DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION
JALIYA Village
RAJKOT District

PREPARED BY

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
Ramparia Dev	Civil	180893106054
Ramani Darshit	Civil	180893106056
Nakum Rohit	Electrical	180893109039

Shri Labhubhai Trivedi Institute
Of Engineering & Technology
Kalavad Road, Rajkot.

Prof. Mehul. M. Chavda
Assistant Professor
Dept. of Civil Engineering

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad– 382424 Gujarat

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DETAIL PROJECT REPORT

CERTIFICATE

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

DETAIL PROJECT REPORT FOR,

VILLAGE: - JALIYA
DISTRICT: - RAJKOT

Under

VishwakarmaYojana: Phase-VIII

In partial fulfillment of the project offered by

GUJARATTECHNOLOGICALUNIVERSITY, CHANDKHEDA
During the academic year 2020-21.

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

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
Rampariya Dev	Civil	180893106054
Ramani Darshit	Civil	180893106056
Nakum Rohit	Electrical	180893109039

Date of Report Submission:	
Principal Name and Signature:	**Dr.B.M.Ramani**
VY-Nodal Officer Name and Signature:	**Assi. Prof. Mehul Chavda**
Internal(Evaluator) Guide Name and Signature:	**Assi. Prof. Mehul Chavda**
College Name:	**S.L.T.I.E.T**
College Stamp:	

ABSTRACT

The aim of the Vishwakarma Yojana was to study village life with respect to the delivery of basic needs and then to re-imagine, redesign, rejuvenate and strengthen the community life. Any research work without direct relevance to the society will not normally lead to great Engineering Research. The students are required to re-imagine & redesign the infrastructure and make sure that the soul of the village is supported by the new. The market centers are typically spaced 30-40 km apart. As the population and the economy grow, several large villages are continually morphing into towns and market centers. Around 65% of the State's population is living in rural areas.
Vishwakarma Yojana deals with the concept of r-urbanization mean to develop the village by providing all the facilities of urban areas but with a aim to conserve the soul of the villages. It intends to reduce the urban pressure and to reduce the rate of migration.

According to Census 2011 information the location code or village code of jaliya village is 360003. Jaliya village is located in Rajkot district in Gujarat, India. It is situated 25km away from Rajkot. The total geographical area of village is 2283.11 hectares. Jaliya has a total population of 1639 peoples. There are about 361 houses in jaliya village. Rajkot is nearest town to jaliya which is approximately 25km away.

By studying the current status and techno-economic survey of jaliya village in rajko district of the Gujarat state in terms of basic services, public facilities, other infrastructural facilities for the need of the people and to prepare a report on the predictable socio-economic growth of the area with the discussion of TDO, DDO and Sarpanch will help full in providing better facilities and Services in village. From the gap analysis, development plans for village development will be projected and planning proposals for Physical infrastructure, Social Infrastructure and Renewable Energy Source will be suggested for the village. The study will concentrate on the development of the village.
We can only approach to digital facilities and sustainable technology for our village. Because we cannot directly approach to latest technologies, we have to consider its future scope also. Now a day‘s awareness is more required rather than technology. As our village is heritage site and surrounded by other religious temples we can develop it as tourism clustered

The existing condition of village is adequate main source of drinking water like tap water, Well, Bore well etc. To serve water in entire village it has one water tank with sufficient capacity. It has good condition closed drainage system and good condition road network.

For village development we design for public facilities are like public toilet and panchayat building, general market Community hall, Public library etc.

For future of development village is public toilet and panchayat building, general market Community hall, Public library etc.to give us a best design of village.

Key Words: village development, community hall, library, water tank, public garden

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

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

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

We express our sincere thanks to **Commissioner ate of Technical Education, Gujarat State**
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We express our sincere thanks to **DDO, TDO, Sarpanch, Talatiand staff members of Rajkot** District for providing us with requisite data whenever we approached them. Especially our thanks are to all villagers and stake holders for their support during Survey.

We are also thankful to our **Prof**.(**Dr.)B. M. RAMANI _Principal**, faculties of our colleges for their encouragement and support to complete this project work.

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

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ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
SWM	Swatch bharat mission
LCPD	Liter capita per day
PHC	Primary Healthcare Center
SOR	Schedule of rates
HVAC	Heating Ventilation and Air conditioning systems
PWD	Public works department
ATM	Automated teller machine
GSRTC	Gujarat State Road Transport Corporation
PGVCL	Paschim Gujarat vij company Ltd
C.C.	Cement concrete
CAD	Computer Aided Design
URDPFI	Urban & Regional Development Plan Formulation and Implementation

Chapter-1
Ideal village visit from District of Gujarat State

1.1 Background & Study Area Location

- As a part of Vishwakarma Yojana Project, we visited MOVIYA village, RAJKOT District,& tried to observe the various parameters like important elements in village development like various infrastructure, economic and social growth & activities related to that, population, financial background, environmental sustainability, electricity, water supply, drainage network, waste management, educational facilities, Mandalas or trust or society etc.

Figure 1.1. Moviya village (map)

- We also met Sarpanch (vaghjibhai padariya) of Grampanchayat of moviya village and villagers. In Moviya the village, the various infrastructure are there like School, Sewage system, Bank, PHC, Hospital is available in the village. The road of RCC and Bitumen are there.

- Moviya village is located in Rajkot district in
- Gujarat, India. moviya is 48km from Rajkot district

- The village has 2500 houses.

- Population: 11008(As per 2011 census) of which 5708 are males while 5300 are females per population census 2011

1.2 Concept: Ideal village

1.2.1 Objective

A moviya village has the following important objectives:

- Prevent distress migration from rural to urban areas, which is a common phenomenon in India‘s villages due to lack of opportunities and facilities that guarantee a suitable standard of living
- Basic Physical Infrastructure – Water Supply, Transport, Sewerage and Solid Waste Management should be the priority focus and be provided.
- Basic Social Infrastructure – Health and Education facilities should be provided and ensure proper delivery of facilities to village dwellers.
- Provide easier, faster and cheaper access to urban markets for agricultural produce or other marketable commodities produced in such village.

- Internal roads with in village settlement, Efficient Mass Transportation systems to improve connectivity between urban and rural areas,
- Public transportation facilities that need to be developed like bus stops, transport depot etc.
- Identification of sanitation facilities that need improvement sewerage and drainage line for household connection, door to door solid waste collection & dumping facilities.
- Electricity connections like street lighting that is energy efficient and eco-friendly

Figure 1.2: PHC center moviya village

1.2.2 Case study of Ideal village of India/Gujarat

- Study Area Location
- Village: moviya
- Taluka : gondal
- District: Rajkot
- State: Gujarat
- Latitude, Longitude:21°9153.9"N 70°8465"E

Figure 1.3: Sarpanch & Talati mantri

1.2.3 The Idea of a model/Smart Village

- Prevent distress migration from rural to urban areas. Hygiene education, health promotion and environmental protection into action in rural communities.
- As said, India lives in its villages 'Mahatma or India's soul is in villages, which is the backbone of Indian culture.
- The ideas of smart village will also attention to multiple challenges such as unplanned urbanization, under development of village and smart.
- In smart village accessustaunable energy services acts as a catalyst for development enabling the provision of good education and health care access to clean water, sanitation and nutrition, the growth of productive enterprise to boost income and enhanced security.

1.2.4 Ancient History Civil

- The foremost element of our ancient history of civil engineering that Characterizes our traditional Indian architecture and planning is the use of Vernacular material and construction techniques and planning strategies.
- Vernacular architecture is the style of architecture which takes into account all the needs and

requirements of the residents, nature, construction materials and also mirrors the traditions and culture.

