**
7	Anglo Indian Toilet	1	2000	No.	**2000**
8	Urinal	1	800	No.	**800**
9	Inside Plaster	2565	40	Sq.ft.	**1,02,600**
10	Outside Plaster	1435	60	Sq.ft.	**86,100**
11	Inside Paint	2565	15	Sq.ft.	**38,475**
12	Outside Paint	1435	10	Sq.ft.	**14350**
					Total=8,01,067
	8% of Plumbing				**64,085**
	12% of Electrification				**96,128**
					Total= 9,61,280

Table 12: Abstract Sheet of Post- Office

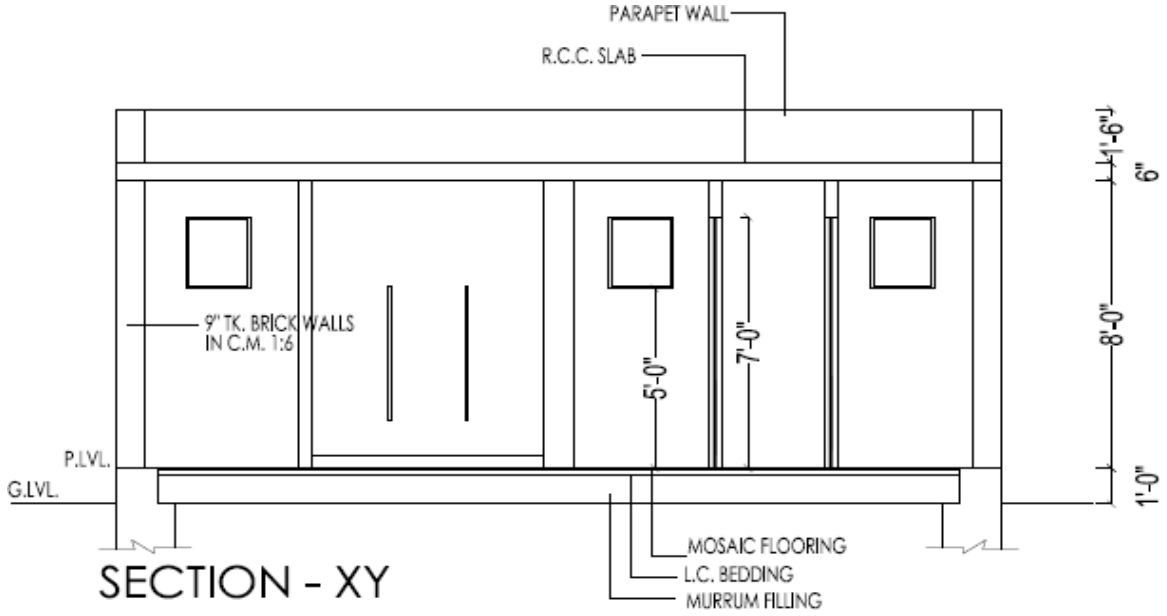
8.1.3 Social Design

PUBLIC TOILET



TOILET BLOCK
260 SQ.FT.

HEIGHTS :
PLINTH 1'-0"
SLAB 8'-0"
LINTEL 7'-0"
SILL 5'-0"



SECTION - XY

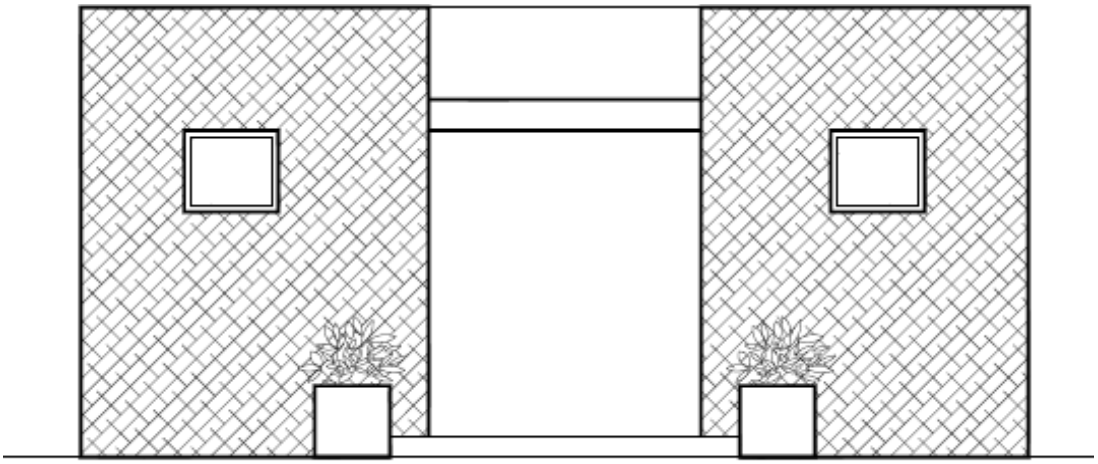


Figure 61: Public Toilet

MEASUREMENT SHEET							
Public Toilet							
Item No.	Item Description	No.	Length (ft.)	Breadth (ft.)	Height (ft.)	Quantity (ft.)	Total (ft.)
	L1=22' 2"	1					
	L2=4' 8.5"	2					
	L3=8' 5"	1					
	L4=7' 11"	1					
	S1=10' 7"	3					
	S2=4' 8.5"	2					
	S3=7' 5.5"	1					
	S4=3' 5.5"	1					
1	Excavation in foundation					(cu.ft.)	
	L1	1	22' 2"	2'	3'	133	441.99 cu. ft.
	L2	2	4' 8.5"	2'	3'	56.16	
	L3	1	8' 5"	2'	3'	50.50	
	L4	1	7' 11"	2'	3'	47.50	
	S1	3	10' 7"	2'	3'	63.48	
	S2	2	4' 8.5"	2'	3'	24.75	
	S3	1	7' 5.5"	2'	3'	45.24	
	S4	1	3' 5.5"	2'	3'	21.36	
2	PCC work in foundation						
	L1	1	22' 2"	2'	-	44.32	
	L2	2	4' 8.5"	2'	-	19.52	

	L3	1	8' 5"	2'	-	16.83	
	L4	1	7' 11"	2'	-	15.83	
	S1	3	10' 7"	2'	-	63.50	105.22 sq. ft.
	S2	2	4' 8.5"	2'	-	19.56	
	S3	1	7' 5.5"	2'	-	15.08	
	S4	1	3' 5.5"	2'	-	7.08	
3	Rubble masonry						
	L1	1	22' 2"	2'	3'	133	
	L2	2	4' 8.5"	2'	3'	56.16	
	L3	1	8' 5"	2'	3'	50.50	
	L4	1	7' 11"	2'	3'	47.50	
							441.99 cu. ft.
	S1	3	10' 7"	2'	3'	63.48	
	S2	2	4' 8.5"	2'	3'	24.75	
	S3	1	7' 5.5"	2'	3'	45.24	
	S4	1	3' 5.5"	2'	3'	21.36	
4	Brick work upto plinth level						
	L1	1	22' 2"	1' 6"	1'	33.24	
	L2	2	4' 8.5"	1' 6"	1'	14.1	
	L3	1	8' 5"	1' 6"	1'	12.61	
	L4	1	7' 11"	1' 6"	1'	11.86	
							71.81 cu. ft.
	S1	3	10' 7"	1' 6"	1'	47.61	
	S2	2	4' 8.5"	1' 6"	1'	14.1	
	S3	1	7' 5.5"	1' 6"	1'	11.17	
	S4	1	3' 5.5"	1' 6"	1'	5.17	
5	C.C.Coping						
	L1	1	22' 2"	1' 6"	1'	33.24	
	L2	2	4' 8.5"	1' 6"	1'	14.1	
	L3	1	8' 5"	1' 6"	1'	12.61	
	L4	1	7' 11"	1' 6"	1'	11.86	
							71.81 cu.ft
	S1	3	10' 7"	1' 6"	1'	47.61	
	S2	2	4' 8.5"	1' 6"	1'	14.1	
	S3	1	7' 5.5"	1' 6"	1'	11.17	
	S4	1	3' 5.5"	1' 6"	1'	5.17	
6	9" thick brick masonry						
	L1	1	22' 2"	-	8'	177.28	
	L2	2	4' 8.5"	-	8'	75.2	

	L3	1	8' 5"	-	8'	67.28	799.36 sq. ft.
	L4	1	7' 11"	-	8'	63.28	
	S1	3	10' 7"	-	8'	253.92	
	S2	2	4' 8.5"	-	8'	75.2	
	S3	1	7' 5.5"	-	8'	59.6	
	S4	1	3' 5.5"	-	8'	27.6	
7	Deduction of openings						
	D1	2	2' 9"	-	7'	38.5	101.8 sq. ft.
	D2	3	2' 6"	-	7'	52.5	
	V	5	2'	-	2'	20	
8	RCC lintel	(Add both side 6")					
	D1	2	3' 9"				
	D2	3	3' 6"				
	V	5	3'				
9	Flooring (Vitrified)						
	Total area=9' 10"×21' 5"=210.46						
	Deduction of all walls: 8' 4"×4"=3.66 7' 5.5"×9"=5.58 7' 5.5"×4"=2.45 7' 11"×4"=2.61 6' 6"×3' 6"=22.75	-	-	-	-	(210.46)-(deduction of all walls)	173.41 sq. ft.
10	Paving tiles in foyer	-	6' 6"	3' 6"	-	22.75 sq.ft.	22.75 sq. ft.
11	Glazed tiles						
	(5' 6"+4'+6' 11"+6'+7' 11"+2' 8"+3' 6"+4'+5' 6"+6' 10"+7' 11")=60.72	-	60.72	-	8'	(485.76)-(deduction of openings)	383.96 sq. ft.

12	RCC slab	-	22' 11"	11' 4"	-	259.57 sq. ft.	259.57 sq. ft.
13	Door and Ventilation in aluminium section						
	D1	2	2' 9"	-	7'	38.5	101.5 sq. ft.
	D2	3	2' 6"	-	7'	52.5	
	V	5	2'	-	2'	20	
14	Parapet wall (22' 11"+22' 11")×(9' 10"+9' 10")=68.48	-	-	-	1'	68.48 sq. ft.	68.48 sq. ft.
15	Outside plastering						
	L	2	22' 11"	-	10' 6"	481.11+ 237.93- deduction of ventilation	699.04 sq. ft.
	S	2	11' 4"	-	10' 6"		
16	Outside painting work						
	L	2	22' 11"	-	10' 6"	481.11+ 237.93- deduction of ventilation	699.04 sq. ft.
	S	2	11' 4"	-	10' 6"		
17	Overhead tank	1	Capacity-2000L				
18	Anglo Indian pan	3					
19	Urinals	3					
20	Wash basin	5					

[NOTE: ALL DIMENSIONS ARE IN FEET AND INCHES]

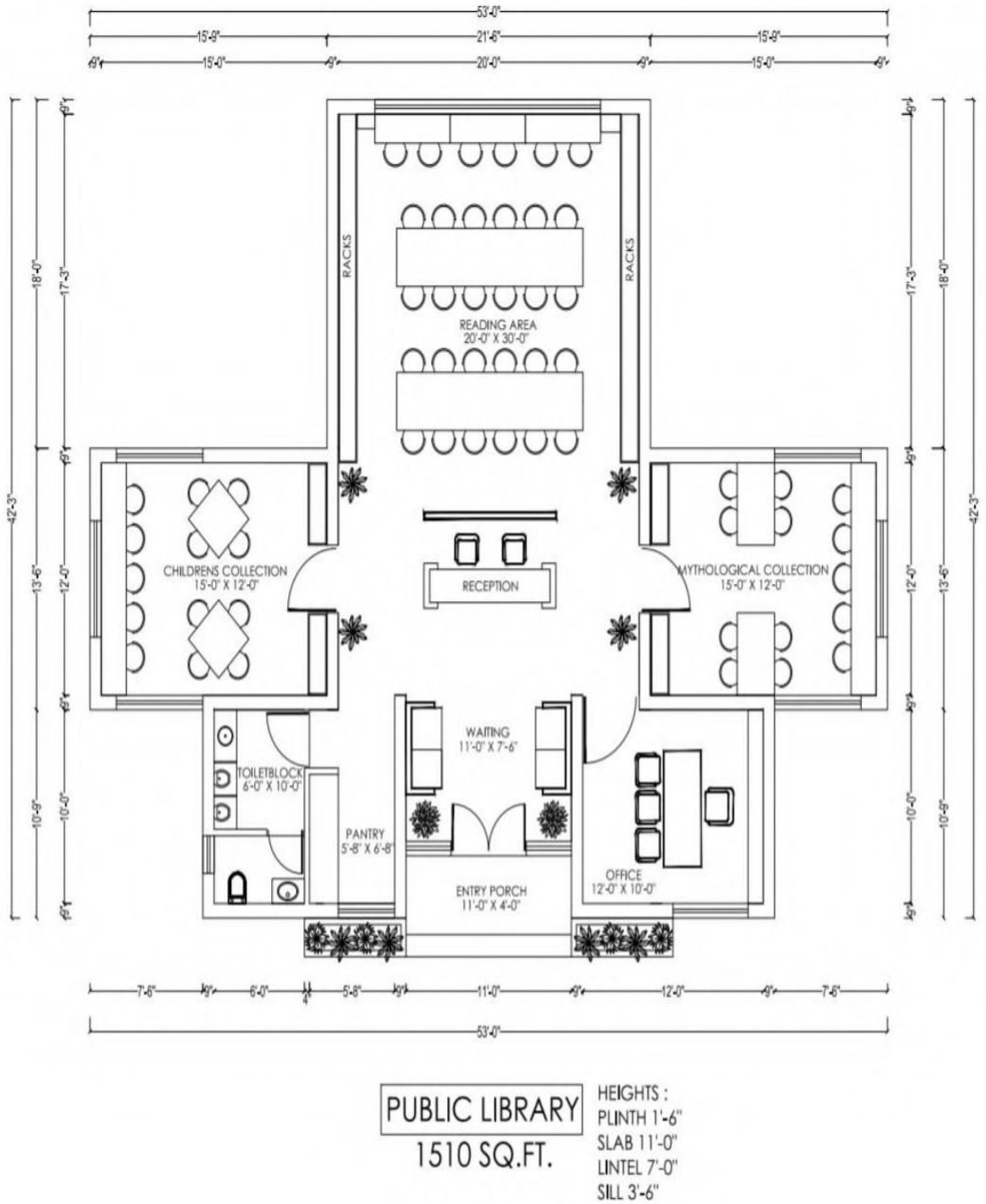
Table 13: measurement sheet of public toilet

ABSTRACT SHEET					
Public Toilet					
Item no.	Item Description	Quantity	Rate	Per	Amount
1	Excavation	441.99	10	Cu .ft.	**4420**
2	Brick Work	799.36	65	Sq.ft.	**51958**
3	RCC	259.57	210	Sq.ft.	**54509**
4	Glass	101.8	400	Sq.ft.	**40720**
5	Flooring(Vitrified Tiles)	173.41	65	Sq.ft.	**11272**
6	Paving Tiles	22.75	22	Sq.ft.	**500**
7	Glazed Tiles	383.96	90	Sq.ft.	**34556**
8	Outside Plastering	699.04	60	Sq.ft.	**41942**
9	Anglo Indian Toilet	3	2000	Nos.	**6000**
10	Urinal	3	800	Nos.	**2400**
11	Wash Basin	5	1200	Nos.	**6000**
			Total=2,54,277		
	8% of electrification				**20,340**
			Total=2,74,617		

Table 14: Abstract Sheet of Public toilet

8.1.4 Socio-Cultural Design

PUBLIC LIBRARY



PUBLIC LIBRARY
1510 SQ.FT.

HEIGHTS :
PLINTH 1'-6"
SLAB 11'-0"
LINTEL 7'-0"
SILL 3'-6"

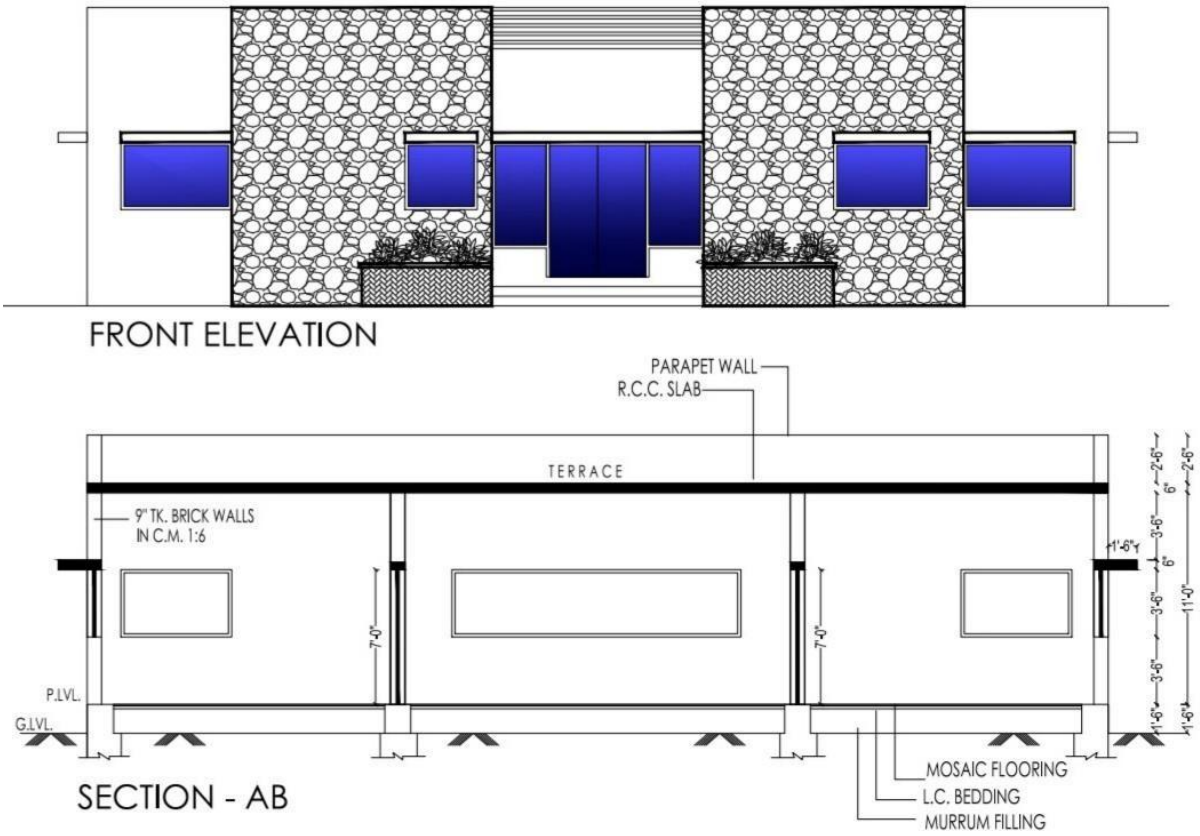


Figure 62: Public library

MEASUREMENT SHEET							
Public Library							
Item No.	Item Description	No.	Length (ft.)	Breadth (ft.)	Height (ft.)	Quantity (ft.)	Total (ft.)
	L1=18'	2					
	L2=12' 9"	4					
	L3=10' 9"	4					
	S1=20' 9"	1					
	S2=15' 9"	4					
	S3=12' 9"	2					
	S4=11' 9"	1					
1	Excavation in foundation					(cu.ft.)	
	L1	2	18'	2'	4'	288	2008 cu. ft.
	L2	4	12' 9"	2'	4'	408	
	L3	4	10' 9"	2'	4'	344	
	S1	1	20' 9"	2'	4'	166	
	S2	4	15' 9"	2'	4'	504	
	S3	2	12' 9"	2'	4'	204	
	S4	1	11' 9"	2'	4'	94	

2	PCC work in foundation					(sq.ft.)	
	L1	2	18'	2'	-	72	875.5 sq. ft.
	L2	4	12' 9"	2'	-	102	
	L3	4	10' 9"	2'	-	86	
	S1	1	20' 9"	2'	-	415	
	S2	4	15' 9"	2'	-	126	
	S3	2	12' 9"	2'	-	51	
	S4	1	11' 9"	2'	-	23.5	
3	Rubble masonry in foundation					(cu.ft.)	
	L1	2	18'	2'	4'	288	2008 cu. ft.
	L2	4	12' 9"	2'	4'	408	
	L3	4	10' 9"	2'	4'	344	
	S1	1	20' 9"	2'	4'	166	
	S2	4	15' 9"	2'	4'	504	
	S3	2	12' 9"	2'	4'	204	
	S4	1	11' 9"	2'	4'	94	
4	Brick upto plinth level					(cu.ft.)	
	L1	2	18'	1' 6"	1' 6"	81	564.73 cu. ft.
	L2	4	12' 9"	1' 6"	1' 6"	114.75	
	L3	4	10' 9"	1' 6"	1' 6"	96.75	
	S1	1	20' 9"	1' 6"	1' 6"	46.68	
	S2	4	15' 9"	1' 6"	1' 6"	141.75	
	S3	2	12' 9"	1' 6"	1' 6"	57.37	
	S4	1	11' 9"	1' 6"	1' 6"	26.43	
5	C.C.Coping					(cu.ft.)	
	L1	2	18'	1' 6"	1' 6"	81	564.73 cu. ft.
	L2	4	12' 9"	1' 6"	1' 6"	114.75	
	L3	4	10' 9"	1' 6"	1' 6"	96.75	
	S1	1	20' 9"	1' 6"	1' 6"	46.68	
	S2	4	15' 9"	1' 6"	1' 6"	141.75	
	S3	2	12' 9"	1' 6"	1' 6"	57.37	
	S4	1	11' 9"	1' 6"	1' 6"	26.43	
6	9" thick brick masonry wall					(sq.ft.)	
	L1	2	18'	-	11'	396	
	L2	4	12' 9"	-	11'	561	

	L3	4	10' 9"	-	11'	473	
	S1	1	20' 9"	-	11'	228.25	2761 sq. ft.
	S2	4	15' 9"	-	11'	693	
	S3	2	12' 9"	-	11'	280.5	
	S4	1	11' 9"	-	11'	129.25	
7	Deduction of openings					(sq.ft.)	
	D1	3	3' 6"	-	7'	88.04	
	D2	1	5'	-	7'	53.51	
	D3	2	2' 6"	-	7'	58.02	
	W1	4	6' 3.5"	-	3' 6"	34.53	
	W2	1	15' 3.5"	-	3' 6"	15.01	613.11 sq. ft.
	W3	2	8' 3.5"	-	3' 6"	4	
	W4	3	3' 3.5	-	3' 6"	73.5	
	W5	1	4' 3.5"	-	3' 6"	35	
	V	1	2'	-	2'	4	
8	RCC lintel	(Add both side 6")					
	D1	3	4' 6"				
	D2	1	6'				
	D3	2	3' 6"				
	W1	4	7' 3.5"				
	W2	1	16' 3.5"				
	W3	2	9' 3.5"				
	W4	3	4' 3.5"				
	W5	1	5' 3.5				
	V	1	3'				
9	Marble flooring					(sq.ft.)	
	Office	1	12'	10'	-	120	
	Mythological collection	1	15'	12'	-	180	
	Reading area	1	20'	30'	-	600	
	Children collection	1	15'	12'	-	150	
	Reception	1	12'	20'	-	240	1207.69 sq. ft.
	Pantry	1	5' 8"	6' 8"	-	37.69	
10	Tiles flooring						
	Toilet block	1	60'	10'	-	600 sq. ft.	600 sq.ft.
11	Paving tiles						
	Entry porch	1	11'	4'	-	44sq.ft.	44sq.ft.
12	RCC slab						
	(53'×42' 3")-(15' 9"×15' 9"×2)-(7'	-	-	-	-	-	1581.87

	6"×10' 9"×2)						sq.ft.
13	Parapet wall					(sq.ft.)	
	21' 6"+15' 9"+7' 6"+7' 6"+11"+13' 6"+10' 9"+10' 9"+13' 6"+13' 6"+18"+18"=190.5	-	190.5	-	2' 6'	190.5×2.5	476.25 sq.ft
14	Inside plaster work					(sq.ft.)	
	(20"+30"+12"+12"+15"+15"+11"+12"+10"+7' 6")	-	1589.5	-	11'	1589.5-11'	1272.45 sq.ft.
15	Inside colour work					(sq.ft.)	
	(20"+30"+12"+12"+15"+15"+11"+12"+10"+7' 6")	-	1589.5	-	11'	1589.5-11'	1272.45 sq.ft.
16	Outside plaster work					(sq.ft.)	
	(13' 6"+7' 6"+10' 9"+36' 9"+10' 9"+13' 6"+16' 6"+20' 9"+18"+15' 9"+7' 6")	-	2142.5	-	12' 6'	2142.5-12' 6"	1815.89 sq.ft.
17	Outside colour work						
	(13' 6"+7' 6"+10' 9"+36' 9"+10' 9"+13' 6"+16' 6"+20' 9"+18"+15' 9"+7' 6")	-	2142.5	-	12' 6'	2142.5-12' 6"	1815.89 sq.ft.
18	Aluminium door and window section					(sq.ft.)	
	D1	3	3' 6"	-	7'	88.04	613.11 sq. ft.
	D2	1	5'	-	7'	53.51	
	D3	2	2' 6"	-	7'	58.02	
	W1	4	6' 3.5"	-	3' 6"	34.53	
	W2	1	15' 3.5"	-	3' 6"	15.01	
	W3	2	8' 3.5"	-	3' 6"	4	
	W4	3	3' 3.5	-	3' 6"	73.5	
	W5	1	4' 3.5"	-	3' 6"	35	
	V	1	2'	-	2'	4	
19	Overhead tank	1	Capacity-500L				
20	Anglo Indian	1					
21	Urinal	1					
22	Wash basin	1					

[NOTE:ALL DIMENSIONS ARE IN FEET AND INCHES]

Table 15: measurement sheet of public library

ABSTRACT SHEET					
Public Library					
Item No.	Item Description	Quantity	Rate	Per	Amount
1	Excavation	2009	10	Cu.ft.	**20,090**
2	RCC	1581.87	210	sq.ft	**3,32,193**
3	Brickwork	2761	65	sq.ft	**1,79,465**
4	Glass	613.11	400	sq.ft	**2,45,244**
5	Flooring(Marble)	1207.69	180	sq.ft	**2,17,385**
6	Tiles Flooring(Toilet)	600	90	sq.ft	**54,000**
7	Tiles Flooring(Entry Porch)	44	22	sq.ft	**968**
8	Outside Plaster	1815.89	60	sq.ft	**1,08,953**
9	Inside Plaster	1272.45	40	sq.ft	**50,898**
10	Outside Paint	1815.89	10	sq.ft	**18,158**
11	Inside Paint	1272.45	15	sq.ft	**19,087**
12	Anglo Indian	1	2000	Nos.	**2,000**
13	Urinal	2	800	Nos.	**1,600**
14	Wash Basin	2	1200	Nos.	**2,400**
					Total=12,52,441
	8% of Plumbing				**1,00,195**
	7% of Electrification				**87,670**
		Total= 12,03,841			

Table 16: Abstract sheet of Public Library

8.1.5 Smart Village Design

E-CORNER

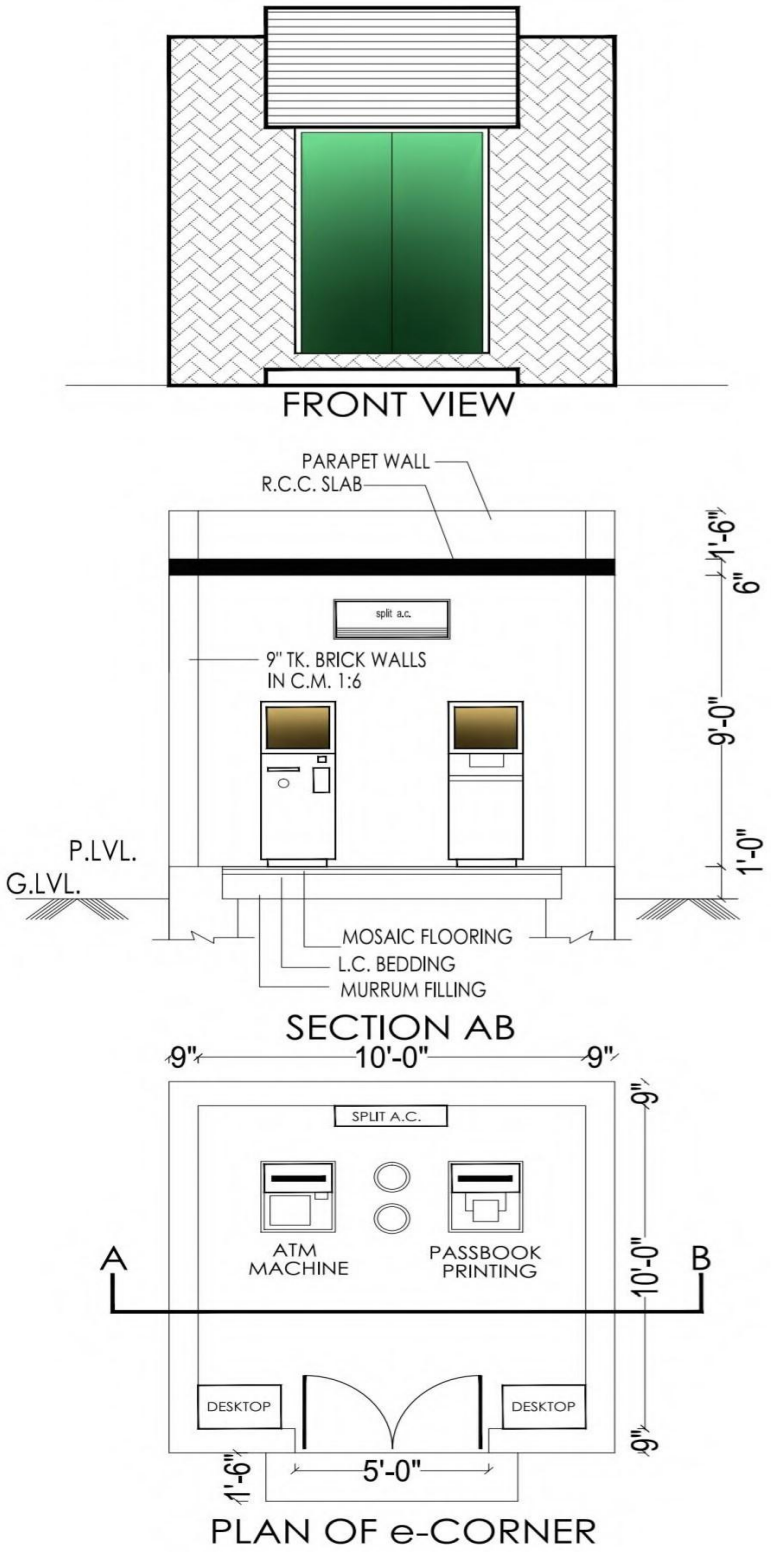


Figure 63: E-Corner

MEASUREMENTSHEET							
E-Corner							
Item No.	Item description	No.	Length (ft.)	Breadth (ft.)	Height (ft.)	Quantity (ft.)	Total (ft.)
	L1=10' 9"	2					
	S1=10' 9"	2					
1	Excavation in foundation					(cu.ft.)	
	L1	2	10' 9"	2'	3'	129	258 cu.ft.
	S1	2	10' 9"	2'	3'	129	
2	PCC work in foundation					(sq.ft.)	
	L1	2	10' 9"	2'	-	43	86 sq.ft.
	S1	2	10' 9"	2'	-	43	
3	Rubble masonry in excavation					(cu.ft.)	
	L1	2	10' 9"	2'	3'	129	258 cu.ft.
	S1	2	10' 9"	2'	3'	129	
4	Brick work in foundation					(cu.ft.)	
	L1	2	10' 9"	1' 6"	1'	32.25	64.5 cu.ft.
	S1	2	10' 9"	1' 6"	1'	32.25	
5	C.C.Coping					(cu.ft.)	
	L1	2	10' 9"	1' 6"	1'	32.25	64.5 cu.ft.
	S1	2	10' 9"	1' 6"	1'	32.25	
6	9" thick brick masonry					(sq.ft.)	
	L1	2	10' 9"	-	10'	215	430 sq.ft.
	S1	2	10' 9"	-	10'	215	

7	Deduction of door					(sq.ft.)	
	D1	1	5'	-	7'	35	
8	Flooring work (Vitrified)	-	10'	10'	-	100 sq.ft.	100 sq.ft.
9	Paving tiles		7'	1' 6"	-	10.5 sq.ft.	10.5 sq.ft.
10	RCC lintel in box 7'-17"=14'						14 ft.
11	Parapet wall (10' 6"+10' 6")(9"+9")	-	-	-	1' 6"	58.5 sq.ft.	58.5 sq.ft.
12	Outside plaster (12'×10' 9")×4	-	-	-	-	516-deduction of door	481 sq.ft.
13	Outside colour work (12'×10' 9")×4	-	-	-	-	516-deduction of door	481 sq.ft.
14	RCC slab	-	11' 6"	11' 6"	-	132.25 sq.ft.	132.25 sq.ft.
15	Inside tiles work	-	(10+10+ 10+10)	-	9'	360-deduction of door	325 sq.ft.
16	Aluminium glass	-	5'	-	7'	35 sq.ft.	35 sq.ft.