- It develops over time to resonate the culture, traditions, history, environment, resident's desires and needs economy of the locality. Though diverse from the popular outlook towards
- The built environment, use of indigenous materials, designing and Construction techniques play a pivotal role in design and architecture
- Civil engineering is a professional engineering discipline that deals with the design, construction, and maintenance of the physical and naturally built environment, including public works such as roads, bridges, canals, dams, airports, sewerage systems, pipelines, structural components of buildings, and railwa

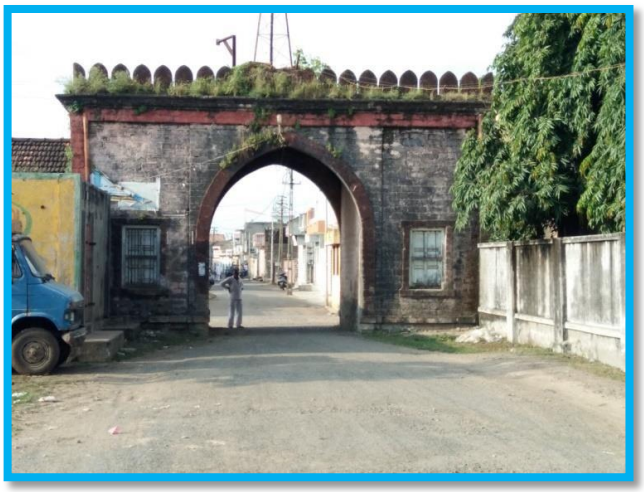


Figure 1.4: Ancient moviya

1.3 Detail study (Socio economic, physical, and demographic and infrastructure details) of Ideal village / Smart Village with photograph

Socio Economy

Table 1.1: - Socio Economy Detail

Particular	Total	Male	Female
Total no of house	2260	_	_
Population	11008	5708	5300
Child{0-6}	961	558	403
Schedule caste	726	351	375
Schedule tribe	5	2	3
Literacy	80.80%	86.35%	74.96%
Total workers	4115	3514	601
Main workers	3883	_	_
Marginal worker	232	119	113

Physical Demographic

- Moviya is situated in Gondal taluka Rajkot, Gujarat, India; its geographical coordinates are 21.9153'N 70.8465"E.
- Moviya village land information:

Table 1.2: - Physical &Demographical Detail

Sr No.	Description	Information/Detail	Unit
1	Area Of Village	6654.44	
2	Forest Area	8.0937	
3	Agriculture Area	5517.07	

4	Residential Area	40.4686	Hector
5	Other Area	1088.87	
6	Water Bodies	5pond/50 khetalawadi	

Figure 1.5 Grampanchayat

Figure 1.6 school

- Infrastructure Detail

1.4 SWOT Analysis Of Ideal Village / Smart village

Figure 1.7. SWOT Analysis

Strengths:

- High growth rate.
- Employment
- Door to door collection of waste.
- Strong infrastructure.
- Educational facilities availability up to Higher secondary level

Weakness:

- Less sustainable eco-friendly environment in terms of capacity to green development in future.

Opportunities:

- Involvement of government initiated health program.
- WIFI spots development.
- Developed green Infrastructures - Tech., Solar Panels, Waste Recycle
- Development of special agricultural programs to various new techniques.
- Sustainable eco-friendly structure – Rain water harvesting, Energy efficient buildings.

Threats:

- Very less sustainability to environment in future

1.5 Future prospects of Ideal village:-

- For future prospect, the village moviya village can use more advanced technologies for agricultural prospect and for other requirements also.
- As prospects view, village can use more modern equipment and technology for agriculture point.

- Free WI-FI system improves the knowledge of people and gives result as a more awareness about all type of problems.
- It can also provide industrial area over the boundary of village.

1.6 Benefits of the visits of Ideal village:-

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

1.7 Electrical concept of ideal village: -

The electricity should be supplied 24 hours. The village should have good facilities of electricity because most of the work now days depend on electricity.

CHAPTER -2
About Village Literature Review

2.1 Introduction; Urban & Rural

Rural Area:

All the areas which are not characterized as urban area is called rural area. In which the population is very low compared to urban areas. Mainly they depend on agricultural activities. According to census 2011, there are 6, 40,867 villages in India. The area where more than 75% of male population is associated with agricultural activity is known as rural area.

Urban Area:

An urban area is the region surrounding a city. Most people of urban areas have non-agricultural jobs. Urban areas are very developed, meaning there is a density of human structures such as houses, commercial buildings, roads, bridges, and railways. "Urban area" can refer to towns, cities, and sub urban.

Figure 2.1.rural & urban

2.2 Importance of the Rural Development

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

2.3 Ancient Villages / Different Definition of: Rural Urban Villages

- By the Numbers in the United States, the Census Bureau classifies a rural area as a town with lesser than 1,000 people per 2.6 square kilometers (square mile), and surrounding areas with lesser than 500 people per 2. Square kilometers (square mile).
- A rural area is an open swath of land that has few homes or other buildings, and not very many people. A rural areas population density is very low. Many people live in a city, or urban area. Their homes and businesses are located very close to one another.

- In a rural are a, there are fewer people, and their homes and businesses are located far away from one another.

- Agriculture is the primary industry in most rural areas. Most people live or work on farms or ranches. Hamlets, villages, towns, and other small settlements are in or surrounded by rural areas.

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

- INDIA

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

Table 2.1: -Population of Rural and Urban Areas as Per Census 2001 And 2011

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

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

Table 2.2: Literacy Rates Of Rural and Urban Areas As Per Census 2001 And 2011

India	2001	2011	Difference
Rural	58.7	68.9	+10.2
Urban	79.9	85.0	+5.1

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

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

- Total population 60,439,692
- Total population of male: - 31,491,26
- Total population of female: 28,948,432
- Total population growth in decade is 19.28%
- Out of total population of Gujarat, 42.60% people lives in urban region and rest in rural

Table 2.3: - Demographic Data of Gujarat as Per Census 2011

Description	Rural	Urban
Population	57.14	42.60%
Total population	34,694,609	25,745,083

Male population	17,799,159	13,692,101
Female population	6,895,450	12052982
Population growth	9.31%	36.00%
Sex ratio	949	880
Literates	21,420,842	19,672,516
Average growth	71.71%	86.31%

2.6 Rural Development Issues - Concerns - Measures

2.6.1 Crime Free / Dispute free

- Traditional way to thinking, Poor understanding, Low level of education to understand development efforts and new technology, Religious and cultural program

2.6.2 Resources

- It is estimated that only 18% of a total rural population of 833 million Indians have access to treated water. Small resources, No use rainfall, Surface and sub-surface water us

2.6.3 Literacy

- Low level of education to understand development efforts and new technology, Proper transportation, Proper teaching equipment, Basic facilities

2.6.4 Health / Hygiene

- Poor sanitation, Deforming in children, Child effect, Nutrition

2.6.5 Women Empowerment

- Empowerment is a multi-faceted, multi –dimensional concept. Women‘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 control over decision- making in the home, society and nation, and to gain ‗power‘. According to the village report of ‒Empowerment means moving from a position of enforced powerlessness to one of power.

- Become aware of the power dynamics at work in their life context.
- Develop the skill and capacity for gaining some reasonable control over their lives.
- Exercise this control without infringing on the rights of others
- Support the empowerment of other in the community.

2.6.6 Various Measures for Rural Development

- Nature policy will be built around the three thematic axes. For each axis a range of measures will be available. In the new Regulation, conditions under which the measures can be implemented have been streamlined and simplified. Under this axis, measures fall into four groups:
- Human resources Young farmers, early retirement, training and information, farm advisory services. A series of measures target human resources within and linked to the agriculture and forestry sectors. Vocational training and information actions are available to all adult persons dealing with agricultural, food and forestry matters in order to provide

- Many Programs / Plans such as IRDP, DDP, DPAP, ITDP, NREP, SFDA, MFAL and TRYSEM etc. have been developed and implemented for raising socio-economic status of the rural people

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

➢ Various infrastructure guidelines/Norms for Villages

Table 2.4 infrastructure guide line

Education	
Anganvadi	Each village 5
Primary school	Each village 1
Secondary School	Per 7500 population
Public library	Per 15000 population
Medical Facility	
Gov./panchayat dispensary or sub PHC or health center	Each village
PHC %CHC	Per 20000 population
Hospital	Per 100000 population
Transportation	
Bus/Auto stand provision	Each village
Drinking Water	
Over head Tank	1/3 of total population
U/G Sump	2/3 of total demand
Public Toilet	Each village 2
Biogas Plant	Each village 1
Social Facility	
Post Office	Per 10000 population
Gram Panchayat Building	Each individual/group panchayat
Police Station	Per 15000 population
Community Hall	Per 10000 population

2.8 Ancient / Existing Electrical concept study as a Literature Review for village development

- Long before any knowledge of electricity existed, people were aware of shocks from electric fish.
- Ancient Egyptian texts dating from 2750 BCE reffered to these fish as the –thunderer of the nileand described them as the –protectors – of all other fish.
- Electric fish were again reported mileenian later by ancient Greek, roman and Arabic naturelists and physicians.
- Several ancient writers, such as Pliny the elder and scribonius larges, attested to the numbing effect of electric shocks delivered by electric catdish and electric rays, and knew that such shocks could travel along conducting objects

2.9 Other Projects / Schemes of Gujarat / Indian Government

Table 2.5:- Government Scheme

Sr No.	Gov. scheme
1	Prandhan mantra gram chadak yojna
	Detail: launched on 25 December 2000bt them prime minister atalbihari Vajpayee
2	Deendayalupadhyay gramenkaushakya yojna
	Detail: the main objective of yojna is to the career aspirations of the rural youth and adding diversity to the income of rural families
3	Swanrnjayanti gram swarozgar yojna
	Detail: which is redesigned as national rural livelihood mission was launched in 2011.
4	Prime minister rural development felloes scheme
	Detail: it has dual goals of providing short-term support to the scheme to the district administration in the underdeveloped and remote area of the country and develop competent and committed leaders and facilitator areas of the country who can serve as a resource for a long-term
5	Prandhan mantra awas yojna
	Detail: Prandhan mantra awas yojna in 2016 is a welfare programme created by the Indian government provide housing to rural poor people in India

CHAPTER: - 3
Smart Concept as per Raj Samadhiyala

3.1 Introduction: Concepts, Definitions and Practices

➢ Concepts

- Smart Village is a concept adopted by national, state and local governments of India, as an initiative focused on holistic rural development, derived from Mahatma Gandhi's vision Adarsh Gram (Ideal Village) and Swaraj.
- In Smart Villages access to sustainable energy services acts as a catalyst for development enabling the provision of good education and healthcare access to clean water, sanitation and nutrition, the growth of productive enterprises to boost incomes, and enhanced security, gender equality and democratic engagement.

Figure 3.1. Concept of smart city

➢ Definition:-

- Smart village means all the necessaries facilities is developed in the village and no need to moves in city for any kind of requirement
- A Smart Village enables its inhabitants to make use of the contemporary technological and social achievements, while its infrastructures are still being developed in line with sustainable development goals, offers an opportunity to efficiently deal with future of energy security and issues of local and circular

➢ Practices:-

- Transportation facility
- Water management
- Health center facility
- Library facility
- Waste management
- Rain water harvesting system
- Recreation facility, etc.
- Provide Good quality of life.
- Clean and sustainable environment

3.2 Vision-Goals, Standards and Performance Measurement Indicators

Bench Marks

1. Transport
2. Water Supply

3. Sewerage & Sanitation
4. Solid Waste Management
5. Electricity
6. Wi-Fi Connectivity
7. Health Care Facilities
8. Education
9. Higher Education
10. Fire Fighting
11. Others

❖ Standards

ISO/TS 37151 outlines 14 categories of basic community needs (from the perspective of residents, city managers and the environment) to measure the performance of smart community infrastructures. These are typical community infrastructures like energy, water, transportation, waste and information and communication technology systems, which have been optimized with sustainable development and resilience in mind.

3.3 Technological Options

Here are the technological options for the smart cities/ villages

- Electricity:

The wiring in smart villages should be underground.

- Lightning:

The Smart city/ village should have Power saving general lights

- Internet:

The smart city/ village should have internet connectivity for most of the Work.

- Pollution Control:

The smart city/ village should have pollution control facilities for waste collection, waste treatment & waste recycling.

- Road Network:

The smart city/ village should have strong and efficient road network.

- Digital city:

A connected community that combines broadband communications Infrastructure; a flexible, service-oriented computing infrastructure based on open industry standards; and, innovative services to meet the needs of governments and Their employees, citizens and businesses.

- Information city:

It collects local information and delivered them to the public portal; In that city, many inhabitants are able to live and even work on the Internet because they could obtain every information through IT infrastructures, using this approach, an information city could be an urban center both economically and socially speaking; the most important thing is the linkage among civic services, people interactions and government institutions.

3.4 Road Map and Safe Guards

- A smart city roadmap consists of four/three (the first is an initial check) major components: Study the Community: Before deciding to build a smart city, first we need to know why.
- This can be done by defining the benefits of such an initiative. Study the community to know the Citizens, the business's needs – know the citizens and the community's unique qualities, such as the age of the citizens, their education, hobbies, and attractions of the city. Develop a Smart City Policy: Develop a policy to drive the initiatives, where roles, responsibilities, objective, and goals, can be defined.
- Create plans and strategies on how the goals will be achieved. Engage the Citizens: This can be done by engaging the citizens through the use of government initiatives, open data, sport events, etc. The first step in establishing a road map for a smart city is to know why there is a need for a Smart city initiative.

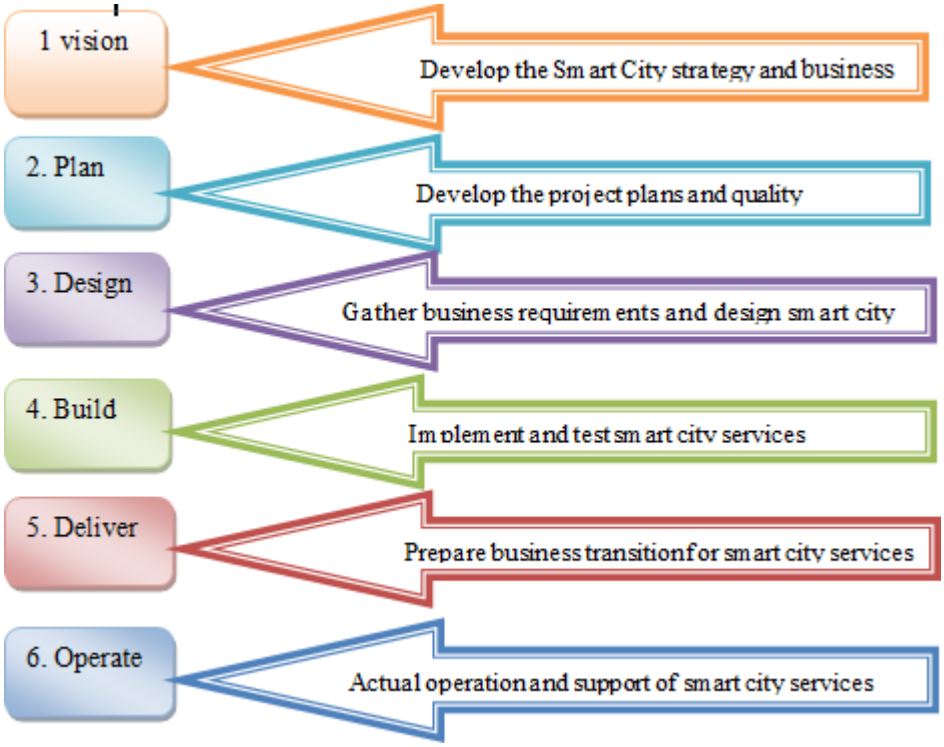


Figure 3.2 Road Map and Safe Guards

3.5 Issues & Challenge

1. Shortage of doctors, health workers in villages Rural districts in India have accounted for over 50% of new coronavirus cases in July and August, according to a research report by State Bank of India. The World Health Organisation recently expressed concern that Covid-19 is moving –efficiently from urban to rural India.
2. According to experts, one would expect that low population density should help reduce the spread of infection. But in rural areas, the advantage due to lower population density could be offset by factors such as lower acceptance of preventive practices, lesser or no access to

diagnostic facilities, shortage of doctors and poor healthcare infrastructure. Mortality could be high given the lack of access to good healthcare facilitie

2 Increased farmers' suicide

Now farmer's suicide is India's old malady. Over the past couple of years, we have seen an increased rate of suicide among those belonging to the farming community. Now Covid-19, lockdown and other such related factors have reinforced this problem.