[NOTE: ALL DIMENSIONS ARE IN FEET AND INCHES]

Table 17: measurement sheet of E-corner

ABSTRACT SHEET					
E-corner					
Item No.	Item Description	Quantity	Rate	Per	Amount
1	Excavation	258	10	Cu.ft.	**2,580**
2	RCC	132.25	210	Sq.ft.	**27,772**
3	Brick Work	430	65	Sq.ft.	**27,950**
4	Flooring(Mosaic)	100	10	Sq.ft.	**1,000**
5	Paving Tiles	10.5	22	Sq.ft.	**231**
6	Outside Plaster	481	60	Sq.ft.	**28,860**
7	Outside Paint	481	10	Sq.ft.	**4,810**
8	Inside Tiles	325	20	Sq.ft.	**6,500**
9	Glass	35	400	Sq.ft.	**14,000**
10	Split AC	1	35,000	Nos.	**35,000**
					Total =1,48,703
	10% of Electrification				**14,870**
					Total=1,63,573

Table 18: Abstract Sheet of E-corner

8.1.6 Heritage Village Design

MUSEUM

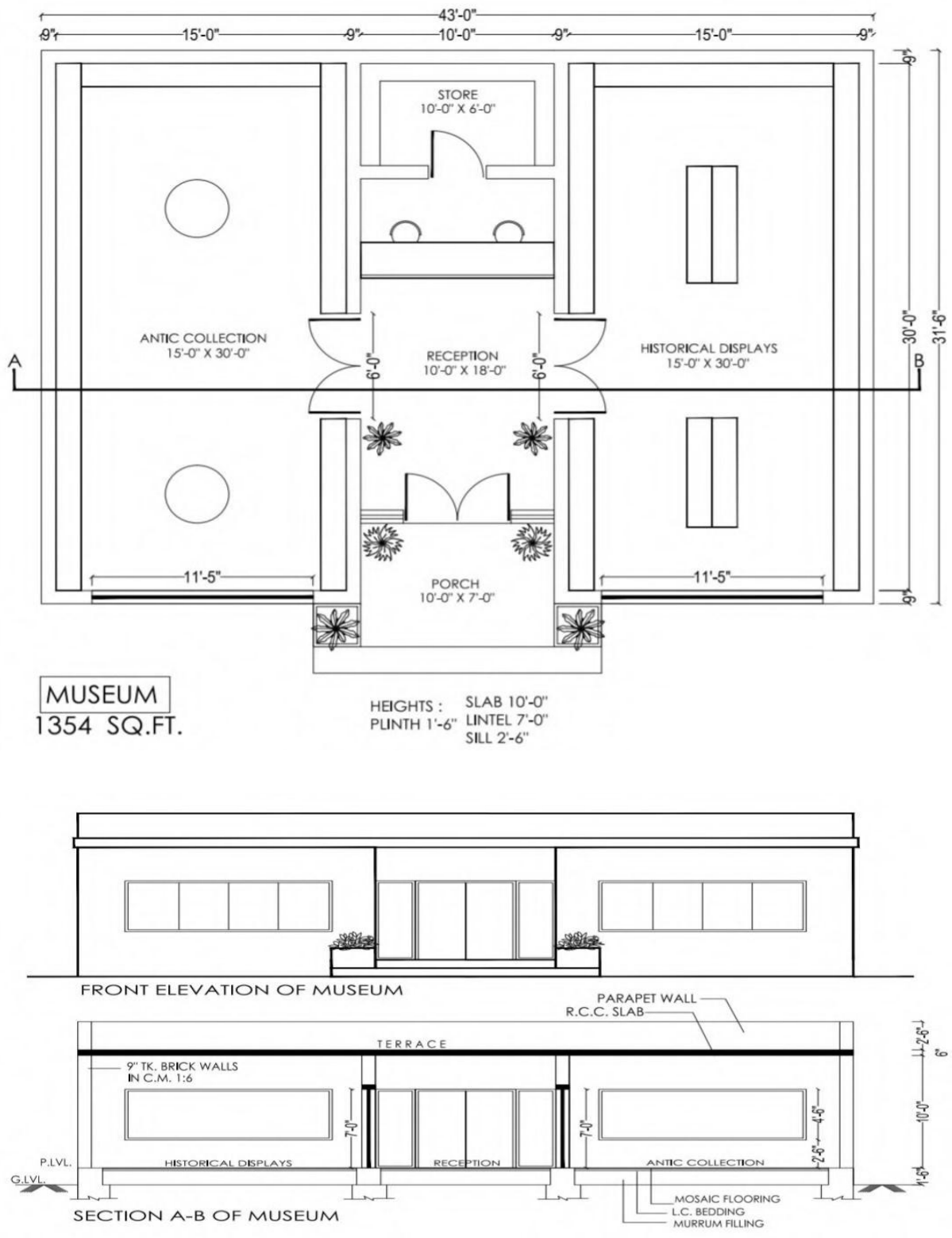


Figure 64: Museum

MEASUREMENT SHEET							
Museum							
Item No.	Item Description	No.	Length (ft.)	Breadth (ft.)	Height (ft.)	Quantity (ft.)	Total (ft.)
	L1=42' 3"	2					
	S1=30' 9"	4					
1	Excavation in foundation					(cu.ft.)	
	L1	2	42' 3"	2'	4'	676	1660 cu.ft.
	S1	4	30' 9"	2'	4'	984	
2	PCC work in foundation					(cu.ft.)	
	L1	2	42' 3"	2'	-	169	415 cu.ft.
	S1	4	30' 9"	2'	-	246	
3	Rubble masonry in excavation					(cu.ft.)	
	L1	2	42' 3"	2'	4'	676	1660 cu.ft.
	S1	4	30' 9"	2'	4'	984	
4	Brick work upto plinth level					(cu.ft.)	
	L1	2	42' 3"	1' 6"	1' 6"	190.125	466.87 cu.ft.
	S1	4	30' 9"	1' 6"	1' 6"	276.75	
5	C.C.Coping					(cu.ft.)	
	L1	2	42' 3"	1' 6"	1' 6"	190.125	466.87 cu.ft.
	S1	4	30' 9"	1' 6"	1' 6"	276.75	
6	9" thick brick masonry					(sq.ft.)	
	L1	2	42' 3"	-	10'	845	2074 sq.ft.
	S1	4	30' 9"	-	10'	1230	

7	Deduction of openings					(sq.ft.)	
	D1	2	6'	-	7'	84	226.34 sq.ft.
	D2	1	3'	-	7'	21	
	W1	1	11' 5"	-	4' 6"	51.34	
	Front opening	2	10'	-	7'	70	
8	RCC lintel						
	D1	2	7'	-	-	14	29.5 ft.
	D2	1	4'	-	-	4	
	Front opening	1	11' 6"	-	-	11.5	
9	Flooring (Vitrified)						
	2(15'×30')+(10'×6') +(10'×18')						1140 sq.ft.
10	Front flooring of paving tiles	-	10'	7'	-	70 sq.ft.	70 sq.ft.
11	RCC slab	-	43'	31' 6"	-	1354.5 sq.ft.	1354.5 sq.ft.
12	Inside plaster work	-	258	-	10'	2360.65 sq.ft.	2360.65 sq.ft.
13	Inside colour work	-	258	-	10'	2360.65 sq.ft.	2360.65 sq.ft.
14	Parapet wall	-	43'	30'	-	1290 sq.ft.	1290 sq.ft.
15	Outside plaster work	-	139	-	13' 6"	1876.5 sq.ft.	1876.5 sq.ft.

[NOTE: ALL DIMENSIONS ARE IN FEET AND INCHES]

Table 19: measurement sheet of museum

ABSTRACT SHEET					
Museum					
Item No.	Item Description	Quantity	Rate	Per	Amount
1	Excavation	1660	10	Cu.ft.	**16,600**
2	RCC	1354.5	210	Sq.ft.	**2,84,445**
3	Brick work	2075	65	Sq.ft.	**1,34,875**
4	Flooring(Vitrified Tiles)	1140	65	Sq.ft.	**74100**
5	Paving Tiles	70	22	Sq.ft.	**1540**
6	Inside Plaster	2360.65	40	Sq.ft.	**94,426**
7	Inside Paint	2360.65	15	Sq.ft.	**35,410**
8	Outside Plaster	1876.5	60	Sq.ft.	**1,12,590**
9	Outside Paint	1876.5	10	Sq.ft.	**18,765**
10	Glass	226.345	400	Sq.ft.	**90,538**
			Total=8,63,289		
	8% of Electrification				**1,03,595**
			Total=9,66,885		

Table 20: Abstract sheet of Museum

8.2 Reason for Students Recommending this Design

- The grey water coming from septic tank contains organic material that need to be filtered out. So for this purpose Soak pit is recommended for design.

- In Vajdi (Vad) village there is no library for book reading and students have to travel outward. For this purpose we have design library for physical comfort.

- There is no ATM or e-corner facility in Vajdi (Vad) village. For small but basic necessities like E-banking, villagers have to go to the nearest district bank which also wastes their time.

- There is no any post office in the village. Villagers faces problems for postal services and payments of any bills. The Villagers have to go far for all such work and so their time is wasted as much.

- The villagers working in the village have to leave their business and go home to go to the toilet. So that a lot of their time is also wasted. So, also to keep village clean public toilet is required to provide in Vajdi (vad) village.

- There is not a single museum in Vajdi (Vad) village. The importance of the museum is profound because it helps preserve objects, objects and materials of cultural, historical, historical and religious significance and provides interesting, entertaining, and interesting displays to people that are indispensable for research and educational purposes.

8.3 Benefit of the villagers

- Day-to-day household tasks, such as cleaning, bathing, and washing clothes, produce waste water. For that providing soak pit will prove very beneficiary.

- After providing post office villagers will get the Postal Service which serves as a foundation for services offered by every level of government, whether federal, state, or local.

- Library provides a very calm and disciplined atmosphere which helps students and youngsters to maintain a good concentration on their studies.

- If toilets are available in Villager it can contribute to improved environmental health of the villagers.

- Providing a museum in Vajdi(vad) village will boost the economy of the village and this museum with modern professional standards of heritage management will prove beneficiary in future for village.

- Every household has at least one mobile phone, which is used for mobile banking. For making Vajdi(vad) a digital village, a dedicated and customised banking platform has been developed to enable villagers to check balance enquiry, get mini statement, transfer fund, etc.

Chapter: 9

Proposing design for Future Development of the Village for the part –II Design

We have decided to propose some new designs for the village development in part- II.

These designs are as follows:

- Cyber Café
- Veterinary Hospital
- Women Cottage Industry
- Public Garden
- Govt. medical lab
- Govt. medical store

The above designs are decided on the basic requirements of the villagers. According to the techno-economic survey we provided the designs in part –I and also in part –II.

The villagers needed to travel some distance for these facilities but now after this provided designs, their comfort level will increase.

There is not any disadvantage or misuse of any of the following designs. They are finalized under the situation by considering the fund of village, economic condition of the villagers, etc. We also thought about the development of the women's of village so our design of "Women's cottage industry" will help them to be employed. The village is much developed so it was hard to find the designs for it.

Chapter: 10

Conclusion of the entire Village Activities of the project

In this project, we are trying our best to take a step forward to help the government and making each village smart. So we visited our allocated village Vajdi (Vad) and performed Techno-economic survey. According to our survey we came to know that village is lacking some of the facilities. So we decided to give some designs for the village. The designed some of the following facilities for the village:

- Post office (Physical Infrastructure)
- Museum(Heritage Infrastructure)
- Soak pit(Sustainable Infrastructure)
- Public library(Socio- cultural Infrastructure)
- Public toilet(Social Infrastructure)
- E-corner(Smart Infrastructure)

By providing the following facilities we can improve the growth of the village. By improving the growth we can decrease the rate of migration and urban city pressure can be reduced and the livelihood of villagers will be increase.

Because of this project we came close to the real world experience. Our skills and understanding level has been to next level due to this. We thoroughly enjoyed the journey of practical knowledge as well as information knowledge of civil field.

Chapter: 11

References refereed for this project

[1] UDPFI (Urban development plans formulation and implementation) norms 2014

[2] Census of India

[3] Google Maps

[4] "An approach towards Rurbanisation of Pratappura (Balva) village" IJIRST- International Journal for Innovative Research in Science & Technology | Volume 3 | Issue 09 | February 2017

ISSN (Online): 2349- 6010

[5] B.N. Dutta (2016), "Estimation and costing in civil engineering theory and practice", UBS Publisher.

[6] Schedule of Rate for Rajkot 2018

[7] http://www.onefivenine.com/india/villages/Rajkot/Lodhika/Vajdi-_3aVad_4a

[8] https://indikosh.com/vill/540134/vajdi-vad

Chapter: 12

Annexure attachment

12.1 Survey form of ideal village

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	Rajsamadhiyala.
Name of Taluka:	Rajkot
Name of District:	Rajkot
Name of Institute:	AIISDS - RAJKOT
Nodal Officer Name & Contact Detail:	Prof. Khemendra R. Gautam M0: 9409014376
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Anganwadi worker/Village dweller)	Panchayat Member
Date of Survey:	23/09/2020

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	1756	875	881	280
ii)	2011	1467	732	735	328

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	1536 hector
	Forest Area (In hect.)	460.4
	Agricultural Land Area (In hect.)	500
	Residential Area (In hect.)	515.5
	Other Area (In hect.)	-
	Water bodies	-
	Nearest Town with Distance:	Rajkot (11 km)

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

3. **Occupational Details:**

Name of Three Major Occupation groups in Village:	1. Irrigation 2. Pillow Imitation 3. Labour work

4. **Physical Infrastructure Facilities:**

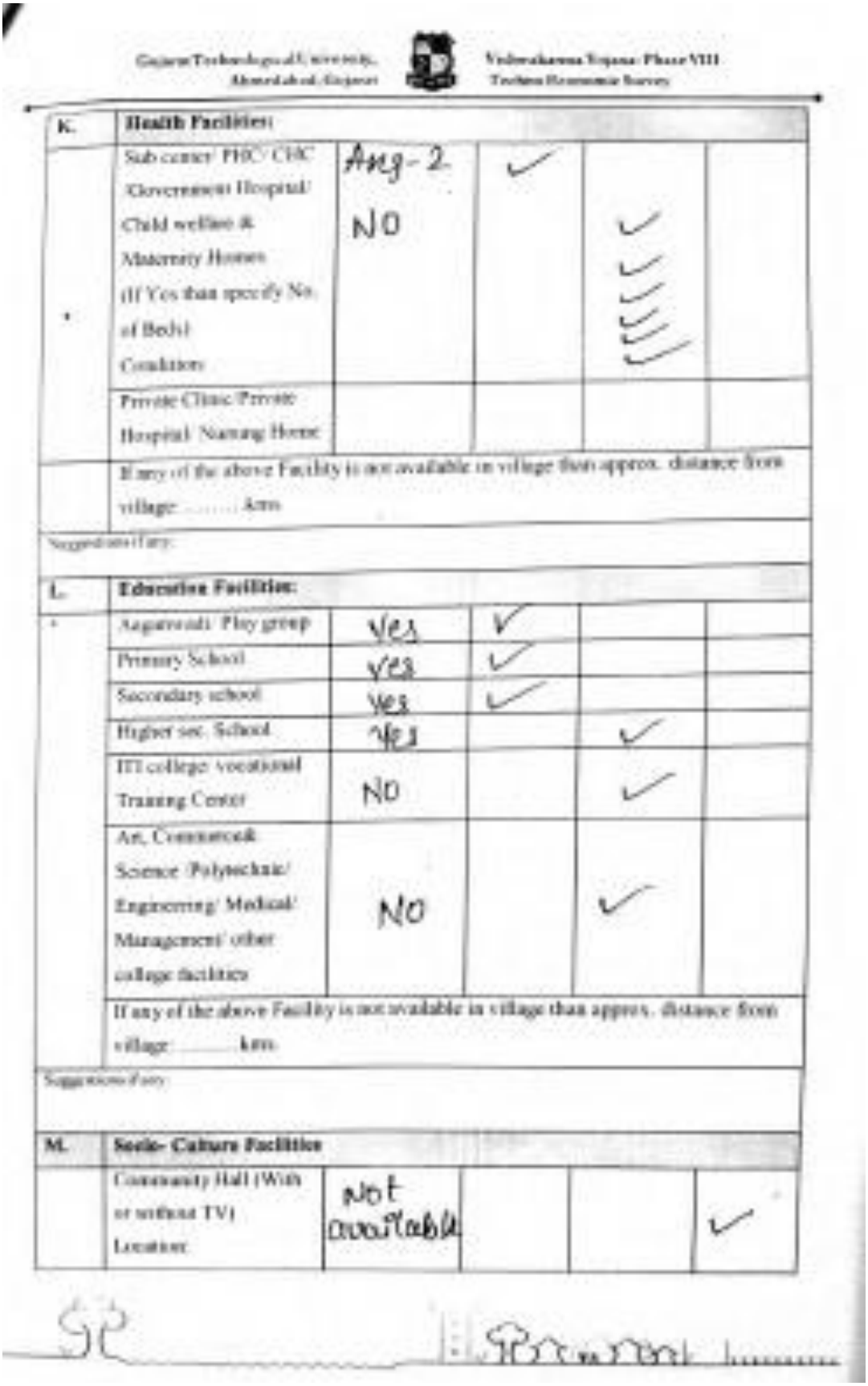
Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated) • RO Water ✓ • Well (Covered/ Uncovered) • Hand pumps • Tube well/ Borehole • River/ Canal/ Spring/ Lake/ Pond	Tap water	✓		
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: 10000	✓		Need Maint.
	Underground Sump	Capacity: 7500	✓		"
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	fully underground drainage	✓		
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	Close			
	If Open than Pucca / Kutchcha	Pakka			
	Whether drain water is discharged directly in to Water bodies/ Sewer plants				
Suggestions if any:					

E.	Road Network :(All Weather/ Katchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	Kuccha	✓		
	Main road				
	Internal streets				
	Nearest NH/SH/MDR/ODR Dist. in kms.				
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No then Nearest Rly Station---Kms)	—	—	—	
	Bus station (Y/N) Condition (If No then Nearest Bus Station---Kms)	—	—	—	
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Rickshaw			
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	More than 6hrs			
	Power supply for Domestic Use	11			
	Power supply for Agricultural Use	8hr.	✓		
	Power supply for Commercial Use	24hrs	✓		
	Road/ Street Lights	Yes	✓		

	Electrification in Government Buildings/ Schools/ Hospitals	Yes	✓		
	Renewable Energy Source Facilities (Y/ N)	No	✓		
	LED Facilities	—	—	—	—
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available then Nos.	—	—	—	—
	Location Condition	good	✓	—	—
	Community Toilet (With bath/ without bath facilities)	No		✓	
	Solid & liquid waste Disposal system available	No		✓	
	Any facility for Waste collection from road	No		✓	
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	River	✓		
Suggestions if any:					
J.	**Housing Condition:**				
	Kaichha/Pucca (Approx. ratio)	5:5			

5. **Social Infrastructural Facilities:**

Sr. No.	Description	Information/ Detail	Adequate	Inadequate	Remarks



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Vishwakarma Yojana: Phase VIII
Tourism Economic Survey

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

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

M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:	Not available			✓

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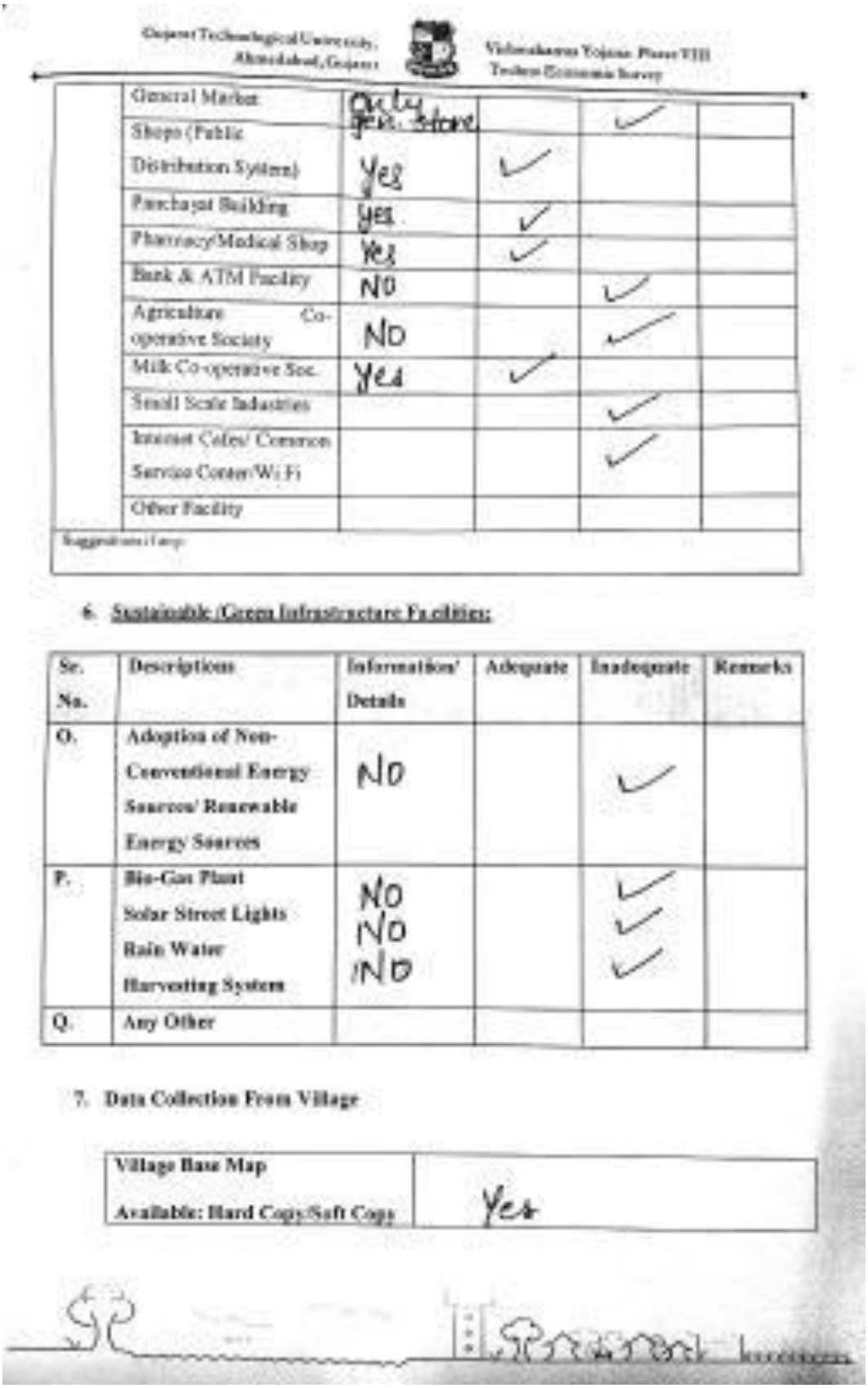
Vishwakarma Yojana: Phase VIII
Techno Economic Survey

	Condition:			Not	Not Fit
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	Not available			✓
	Public Garden Location: Condition:	Not available			✓
	Village Pond Location: Condition:			✓	
	Recreation Center Location: Condition:	available		✓	
	Cinema/ Video Hall Location: Condition:	NO			
	Assembly Polling Station Location: Condition:	In School		✓	
	Birth & Death Registration Office Location: Condition:	at Panchayat office		✓	

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

Suggestions if any:

Sr.	Other Facilities				
	Post office	Not available			
	Telecommunication Network/ STD booth	not available.			



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojna: Phase-VIII
Techno Economic Survey

	General Market	Only general store		✓	
	Shops (Public Distribution System)	Yes	✓		
	Panchayat Building	yes	✓		
	Pharmacy/Medical Shop	Yes	✓		
	Bank & ATM Facility	NO		✓	
	Agriculture Co-operative Society	NO		✓	
	Milk Co-operative Soc.	Yes	✓		
	Small Scale Industries			✓	
	Internet Cafes/ Common Service Center/Wi Fi			✓	
	Other Facility				
Suggestions if any:					

6. Sustainable /Green Infrastructure Facilities:

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

7. Data Collection From Village

Village Base Map Available: Hard Copy/Soft Copy	Yes

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

8. Additional Information/ Requirement:

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

9. Smart Village Proposal Design

Sr. No.	Descriptions	Information/ Detail	Remarks
1.			

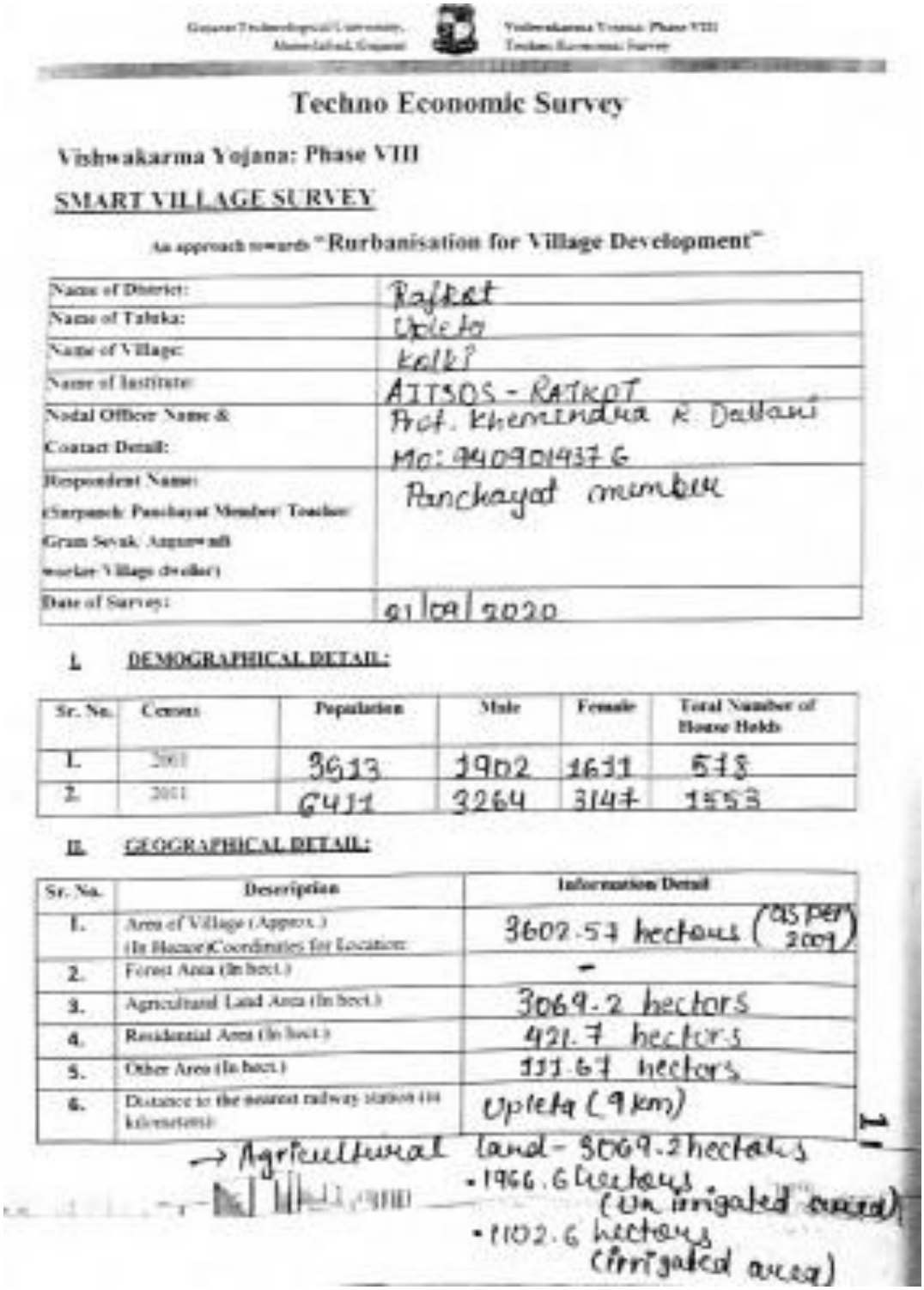
Note: Photographs/ Video/ Drawings of all existing Infrastructure facilities & conditions should be taken by students of respective villages for their record and information.