3.6 Smart Infrastructure - Intelligent Traffic Management

- Smart housing:

Smart houses are built as per the codes of the Indian Green Building Council (IGBC) guidelines. All houses in smart cities are connected with a network of fiber optic cables to provide telephone and broadband connectivity.

- Smart mobility:

Infrastructure also provides different means of commuting other than cars and bikes. Most of the mobility needs of a smart city should be fulfilled by walking and cycling. The public transport should be efficient and environment friendly.

- Smart sanitation:

Sewage should be treated and must not be released in rivers or water bodies. The methane Released from sewage should be captured and used as fuel and it's residue can be used as a Bio-fertilizer.

- Smart waste management:

Water should be treated as a precious natural resource. The infrastructure should be such that water supply should be metered. Dual water supply lines should be established – one for Drinking and cooking and the other for various uses. Each housing complex should have rain water harvesting and water treatment plants for optimum usage.

- Technology infrastructure:

Internet connectivity along with cell phone coverage is essential in smart cities as most of The city services are offered online. Multiple service kiosks have to be set up for people to access public services and information. –Technology infrastructure can provide real time Vehicle tracking, control of street lighting, solid waste serving vehicle tracking, citizen's Portal, online building permissions and water and energy management applications at testing Level,‖ says Kanchan Sidhaye, GRIHA trainer and evaluator, BEE Energy Manager, Environmental, a green consulting firm based in Pune.

- Solid waste management:

Solid waste must be mandatorily segregated into dry and wet waste and collected through Separate channels that handle all activities from collection to disposal. Where wet waste can be used by converting into fuel/fertilizer/heat source, while the dry waste should be Segregated into reusable parts and non-usable parts which can further be converted into Electricity.

- Smart industry:

Smart cities are employment oriented. They should follow guidelines given by _Ease of Doing Business Index' to facilitate industrial development. They should provide single Window clearance' system for industries. Fuel pipelines and dedicated high tension Electricity lines should be provided for uninterrupted supply of energy.

- Smart security:

A smart city should be covered by CCTV cameras for round-the-clock surveillance. Advanced surveillance techniques with facial recognition and video processing should be Implemented to track would-be criminals.

3.7 Cyber Security or any other concept as per the

The branch of technology, various types of projects to protect webs, processes and practices, programs and data, computers from various attack, damage or from cyber ware unauthorized access. In a evaluating surrounding, security includes both cyber ware and physical security which includes Antivirus and Firewall.

Elements of cyber security include are as below:

1. Information Security and Access.
2. Network Security and Passkey.
3. End user Education with Practical Knowledge.
4. Disaster Recovery and Data Recovery.
5. Application Security.
6. Operational Security

3.8 Retrofitting- Redevelopment- Greenfield Development District Cooling

- All climate controlling devices and handling systems have three main basic components: Source of cooled and warmed air, way of distributing the air in the rooms being cooled or heated, various Controlled used to regulate the new system. The origin of hot temperature during winter season we can get hot air from the furnace. Sources of chill breeze such as an air conditioner in a commercial area & house often use the same distribution and control systems.
- If commercial office or house has central air conditioning for maintaining cool air probably it flows through the same ducts and vents from where the heat is dissipated & regulated by the same vent or duct.
- Both air conditioner, heater work on the fundamental theory that heat air always travels from a warm object to a cooler one. Just as like liquid or take as water, which flows from a higher level to a lower level, air conditioners separate warm air to form your home as much as cool according to the requirement and set level of air conditioners; heaters and furnaces put heat

into the air to make your home warmer to maintain temperature in home.

- **Green building:** is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a **building's** life-cycle from siting to design, construction, operation, maintenance, renovation and deconstruction
- The city heating network designed, built and operated by ENGIE at Aosta in Italy recovers and recycles waste energy from a nearby steelworks. It's one of the most innovative systems

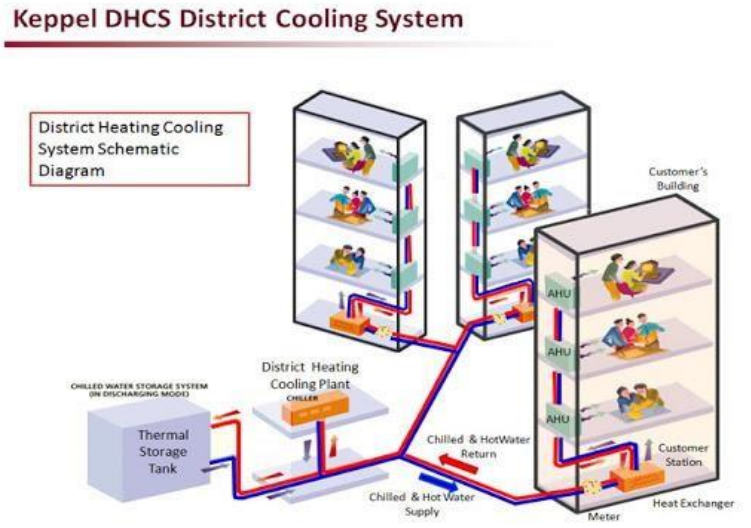


Figure 3.8. DHCS SYSTEM

3.9 Strategic Options for Fast Development

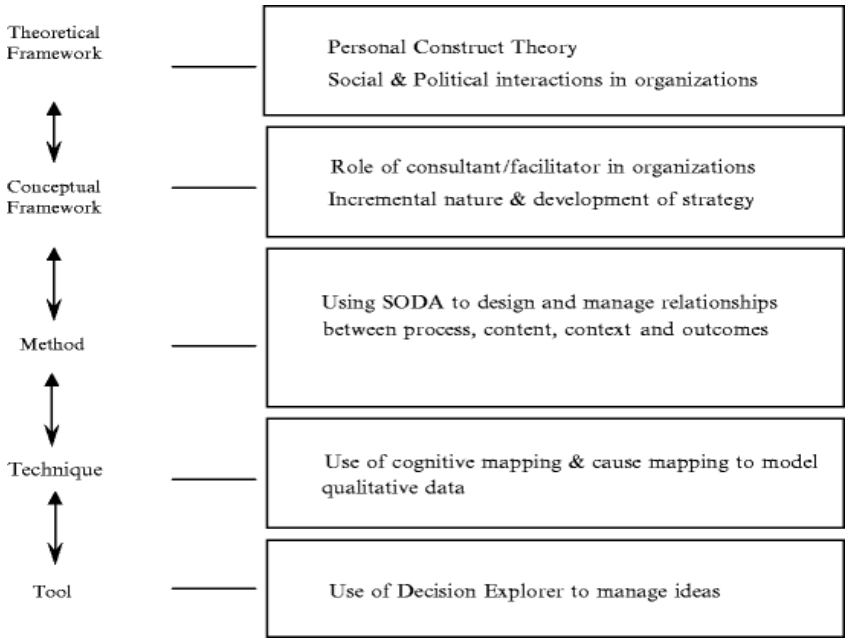


Figure 3.9. Fast Development

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

- Nearly half of the population in India currently practices open defecation.
- Water Aid called on New York business leaders to ensure that millions of people in India have and use something that most of the world takes for granted within the next four years: a toilet. The unprecedented opportunity to achieve a clean India was presented in Manhattan at an exclusive gathering of prominent New York residents with a connection to India and an interest in the sustainable progress of humanity.
- India faces herculean challenges in providing and maintaining the two basic services of safe drinking water and improved sanitation. With more people than any other country in the world Living without access to improved sanitation, nearly half of the population in India currently practices open defecation

3.11 Initiatives in village development by local self-government

Urbanization is reaching a new peak with the steep rise of population in Indian cities. At present, Cities accommodate nearly 31 per cent of India s current population and contribute 63 percent of nations Gross Domestic Product (GDP). Cities are expected to house 40 per cent of India s population and contribute 75 per cent of India s GDP by 2030.

3.12 Smart Initiatives by District Municipal Corporation

Indian cities work in a complex environment especially when coupled with constrained financial resources, fast-growing populations, and aging infrastructure. To change the contours of urban space, the Government of India has launched the Smart City Mission and recently released the list of 100 potential smart cities.

Since 1992, local governance in India takes place in two very distinct forms. Urban localities covered in the 74thamendment the constitution, have agarpalika but derive their powers from thin divide state governments, while the power of rural localities have been formalized under the panchayat raj system, under 73rdamendment to the constitution for the history of traditional local government in India and south Asia, see Panchayat raj.

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

Non-governmental Organizations (NGOs) play an important role in the economic development of developing countries. They provide services to society through welfare works for community development, assistance in national disasters, sustainable system development, and popular movements.

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

India's history and culture are dynamic, spanning back to the beginning of human civilization. It begins with a mysterious culture along the Indus River and in farming communities in the southern lands of India. The history of India is punctuated by constant integration of migrating people with the diverse cultures that surround India.

CHAPTER-4
About Jaliya Village (Allocated Village)

4.1 Introduction

4.1.1 Introduction about jaliya village

Jaliya village is located in Rajkot district in Gujarat India .it is situated 25km away from Rajkot. Which is both district sub district headquarter of jaliya village as per 2009 states. Jaliya village is also a gram panchayat. The 2283.11 hectares.

Figure 4.1. Jaliya village

Figure 4.2 School

4.1.2 Justification / Need of study

- The need of the study is to provide the basic requirements of people in the village and for City Development of the village. For this purpose the information of the village is collected based on different categories such as Education, Water Facilities, Drainage Facilities, Transportation Facilities,Primary Health Care, Bank Facilities, Public Toilets, Community hall and other amenities.

- 65% of the population of the country lives on agriculture which contributes only 15 % to the country_s GDP.
- If we compare this with China which has a similar sector contribution to the GDP, only 30% of people depend on agriculture whereas in country like USA just 2% of the people are dependent on agriculture Citification addresses this concern and imbalance by providing alternate jobs to village masses dependent upon agriculture.
- So it is very important to develop village area compare to city one

4.1.3 Study Area (Broadly define)

- GTU allocated one village to us of Gujarat for surveying which is the jaliya village near Rajkot district. This is our study area to find difficulty related to structure and broad amenities .25 km away from Rajkot.
- In the village lack of basic facilities like panchayat building, primary school milk co-operative anganvadi, health center

Figure 4.4. Jaliya village map (satellite view)

4.1.4 Objectives of the study

- To analyze the existing conditions.
- To find out the problems of village.
- To analysis of existing social and physical amenities, public buildings as well as infrastructure.
- To collect socio-economic data through techno-economic survey.
- To propose the inclusive planning suited for ideal village.
- To improve the lifestyle of jaliya village

4.1.5 Scope of the Study

- By the analyzing the present conditions we can improve the basic amenities and facilities like drainage facility, transportation facility, education facility.
- To improve life style of villagers by helping them to develop their skill.
- From the Gap analysis, development tactics for village development will be proposed and planning suggestions for physical infrastructure, social infrastructure and renewable energy.
- Source will be suggested for the village.

4.1.6 Methodology Frame Work for development of your village

- Methodology goes in following order
- Concept
- Literature review
- Meeting with Sarpanch
- Meeting with revenue Talati
- Techno Economic Survey
- Collection of data

- Analysis of data
- Design Proposals
- Future plan
- Acknowledgement

4.1.7 Available Methodology for development of related to Civil/Electrical

- **Civil**
  - Water Tank
  - Drainage System
  - Gram Panchayat
  - Anganvadi
  - Health Centre
  - Road
- Overhead tank
- **Electrical**
- Streetlight

4.2 Jaliya Study Area Profile

4.2.1 Study Area Location with brief History land use details

- According to census 2011 information the location code or village code of jaliya village is 512922.jaliya village is located in Rajkot tehsil of Rajkot district in Gujarat. India. It is situated 25 km away from Rajkot. Which is both district %sub district headquarter of jaliya village. As per 2009 stats. Jaliya village is also a gram panchayat.
- The total geographical area of village is 2283.11 hectares. Jaliya has a total population of 1639 peoples. There are about 361 houses in jaliya village.
- The surrounding nearby villages from jaliya are ratanpar, Khorana, sansora, rampara, vankvad, hirasar etc.
- Jaliya Village Is Located In The Rajkot Taluka Of Rajkot District Of GujaratState.
- Nearest Town From jaliya Village Is Rajkot Which Is 25 Km Away From jaliya.
- Pin code:360003
- District: Rajkot
- State: Gujarat
- Nearest Town: Rajkot(25 km)

Figure 4.6. PHC center

Figure 4.5. Panchayat

Figure 4.7. Anganvadi

Figure 4.8. Water tank

Figure 4.10. Jaliya village

Figure 4.9. Sarpanch & Talati mantri

4.2.2 Base Location map, Land Map, Gram Tal Map

Table 4.0:- jaliya detail

Place :	Jaliya
PIN Code	360003
District :	Rajkot
Tehsil/ Taluka :	Rajkot
State :	Gujarat
Latitude :	22.3039005
Longitude :	70.8021539

Figure 4.11. Jaliya village

4.2.3 Physical & Demographical Growth

Jaliya village is located in Rajkot Taluka of Rajkot district in Gujarat, India. Jaliya is located 25km away from Rajkot. The geographical area of village is 2283.11 hectare guntha RA. Jaliya has a total population of 1639. There are about 361 houses in jaliya village.

Table 4.1: -Physical growth

Year	Population	male	female
2011	1639	815	824

Table 4.2 demographical detail

Agriculture land	400.38 hect
Business land	2283.11 hect
Nearest town	Rajkot

4.2.4 Economic generation profile / Banks

- In jaliya village mostly people are connects with agriculture And labor work.
- Major crops in village Kapas, Magfali etc.
- Bank and Atm is available at nearest village gavridad 8.9km state bank of india

4.2.5 Actual Problem faced by Villagers and smart solution

Problems:

- Problems of public toilet.
- Problems of solid waste management.
- Problems of basic facility like public garden, community hall, etc.
- Village has no CCTV system and it shouldn‘t have renewable energy.

Solution:

- We are given the smart solution and design of public toilet, solid waste management etc.
- Electrical point of view we will give design of solar street light and CCTV system etc.
- Solid waste management is done by door to door collection dustbin at some specific interval.

4.2.6 Social scenario -Preservation of traditions, Festivals, Cuisine

➢ Social scenario

- Jaliya village total population is 1639among them 815 are males and 824 are females as per census2011.
- The population of children with age 0-6 is 164which is 10.19 of total village population. There are about 361 houses in jaliya village and average family size is 4members.
- Literacy rate of village was 66.98% as per census2011.
- The geographical are of village is 2283.11 hector.

Preservation of Traditions

In This Village All People Are Engaged To Preservation Of Tradition Because All People Are Connect To Nature By Profession Like Their Occupation Is Milk Production And Farming So People Are Daily Connect With Nature.

Festivals

- In This Village All People Are Enjoying All Festivals Like Diwali, Janmastmi, ide Dhulet , and Rakshabandhan.

4.2.6 Migration Reasons / Trends

- Now a day‘s people are migrate due to low facility of people.
- Unable to provide Morden lifestyle.
- Now a day‘s Unemployment is big problem for migrate.

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

4.3.1 Describe Methods for data collection

- We Are Conducted Techno Economic Survey for Data Collection of jaliya Village. We Are Met With Sarpanch, Talati Mantri And Dweller Of Village And Understand Village Actual Situation, Condition And Existing Structure Of Village. Available Facilities Are

- **Demographical details**
  2001-1130 population
  2011-1639 population

Table 4.3: -Geographical Details.