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

સરપંચ,
રાજસમઢીયાળા ગ્રામ પંચાયત

તલાટી-કમ-મંત્રી,
રાજસમઢીયાળા ગ્રામ પંચાયત

12.2 Survey form of smart village scanned copy attachment in the report for part-I



Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

Name of District:	Rajkot
Name of Taluka:	Upleta
Name of Village:	Kolki
Name of Institute:	AITSOS - RAJKOT
Nodal Officer Name & Contact Detail:	Prof. Khemindra R. Dallani Mo: 9409019376
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Anganwadi worker/ Village dweller)	Panchayat member
Date of Survey:	21/09/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	3913	1902	1631	518
2.	2011	6411	3264	3147	1553

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information Detail
1.	Area of Village (Approx.) (In Hectare/Coordinates for Location:	3602.53 hectares (as per 2001)
2.	Forest Area (In hect.)	-
3.	Agricultural Land Area (In hect.)	3069.2 hectors
4.	Residential Area (In hect.)	421.7 hectors
5.	Other Area (In hect.)	111.67 hectors
6.	Distance to the nearest railway station (in kilometers)	Upleta (9 km)

→ Agricultural land - 3069.2 hectares
- 1966.6 hectares (Un irrigated area)
- 1102.6 hectares (Irrigated area)

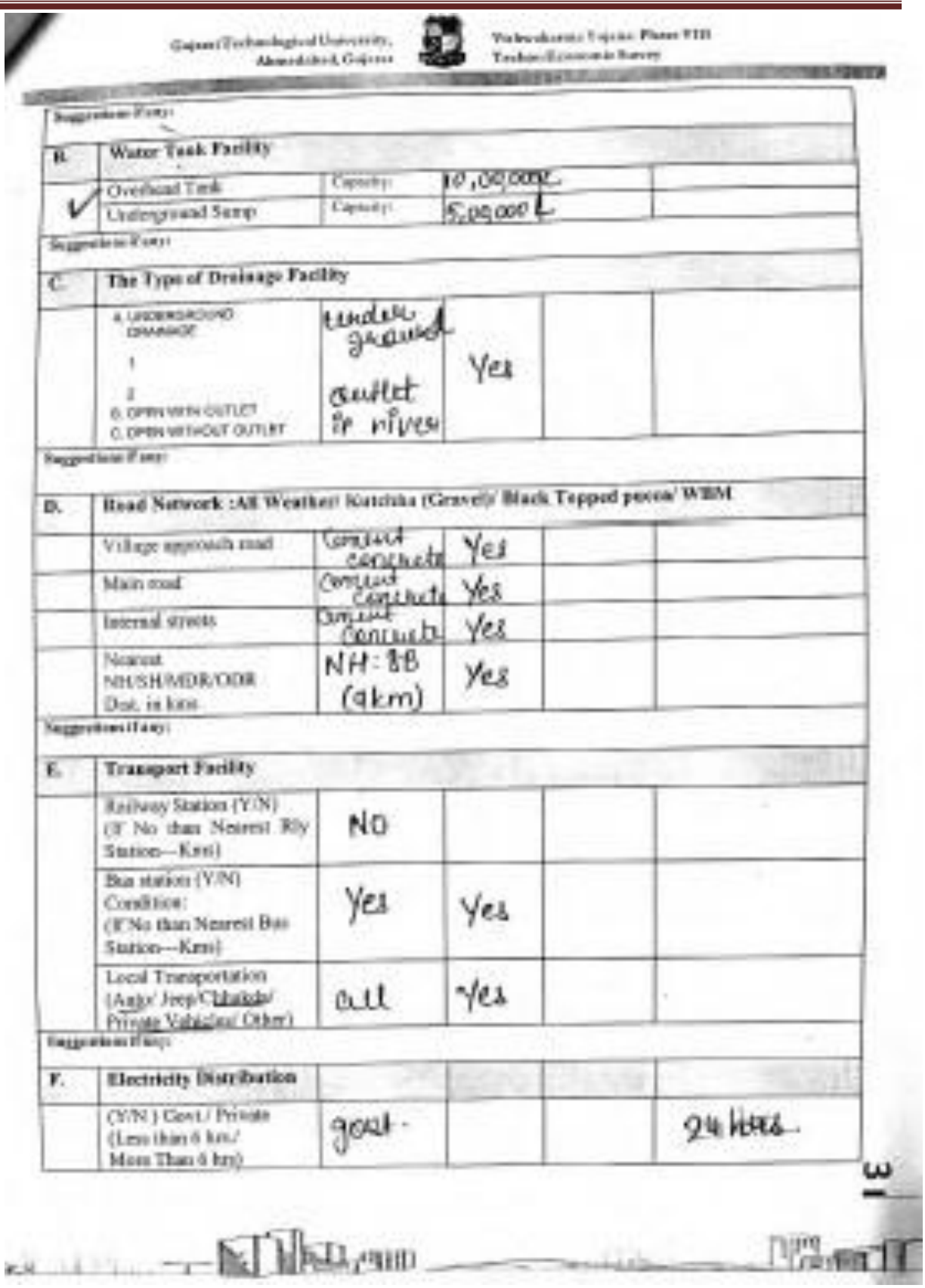
7.	Name of Nearest Town with Distance:	Upleta (9 km)
8.	Distance to the nearest bus station (in kilometers):	in village
9.	Whether village is connected to all road for the any facility or town or City?	Yes

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Farming
	2.	labour work
	3.	cottage Industries
Major crops grown in the village:	1.	Groundnut
	2.	Cotton
	3.	Wheat

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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



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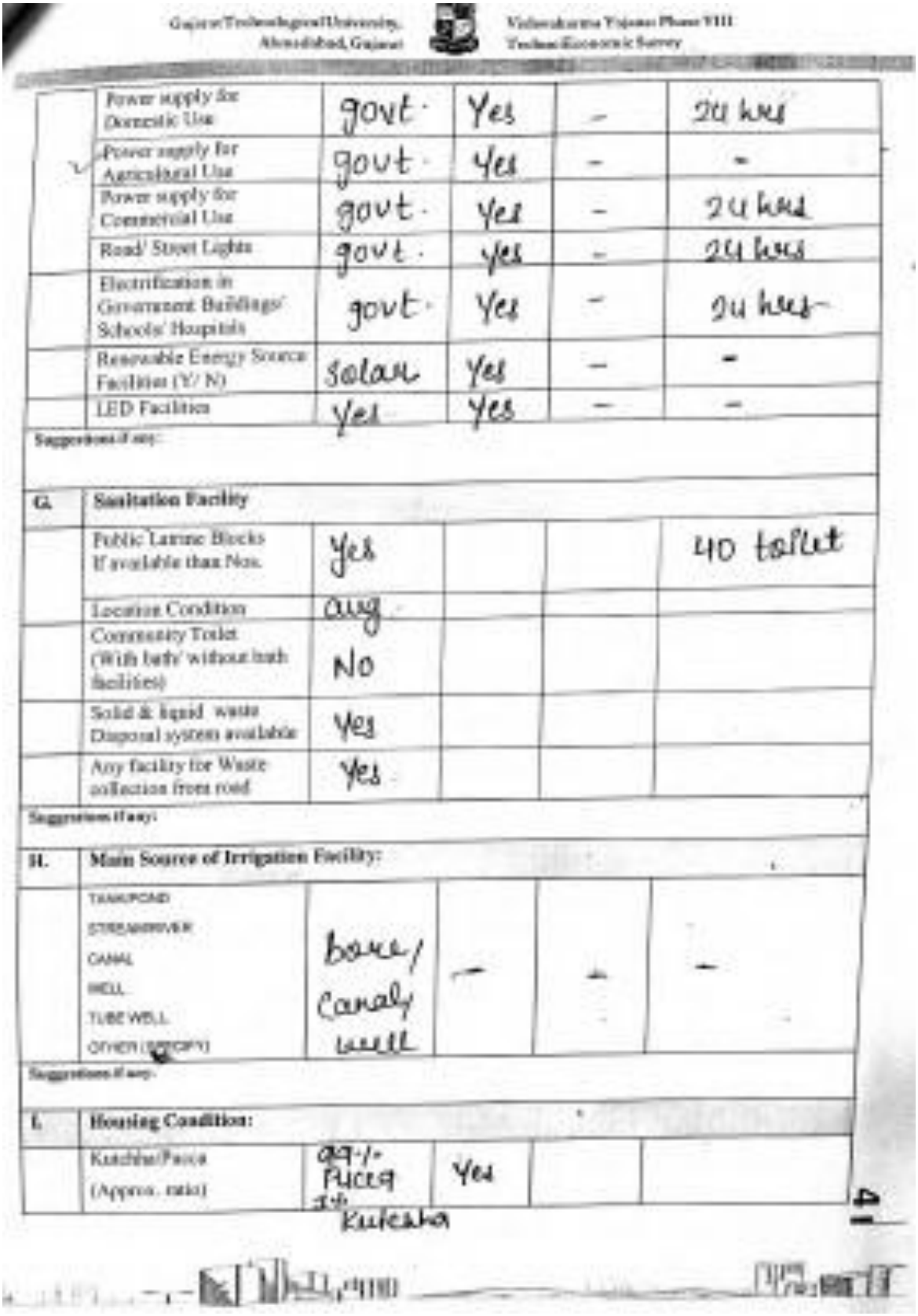
B.	**Water Tank Facility**				
✓	Overhead Tank	Capacity:	10,00,000 L		
	Underground Sump	Capacity:	5,00,000 L		
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	underground outlet is given	Yes		
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Concrete concrete	Yes		
	Main road	Concrete concrete	Yes		
	Internal streets	Concrete Concrete	Yes		
	Nearest NH/SH/MDR/ODR Dist. in km	NH: 8B (9km)	Yes		
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Km)	NO			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Km)	Yes	Yes		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	all	Yes		
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	good			24 Hrs.



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	Power supply for Domestic Use	govt.	Yes	-	24 hrs
	Power supply for Agricultural Use	govt.	Yes	-	-
	Power supply for Commercial Use	govt.	Yes	-	24 hrs
	Road/ Street Lights	govt.	yes	-	24 hrs
	Electrification in Government Buildings/ Schools/ Hospitals	govt.	Yes	-	24 hrs
	Renewable Energy Source Facilities (Y/ N)	solar	Yes	-	-
	LED Facilities	yes	Yes	-	-

Suggestions if any:

G.	Sanitation Facility				
	Public Latrine Blocks If available than Nos.	Yes			40 toilet
	Location Condition	avg			
	Community Toilet (With bath/ without bath facilities)	No			
	Solid & liquid waste Disposal system available	Yes			
	Any facility for Waste collection from road	Yes			

Suggestions if any:

H.	Main Source of Irrigation Facility:				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL OTHER (SPECIFY)	bore/ Canal/ well	-	-	-

Suggestions if any:

I.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)	99% Pucca 1% Kutcha	Yes		

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi) ✓	(6)	Yes		
	Sub-Centre				
	PHC (2)	avg. condition	Yes		condition avg.
	BLOCK PHC				
	CHC/RH				
	District/ Govt. Hospital	NO			
	Govt. Dispensary				
	Private Clinic (5)	Yes	Yes		
	Private Hospital/ Nursing Home	NO NO			
	AYUSH Health Facility	Yes	Yes		
	sonography /ultrasound facility	NO			
	If any of the above Facility is not available in village then approx. distance from village: 9 kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Anganwadi/ Play group				
	Primary School (2)	Yes		Yes	maintenance required
	Secondary school (2)	Yes	Yes		
	Higher sec. School (1)	Yes	Yes		
	ITI college/ vocational Training Center	NO			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	NO			
	If any of the above Facility is not available in village then approx. distance from village: 9 ...kms.				

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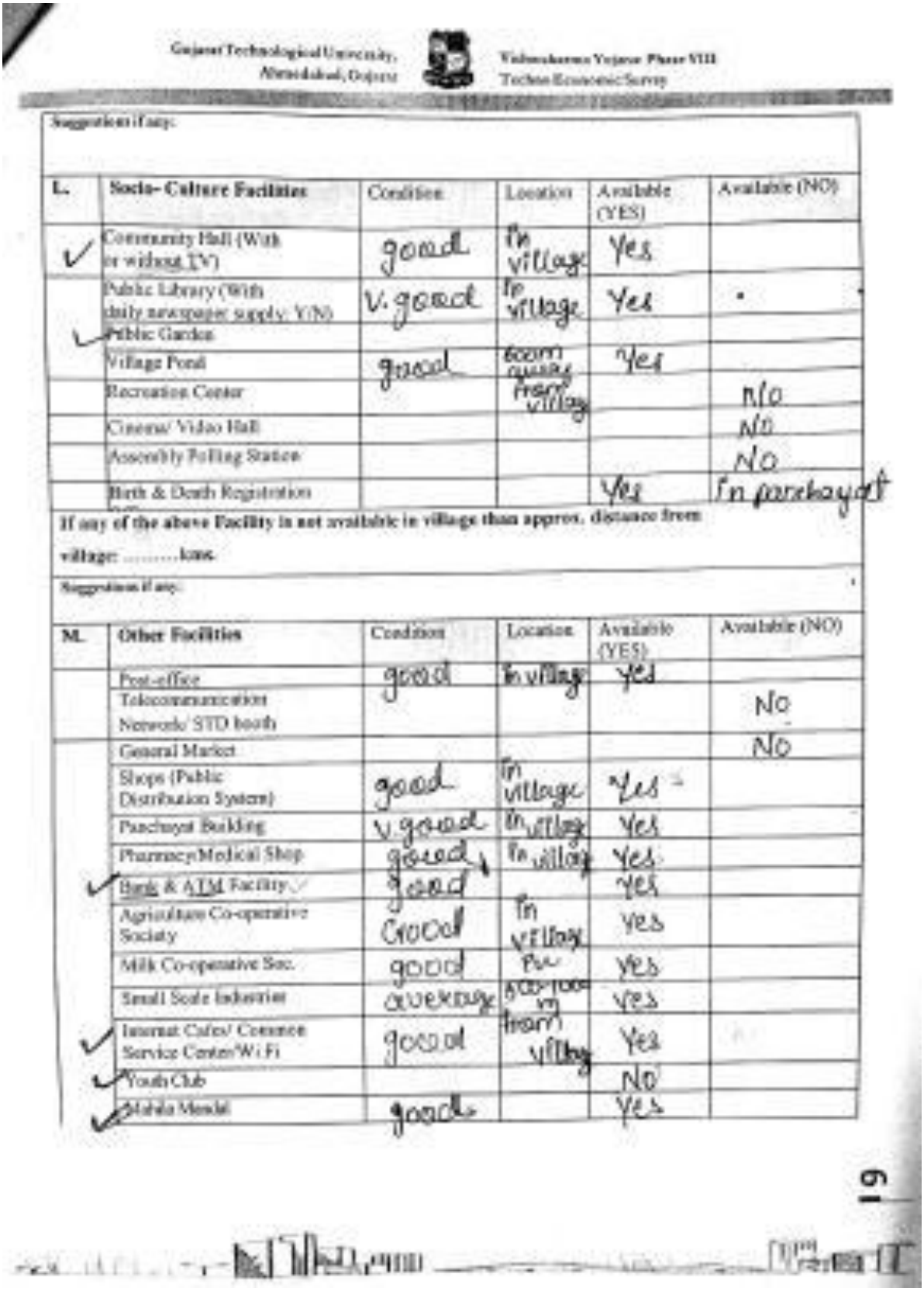

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Suggestion if any:

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

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

Suggestion if any:

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

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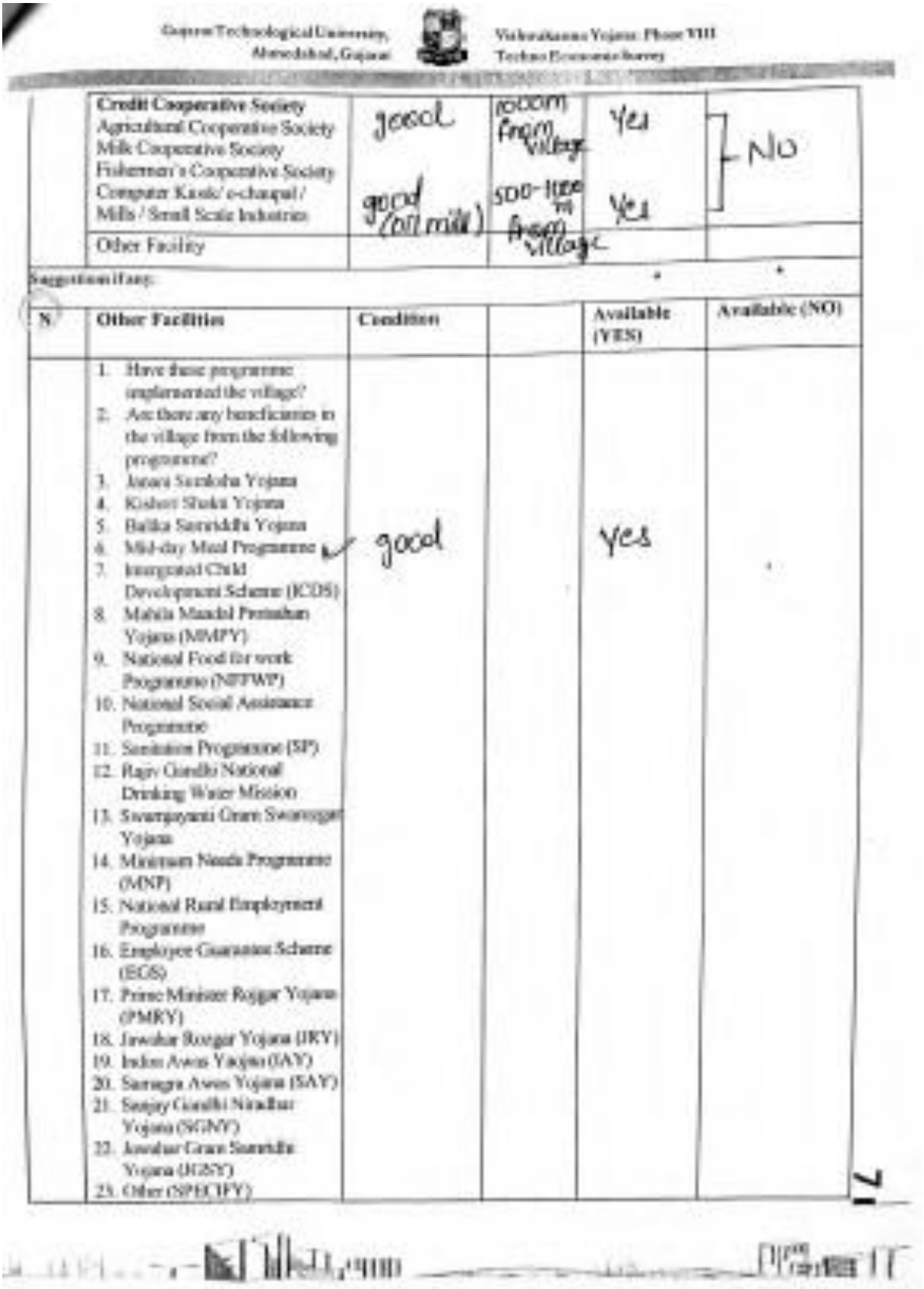

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Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-chaupal / Mills / Small Scale Industries	good good (20 mile)	10 KM from village 500-1000 m from village	Yes Yes	No
Other Facility				

Suggestion if any:

S.	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. Integrated 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 Yojana (IAY) 20. Samagra Awas Yojana (SAY) 21. Sanjay Gandhi Niradhar Yojana (SGNY) 22. Jawahar Gram Samridhi Yojana (JGSY) 23. Other (SPHCIFY)	good		Yes	

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional/ Renewable Energy Sources	Solar plates	Yes		
2.	Bio-Gas Plant X Water Harvesting System X	✓ →	Yes		
3.	Any Other				

VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

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

IX. Smart Village / Heritage Details

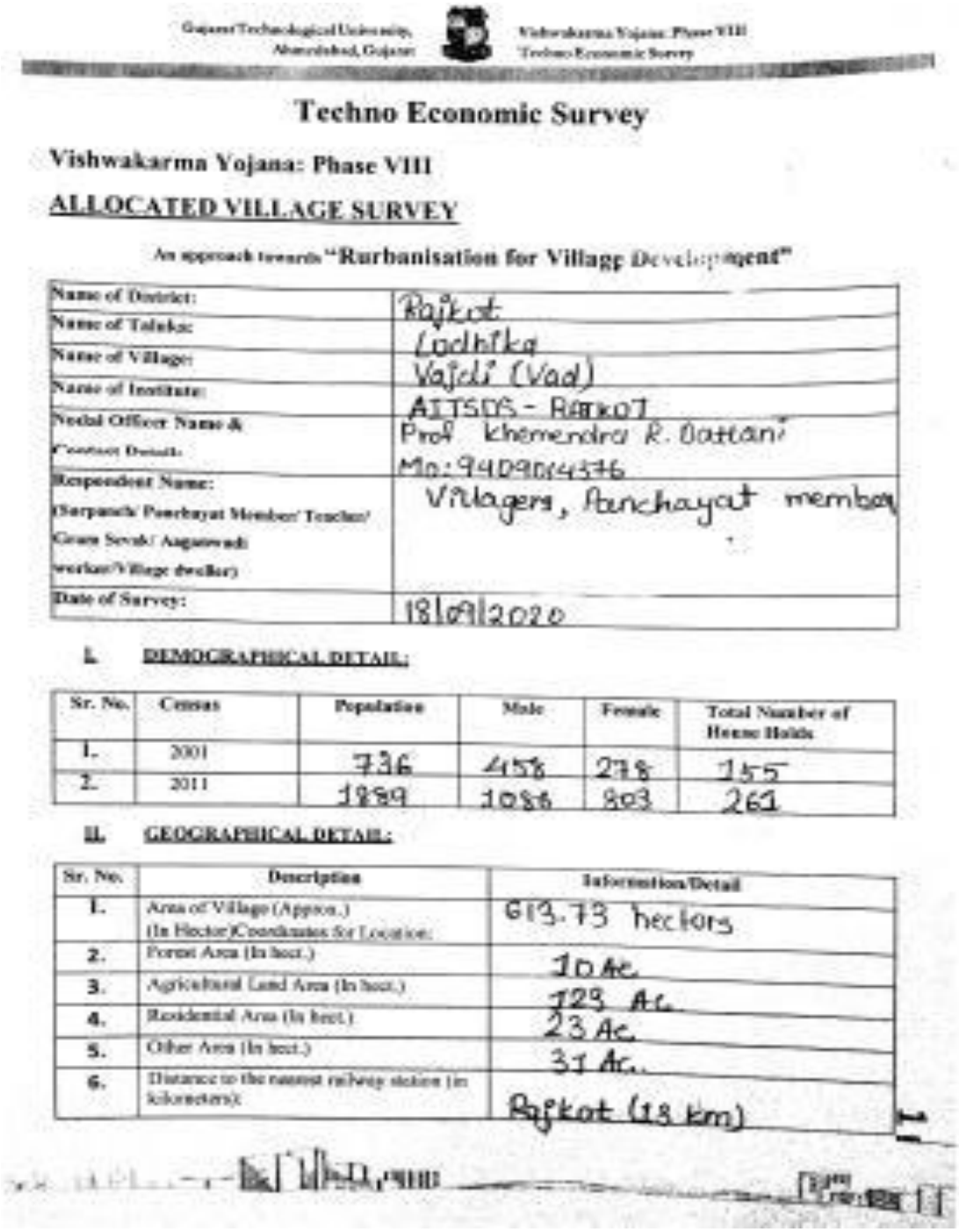
Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	—	—

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

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

દેવાભાઈ પ્રજાપતિ પટેલ
સરપંચ,
શ્રી ગ્રામ પંચાયત-કોલકી

12.3 survey form of allocated village scanned copy attachment in the report for part-I



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Techno Economic Survey

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

Name of District:	Rajkot
Name of Taluka:	Lodhika
Name of Village:	Vajdi (Vad)
Name of Institute:	AITSDS - Rajkot
Nodal Officer Name & Contact Details:	Prof Khemendra R. Dattani Mo: 9409064376
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Villagers, Panchayat member
Date of Survey:	18/09/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	736	458	278	155
2.	2011	1889	1086	803	261

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)/Coordinates for Location:	613.73 hectors
2.	Forest Area (In hect.)	10 Ac.
3.	Agricultural Land Area (In hect.)	129 Ac.
4.	Residential Area (In hect.)	23 Ac.
5.	Other Area (In hect.)	31 Ac.
6.	Distance to the nearest railway station (in kilometers):	Rajkot (13 km)

7.	Name of Nearest Town with Distance:	Metoda GIDC (2.5-3 km)
8.	Distance to the nearest bus station (in kilometers):	In Village
9.	Whether village is connected to all road for the any facility or town or City?	Yes

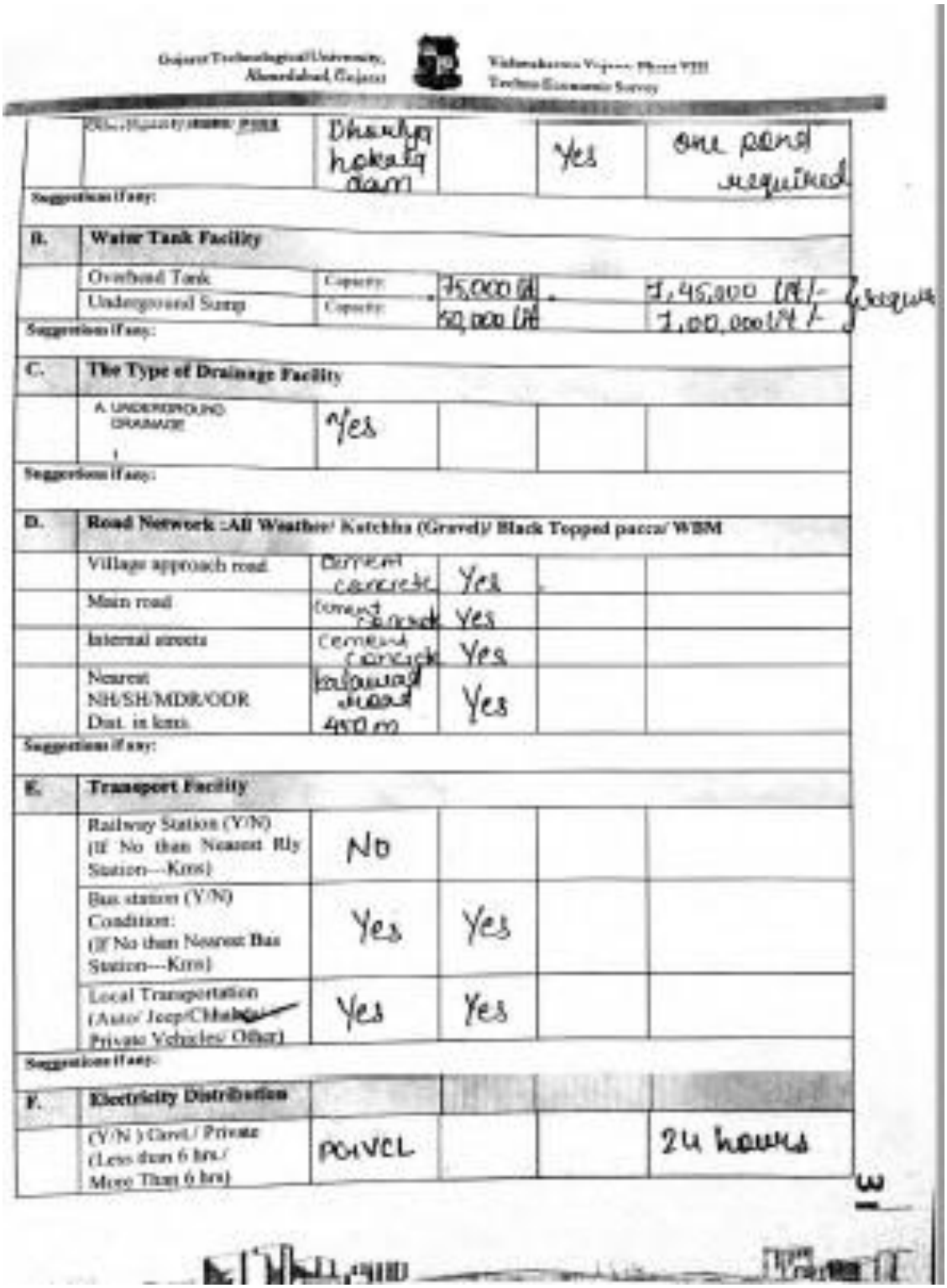
III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	farming
	2.	labour
	3.	Cottage industries

Major crops grown in the village:	1.	Groundnut
	2.	Cotton
	3.	wheat

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
1.	**PIPED WATER** Piped Into Dwelling Piped To Yard Plot Public Tap Standpipe Tube Well Or Bore Well → 5			✓	Summer season per day 1,00,000 lit. 4 per. 1 Sch 1 no. 000 storage capacity needed
2.	**DUG WELL** Protected Well → 1 Un Protected Well	0	0	0	
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 Boring Well Hand Pump → 5	Some dirty			1 requirement 1 in working condition



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Vishwakarma Yojana: Phase VIII
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	[illegible]	Dhardya hakalq dam		Yes	one pond required

Suggestions if any:

B.	**Water Tank Facility**					
	Overhead Tank	Capacity	75,000 lit.		3,45,000 lit/-	3 required
	Underground Sump	Capacity	50,000 lit		1,00,000 lit/-	

Suggestions if any:

C.	**The Type of Drainage Facility**					
	A. UNDERGROUND DRAINAGE	Yes				

Suggestions if any:

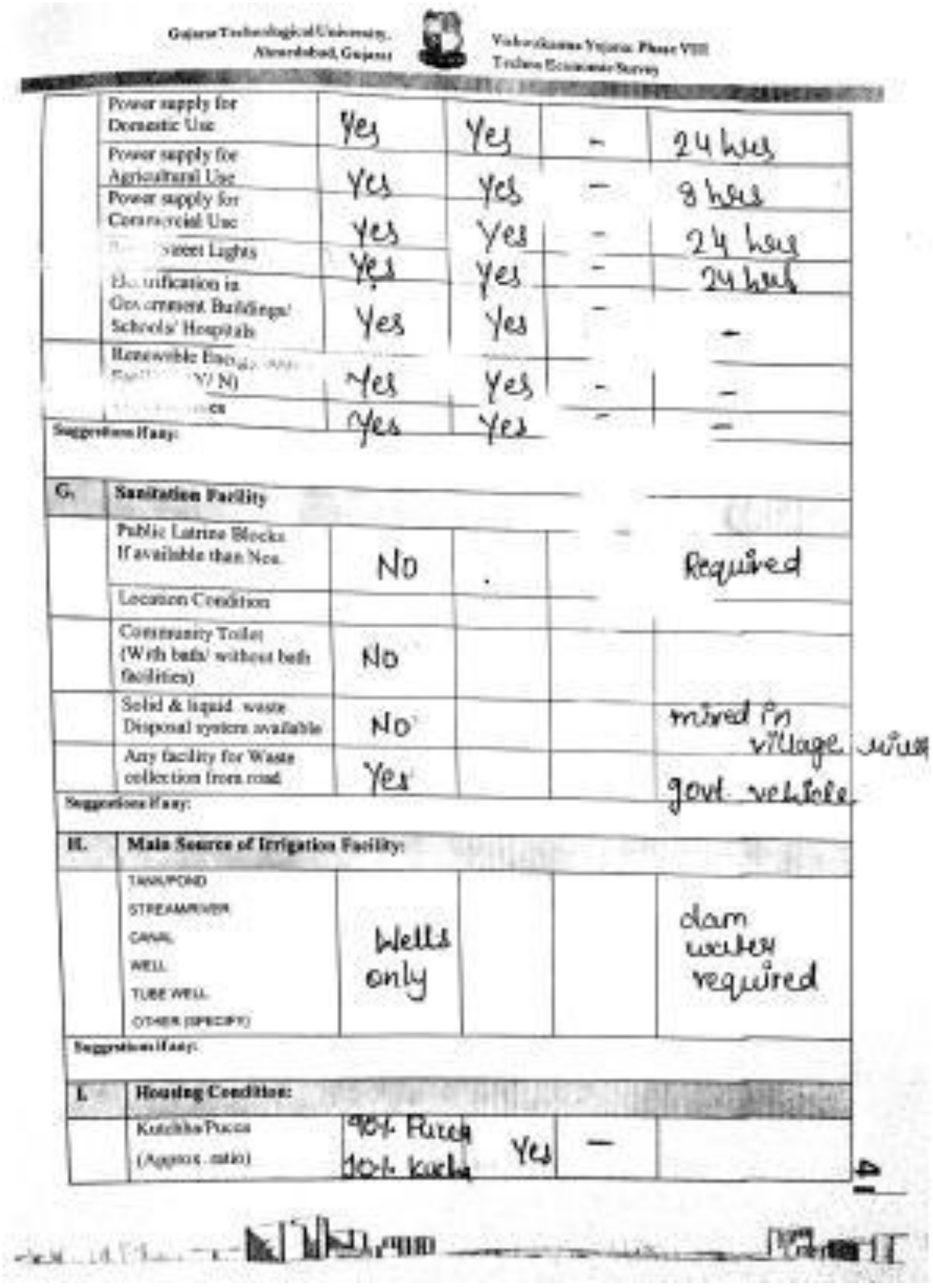
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pacca/ WBM**					
	Village approach road	Cement concrete	Yes			
	Main road	Cement concrete	Yes			
	Internal streets	Cement concrete	Yes			
	Nearest NH/SH/MDR/ODR Dist. in kms.	Kalavad road 450 m	Yes			

Suggestions if any:

E.	**Transport Facility**					
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No				
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes	Yes			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Yes	Yes			

Suggestions if any:

F.	**Electricity Distribution**					
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	power			24 hours	



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Vishwakarma Yojana: Phase VIII
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	Power supply for Domestic Use	Yes	Yes	-	24 hrs
	Power supply for Agricultural Use	Yes	Yes	-	8 hrs
	Power supply for Commercial Use	Yes	Yes	-	24 hrs
	Street Lights	Yes	Yes	-	24 hrs
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	Yes	-	-
	Renewable Energy Facilities (Y/ N)	Yes	Yes	-	-
	Others	Yes	Yes	-	-

Suggestions if any:

G.	Sanitation Facility				
	Public Latrine Blocks If available then Nos.	No			Required
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	No			
	Solid & liquid waste Disposal system available	No			mixed in village waste
	Any facility for Waste collection from road	Yes			govt. vehicle

Suggestions if any:

H.	Main Source of Irrigation Facility:				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL OTHER (SPECIFY)	Wells only			dam water required

Suggestions if any:

I.	Housing Condition:				
	Kutchha Pucca (Approx. ratio)	90% Pucca 10% kucha	Yes	-	

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Description	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi) → 2	ICDS(2)	Yes		—
	Sub-Centre				
	PHC → 1			Yes	—
	BLOCK PHC				—
	CHC/RH				—
	District/ Govt. Hospital.	X			
	Govt. Dispensary	✓			—
	Private Clinic	X			
	Private Hospital/	X			—
	Nursing Home				—
	AYUSH Health Facility	X			
	sonography /ultrasound facility	X			—
					—
	If any of the above Facility is not available in village then approx. distance from village: ..... /kms.				
Suggestions if any:					

K.	Education Facilities:				
	Anganwadi/ Play group	Yes	Yes		
	Primary School	Yes	Yes		(1st to 7th Std)
	Secondary school	—	—	—	needed
	Higher sec. School	—	—	—	needed
	ITI college/ vocational Training Center	—	—	—	—
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	—	—	—	—

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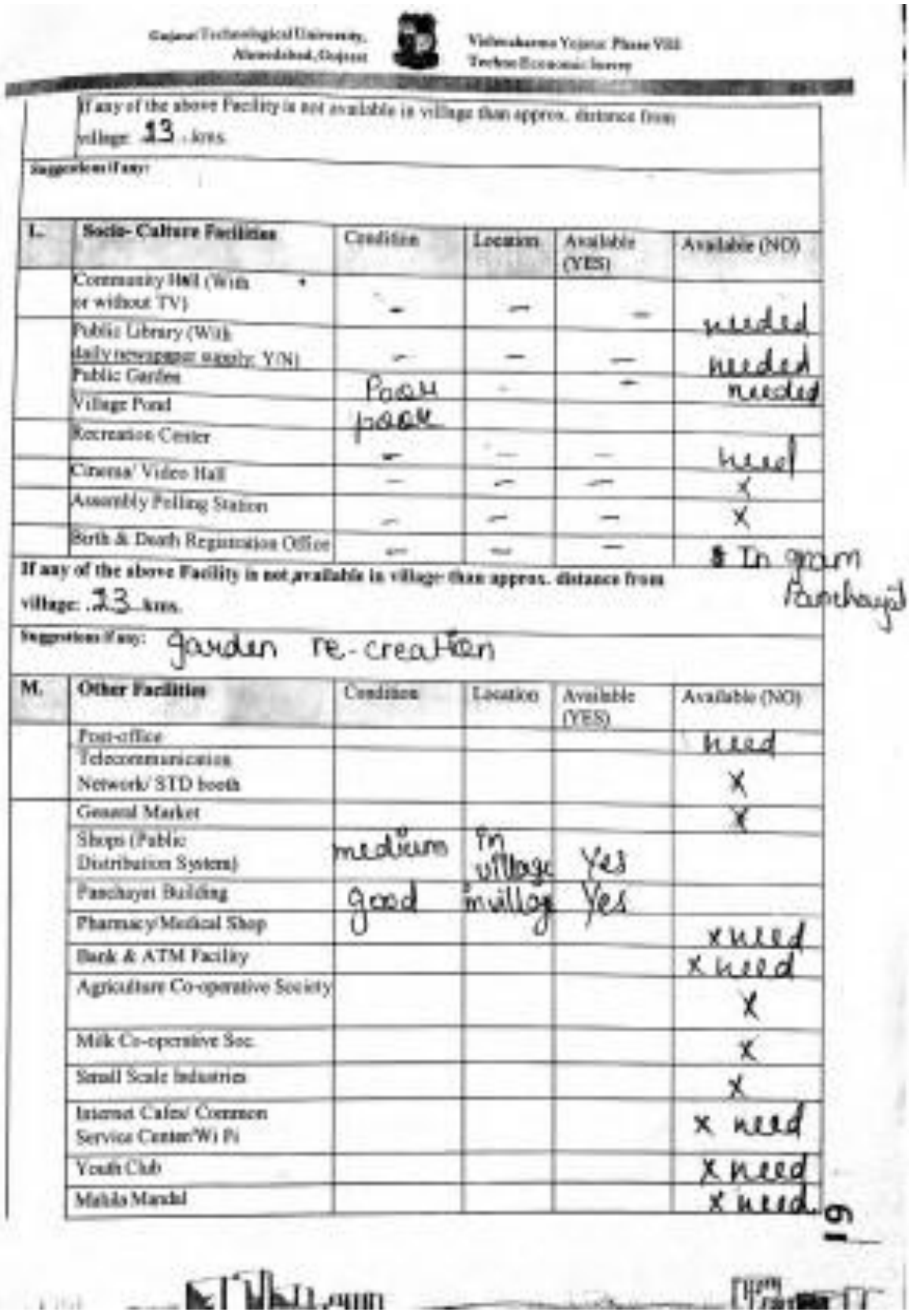

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If any of the above Facility is not available in village than approx. distance from village: 13 kms.

Suggestion if any:

I.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)	-	-	-	needed
	Public Library (With daily newspaper supply: Y/N)	-	-	-	needed
	Public Garden	Poor	-	-	needed
	Village Pond	poor			
	Recreation Center	-	-	-	need
	Cinema/ Video Hall	-	-	-	x
	Assembly Polling Station	-	-	-	x
	Birth & Death Registration Office	-	-	-	In gram Panchayat

If any of the above Facility is not available in village than approx. distance from village: 13 kms.

Suggestion if any: garden re-creation

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

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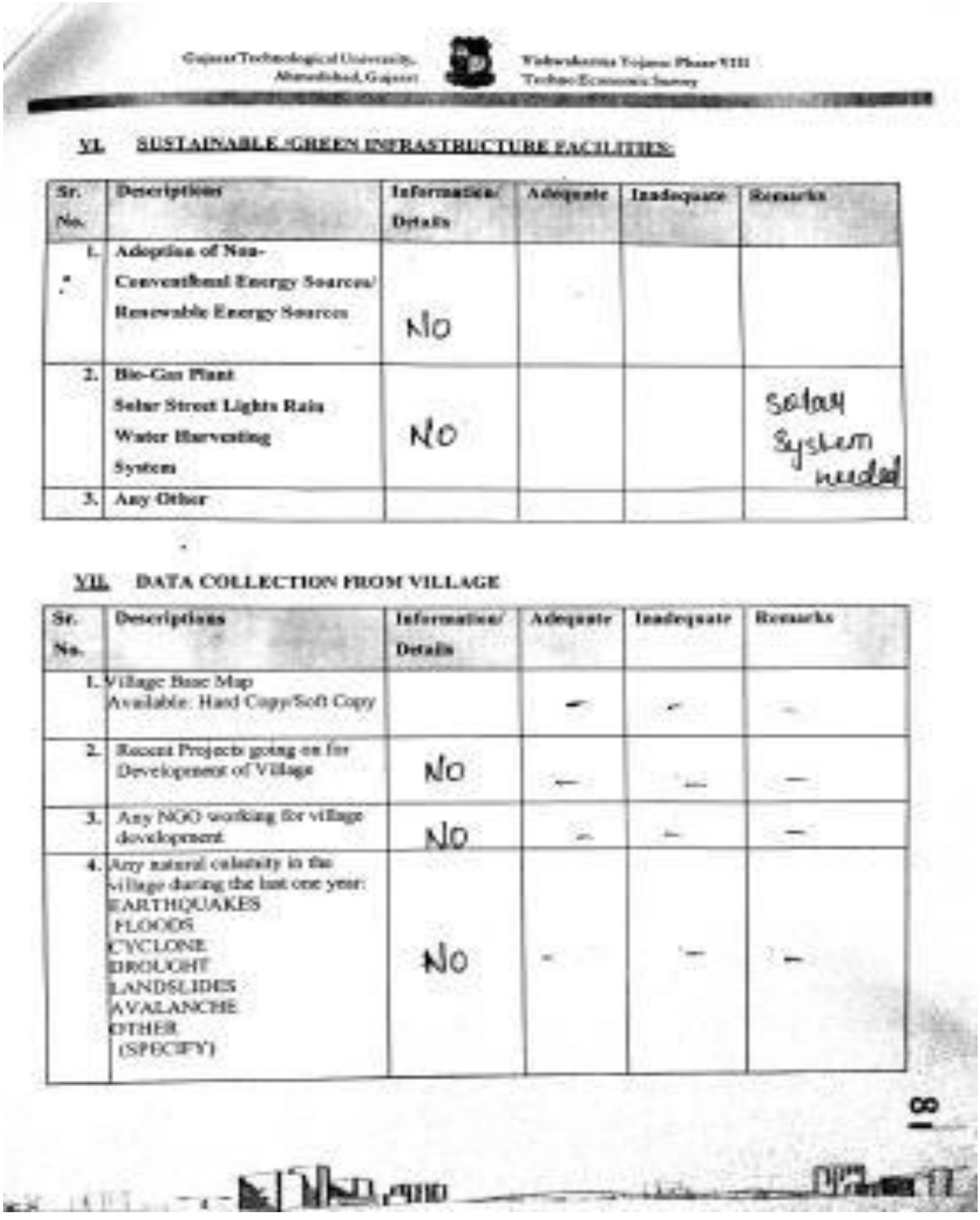
	Credit Cooperative Society Agricultural Cooperative Society Milk Cooperative Society Fishermen's Cooperative Society Computer Kiosk/ e-chaupal / Mills / Small Scale Industries	–	–	–	–
	Other Facility	–	–	–	–

Suggestions Here: -

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		need improvement		
	6. Mid-day Meal Programme →	medium		Yes	–
	7. Integrated 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 Yojna (IAY)	–	–	–	–
	20. Sansgra Awas Yojana (SAY)				
	21. Sanjay Gandhi Niradhar Yojana (SGNY)				
	22. Jawahar Gram Samridhi Yojana (JGSY)				
	23. Other (SPECIFY)				



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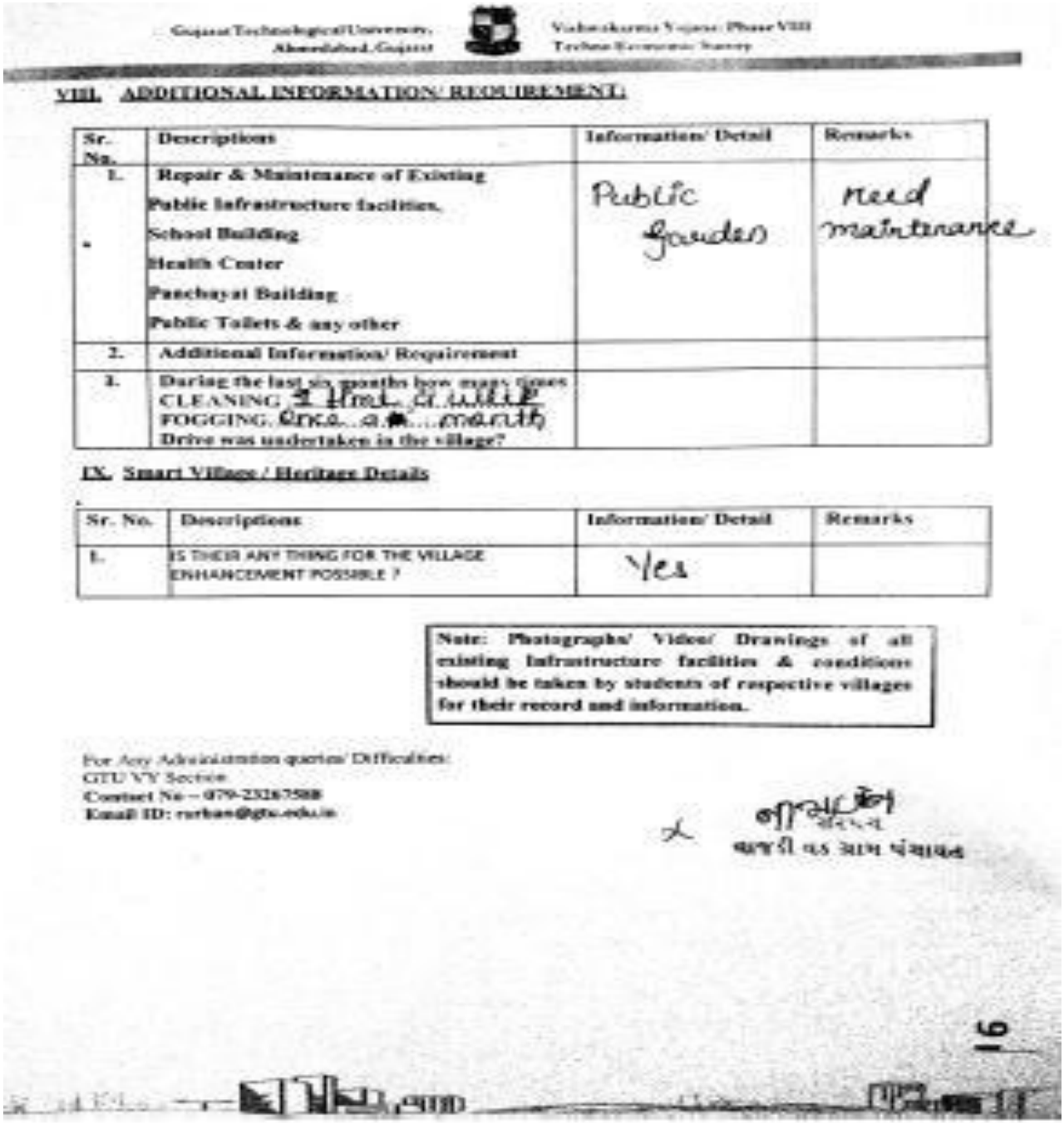
VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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



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VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

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

IX. Smart Village / Heritage Details

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

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 VV Section
Contact No – 079-23267588
Email ID: vurban@gtu.edu.in

12.4 Gap analysis of Vajdi (Vad)

Village facilities	Planning commission/UPDFI norms	village	Vajdi (Vad)	
		Population		1889
		Existing	Required as per norms	Gap
Social Infrastructure Facilities				
Education				
Anganwadi	Each or per 2500 population	1	1	0
Primary School	Each per 2500 population	1	1	0
Secondary School	Per 7,500 population	0	1	-1
Higher Secondary school	Per 15,000 population	0	0	0
College	Per 125,000 population	0	0	0
Tech. training Institute	Per 100000 population	0	0	0
Agriculture Research Center	Per 100000 population	1	0	0
Skill development center	Per 100000 population	0	0	0
Health Facility				
Govt./Panchayat dispensary or sub	Each village	1	1	0
Primary Health center	Per 20,000 population	1	0	0
Child welfare and Maternity Home	Per 10,000 population	0	0	0
Multispecialty Hospital	Per 100000 Population	0	0	0
Public Latrines	1 for 50 families(if toilet is not there in home, specially for slum pockets & kacha house)	0	1	-1
Physical Infrastructure Facilities				
Transportation		Adequate	Inadequate	
Pakka village Approach Road	Each village	Yes	No	
Bus/Auto Stand Provision	All villages connected by PT(ST bus or Auto)	Yes	No	

Drinking water (Min. 70 lpcd)		Yes	No	
Over Head Tank	1/3 Total demand	Yes	No	
U/G Sump	2/3 Total demand	Yes	No	
Drainage network-open		No	No	
Drainage network-cover		Yes	No	
Waste management system		No	Yes	
Electricity Network		Yes	No	
Socio culture Infrastructure Facilities				
Community Hall	Per 10000 Population	0	1	-1
Community Hall & Public Library	Per 15000 Population	0	1	-1
Cremation Ground	Per 20,000 Population	1	0	-1
Post Office	Per 10,000 Population	0	1	0
Gram Panchayat Building	Each individual/ group	1	0	0
APMC	Per 100000 Population	0	0	0
Fire Station	Per 100000 Population	0	1	-1
Public Garden	Per village	1	0	0
Police Station	Per 40,000 Population	0	1	-1
Shopping Mall		0	0	0

Table 21: Gap Analysis

12.5 Summary Details of all the villages Designs in Table form as Part-I and Part-II

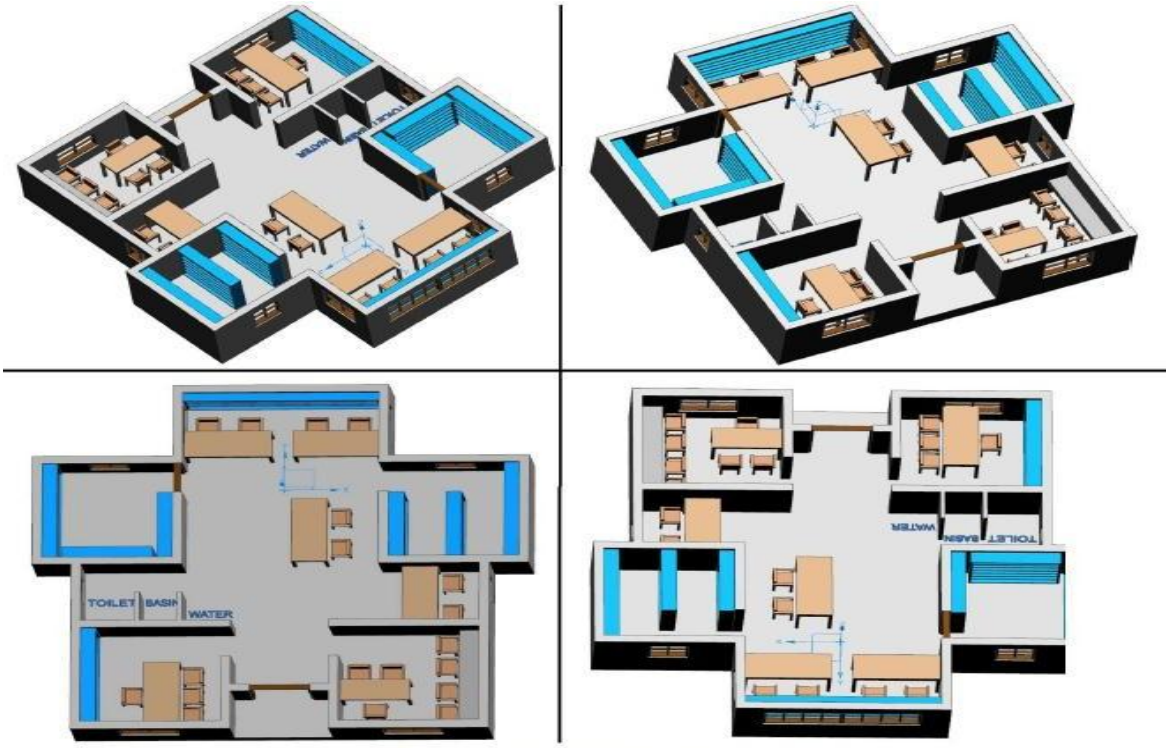
Sr. No	Village	Discipline	Part-1	Part-2
1	Vajdi(Vad)	Civil	Soak Pit	Govt. Medical Store
			Public Toilet	Govt. Medical Lab
			Post Office	Women's Cottage Industry
			Public Library	Public Garden
			Public Museum	Veterinary Hospital
			E-corner	Cyber Café
2	Charkhadi	Civil	Septic Tank	Paver Block Pavement
			Overhead Tank	Bus Stand
			Public Toilet	Play Ground
			Super Market	Ware House
			Rain Water Harvesting	Skill Development Center
			Gate	Public Health Center
3	Bavakhakhariya	Civil	Water Butt	Main Gate
			Public Garden	Public Library
			PHC	Public Toilet
			Assembly Hall	Community Hall
			Plastic bottle crusher machine	Skill Development Center
			Avado	Post Office
4	Devda	Civil	Biogas Plant	Water Tank
			Medical Store	Public Toilet
			Anganwadi	Plastic Bottle Crusher Machine
			Bank with ATM	Post Office
			Chabutro	Bus Stand
			Cabin for control of CCTV	Feast of Water

Table 22: Summary of village design

12.6 Plan & Drawing in 3D:

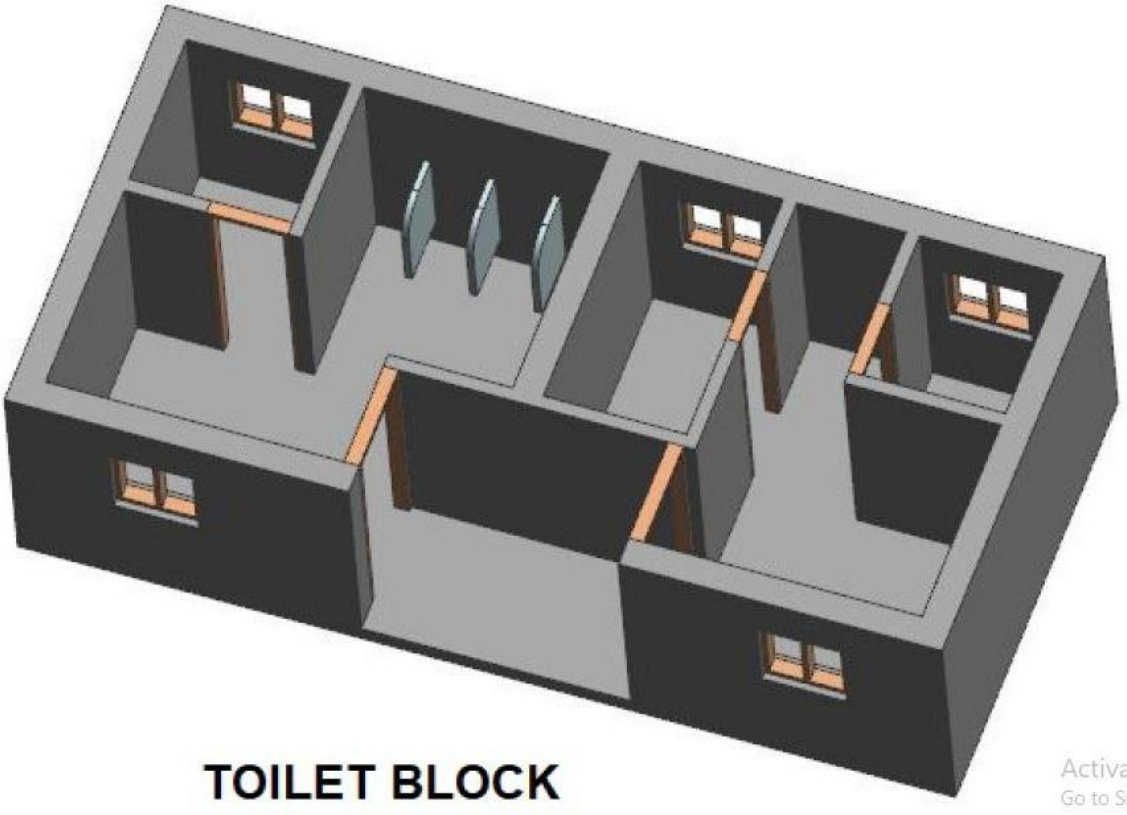
12.6.1 Post office

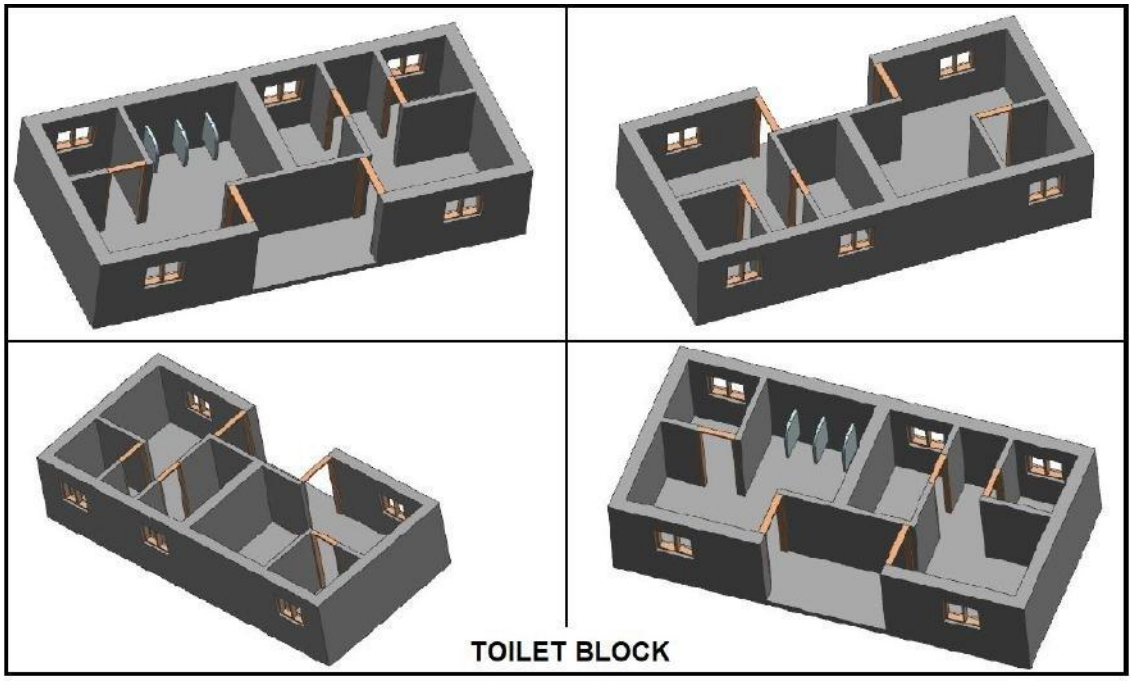
POST OFFICE BUILDING



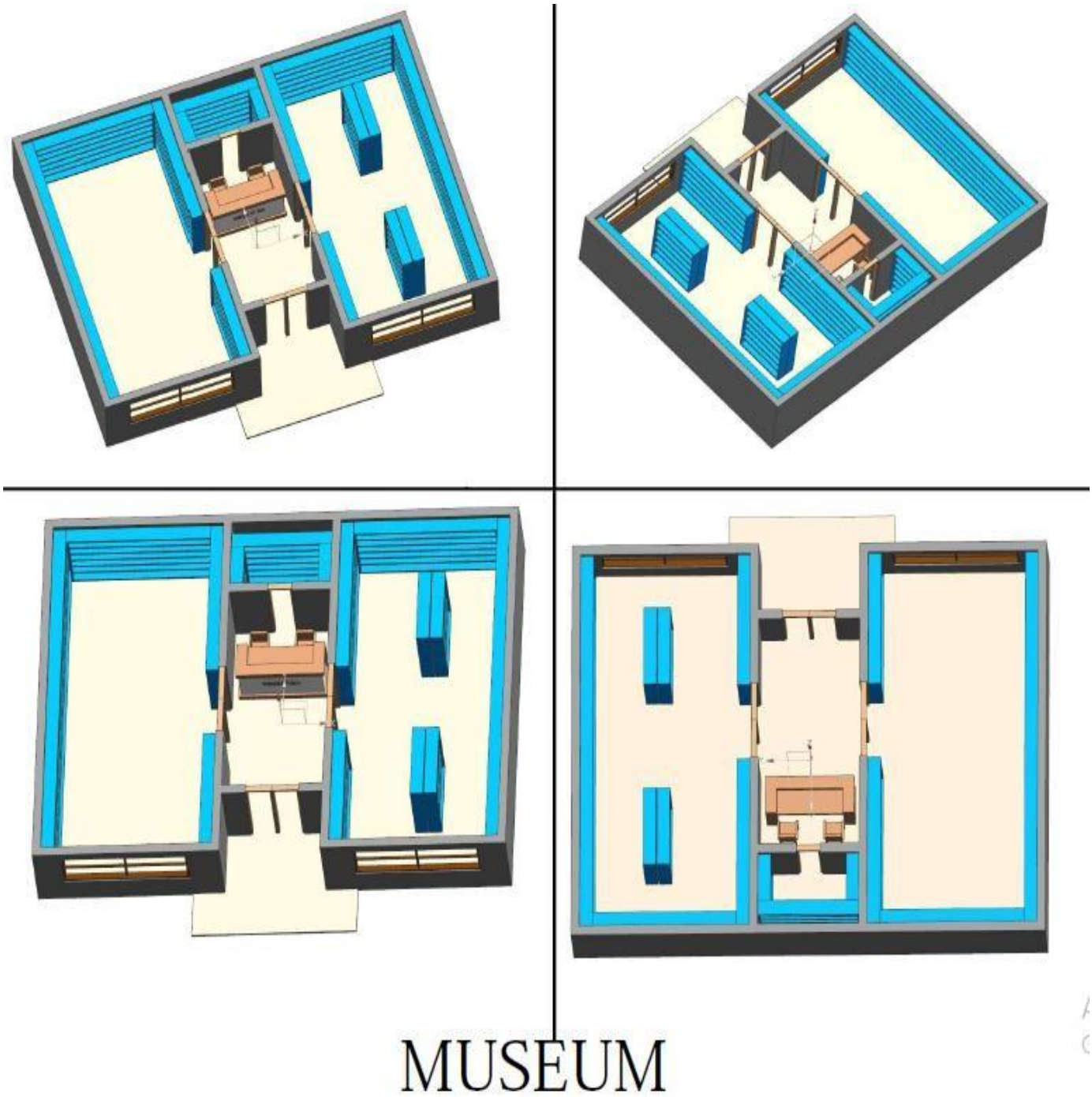
POST OFFICE BUILDING

12.6.2 Public Toilet



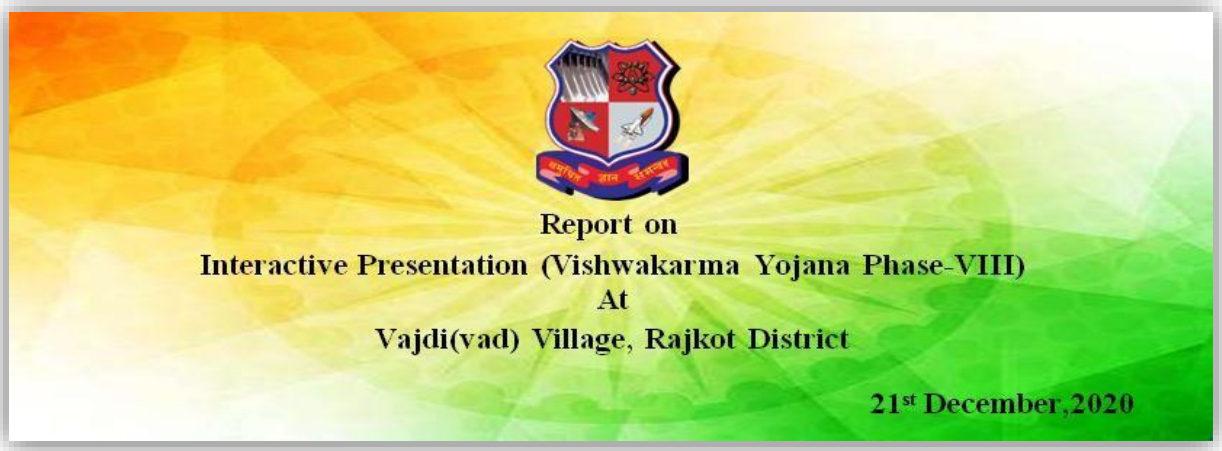


12.6.3 Museum



12.7 Summary of Good photographs

12.8 Village Interaction with Sarpanch Report and photograph



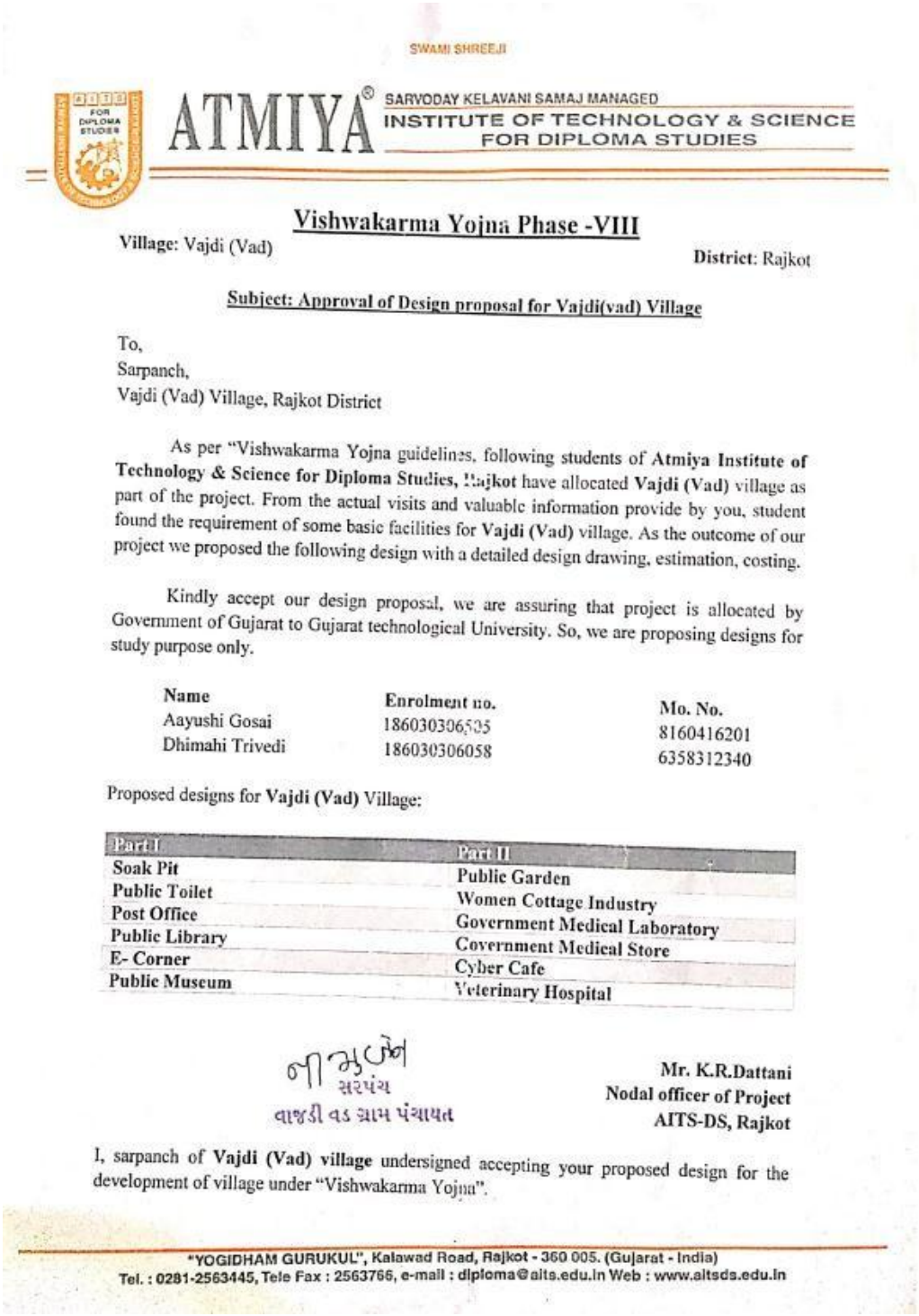
We visited Vajdi (Vad) and surveyed many village dwellers. We interacted with Sarpanch, Talati, Panchayat members. We explained them about Vishwakarma Project and they cooperatively helped us for moving further. We conducted Techno-economic survey for getting the basic information and existing facilities.