SR.NO	DESCRIPTION	DETAIL(in hector)
1	Area of village (appx...)	2731.07
2	Forest area	47.58
3	Agricultural land area	400.38
4	Residential area	2283.11
5	Other area	47.58

- **Occupational details.**

1. **Major occupation groups in village** –wind form (8-aecor)
2. **Major crops grow in village**
   - **A.** Ground nut
   - **B.** Pigeon
   - **C.** Cotton

- Physical Infrastructure Facilities Like Sources Of Water, Road Network, Sanitation Facility, and Housing Conditioned…..
- Main source of drinking water
- Piped water- is also nice
- Dug well- is also nice
- Water from spring –rain water, tanker water
- Surface water – irrigation channel
- Lake
- Water tank –overhead tank, underground sump
- Drainage facility – 50% starting
- Road network – good (near rajkot –morbi hwy)
- Transport facility
- Major private vehicle use
- Electricity distribution
- 24- hour is available

Main source of irrigation facility : tank, pond ,stream canal, well, tube well

- Social Infrastructure Facilities Like, Primary School.
- Socio Culture Facilities Like, Village Ponds.
- Other Facilities Like Panchayat Building,

4.3.2 Primary details of survey ~~details~~

- jaliya village is located in rajkot district of gujarat state. it is a small village with population of 163 9people.as per census
- Sarpanch of the village of jaliya is chavda shantaben kesavbhai .total area of the village‘s 2731.07hectares.

- the nearest town to the jaliya is rajkot which is 25 km away from village.
- the village has primary school, gram panchayat, cement concrete road, and Aganwadi……
- the nearest village of jaliya is ratanpar, Khorana etc…

4.3.3 Average size of the House - Geo-Tagging of House

- Jaliya village total population is 1639among them 815 are males and 824 are females as per census2011.
- The population of children with age 0-6 is 164 which is10.19% of total village population. There are about 361houses in jaliya village and average family size is 4members.

House-geo-tagging of house

- In jaliya village 40%is Kutcha houses and 60% is Puccahouses

4.3.4 No of Human being in One House

- The total number of households in JALIYA village is 361. As far as male population concern the number of population is of 815 the village JALIYA and the total female population number is 824. The reference taken to publish these data is of year 2011. The source of data is Census of India.
- Average size of family in houses is4person

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

- JALIYA village is used concrete, reinforcement and bricks are used for construction and wooden also available for furniture works.
- Village house are Eco- friendly in nature, made by bamboos and mud_s Wall and floor of the village houses are by painted by a mixture of dirt, grass, and cow shit. Before and after rain, these houses need maintenance every time. Some houses are pucca which is made of Brick masonry and roof is of GI sheet.

OUT SOURCE MATERIAL

- No Sourced Material

Table 4.4: -Demographical Detail - Cast Wise Population Details / Which ID Proof Using By Villagers

	Total	OBC	SC/ST	General
Total	1639			

Male	815			
female	824			

Table 4.5: -Occupational Detail - Occupation Wise Details / Majority Business

name of three major occupation groups in village	1.Wind farm
	-
	jaliya
Major crops grown in the village	1.ground nut
	2.pigoen
	3.cotton

- Main occupation of jaliya village is farming then most of people engaged with the farm. And very nature lover of all people.
- In jaliya village, 400.38 Ha. Has available for agriculture use. There is no availability of seashore area.

Table 4.6: -Agricultural Details / Organic Farming / Fishery

Major crops	Ground nut
	Pigeon
	cotton

4.3.10 Physical Infrastructure Facilities - Manufacturing HUB / Ware Houses

- Local Transportation facility
- Electric facility
- Underground drainage
- Water tank
- Well
- Cement concrete road

MANUFACTURING HUB / WAREHOUSES

- There is no ware house and manufacturing hub in village

4.3.11 Tourism development available in the village for attracting the tourist

- There isn‘t any attractive place for Tourists.
- No tourism in this village

4.4 Infrastructure Details (With Exiting Village Photograph)

4.4.1 Drinking Water / Water Management Facilities

- Nos. of the water tank is 2, rested on ground with
- Capacity of the tank is 50,000 liters& 1,00,000 liter
- In our village source of water is sufficient

Figure 4.15. Housing condition

4.4.2 Drainage Network / Sanitation Facilities

This village 50% drainage network is working

4.4.3 Transportation & Road Network

- The internal streets of village are made up of Cement concrete and the outer road of the village is flexible pavement made up of mortar.

4.4.4 Housing condition

- 60% houses are pucca and 40% houses are kacha
- All houses with good ventilation.

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

Health facilities

- There is no health center available.

Education facilities

In village has primary school .also Aganwadi for children.

Higher education is available at nearest town Rajkot. (Egg. ITI, etc.)

Community hall

There is no community hall in village

Public library

There is no public library in village

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

- Condition of primary school is good
- Condition of Aganwadi is poor maintenance is required
- Condition of Panchayat building good

Figure 4.16. Gram panchayat and school and Aganwadi

4.4.7 Technology Mobile/ WIFI / Internet Usage Details

- All most 65% peoples have smart phone and they use internet, but there is no Wi-Fi facility in village.

4.4.8 Sports Activity as Gram Panchayat

- There is no sport activity as Grampanchayat

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

SOCIO-CULTURALFACILITIES

- Public Garden

  There is no Public Garden in the Village.

- Public Garden/Park/Playground

There is no public garden in village,
But one primary school (Playground) is available

- Other Recreation Facilities

There are no any other facilities is there

Figure 4.17. School & play ground

4.4.10 Other Facilities (e.g. like foot path development-Smart toilets- Coin operated entry, self-cleansing, waterless, and public Building)

- There are no any facilities in village.

4.4.11 any other details

- In village no other facilities available.

4.5 Electrical Concept

- Electrical energy 24 hours in this village and electrical power is provide by substation.

4.5.1 Renewable energy source planning particularly for villages

Which Renewable Energy Technology Holds the Most Promises

- Solar Power: - Solar energy has an unlimited power source in the sun.
- Hydropower: -As the name implies, hydropower generates electricity from the movement Of water
- Geothermal
- Bio-power
- Wind Power
- Decentralized renewable energy systems are promising options to cope with the challenge of Balancing local production and energy consumption.. At the system level, they can range From single buildings, such as multi-family homes, to groups of buildings within Neighborhoods, communities or city quarters

4.5.2 Irrigation Facilities

- Bore well is main source of water.
- One river is passing across village; it is also useful in irrigation.
- Irrigation point of view, to increase water table of bore well and tube wall 4 to 5 check Dam is constructed.

4.5.3 Electricity Facilities with Area

- Electrical energy 24 hours in our village and electrical power is provided by 66kv substation.
- Electricity provide through the 11kv feeder in the feeder step-down the voltage 11kv to 220v it is provide to village directly through pole.

4.6 Existing Institution like - Village Administration – Detail Profile

4.6.1 Bachatmandali

- In this village no any type of bachatmandali.

4.6.2 Dudh Mandali

- In this village no any type of dudhmandali

.

4.6.3 Mahila forum

- In this village one Mahila forums are working.

4.6.4 Plantation for the Air Pollution

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

4.6.4 Rain Water Harvesting - Waste Water Recycling

In this village people are collect rain water for future purpose use.

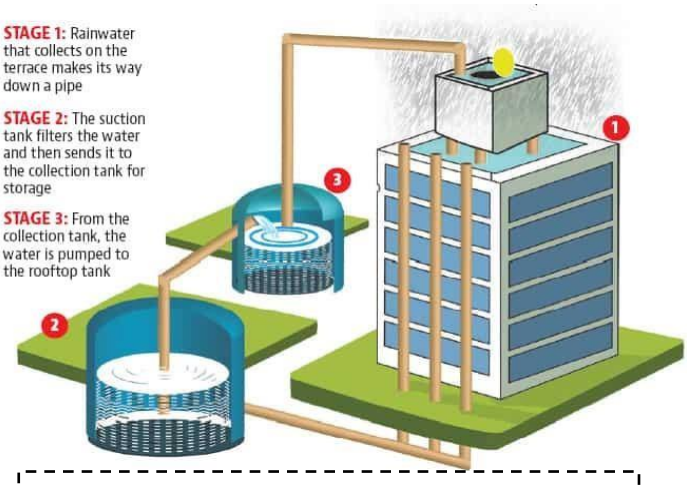


Figure 4.18. Rain water

4.6.5 Agricultural Development

- In this village have a many agriculture development. Because people are engaged with farming so people are focuses in agriculture development.
- In this village one agriculture co-operative society are available

4.6.6 Any Other

- It has a gram Panchayat for many working purpose.