We also visited the Gram Panchayat Building, Temples, Public Garden, Etc. to know the current condition of the existing facilities. We also studied various developed facilities like Cement Concrete Roads, Street Lights, Underground Drainage, Piped Water and Gas Line, etc.

We tried our best for providing the lacking and needed amenities like Public Toilet, Public Library, Post-Office, Museum, E-corner, Soak pit. We explained our designs to the villagers and sarpanch. They helped us very well for understanding the village and for overall development of the village.

Figure-65 Interaction at Vajdi (Vad) Village

12.9 Sarpanch letter giving information about the village development



SWAMI SHREEJI

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

Vishwakarma Yojna Phase -VIII

Village: Vajdi (Vad) **District**: Rajkot

Subject: Approval of Design proposal for Vajdi(vad) Village

To,
Sarpanch,
Vajdi (Vad) Village, Rajkot District

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

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

Name	Enrolment no.	Mo. No.
Aayushi Gosai	186030306535	8160416201
Dhimahi Trivedi	186030306058	6358312340

Proposed designs for **Vajdi (Vad)** Village:

Part I	Part II
Soak Pit	Public Garden
Public Toilet	Women Cottage Industry
Post Office	Government Medical Laboratory
Public Library	Government Medical Store
E- Corner	Cyber Cafe
Public Museum	Veterinary Hospital

સરપંચ
વાજડી વડ ગ્રામ પંચાયત

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

I, sarpanch of **Vajdi (Vad) village** undersigned accepting your proposed design for the development of village under "Vishwakarma Yojna".

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

12.10 Comprehensive Report preparation as per format

- We selected Vajdi (Vad) as our allocated village for the Vishwakarma Phase-VIII.
- As a reference we took Kolki village as smart village and Rajsamadhiyara as ideal village.
- After techno economical surveys of these 3 villages we found out some lacking facilities in our allocated village.
- So we decided to take a step towards for its designing.
- We provided 6 designs which are as follow:
    i. Soak Pit
    ii. E-corner
    iii. Public library
    iv. Public toilet
    v. Post office
    vi. Museum
- For a new concept design and prototype model we practiced the survey of vertical farming
- We visited the village during pandemic situation so it was much necessary to follow rules and regulations for the safety of villagers and us.
- Although the village is much clean and hygienic we contributed little for the Swatchhta Abhiyaan.
- Village dweller, Sarpanch, panchayat members were much supportive to us and also so kind and co-operative for this work.

Chapter: 13

Design Proposals

13.1 Design Proposals

13.1.1 Cyber Café Design

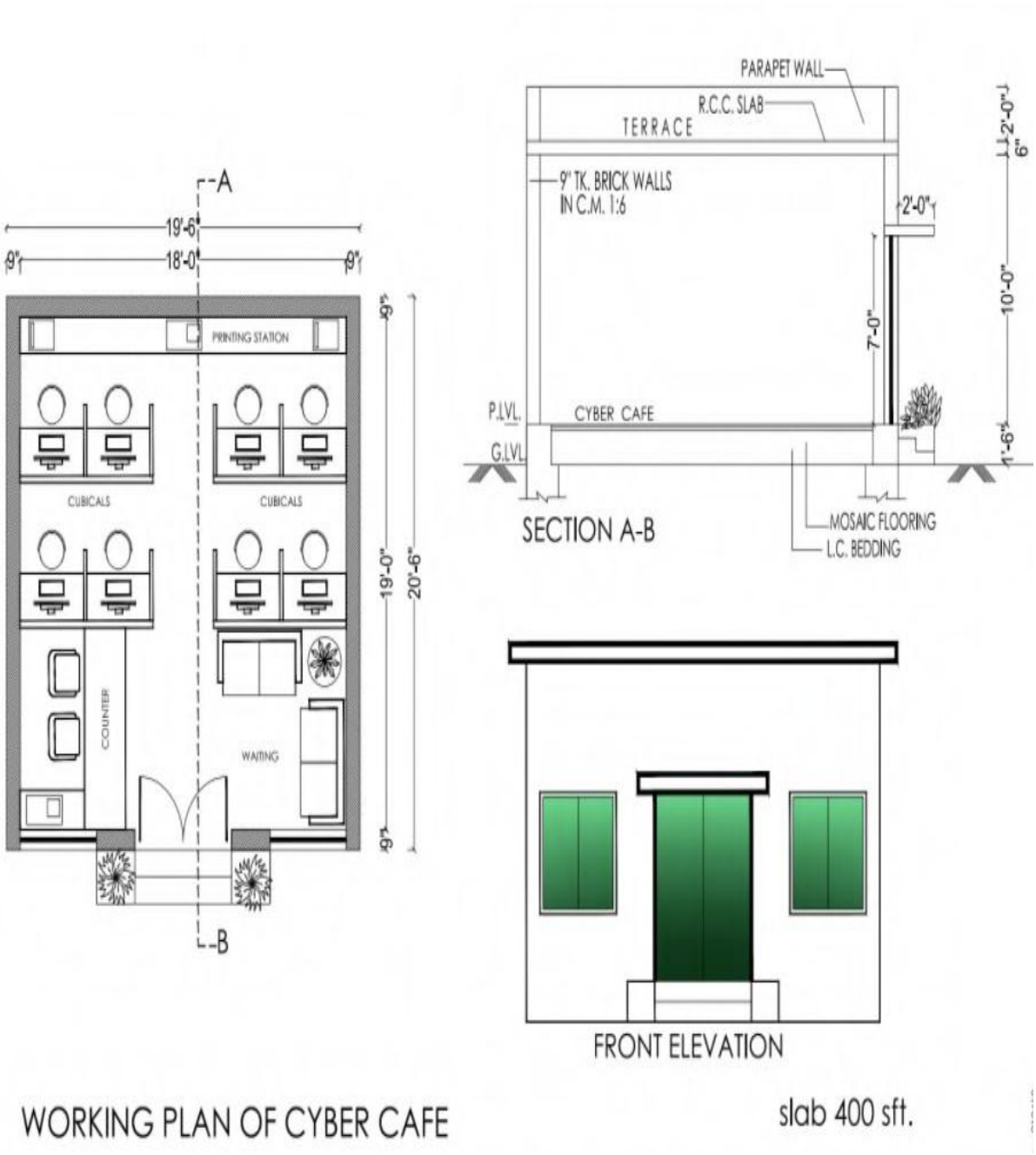


Figure 66 : Cyber Cafe

MEASUREMENT SHEET							
Cyber Cafe							
Item no.	Item Description	No.	Length (ft.)	Breadth (ft.)	Height (ft.)	Quantity (ft.)	Total
	L1=20'6"	2					
	S1=19'6"						
1	Excavation					(cu.ft.)	
	L1=20'6"	2	20'6"	2'	3'	246	
	S1=19'6"	2	19'6"	2'	3'	234	
							480 cu.ft.
2	PCC Work					(cu.ft.)	
	L1	2	20'6"	2'	-	82	160 cu.ft.
	S1	2	19'6"	2'	-	78	
3	Rubble Masonary					(cu.ft.)	
	L1	2	20'6"	2'	3'	246	480 cu.ft.
	S1	2	19'6"	2'	3'	234	
4	Brick Work					(cu.ft.)	
	L1	2	20'6"	1'6"	1'	61.5	108 cu.ft.
	S1	2	19'6"	1'6"	1'	46.5	
5	Slab	1	20'6"	15'6"	-	317.75 sq.ft.	317.75 sq.ft.
6	Plaster Work					(sq.ft.)	
	L1	2	19'00"	-	10'	380	740 sq.ft.
	S1	2	18'00"	-	10'	360	

[NOTE: ALL DIMENSIONS ARE IN FEET AND INCHES]

Table 23: Measurement sheet of cyber

ABSTRACT SHEET					
Cyber cafe					
Item No.	Item Description	Quantity	Rate	Per	Amount
1	Excavation	480	10	Cu.ft.	**4800**
2	PCC	160	150	Sq.ft.	**24000**
3	Brick Work	108	65	Sq.ft.	**7020**
4	Flooring(Mosaic)	317.75	65	Sq.ft.	**20653.75**
5	Plasterning	740	60	Sq.ft.	**44400**
		Total=1,00,473.75			
	7% of electrification				**7033**
		Total=1,07,506.75			

Table 24: Abstract sheet of cyber

13.1.2 Government Medical Store

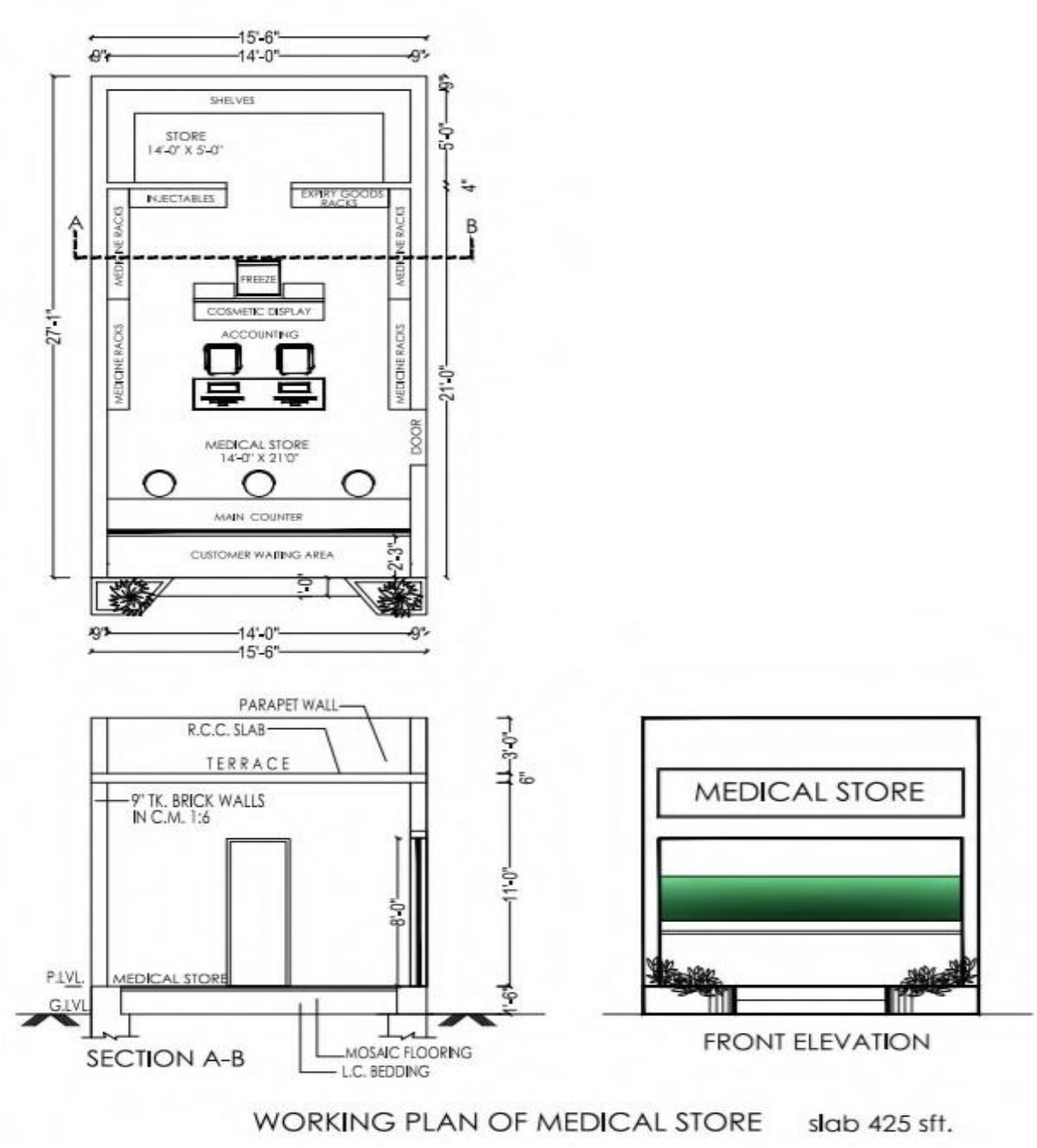


Figure 67: Government Medical Store

MEASUREMENT SHEET							
Govt. Medical Store							
Item No.	Item Description	No.	Length (ft.)	Breadth (ft.)	Height (ft.)	Quantity (ft.)	Total (ft.)
	L1=27'1"	2					
	S1=15'1"	2					
1	Excavation in foundation					(cu.ft.)	
	L1	2	27'1"	2'	4'	324.996	510.996 cu.ft.
	S1	2	15'1"	2'	4'	186	
2	PCC work in foundation					(cu.ft.)	
	L1	2	27'1"	2'	-	108.332	170.332 cu.ft.
	S1	2	15'1"	2'	-	62	
3	Rubble masonry in excavation					(cu.ft.)	
	L1	2	27'1"	2'	4'	324.996	510.996 cu.ft.
	S1	2	15'6"	2'	4'	186	
4	Brick work upto plinth level					(cu.ft.)	
	L1	2	27'1"	1' 6"	1' 6"	81.249	127.749 cu.ft.
	S1	2	15'6"	1' 6"	1' 6"	46.5	
5	C.C.Coping					(cu.ft.)	
	L1	2	27'1"	1' 6"	1' 6"	190.125	127.749 cu.ft.
	S1	2	15'6"	1' 6"	1' 6"	46.5	
6	9" thick brick masonry					(sq.ft.)	
	L1	2	27'1"	-	10'	270.83	425.83 sq.ft.
	S1	2	15'6"	-	10'	155	

[NOTE: ALL DIMENSIONS ARE IN FEET AND INCHES]

Table 25: Measurement sheet of govt. medical store

ABSTRACT SHEET					
Govt. Medical Store					
Item No.	Item Description	Quantity	Rate	Per	Amount
1	Excavation	1934.384	10	Cu.ft.	**19343**
2	PCC	523.158	150	Sq.ft.	**78473**
3	Brick Work	519.885	65	Sq.ft.	**33792**
4	Flooring(Mosaic)	1907.5	65	Sq.ft.	**123987**
5	Plastering	2959.12	60	Sq.ft.	**177547**
		Total=4,33,144			
	6% of Electrification				**25989**
		Total=4,59,133			

Table 26: Abstract sheet of govt. medical

13.1.3 Women cottage industry

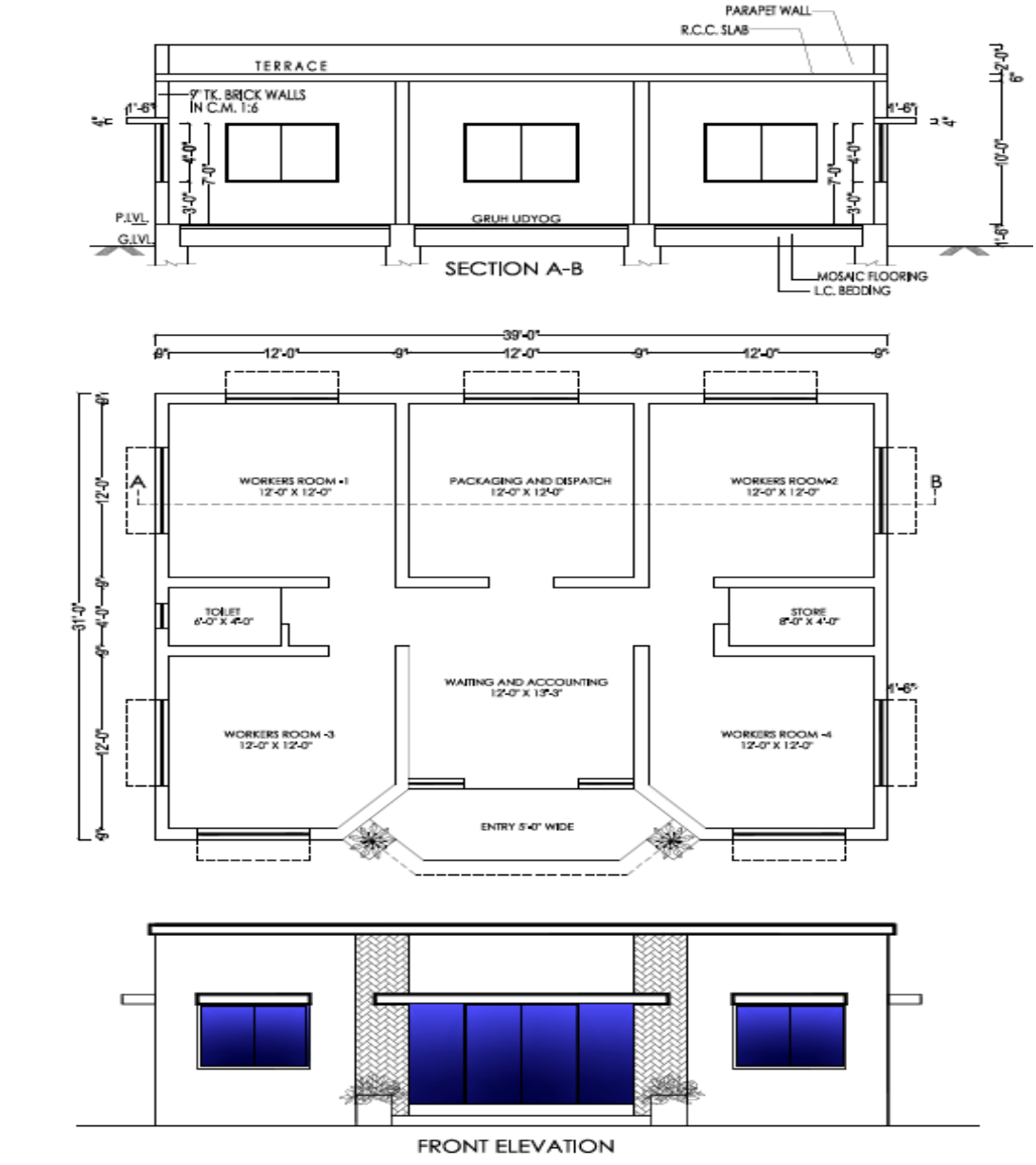


Figure 68: Women cottage industry

MEASUREMENTSHEET							
Women Cottage Industry							
Item No.	Item description	No.	Length (ft.)	Breadth (ft.)	Height (ft.)	Quantity (ft.)	Total (ft.)
	L1=31’	2					
	L2=24’4”	2					
	S1=39’	2					
	S2=12’9”	5					
1	Excavation in foundation					(cu.ft.)	
	L1	2	31’	2’	3'	372	1284.99 cu.ft.
	L2	2	24’4”	2’	3'	291.99	
	S1	2	39’	2’	3’	468	
	S2	5	12’9”	2’	3’	153	
2	PCC work in foundation					(sq.ft.)	
	L1	2	31’	2’	-	124	504.83 sq.ft.
	L2	2	24’4”	2’	-	97.33	
	S1	2	39’	2’	-	156	
	S2	5	12’9”	2’	-	127.50	
3	Rubble masonry in excavation					(cu.ft.)	
	L1	2	31’	2’	3’	372	1284.99 cu.ft.
	L2	2	24’4”	2’	3’	291.99	
	S1	2	39’	2’	3’	468	
	S2	5	12’9”	2’	3’	153	
4	Brick work in foundation					(cu.ft.)	
	L1	2	31’	1’6”	1’	93	378.62 cu.ft.
	L2	2	24’4”	1’6”	1’	72.99	
	S1	2	39’	1’6”	1’	117	
	S2	5	12’9”	1’6”	1’	95.63	
5	C.C.Coping					(cu.ft.)	
	L1	2	31’	1’6”	1’	93	378.62 cu.ft.
	L2	2	24’4”	1’6”	1’	72.99	
	S1	2	39’	1’6”	1’	117	
	S2	5	12’9”	1’6”	1’	95.63	
6	9' thick brick masonry					(sq.ft.)	

	L1	2	31’	-	10’	620	2528.1 sq.ft.
	L2	2	24’4”	-	10’	490.6	
	S1	2	39’		10’	780	
	S2	5	12’9”		10’	637.5	

[NOTE: ALL DIMENSIONS ARE IN FEET AND INCHES]

Table 27: Measurement sheet of women cottage industry

ABSTRACT SHEET					
Women cottage industry					
Item No.	Item Description	Quantity	Rate	Per	Amount
1	Excavation	1284	10	Cu.ft.	**12849**
2	RCC	504.83	150	Sq.ft.	**75724**
3	Brick Work	378.62	65	Sq.ft.	**24610**
4	Flooring(Mosaic)	1209	65	Sq.ft.	**78585**
5	Plastering	2528.1	60	Sq.ft.	**151686**
		Total=3,43,455			
	4.5% of electrification				**15455**
		Total=3,58,910			

Table 28: Abstract sheet of women cottage

13.1.4 Garden

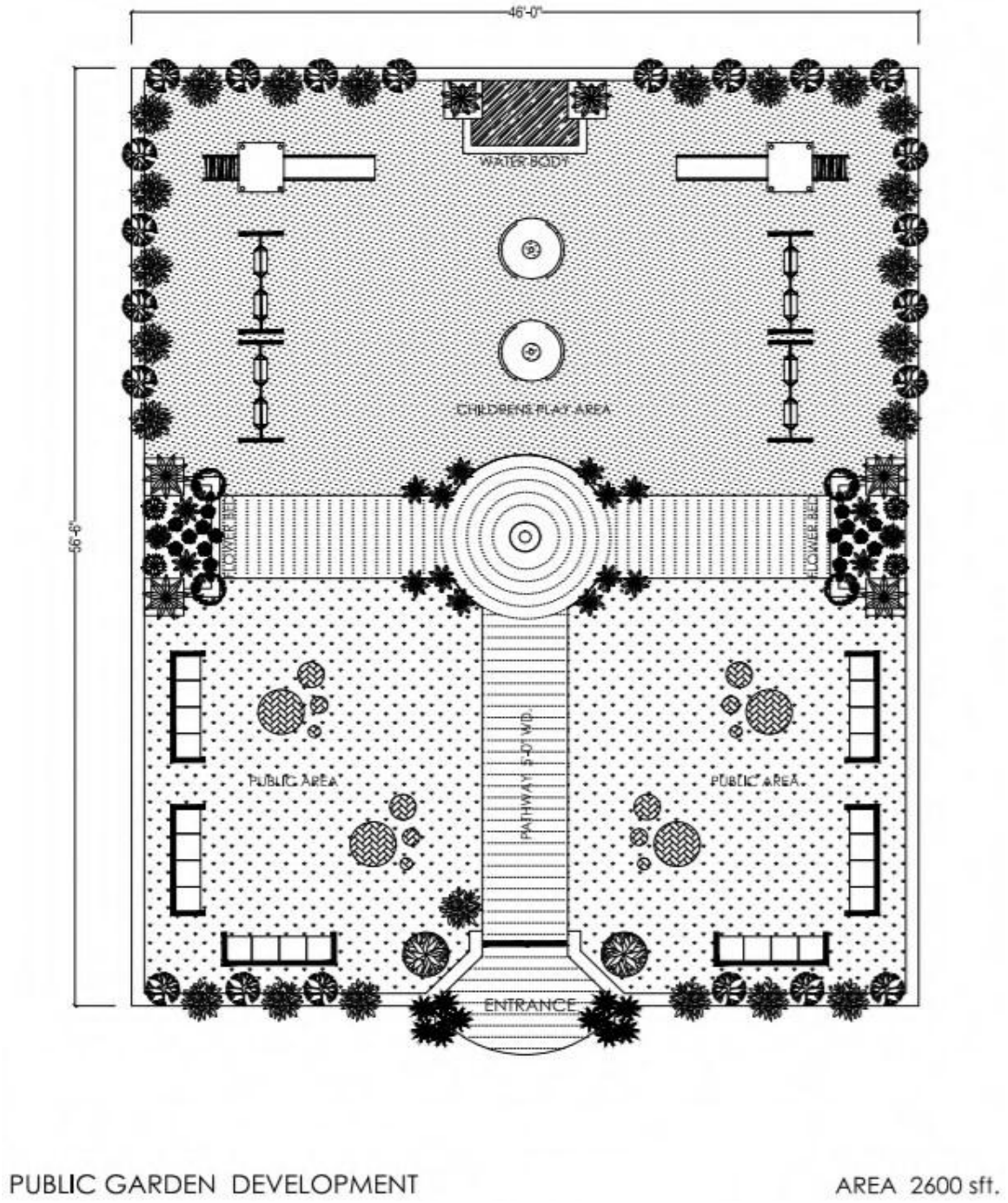


Figure 69: Garden

MEASUREMENT SHEET							
Garden							
Item no.	Item Description	No.	Length (ft.)	Breadth (ft.)	Height (ft.)	Quantity (ft.)	Total
	L=56'6"	2					
	S=46'	2					
1	Brick work in boundry						
	L	2	56'6"	1'4"	1'	150.629 cu.ft.	273.265 cu.ft.
	S	2	46"	1'4"	1'	122.636 cu.ft.	
							145.5 cu.ft.
2	Sand filling in children play area	1	27'9"	46'	-	1276.5 sq.ft.	1276.5 sq.ft.

[NOTE: ALL DIMENSIONS ARE IN FEET AND INCHES]

Table 29: Measurement sheet of garden

ABSTRACT SHEET					
Garden					
Item No.	Item Description	Quantity	Rate	Per	Amount
1	Palm trees	30	300	1	**9000**
2	Karen trees	35	10	1	**350**
3	Swings	7	10714	1	**75000**
4	Slides and rides	5	15000	1	**75000**
			Total=1,59,350		
	2% of electrification				**3187**
			Total=1,62,537		

Table 30: Abstract sheet of garden

13.1.5 Veterinary Hospital

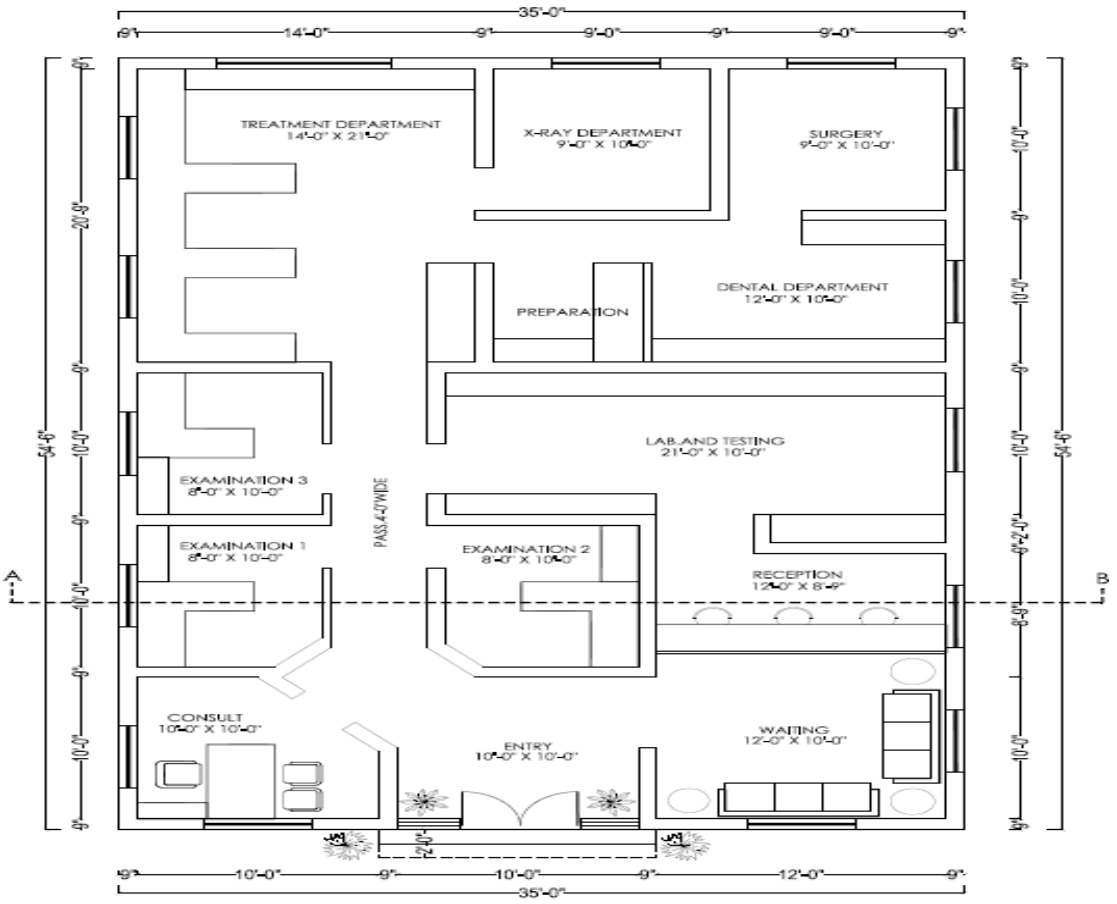


Figure 70: Veterinary Hospital

MEASUREMENT SHEET							
Veterinary Hospital							
Item No.	Item Description	No.	Length (ft.)	Breadth (ft.)	Height (ft.)	Quantity	Total
	L1=54’6”	2					
	L2=12’1”	2					
	L3=10’9”	1					
	S1=35’	2					
	S2=9’8”	2					
	S3=14’2”	4					
1	Excavation in foundation					(cu.ft.)	
	L1	2	54’6”	2’	4’	654	1934.384 cu. ft.
	L2	2	12’1”	2’	4’	153.96	
	L3	1	10’9”	2’	4’	64.5	
	S1	2	35’	2’	4’	420	
	S2	2	9’8”	2’	4’	115.92	
	S3	4	14’2”	2’	4’	339.98	
2	PCC work in foundation					(sq.ft.)	
	L1	2	54’6”	2’	-	218	523.158 sq. ft.
	L2	2	12’1”	2’	-	48.33	
	L3	1	10’9”	2’	-	21.5	
	S1	2	35’	2’		140	
	S2	2	9’8”	2’	-	38.664	
	S3	4	14’2”	2’	-	56.66	
3	Rubble masonry					(cu.ft.)	
	L1	2	54’6”	2’	4’	654	1934.384 cu.ft
	L2	2	12’1”	2’	4’	153.96	
	L3	1	10’9”	2’	4’	64.5	
	S1	2	35’	2’	4’	420	
	S2	2	9’8”	2’	4’	115.92	
	S3	4	14’2”	2’	4’	339.98	
4	Brick work upto plinth level					(cu.ft.)	
	L1	2	54’6”	1’6”	1’	163.5	519.885 cu. ft.
	L2	2	12’1”	1’6”	1’	36.25	
	L3	1	10’9”	1’6”	1’	16.125	
	S1	2	35’	1’6”	1’	105	
	S2	2	9’8”	1’6”	1’	28.998	
	S3	4	14’2”	1’6”	1’	84.996	

5	C.C. Coping					(cu.ft.)	
	L1	2	54'6"	1'6"	1'	163.5	
	L2	2	12'1"	1'6"	1'	36.25	
	L3	1	10'9"	1'6"	1'	16.125	519.885 cu. ft.
	S1	2	35'	1'6"	1'	105	
	S2	2	9'8"	1'6"	1'	28.998	
	S3	4	14'2"	1'6"	1'	84.996	

[NOTE: ALL DIMENSIONS ARE IN FEET AND INCHES]

Table 31: Measurement sheet of

ABSTRACT SHEET					
Veterinary Hospital					
Item No.	Item Description	Quantity	Rate	Per	Amount
1	Excavation	1934	10	Cu.ft.	**19343**
2	RCC	523.158	150	Sq.ft.	**78473**
3	Brick Work	519.88	65	Sq.ft.	**33792**
4	Flooring(Mosaic)	1907	65	Sq.ft.	**123987**
5	Plastering	2959.12	60	Sq.ft.	**177547**
			Total=4,33,144		
	6% of electrification				**25678**
			Total4,35,722		

Table 32: Abstract sheet of veterinary

13.1.6 Government Medical Laboratory

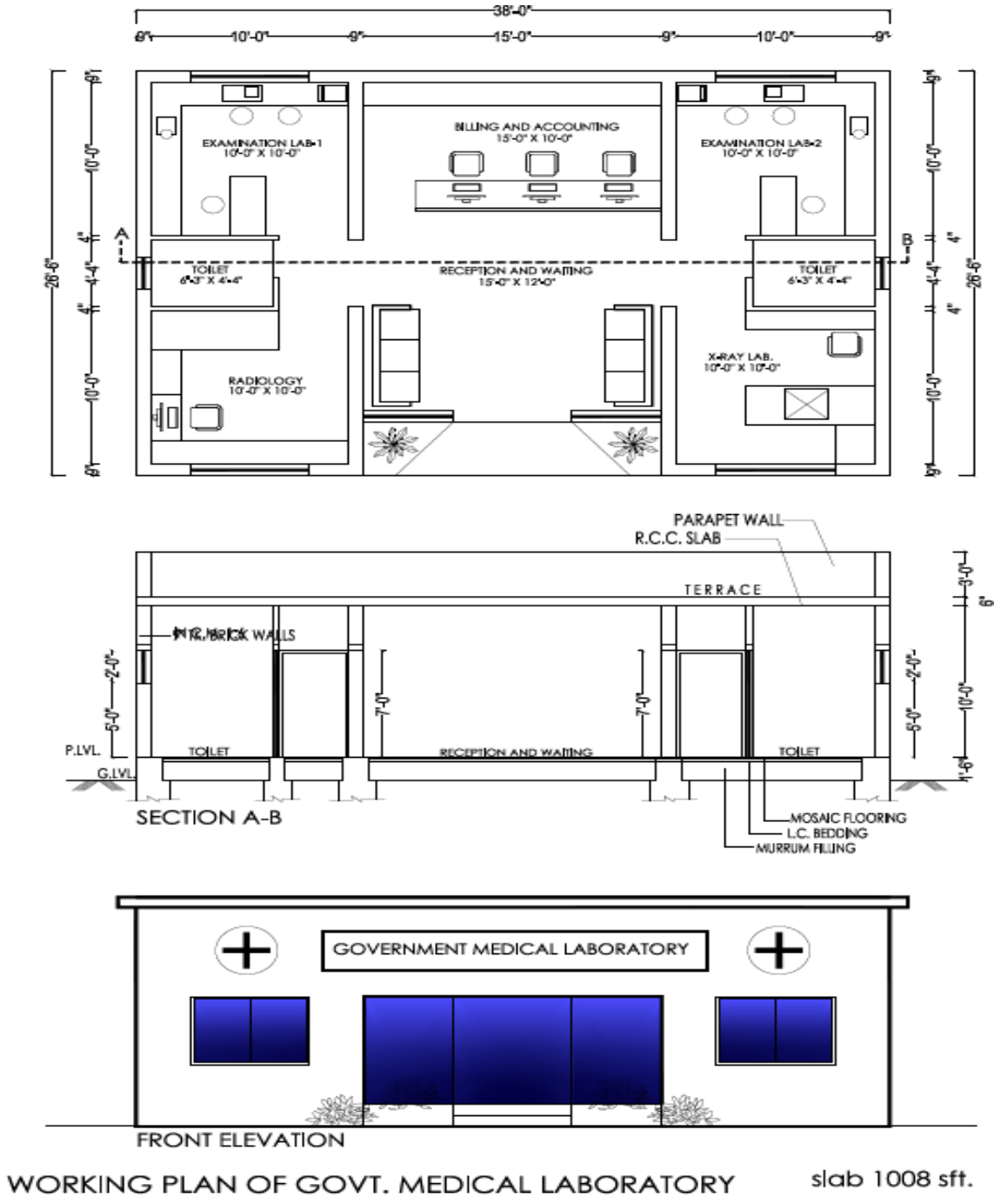


Figure 71: Govt. Medical Laboratory

MEASUREMENTSHEET							
Govt. Medical Laboratory							
Item No.	Item description	No.	Length (ft.)	Breadth (ft.)	Height (ft.)	Quantity (ft.)	Total (ft.)
	L1=26'6"	2					
	L2=11'2"	2					
	S1=38'	3					
1	Excavation in foundation					(cu.ft.)	
	L1	2	26'6"	2'	3'	318	1183.99 cu.ft.
	L2	2	11'2"	2'	3'	133.99	
	S1	3	38'	2'	3'	456	
2	PCC work in foundation					(sq.ft.)	
	L1	2	26'6"	2'	-	106	394.66 sq.ft.
	L2	2	11'2"	2'	-	44.66	
	S1	3	38'	2'		152	
3	Rubble masonry in excavation					(cu.ft.)	
	L1	2	26'6"	2'	3'	318	1183.99 cu.ft.
	L2	2	11'2"	2'	3'	133.99	
	S1	3	38'	2'	3'	456	
4	Brick work in foundation					(cu.ft.)	
	L1	2	26'6"	1'6"	1'	79.5	296 cu.ft.
	L2	2	11'2"	1'6"	1'	33.50	
	S1	3	38'	1'6"	1'	114	
5	C.C.Coping					(cu.ft.)	
	L1	2	26'6"	1'6"	1'	79.5	296 cu.ft.
	L2	2	11'2"	1'6"	1'	33.50	
	S1	3	38'	1'6"	1'	114	
6	9" thick brick masonry					(sq.ft.)	
	L1	2	26'6"	-	10'	515	1901.52 sq.ft.
	L2	2	11'2"	-	10'	213.2	
	S1	3	38'	-	10'	750	
7	Slab	1	26'6"	38'	-	1007	1007 sq.ft.

[NOTE: ALL DIMENSIONS ARE IN FEET AND INCHES]

Table 33: Measurement sheet of govt. medical laboratory

ABSTRACT SHEET					
Govt. Medical Laboratrory					
Item No.	Item Description	Quantity	Rate	Per	Amount
1	Excavation	1183.99	10	Cu.ft.	**11839**
2	RCC	394.66	150	Sq.ft.	**59199**
3	Brick Work	296	65	Sq.ft.	**19240**
4	Flooring(Mosaic)	1007	65	Sq.ft.	**65455**
5	Plastering	1901.52	60	Sq.ft.	**11409**
	5.5% of electrification				**16570**
			Total=2,86,395		

Table 34: Abstract sheet of medical laboratory

Chapter: 14

Technical Options with Case Studies

14.1 Advance 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.

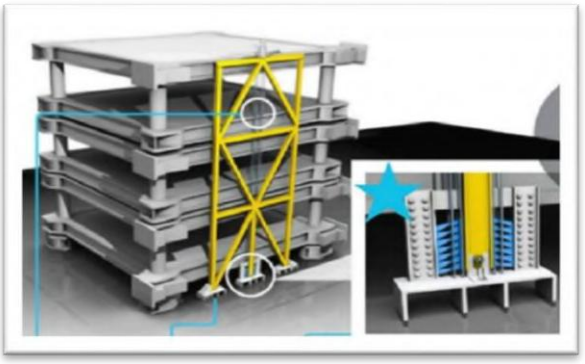


Figure 72: Earthquake

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 in 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.

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

1. Base Isolation
2. Energy Dissipation Devices

14.2 Seismic Retrofitting of Buildings

Seismic retrofitting is the modification of existing structures to make them more resistant to seismic activity, ground motion, or soil failure due to earthquakes. With better understanding of seismic demand on structures and with our recent experiences with large earthquakes near urban centers, the need of seismic retrofitting is well acknowledged. Prior to the introduction of modern seismic codes in the late 1960s for developed countries (US, Japan etc.) and late 1970s for many other parts of the world (Turkey, China etc.), many structures were designed without adequate detailing and reinforcement for seismic protection. In view of the imminent problem, various research work has been carried out. State-of-the-art technical guidelines for seismic assessment, retrofit and rehabilitation have been published around the world – such as the ASCE-SEI 41 and the New Zealand Society for Earthquake Engineering (NZSEE)'s guidelines. These codes must be regularly updated; the 1994 Northridge earthquake brought to light the brittleness of welded steel frames, for example.

Figure 73: Seismic retrofitting

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

14.3 Advance Practices in Construction in Morden Materials, Techniques and Equipment's

The building construction activity, especially the residential and commercial complex is highly labour intensive with very little mechanization. Approximately 35% of the total construction cost is spent on labour. The labourers have their limitations and may fail to meet the time limits. The quality of workmanship, too, differs from person to person. Hence, quality standards cannot be maintained. Wastage of material is considerably high as it is handled and utilized manually. The objective of the construction organizations should be 'speed and economy'. This cannot be achieved with labour oriented advanced construction techniques. Only studying and adopting modern industrial techniques and equipment is the solution. By this, one can save material, reduce labour expenses, and increase the speed of work, leading to the economy in construction. Though the scope of the

Figure 74: Construction Technology

subject is vast, in this chapter we shall discuss only the advanced techniques to be used in advanced construction techniques activities.

EQUIPMENT USED FOR SMALL AND MEDIUM CONSTRUCTION WORK

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

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

14.4 Engineering Aspects of Soil Mechanics-Environmental Impact Assessment

Soil is a vital part of the natural environment. It is just as important as plants, animals, rocks, landforms, lochs and rivers. It influences the distribution of plant species and provides a habitat for a wide range of organisms. It controls the flow of water and chemical substances between the atmosphere and the earth and acts as a source and store for gases (like oxygen and carbon dioxide) in the atmosphere. Soil is one of the most valuable natural resources available to us. It is very important for sustenance of life on the earth. The top soil which is suitable for plant growth is eroded due to human activities like construction of Thermal power plant, buildings, roads and expansions on the other hand the soil layers are contaminated deliberately due to Industrial pollution. The soils and its properties are affected to a great extent. The quality of soil is an function of its physical and chemical characteristics. Earlier, soil surveys have been carried out topographic maps and cadastral maps as data base. Soil surveys provide desired information on nature, location, extent and physico-chemical characteristics. EIA(Environmental impact Assessment) is the process by which the anticipated effects on the environment of a proposed development power plant project and

Figure 75: EIA

also certain measures have been taken to reduce or avoid those effects .Large area of land is required for coal based Thermal power plant. Due to this natural soil properties changes and it becomes more alkaline due to the alkaline nature of fly ash. SPM (Suspended Particulate Matter) get deposited in the land which affects the soil. Spreading and Deposition of SPM on soil, disturb the soil strata thereby, the fertile and land use becomes less productive. The baseline environment quality represents the background environmental scenario of various environmental components during the study period. To extract and understand the soil characteristics of the study area for effective management of soil resources for the future development, Preparation of Environmental impact Assessment studies as per EIA notification, 2006 and its requirements. The EIA study will include the determination of baseline conditions surrounding to the proposed area, assessment of the impacts on the environment due to the construction and operation of the proposed project and making recommendations on the preventive measures to be taken, to minimize the impact on the environment to acceptable levels.

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

Water scarcity and water pollution are crucial issues in today's world. One of the ways to reduce the impact of water scarcity and pollution is to expand water and wastewater reuse. The increasing scarcity of water in the world along with rapid population increase in urban areas gives rise to concern about appropriate water management practices. In the context of trends in urban development, wastewater treatment deserves greater emphasis. Currently, there is a growing awareness of the impact of sewage contamination on rivers and lakes. Accordingly, wastewater treatment is now receiving greater attention from the World Bank and government regulatory bodies. Urban wastewater treatment has received less attention compared to 'water supply & treatment.' Water scarcity coupled with the bursting seams of our cities and towns have taken a toll on our health and environment. The sewage contamination of our lakes, rivers, and domestic water bodies has reached dangerous levels and is being recognized by leading organizations like the World Bank. The current urban wastewater management system is a linear treatment system that is based on disposal. The traditional system needs to be transformed into a sustainable, closed-loop urban wastewater management system that is based on the conservation of water and nutrient resources. A huge loss of life-supporting resources is the result of failed organic wastewater recovery. A wastewater management team is well equipped to create a wastewater management strategy that will result in the reduction of pathogens in surface and groundwater to improve public health. In a developing urban society, the wastewater generation usually averages 30- 70 cubic meters per person per year. In a city of one million people, the wastewater generated

Figure 76: Water Treatment Plant

would be sufficient to irrigate approximately 1500-3500 hectare. This urban epidemic needs to be tackled ecologically because of so many pressing issues that are afflicting our waste management process: New immigrants to cities have low incomes and cannot afford municipal amenities like waste disposal and sanitary functions; In developing countries, approximately 300 million urban residents have no access to sanitation; Approximately two-thirds of the population in the developing world has no hygienic means of disposing excreta and an even greater number lack adequate means of disposing of total waste water; It is often an acceptable practice to discharge untreated sewage directly into the bodies of water.

Prototype Model:

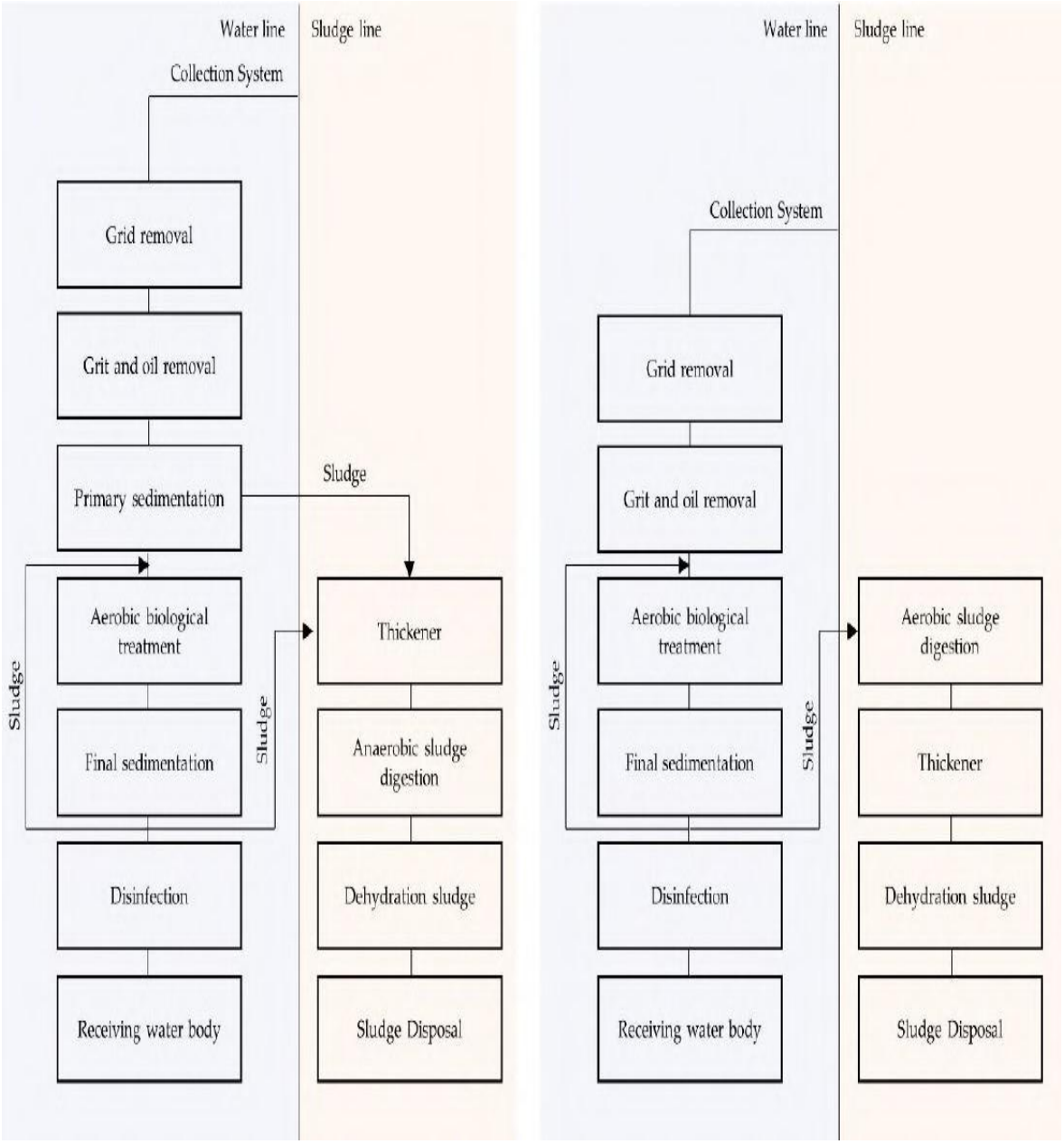


Figure 77: Process diagram (i) classic process diagram ;(ii) simplified

Wastewater can have different origins. There are urban, industrial and agricultural origins of wastewater. Depending on the influent, the type and quantity of pollutants changes. Consequently, the treatment processes changes. On the basis of per number, natural systems are adopted for small communities (<2000 per) while plant systems are adopted for large communities (>2000 per). Natural systems require large spaces but they have very low operating costs.

Plant systems require smaller spaces, but they have high operating costs due to the electromechanical equipment that they use. Since 1914 the most common plant system has been activated sludge.

The variety of pollutants present in wastewater requires the adoption of specific processes. In fact, there are no processes or treatments that can be used for every type of discharge.

Estimated cost:

Quantity	5000(population)	10,000(population)	15,000(population)
Total cost of civil work of treatment units	22299800	3,571.58	3,231.88
Costs of hydraulic and electrical connections	669.08	535.78	486.04
Costs of service structures	1204	1118	1300
Costs for arrangement of external area	1899.74	1306.34	1253.88
Total cost per person	8,232.78/Pe	6,531.7/Pe	6,271.8/Pe
Total cost	**Rs.4,11,63,900**	**Rs.6,53,17,000**	**Rs.9,40,77,000**

Table 35: Estimated cost of prototype model

Chapter: 15

Smart and/or sustainable features of chapter 8 & 13 designs, impact on society

Sr. No.	Design name	Period	Expected Amount	Benefits of villagers
1	Soak Pit	6 months	12,135	Helps in maintaining hygine and reduce the amount of water borne disease
2	E-Corner	8 months	1,63,573	It provides better banking facilities to the teens and adults
3	Public Library	1 year	12,03,841	It encourages the book lovers and a step towards education
4	Post Office	1.5 years	9,61,280	For easy postal and parcel services
5	Museum	1 year	9,66,885	To preserve and collect royal and heritage artistic objects.
6	Public Toilet	11 months	2,74,617	For maintaining hygine and cleanliness
7	Public Garden	5 months	1,62,537	It encourages outdoor gaming
8	Cyber café	7 months	1,07,506	Helpful for students specially for online services
9	Veterinary Hospital	1 year	4,35,722	A better treatment place for village's animals
10	Women cottage industry	1 year	3,58,910	For encouraging the small scale business and helping women to support her talent
11	Govt. Medical Lab	10 months	8,86,395	For speedy and easy medical tests and treatment for villager
12	Govt. Medical Store	3 months	4,59,133	For reasonable rates of medicines who cannot afford it

Table-36 Design details

Chapter: 16

Survey by Interviewing with Talati and /or Sarpanch

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

CHAPTER- 16

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

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

સરપંચ
વાજડી વડ ગ્રામ પંચાયત

Chapter: 17

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

17.1 Agriculture Activities:

The basic crops like Wheat, Cotton and Groundnut are cultivated in Vajdi (Vad). The crops grown there are sufficient for the village, and the remaining ones are sold to the nearest city or village. They also grow some of the crops like Green Grams, moong, etc. some of the house in village grow vegetables and fruits for their own personal use. The crops are kept as organic as possible.

17.2 Irrigation Activities:

The irrigation facilities in the farm are some of the basic and usual. The irrigation methods like drip irrigation, well irrigation, sprinkler irrigation, basin irrigation. Most of the used methods are drip method, sprinkler method and well method. For small farms manual irrigation can also be used.

Figure 78: Well Irrigation

Figure 79: Sprinkler Irrigation

17.3 Agro Industries:

There are not any agro industries in the village as their main occupation is farming and agriculture. So they work in the industries of their nearest village, Metoda or other cities.

17.4 Alternate Technics and Solution:

Organic Farming: The farming process that uses biological fertilizers and animals/ plants waste is called organic farming. It is the eco-system of agriculture production without the use of synthetic fertilizers or GMO (Genetically Modified Organisms). It helps to prevent soil pollution.

Sustainable Agriculture: The farming in sustainable manner by meeting societies' present needs i.e. food and textile without compromising the ability for current or future generation needs.

Backyard Farming/ Subsistence Farming: The farming in which nearly all the crops and livestock raised are used to maintain farmer and his family's requirement is known as subsistence farming. Pre-industrial agriculture people throughout the world have traditionally practiced subsistence farming.

Zero Budget Farming: The farming model consists of promisis to cut down farmer expenditure drastically and end dependence on loans and debts.

Polyculture: The cultivation in which multiple species grown on the same piece of land at different time interval to prevent land exploitation is called Polyculture.

Integrated pest management (IPM): It is broad base approach that integrates practices for economic pest control. It emphasizes the growth of healthy crop with least possible disruption to agro eco-system and encourages natural pest control mechanism.

Crop Rotation: The practices of planting different crops sequentially on the same piece of land to improve soil help optimize nutrients in the soil and fight with weed and pest is called crop rotation.

Trap Cropping: The cultivation practices in which crop planted to attract pest from another crops especially one in which pest failed to survive is called Trap cropping.

Chapter:18

Social Activities

We are much aware by the day to day incidents for the girl child and her education. So we decided to raise a voice towards it and arrange the "Girl Child Education" awareness programme in the village. Although the village is much educated and developed, every girl child is encouraged for education. We gathered some women's and explained them about the girl's education and awareness. Due to the pandemic and the norms of government we avoided to gather too many people. We explained them about the importance of girl child education, the government schemes for girls, and benefits for the subsidy of the government.

Figure 66: Social Activity

Government has introduce the scheme like "Vahli Dikri Yojna" and "Sukanya Samriddhi Yojna (SSY)" which encourages the girl's family and parents for her better future and education. Also they encourage the family for raising the fund for the girl's marriage and future. The "Vahli Dikri Yojna" provides INR 1,10,000 on the birth of the girl child. Villagers were much impressed by knowing the importance of the girl's education. We also gave some examples of the women who have reached the top and became inspiration for many other women. The women like Kalpana Chawla, Pratibha Patil, Indira Gandhi, Mother Teresa, etc.

Chapter: 19

SAGY Questionnaire Survey Form

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: Vajdi (Vad)
b. Ward Number: 19
c. Gram Panchayat: Vajdi (Vad)
d. Block: -
e. District: Rajkot
f. State: Gujarat
g. Lok Sabha Constituency: Rajkot
h. Number of Habitations / Hamlets in the Gram Panchayat: -
i. Names of Habitations / Hamlets:

Demographic Information

Number of Households 261 Total Population 1889 Male 1086 Female 803

SC HHs 46 ST HHs 52 OBC HHs 54 Other HHs 107

II. Access to Infrastructure/Amenities etc.

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
a.	Nearest Primary School	Yes	in village
b.	Nearest Middle School	Yes	in village
c.	Nearest Secondary School	No	05 km away
d.	Kisan Seva Kendra	Yes	in village
e.	Milk Cooperative /Collection Centre	No	12 km away
g.	Health Sub Centre	Yes	in village
h.	Bank	No	5 km away
i.	ATM	No	5 km away
j.	Bus Stop	Yes	in village
k.	Railway Station	NO	12 km away

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

1

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

i.	Access to Infrastructure / Facilities / Services	Located in the Village Yes (Y)/No(N)	If located elsewhere (N), distance in kms from the village
l	Library	No	12 km (Rajkot)
m	Common Service Centre	NO	2 km (Metoda)
n	Veterinary Care Centre	NO	12 km (Rajkot)

ii. Road Connectivity

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

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

iii. Drinking Water Facilities

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

If 3 mention the name of the habitations not covered:

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

If 3 mention the name of the habitations not covered:

iv. Coverage of Habitations under Waste Management System

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

If 3 mention the name of the habitations not covered:

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

If 3 mention the name of the habitations not covered:

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

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

v. Coverage of Habitations under Electrification

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

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

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

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

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: 1

c. Schools (Number)

Primary Private: 0 Primary Govt.: 1

Middle Private: 0 Middle Govt.: 1

Secondary Private: 0 Secondary Govt.: 0

Higher Secondary Private: 0 Higher Secondary Govt: 0

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

viii. Land Category		Area in Acres		Land Category	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	123 Ac	d.	Pasture / Grazing Land	-	g.	Check Dam	2
b.	Irrigated Land	96 Ac	e.	Forests/ Plnatations	10 Ac	h.	Wells/Bore Wells	2
c.	Un-irrigated Land	27 Ac	f.	Other Common Land	3 Ac	I	Tanks /Ponds	1

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	455
5	Number of landless households	60
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'

Aayushi Dhimahi	V.M. Dabhai	[illegible]	15/3/21
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

3

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: Vajdi (Vad)

b. Block: –

c. District: Rajkot

d. State: Gujarat

e. Lok Sabha Constituency: Rajkot

f. Number of Wards in the Gram Panchayat: 12

g. Number of Villages in the Gram Panchayat: 1

h. Names of Villages:

Demographic Information

Number of Households 261 Total Population 1889 Male 1086 Female 803

SC HHs 48 ST HHs 52 OBC HHs 54 Other HHs 107

I. Access to Infrastructure / Facilities / Services

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

1

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
o	Agriculture Credit Cooperative Society .	No	2 km away
p	Nearest Agro Service Centre	No	2 km away
p	MSP based Government Procurement Centre	No	2 km away
q	Milk Cooperative /Collection Centre	No	2 km away
r	Veterinary Care Centre	No	12 km away
s	Ayurveda Centre	No	12 km away
t	E – Seva Kendra	No	2 km away
u	Bus Stop	Yes	in village
v	Railway Station	No	12 km away
w	Library	No	12 km away
x	Common Service Centre	No	2 km away

IV. Sports Facilities in the Gram Panchayat

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

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 1

b. Number of villages without Angan Wadi Centres 0

Names of such villages: –

c. Schools (Number)

Primary Private: 0 Primary Govt.: 1

Middle Private: 0 Middle Govt.: 0

Secondary Private: 0 Secondary Govt.: 0

Higher Secondary Private: 0 Higher Secondary Govt: 0

VI. Public Distribution System

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

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

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	123 Ac	d.	Pasture / Grazing Land	–	g.	Check Dam	2
b.	Irrigated Land	96 Ac	e.	Forests/ Plantations	10 Ac	h.	Wells/Bore Wells	9
c.	Un-irrigated Land	27 Ac	f.	Other Common Land	31 Ac	i	Tanks /Ponds	1

[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)	8
b)	Number of Households receiving pension (old age, widow, disability)	7
c)	Number of eligible Households who are not receiving pension	257
d)	Number of Households eligible for Ration Card	28
e)	Number of eligible HHs having ration cards	89
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	37
l)	Number of landless households	62
m)	Number of IAY beneficiaries	–
n)	Number of FRA[1] 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	13
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'

Aayushi Dhimahi	[illegible]	[illegible]	15/03/21
Surveyor	PRI Respondent (Preferably Gram Panchayat Chairperson)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey

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

4

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Vajdi (Vad) Gram Panchayat: Vajdi (Vad) Ward No. 9

Block: — District: Rajkot

State: Gujarat L S Constituency: _____

1. Family Identity and Size

Name of Head of Household	Mahipatsinh Madhuji Dabhi							Male/ Female	Male
SECC Survey ID:	—	Family Size	3	Over 18	3	6 to 18	0	Under 6	0

2. Category & Entitlement Details (Tick as appropriate)

Social Category[1]	Gen	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]
Mahipatsinh Dabhi	50	M	No	2	6	Y	Y	0
Vanshaba Dabhi	46	F	No	2	5	Y	Y	0
Rajdeepsinh Dabhi	23	M	No	1	7	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	—	—
Children	—	—

9. House & Homestead Data

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

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

Source of Water		Distance
Piped Water at Home	Yes / No	0.1 km
Community Water Tap	Yes / No	
Hand Pump (Public / Private)	Yes / No	
Open Well(Public / Private)	Yes / No	2 kms
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: PNG
If cooking in Chullah: Normal/ Smokeless

12. Landholding (Acres)

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

13. Principal Occupations in the Household

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

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

15. Agriculture Inputs

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

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

Name	Unit	Quantity
Wheat	Kg	983
Groundnut	Kg	176
Cotton	Kg	82

17. Livestock Numbers

Cows: 3	Bullocks: 2	Calves: 1
Female Buffalo: —	Male Buffalo: 2	Buffalo Calves: 1
Goats/ Sheep: —	Poultry/ Ducks: —	Pigs: —
Any other: Type _____		No. _____
Shelter for Livestock: Pucca / Kutcha / None		
Average Daily Production of Milk(Litres): 80L		

18. What games do Children Play

— —

19. Do children play musical instrument (mention)

—

Schedule Filled By:
Principal Respondent:
Date of Survey: 15/3/21

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Vajdi (Vad) Gram Panchayat: Vajdi (Vad) Ward No. 8

Block: _____ District: Rajkot

State: Gujarat L S Constituency: –

1. Family Identity and Size

Name of Head of Household	Hanubha Visaji Dabhi							Male/ Female	Male
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]
Hanubha Dabhi	50	M	N	2	5	Y	Y	
Minaba Dabhi	43	F	N	2	3	Y	–	–
Tejal ben Dabhi	21	F	N	1	5	Y	–	–
Rajraj Dabhi	19	M	N	1	6	Y	–	–

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	—	—
Children	—	—

9. House & Homestead Data

Own House: Yes / No	No. of Rooms: 04	
Type: Kutcha / Semi Pucca / Pucca		
Toilet: Private / Community / Open Defecation		
Drainage linked to House: Covered / Open / None		
Waste Collection System	Door Step / Common Point / No Collection System	
Homestead Land: Yes / No	Kitchen Garden : Yes / No	
Compost Pit: Individual/ Group/ None	Biogas Plant: Individual/ Group/ None	

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

Source of Water		Distance
Piped Water at Home	Yes / No	0.9 km
Community Water Tap	Yes / No	
Hand Pump (Public / Private)	Yes / No	
Open Well(Public / Private)	Yes / No	1.5 km
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: PNG
If cooking in Chullah: Normal/ Smokeless

12. Landholding (Acres)

1. Total	6A1C	2. Cultivable Area	6A1C
3. Irrigated Area	6A1C	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
Ground nut	20Kg	215
Wheat	20Kg	315

17. Livestock Numbers

Cows: 1	Bullocks: 2	Calves: —
Female Buffalo: —	Male Buffalo: 1	Buffalo Calves: 1
Goats/ Sheep: —	Poultry/ Ducks: —	Pigs: —
Any other: Type —		No. —
Shelter for Livestock: Pucca / Kutcha / None		
Average Daily Production of Milk(Litres): 10L		

18. What games do Children Play

—

19. Do children play musical instrument (mention)

—

Schedule Filled By:

Principal Respondent:

Date of Survey: 15/3/21

Chapter: 20

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

Gmail Dhimahi Trivedi <dhimee0932@gmail.com>

Vajdi (Vad) Village Report
1 message

Dhimahi Trivedi <dhimee0932@gmail.com> 7 July 2021 at 11:30
To: ddo-raj@gujarat.gov.in
Cc: khemen.dattani07@gmail.com, rurban@gtu.edu.in

Respected Sir/Madam,

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

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

Sr. No.	Design name	Period	Expected Amount	Benefits of villagers
1	Soak Pit	6 months	12,135	Helps in maintaining hygiene and reduce the amount of water borne disease
2	E-Corner	8 months	1,63,573	It provides better banking facilities to the teens and adults
3	Public Library	1 year	12,03,841	It encourages the book lovers and a step towards education
4	Post Office	1.5 years	9,61,280	For easy postal and parcel services
5	Museum	1 year	9,66,885	To preserve and collect royal and heritage artistic objects.
6	Public Toilet	11 months	2,74,617	For maintaining hygiene and cleanliness
7	Public Garden	5 months	1,62,537	It encourages outdoor gaming
8	Cyber café	7 months	1,07,506	Helpful for students specially for online services
9	Veterinary Hospital	1 year	4,35,722	A better treatment place for village's animals

10	Women cottage industry	1 year	3,58,910	For encouraging the small scale business and helping women to support her talent
11	Govt. Medical Lab	10 months	8,86,395	For speedy and easy medical tests and treatment for villager
12	Govt. Medical Store	3 months	4,59,133	For reasonable rates of medicines who cannot afford it

Please find here with attached,
1. Detailed Project Report of Vajdi (Vad) Village

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Regards,

Thanks & Regards,
Aayushi Gosai & Trivedi Dhimahi
Diploma Civil Engineering
Atmiya Institute of Technology & Science for Diploma Studies, Rajkot
Gujarat Technological University.