CHAPTER - 5
Technical Options with Case Studies

- ## Concept (Civil)

5..1 Advance Sustainable construction techniques / Practice sand Quantity Surveying

- Sustainable construction is the practice of creating healthy environment that‘s based on ecological principles. According to Professor Charles j. kibert sustainable construction focuses on six principles –conserve, reuse, recycle/renew, protect nature create non-toxic and high quality.

- The goal is to reduce the industry impact on the environment by utilizing sustainable development practices employing energy efficiency. And taking advantage of green technology.

- Solar Power. ...
- Biodegradable Materials. ...
- Green Insulation. ...
- The Use of Smart Appliances. ...
- Cool Roofs. ...
- Sustainable Resource Sourcing. ...
- Low-Energy House and Zero-Energy Building Design. ...
- Low-Emitting Materials.

5..2 Soil Liquefaction

- Liquefaction is a phenomenon in which the strength and stiffness of a soil is reduced by earthquake shaking or other rapid loading. This water exerts a pressure on the soil particles that influences how tightly the particles themselves are pressed together. Prior to an earthquake, the water pressure is relatively low.
- Soil liquefaction occurs when the effective stress (shear strength) of soil is reduced to essentially zero. This may be initiated by either monotonic loading (i.e. a single, sudden occurrence of a change in stress – examples include an increase in load on an embankment or sudden loss of toe support) or cyclic loading (i.e. repeated changes in stress condition – examples include wave loading or earthquake shaking). In both cases a soil in a saturated loose state, and one which may generate significant pore water pressure on a change in load are the most likely to liquefy. This is because loose soil has the tendency to compress when sheared, generating large excess pore water pressure as load is transferred from the soil skeleton to adjacent pore water during untrained loading. As pore water pressure rises, a

progressive loss of strength of the soil occurs as effective stress is reduced. Liquefaction is more likely to occur in sandy or non-plastic silty soils, but may in rare cases occur in gravels and clays

- A 'flow failure' may initiate if the strength of the soil is reduced below the stresses required to maintain the equilibrium of a slope or footing of a structure. This can occur due to monotonic loading or cyclic loading, and can be sudden and catastrophic. A historical example is the Aberfan disaster. Casagrande referred to this type of phenomena as 'flow liquefaction' although a state of zero effective stress is not required for this to occur.

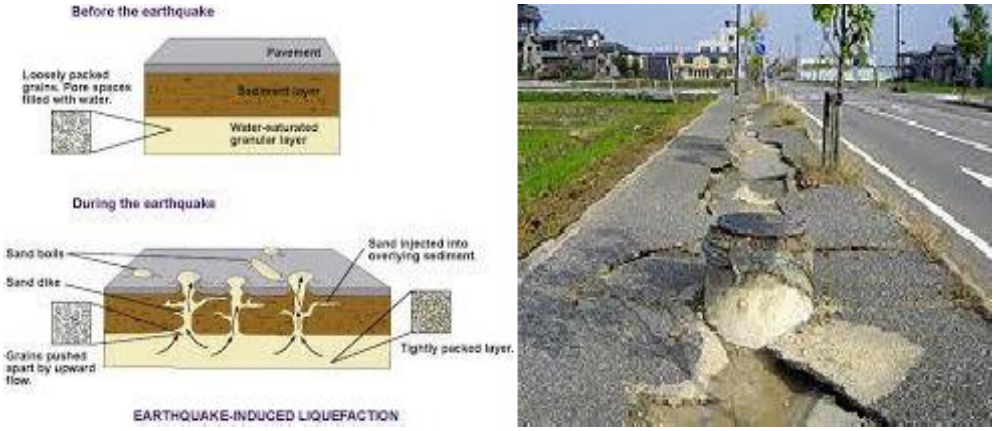


Figure 5.1. Soil liquefaction

5..3 Sustainable Sanitation

- To summaries, sustainable sanitation is a simple approach: 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.

- Technologies that would challenge the conventional toilet systems around the world which is actually responsible for many waterborne diseases. Understanding that excreta are not a waste, but actually valuable resource is the first step in understanding sustainable sanitation. Significant of amount of energy, and plant nutrients can be obtained if this ‒waste‖ is processed right. In fact, the water can be recycled and reused too, which would help in sustaining natural resources.

What are some of the technologies that have helped keep Sanitation Sustainable?

- Water-less toilets
- Energy Generating Toilets
- Dehydrating Toilets
- The Humanure

5..4 Transport Infrastructure / system

Transport infrastructure is composed of the fixed installations of canals, waterways, airways, railways, roads, and terminals, as well as pipelines such as seaports, refueling depots, trucking terminals, warehouses, bus stations, railway station, and airports.

They are often built on challenging and sensitive environments and over unexpected geotechnical conditions. Whether it's rural or urban roads, freight or passenger rail, commercial ports and airports or small regional or private operations – we have worked on transport infrastructure projects around the globe.

Transport system

The human transport system is a system of tubes with a pump and valves to ensure one way blood flow. We need a transport system to deliver oxygen, nutrients and other substances to all our body cells, and take away waste products from them.

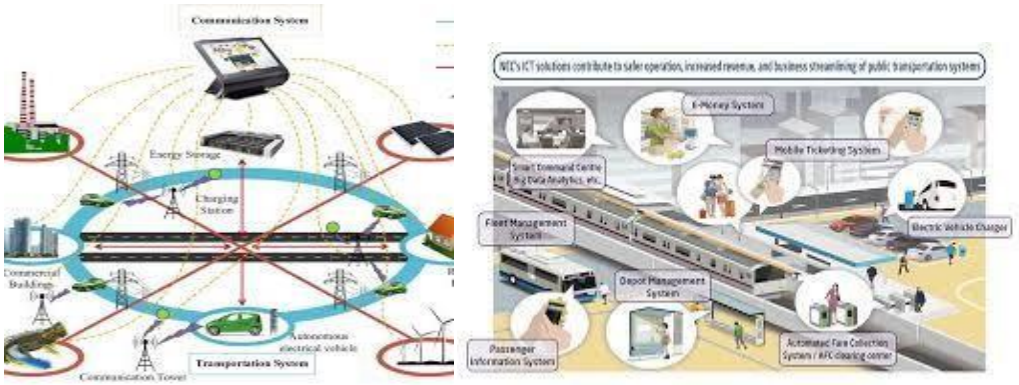


Figure 5.3. Transport Infrastructure

5..5 Vertical Farming

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

- In vertical farming, crops are grown indoors, under artificial conditions of light and temperature.

Figure 5.4. Green building

5..6 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure

Corrosion mechanism

- Now consider when an iron is immersed in water or sea water which is exposed to the atmosphere. Now corrosion will occur due to the anodic reaction is

  $Fe \longrightarrow Fe^{2+} + 2e^-$

- And also the medium is exposed to the atmosphere, it contains dissolved oxygen. Both water and sea water are nearly neutral, thus the cathode reaction takes place as follows

  $O_2 + 4H^+ + 4e^- \longrightarrow 2H_2O$

- Now, remember that the sodium and chloride in the sea water do not participate in the Reaction. The reaction is only between the iron and water. The reaction can be rewritten as follows

  $2Fe + O_2 + 4H^+ \longrightarrow 2Fe^{2+} + 2H_2O$

  Now the final product is familiarly called as **–Rus.**

Corrosion prevention

1. Barrier coating:
2. Hot-Dip Galvanization
3. Alloyed steel (Stainless)
4. Cathode protection

Corrosion Repair

- To repair is defined as –to replace or re-fix parts, compensating for loss or exhaustion‖.
- One definition of the word rehabilitate is –to restore to proper condition‖.
- These definitions are worth bearing in mind. If we want to rehabilitate a structure we want to restore it, not necessarily to its original condition, because if we do, it may fail again because of intrinsic flaws.