E-Mail: aayushigosai200016@gmail.com
E-Mail: dhimee0932@gmail.com

Chapter:21

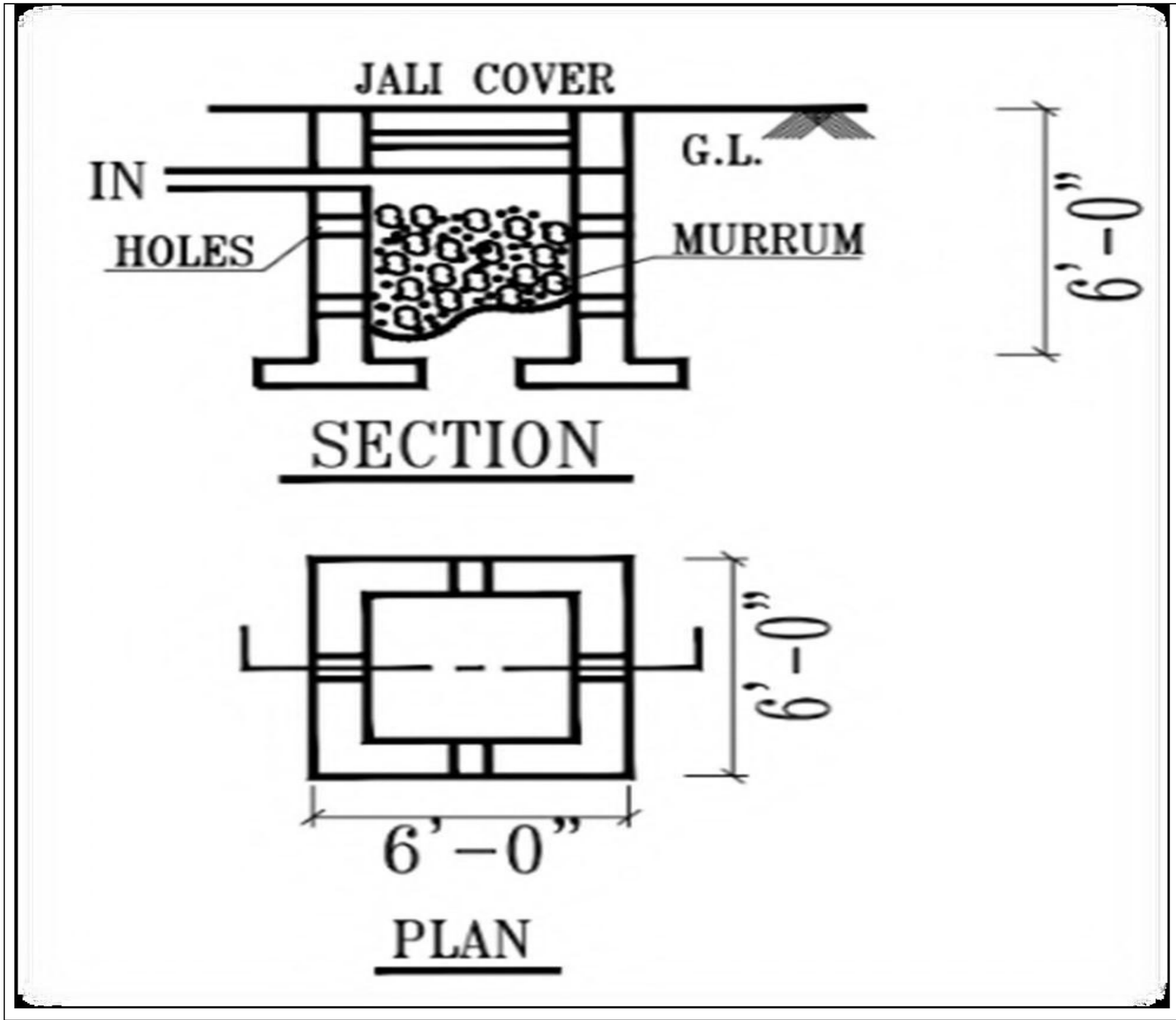
Comprehensive Report for the entire Village

- We selected Vajdi (Vad) as our allocated village for the Vishwakarma Yojna Phase-VIII Project.
- Techno economic survey was conducted by us for the detail studies of the village.
- Later, we selected Kolki village as smart village and Rajsamadhiyara village as ideal village.
- After the analysis and survey we provided the lacking designs which is used as basic amenities.
- The selected designs are as follow:

Part I	Part II
Public Toilet	Govt. Medical Laboratory
Public Library	Govt. Medical Store
E-Corner	Cyber Café
Public Museum	Women's Cottage Industry
Soak Pit	Public Garden
Post Office	Veterinary Hospital

Table 37: Designs for part 1&2

- There after we also provided detailed estimation and costing for the given designs.
- We gave a prototype model for sewerage system.
- We visited village for better interaction with sarpanch and the village dwellers.
- The activity of "Girl child education" was presented and explained by us to the villagers for the awareness of it.
- Everyone co-operated for the betterment of village and kindly helped us for the step towards the development of village.



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Atmiya Institute of Technology & Science for Diploma Studies

Design by:	Aayushi Gosai Dhimahi Trivedi

SOAK PIT

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Vishwakarma Yojana: Phase VIII	
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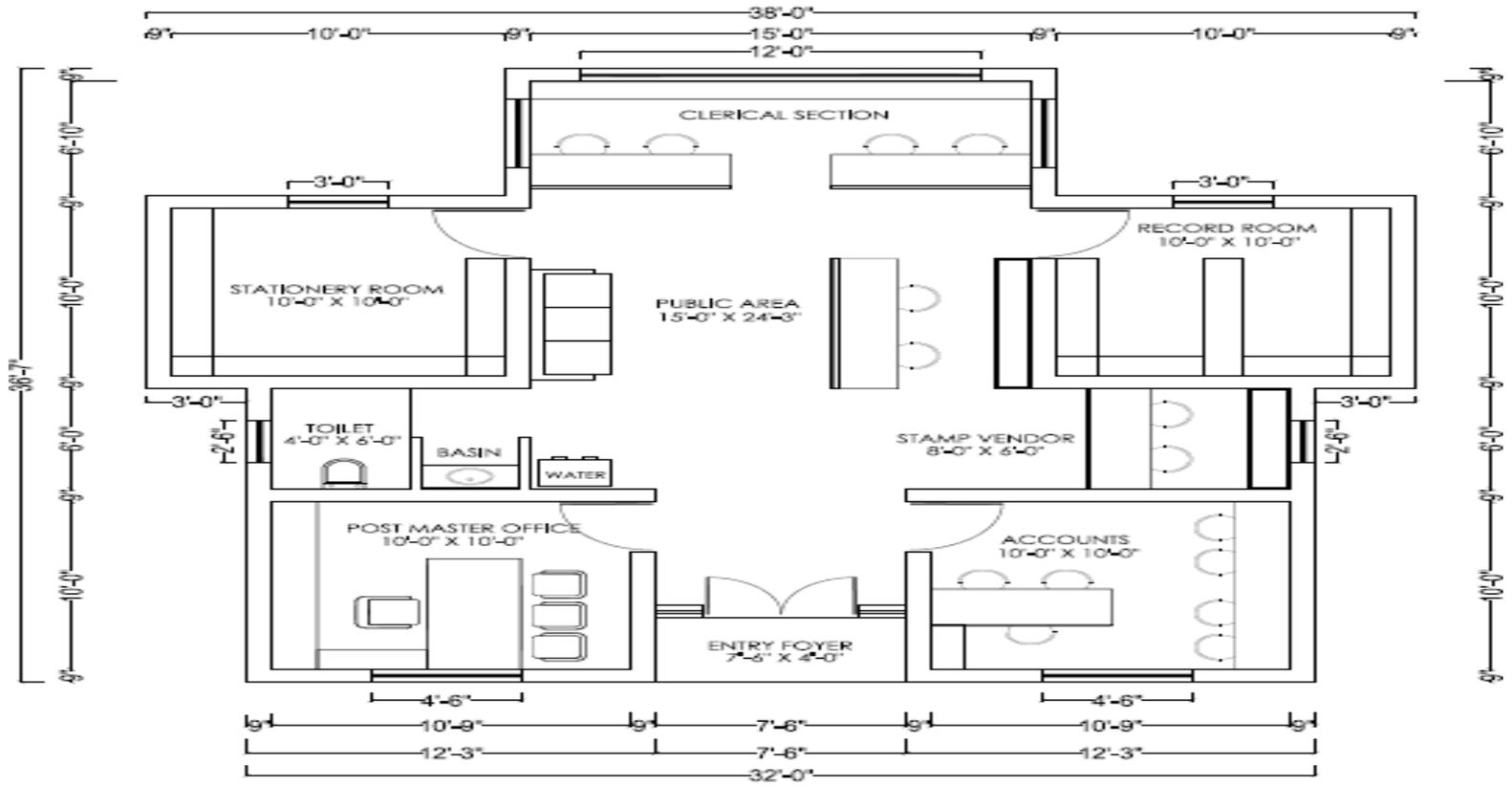
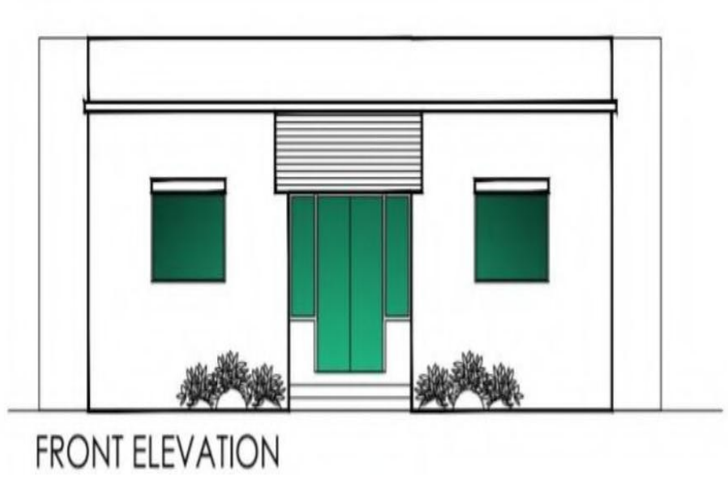
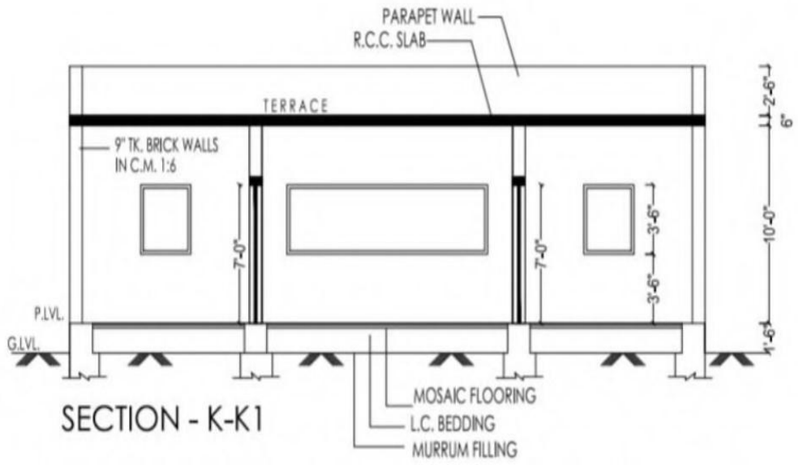




FRONT ELEVATION



SECTION - K-K1

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POST OFFICE

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Vishwakarma Yojana: Phase VIII	
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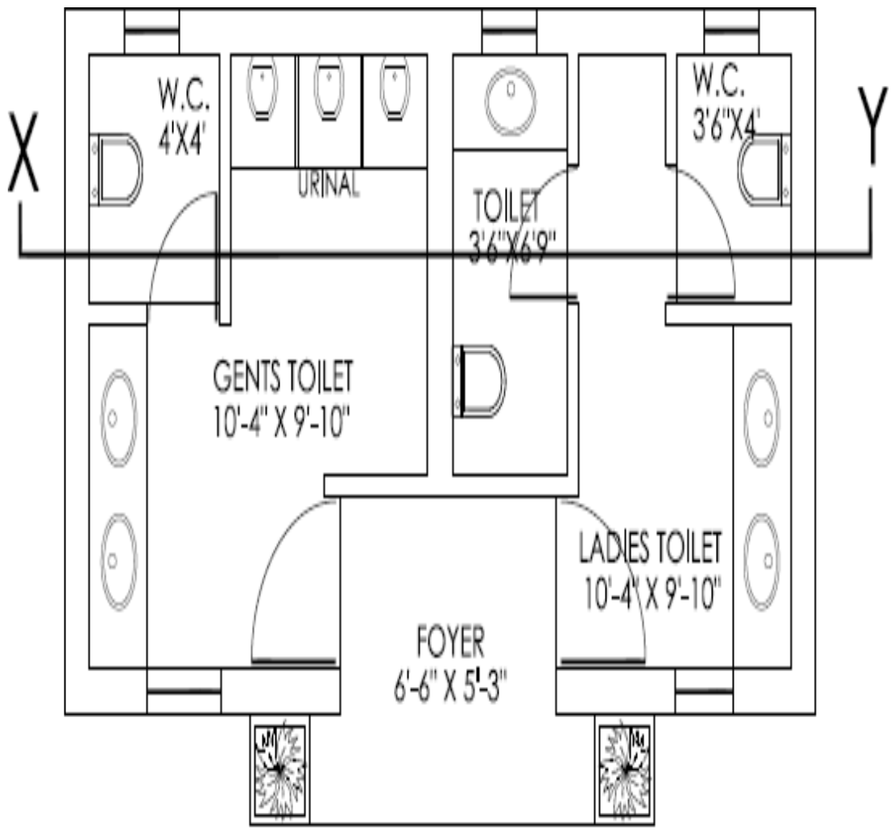

TOILET BLOCK

260 SQ.FT.

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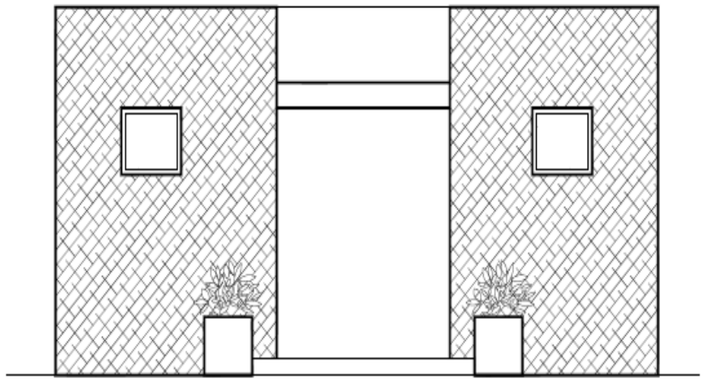
SLAB 8'-0"
LINTEL 7'-0"
SILL 5'-0"



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PUBLIC TOILET

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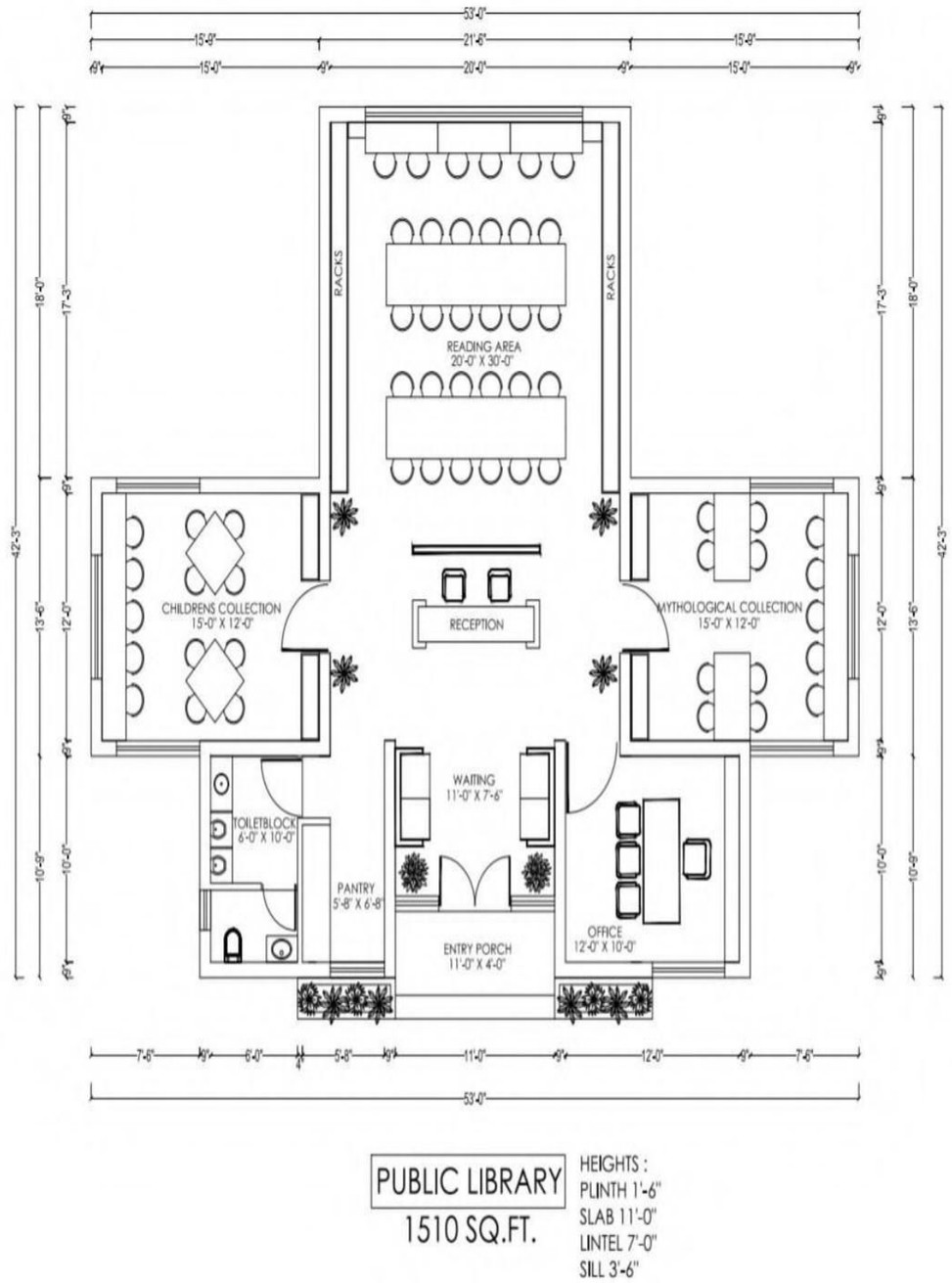

PUBLIC LIBRARY
1510 SQ.FT.

HEIGHTS :
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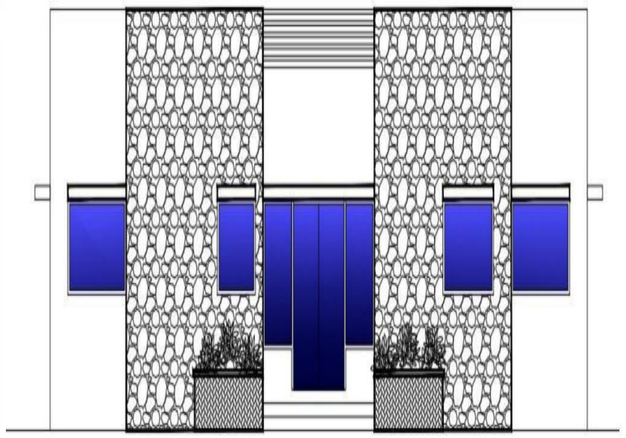
SLAB 11'-0"
LINTEL 7'-0"
SILL 3'-6"



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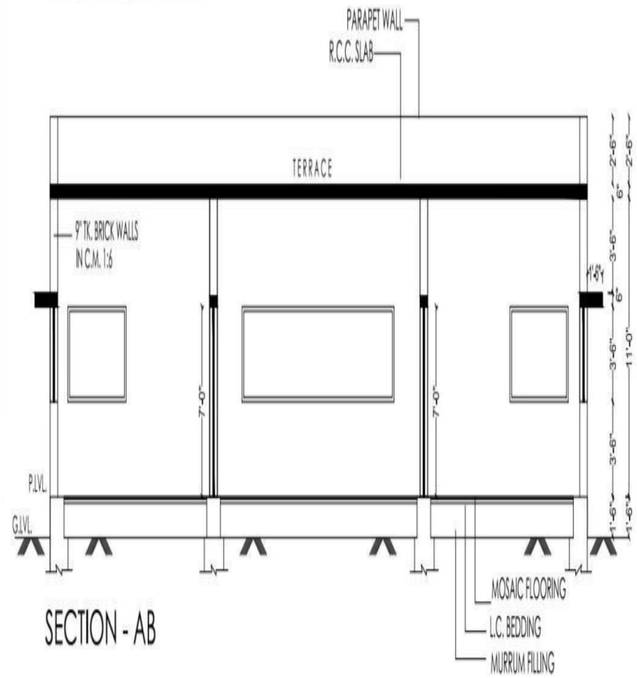

SECTION - AB

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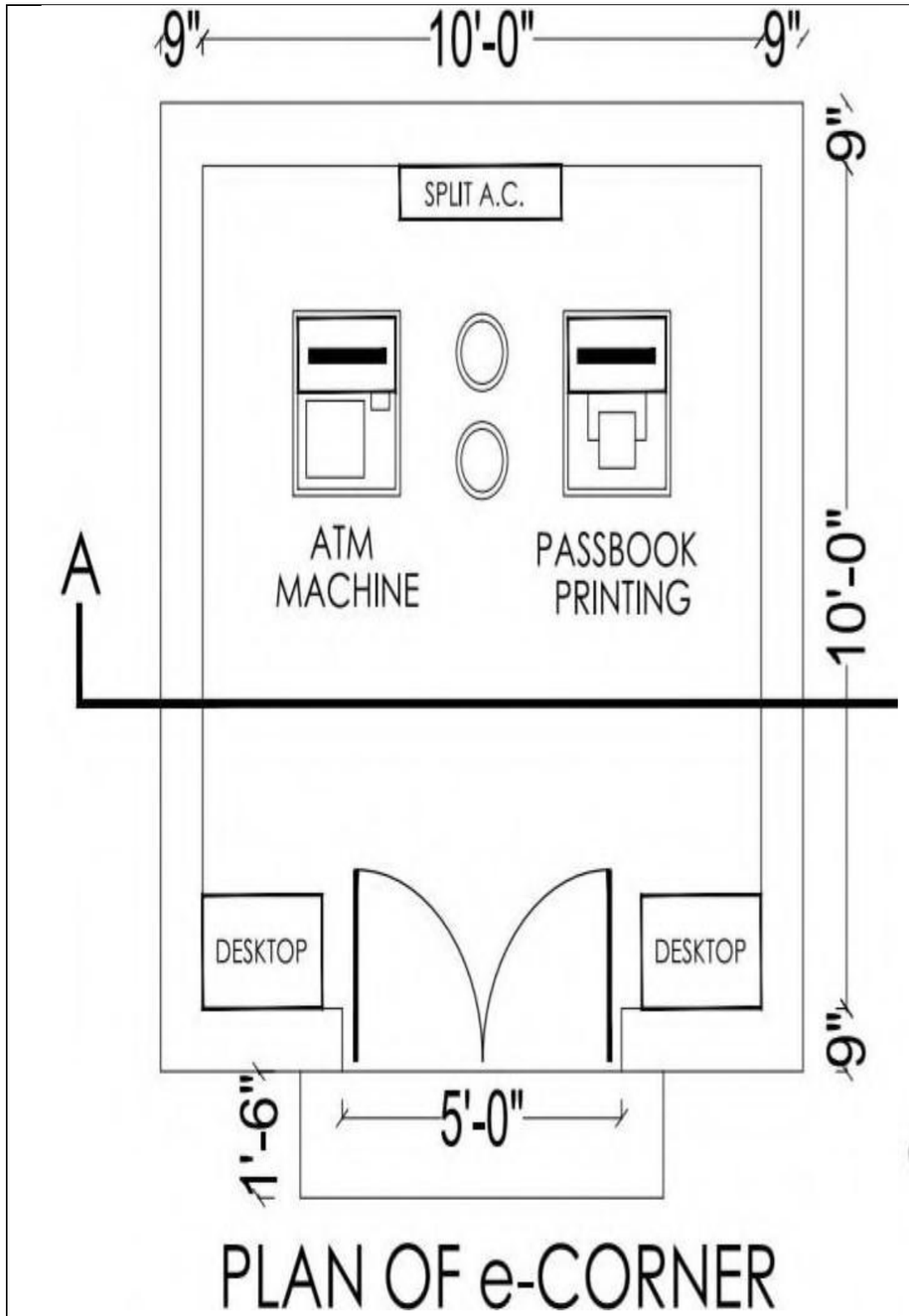
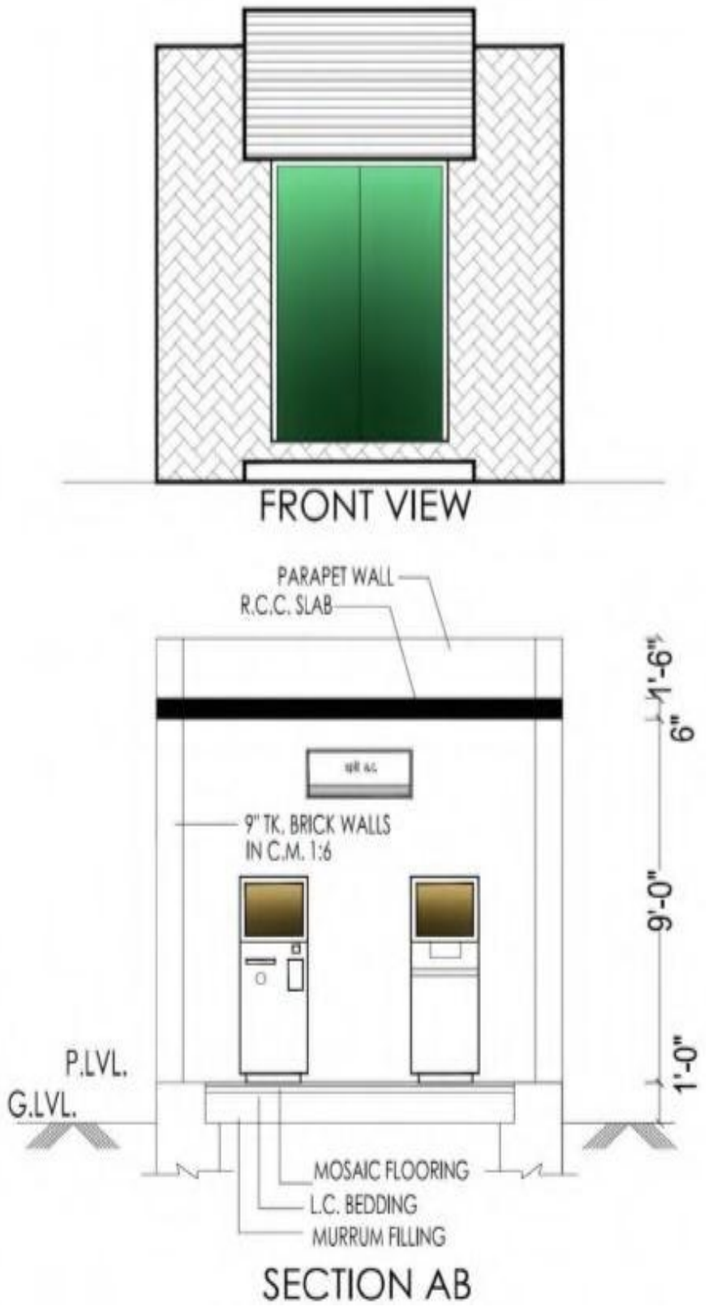


PLAN OF e-CORNER



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E-CORNER

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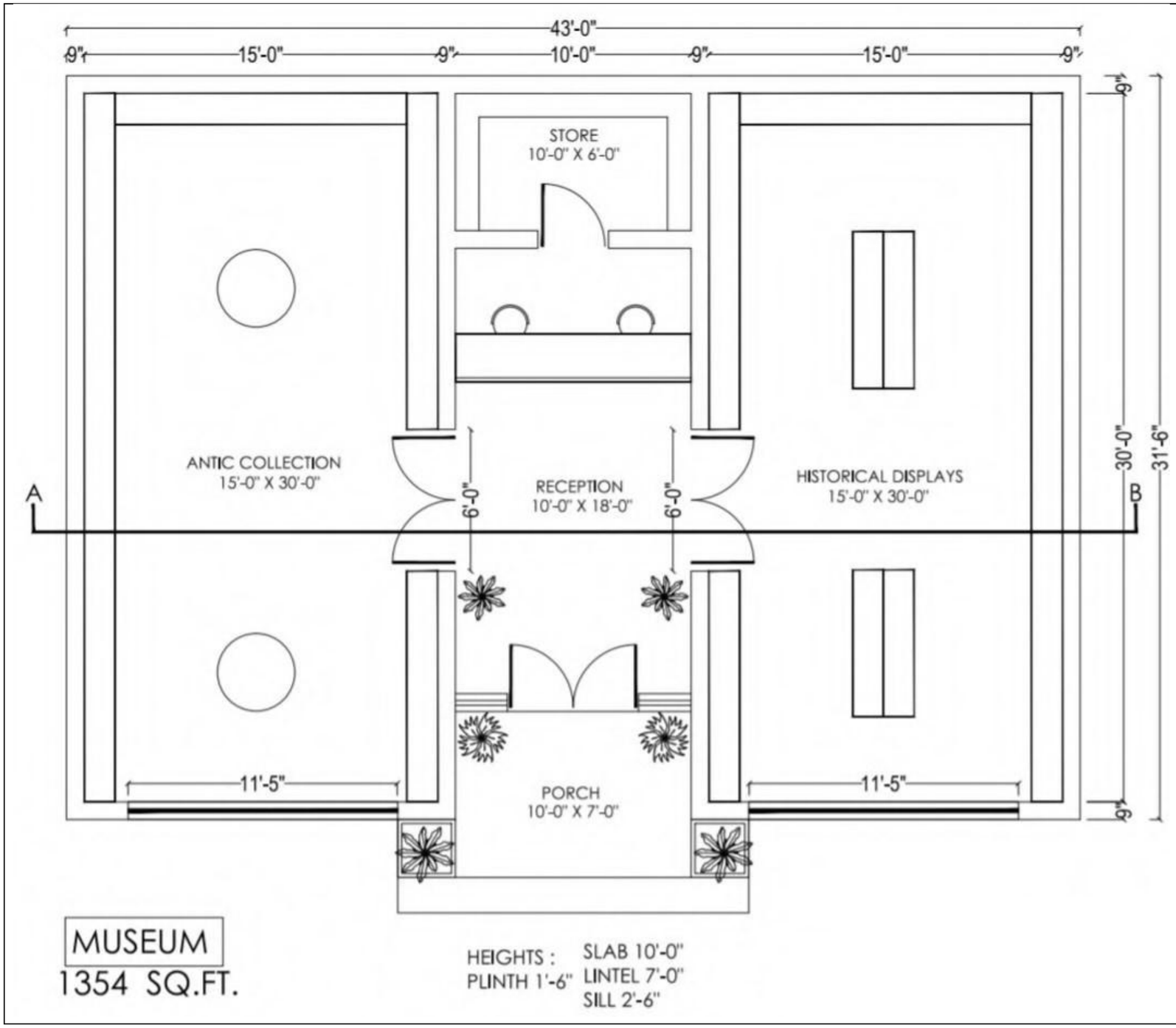

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MUSEUM	
Sheet No.	006
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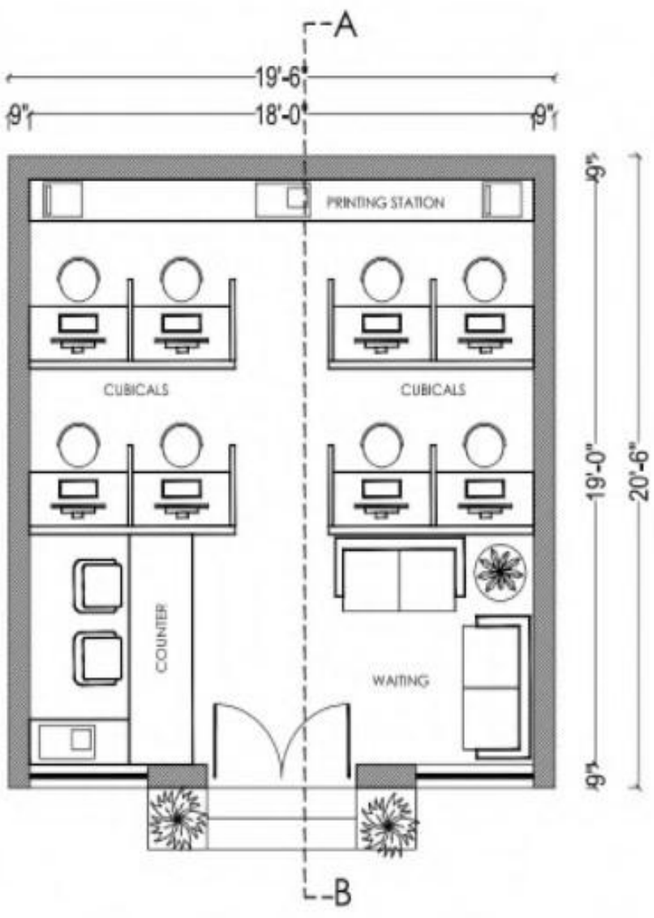
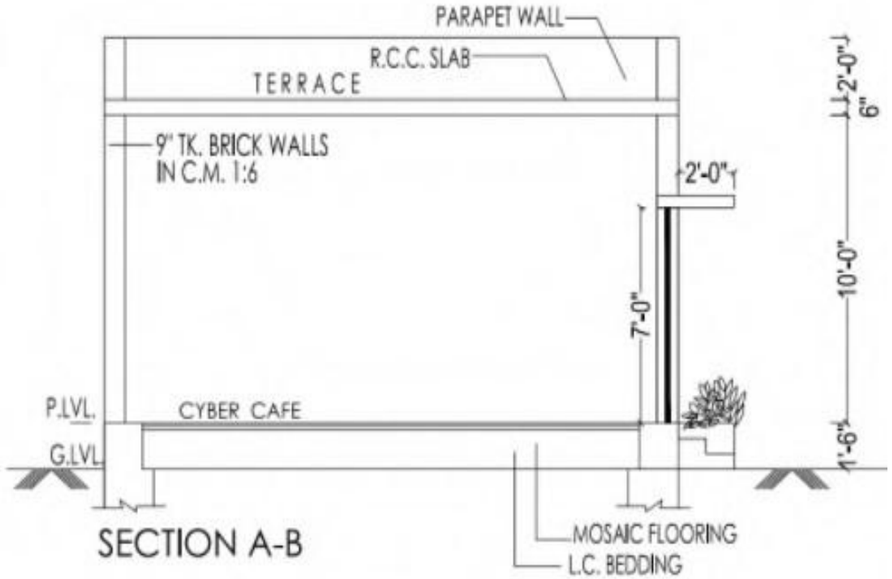
Vishwakarma Yojana: Phase VIII	
Scale	As Indicated





WORKING PLAN OF CYBER CAFE

slab 400 sft.

Gujarat Technological University

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CYBER CAFE

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Vishwakarma Yojana: Phase VIII	
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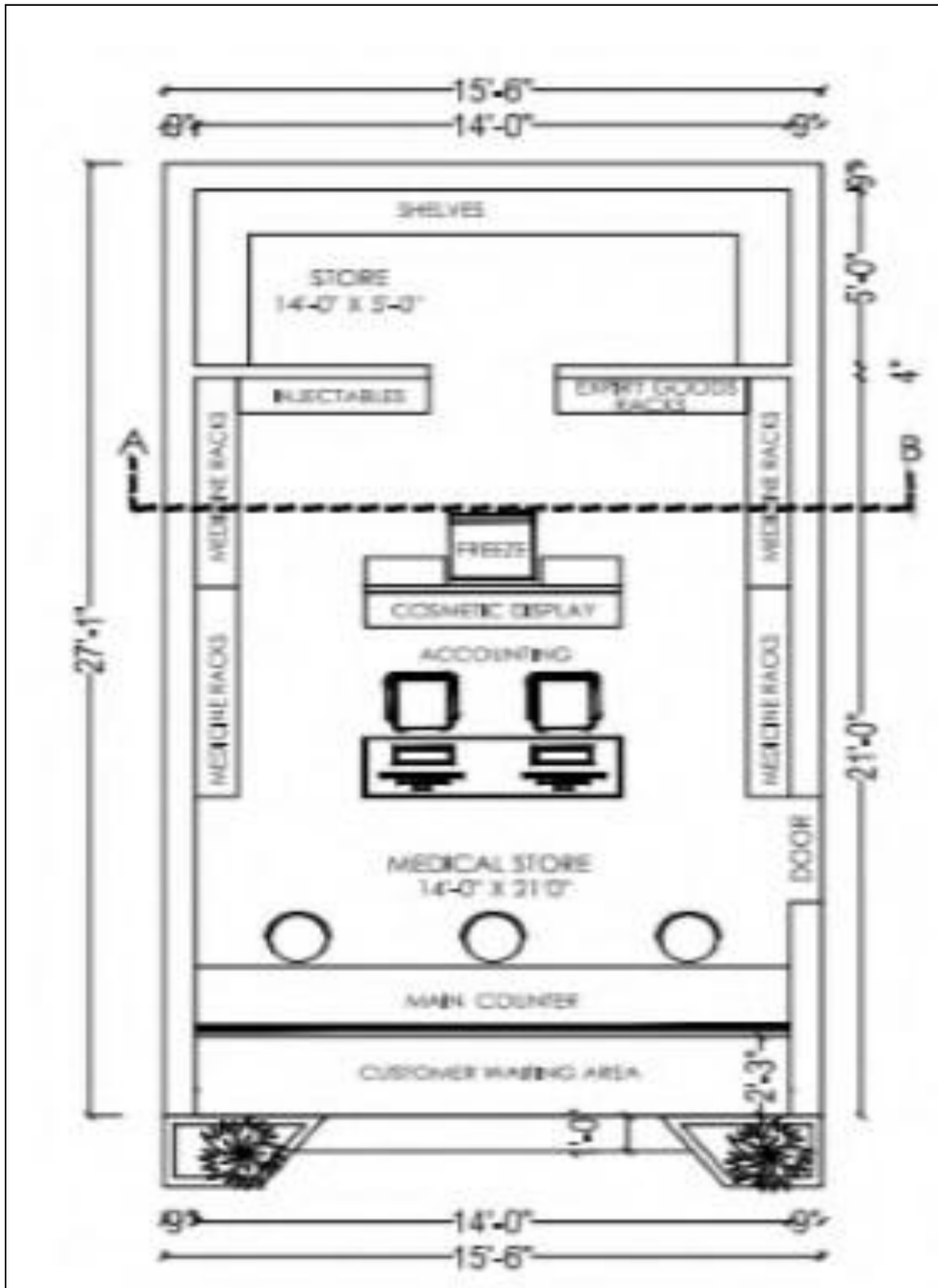
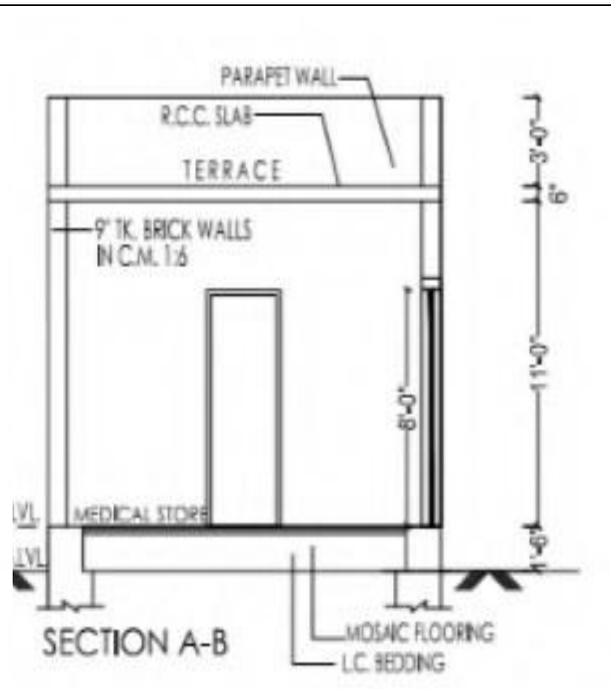
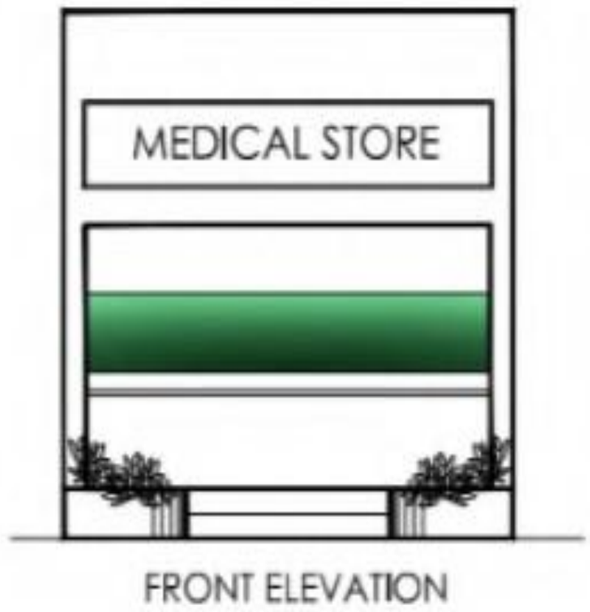




SECTION A-B



FRONT ELEVATION

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All dimensions are in Feet until stated.

Drawing Should be read not for scale.

Design is prepared only for educational purpose and correction of all data must be check before use.

Design is not responsible for any kind of wrong data.

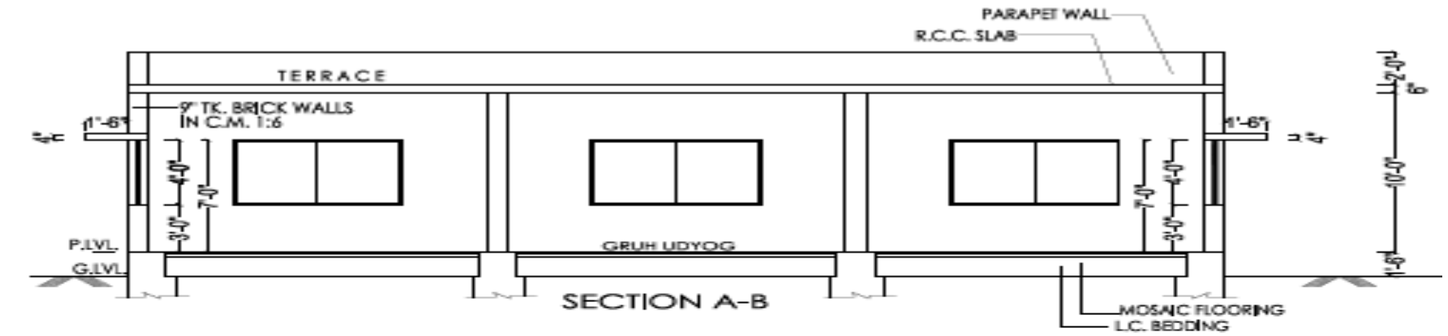
Minimum Grade of Concrete is M20 and all Steel grade is Fe500 as per IS456:2000.

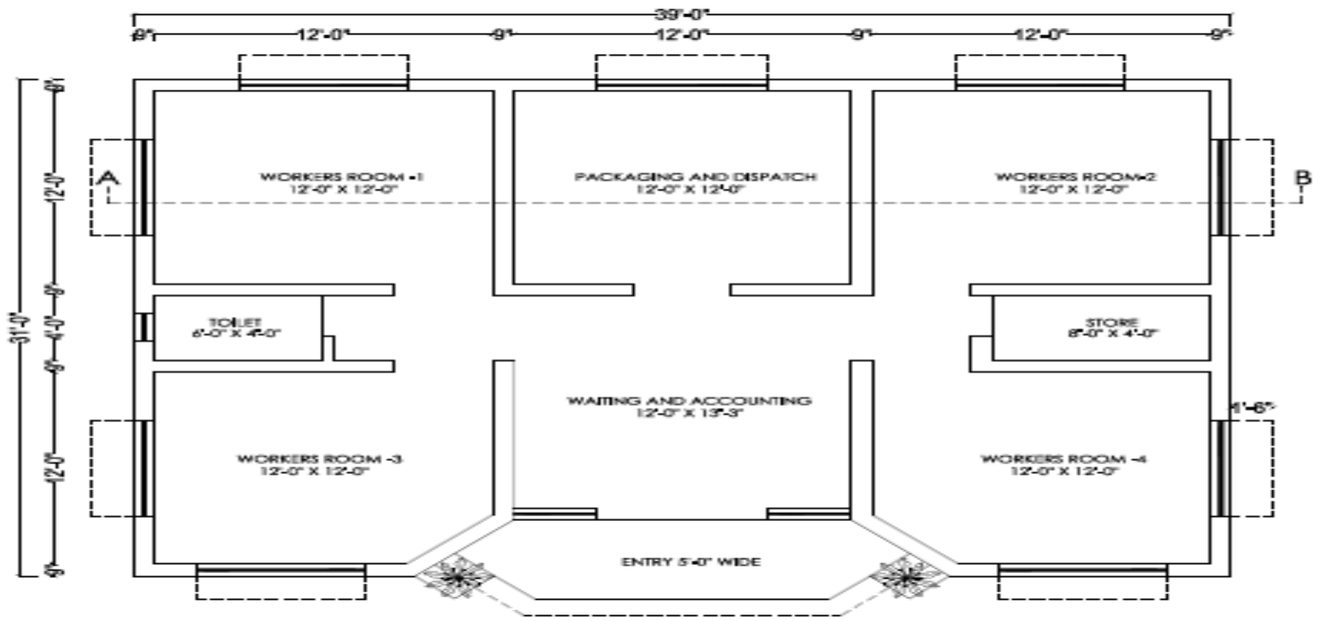
Atmiya Institute of Technology & Science for Diploma Studies

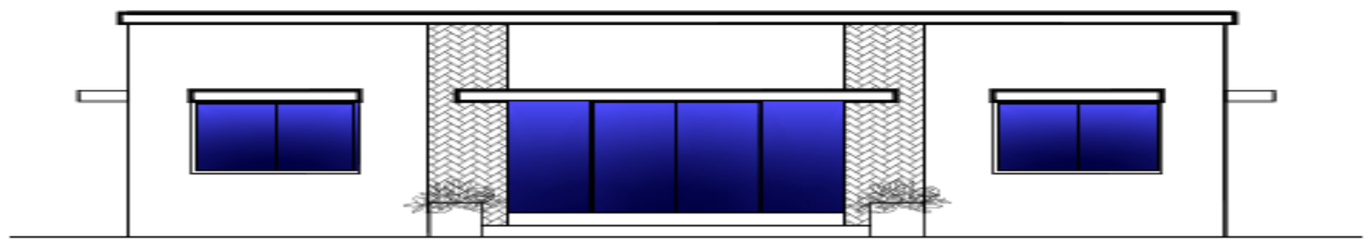
Design by:	Aayushi Gosai Dhimahi Trivedi

MEDICAL STORE

Sheet No.	008
Guided By	Prof. K.R. Dattani
Vishwakarma Yojana: Phase VIII	
Scale	As Indicated







WORKING PLAN OF WOMEN'S COTTAGE INDUSTRIES. slab 1250 sft.

Gujarat Technological University

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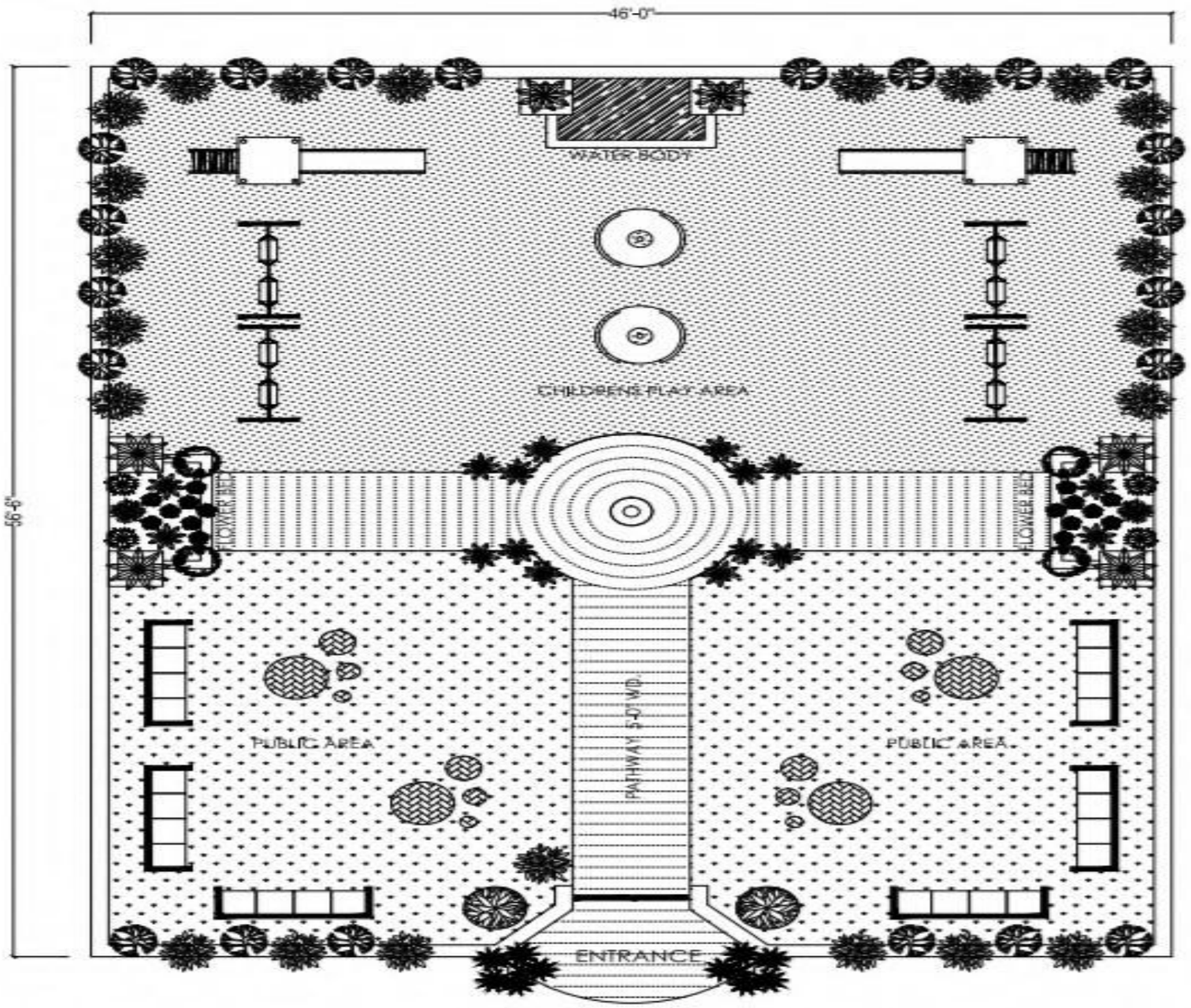
Atmiya Institute of Technology & Science for Diploma Studies

Design by:	Aayushi Gosai Dhimahi Trivedi

WOMEN'S COTTAGE INDUSTRY

Sheet No.	009
Guided By	Prof. K.R. Dattani
Vishwakarma Yojana: Phase VIII	
Scale	As Indicated



PUBLIC GARDEN DEVELOPMENT AREA 2600 sft.

Gujarat Technological University

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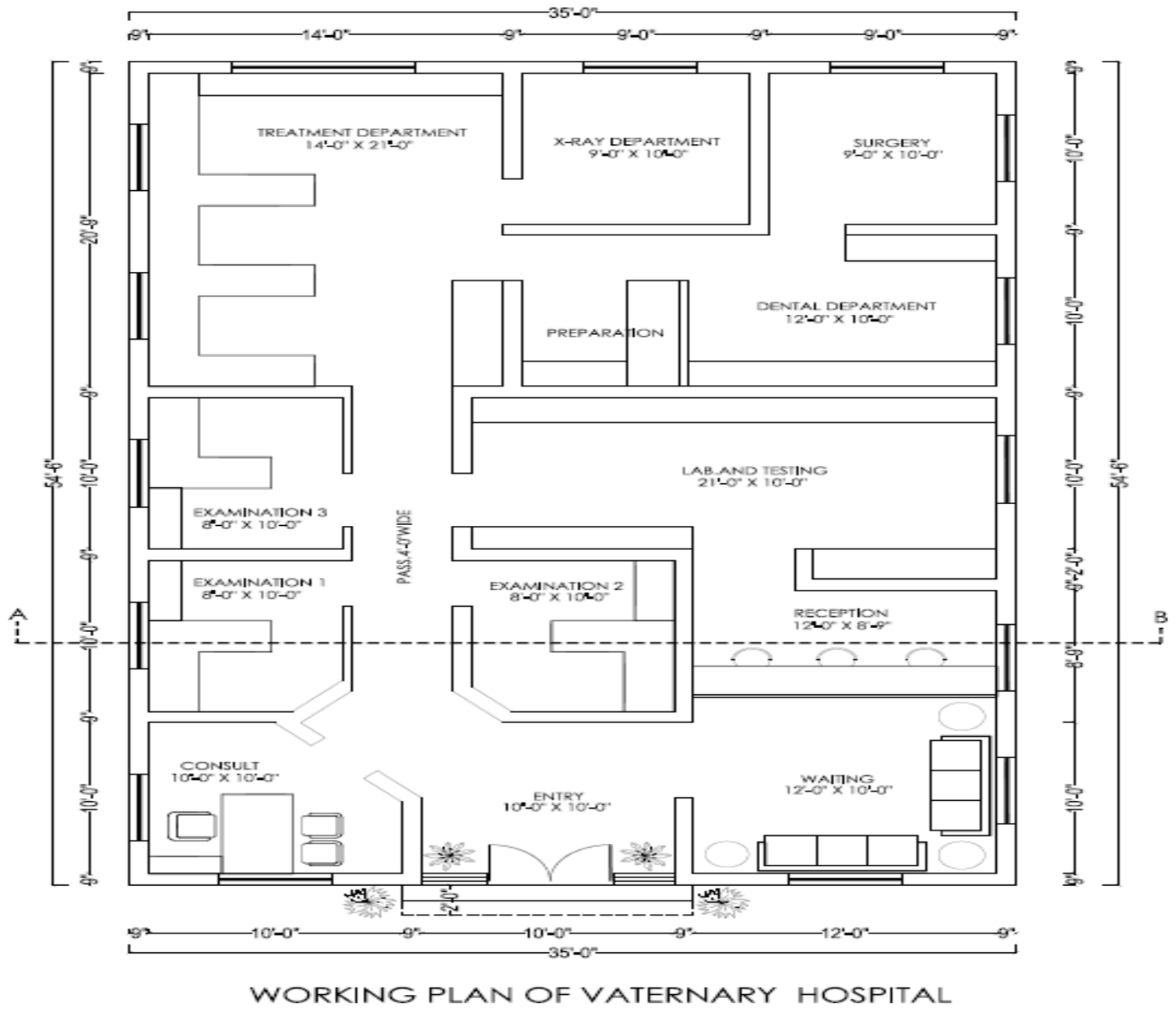
Atmiya Institute of Technology & Science for Diploma Studies

Design by:	Aayushi Gosai Dhimahi Trivedi

PUBLIC GARDEN

Sheet No.	010
Guided By	Prof. K.R. Dattani
Vishwakarma Yojana: Phase VIII	
Scale	As Indicated



WORKING PLAN OF VATERNARY HOSPITAL

Gujarat Technological University

All dimensions are in Feet until stated.

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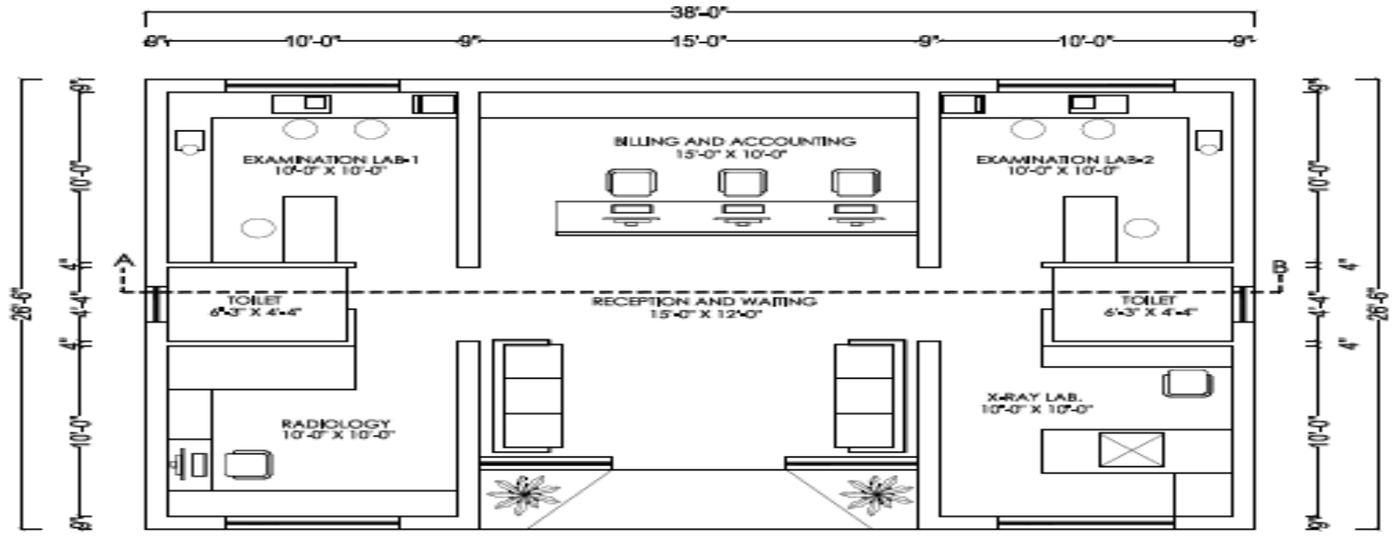
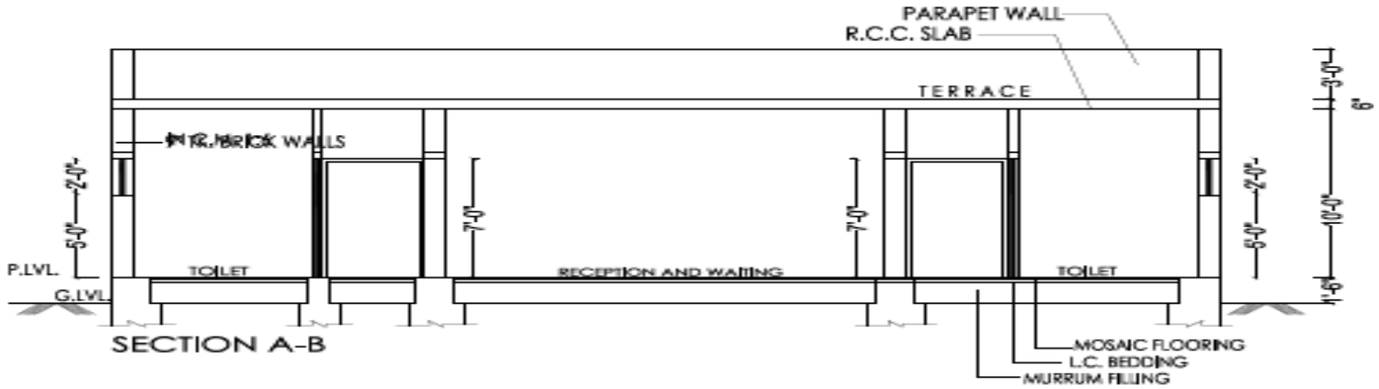
Atmiya Institute of Technology & Science for Diploma Studies

Design by:	Aayushi Gosai Dhimahi Trivedi

VETERINARY HOSPITAL

Sheet No.	011
Guided By	Prof. K.R. Dattani
Vishwakarma Yojana: Phase VIII	
Scale	As Indicated





SECTION A-B

FRONT ELEVATION

WORKING PLAN OF GOVT. MEDICAL LABORATORY slab 1008 sft.

Gujarat Technological University
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Drawing Should be read not for scale.
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Minimum Grade of Concrete is M20 and all Steel grade is Fe500 as per IS456:2000.
Atmiya Institute of Technology & Science for Diploma Studies

Design by:	Aayushi Gosai Dhimahi Trivedi
MEDICAL LABORATORY	
Sheet No.	012
Guided By	Prof. K.R. Dattani
Vishwakarma Yojana: Phase VIII	
Scale	As Indicated