5..7 Sewage treatment plan

- Sewage treatment is the process of removing contaminants from wastewater and household sewage water.

- It includes physical, biological and sometimes chemical processes to remove pollutants. Its aim is to produce environmentally safe sewage water, called effluent, and a solid waste, called sludge or bio solids, suitable for disposal or reuse. Reuse is often for agricultural purposes, but more recently, sludge is being used as a fuel source.
- Water from the mains, used by manufacturing, farming, houses (toilets, baths, showers, kitchens, sinks), hospitals, commercial and industrial sites, is reduced in quality as a result of the introduction of contaminating constituents. Organic wastes, suspended solids, bacteria, nitrates, and phosphates are pollutants that must be removed.

The features of wastewater 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.

Sewage treatment plant processes fall into two basic types:

Anaerobic Sewage Treatment

- Sewage is partly decomposed by anaerobic bacteria in a tank without the introduction of air, containing oxygen. This leads to a reduction of Organic Matter into Methane, Hydrogen Sulphide, and Carbon Dioxide etc.
- It is widely used to treat wastewater sludge and organic waste because it provides volume and mass reduction of the input material to a large extent.. The methane produced by large-scale municipal anaerobic sludge treatment is currently being examined for use in homes and industry, for heating purposes.

Aerobic Sewage Treatment

- In this process, aerobic bacteria digest the pollutants. To establish an aerobic bacterial colony you must provide air for the bacteria to breathe. In a sewage treatment plant, air is continuously supplied to the Bio zone either by direct Surface Aeration using Impellers propelled by pumps which whisk the surface of the liquid with air, or by Submerged Diffused Aeration using blowers for air supply through bubble diffusers at the bottom of the tank.

➢ Case study of bet dwaraka bridge :-

Bet Dwarka (also spelled Beyt Dwarka) is an inhabited island at mouth of the Gulf of Kutch situated 3 km (2 mi) off the coast of Okha, Gujarat, India. The island measured northwest to southeast in 13 km (08 mi) long with an average east-west width of 4 km (2 mi). It is a strip of sand and stone situated 30 km (19 mi) north of the town of Dwarka

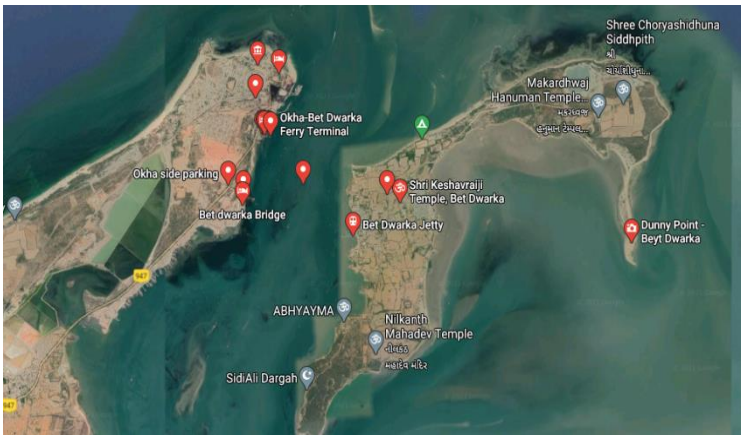


Figure 5.5 bet map

Figure 5.6 ship stop

➢ Suspension bridge (signature bridge) : -

- Gandhinagar: Gujarat government today said the Central government has given its approval to Rs 962 crore cable stayed signature bridge project connecting the coastal port town Okha and pilgrim town Bet Dwaraka which is located on island. The state government said it plans to complete this project in 30-month period.

- Deputy Chief Minister Nitin Patel in his briefing at capital Gandhi agar today said that two million pilgrims who visit Bet Dwaraka every year by boat in addition to 8,500 local people will benefit from this bridge project.

- He said a 3.73 km four lane 27.20 meter wide cable-stayed signature bridge will be built connecting Okha and Bet Dwaraka. The bridge will have 2.5 meter wide footpath with street lights. The footpath will have solar panels atop it which will generate 1 mw power. Approach of this bridge on Okha side will be 209 meter in length while on Bet Dwaraka side it will be 1101 meter. Bridge portion length will be 2.32 km. 900 meter middle portion will be cable stayed type. Out of three spans the middle span will be 500 meter in length which will be the largest in India. It will have 150 meter toll two pylons. The other 13 spans on two sides will have 50 meter length.

- This coastal town is traditionally identified with Dwaraka or Dwaravati, mentioned in the Mahabharata as Krishna's city. Ancient Dwaraka sank in sea known for archaeological site or

Island of Barka mentioned in the Periplus of Erythrean Sea was a port, and some scholars have identified it as Dwaraka. The Deccan College, Pune and the Department of Archaeology, Government of Gujarat, in 1963 made the first archaeological excavations at Dwaraka and second round of excavations in 1979 by the ASI. A distinct pottery known as lustrous red ware, which could be more than 3,000 years old was found here. Scientists and archaeologists have researched this site for 20 years. The Underwater Archaeology Wing (UAW) of the Archaeological Survey of India (ASI) began excavations at Dwaraka again from January 2007 to study the antiquity of the site in a holistic manner, excavations are being conducted simultaneously both on land and undersea. The objective of the excavation was to know the antiquity based on material evidence. In the offshore excavation, the ASI's trained underwater archaeologists and the divers of the Navy searched the sunken structural remains and finds were studied and documented. A large number of people visit this place to visit temples at Beyt Dwaraka and also to spot dolphins, marine excursions, camping and picnicking. There is a consideration to connect Beyt Dwaraka Island to mainland near Okha, which will further enhance the tourism activities. Considering the ecological and heritage significance and BeytDwarka Okha 11 also expected increase in tourism with the proper connectivity, it is proposed to provide some additional features that can attract tourists such as underwater restaurant and viewing gallery.

- The government conveyed thanks to Prime Minister Shri Narendra Modi for approval to this bridge project.

Figure 5.7 bridge

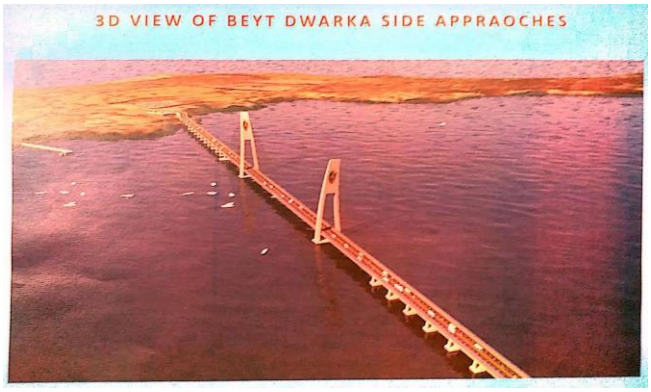


Figure 5.8 3d view

Figure 5.9 site work

Figure 5.10 sea foundation

Figure 5.11 pile caste

Figure 5.12 column cap

Figure 5.13 pre-cast pavement

Figure 5.14 hall site view

- Concept (Electrical)

5.1 Programmable Load Shedding

- In today‘s world, there is a continuous need for automatic appliances with the increase in standard of living there is a sense of urgency for developing circuits that would ease the complexity of life.
- The project is designed to operate an electrical load multiple number of times as per the program. It overcomes the difficulties of switching the load ON/OFF manually. This proposed has an inbuilt real time clock (RTC) to keep tracking the time and thus to switch ON/OFF the load accordingly.
- Load shedding is what electric utilities do when there is a huge demand for electricity that exceeds the supply. Thus in a distribution system it needs to be precisely controlled for specific period of time.
- Programmable load shedding time management system is a reliable circuit that takes over the manual task of switch ON/OFF the electrical devices with respect to time. It uses real time clock (RTC) interfaced to a microcontroller of 8051 family. While the set time equals to the real time, then microcontroller gives command to the corresponding relay to turn ON the load and then another command to switch OFF as per the program.

BLOCK DIAGRAM

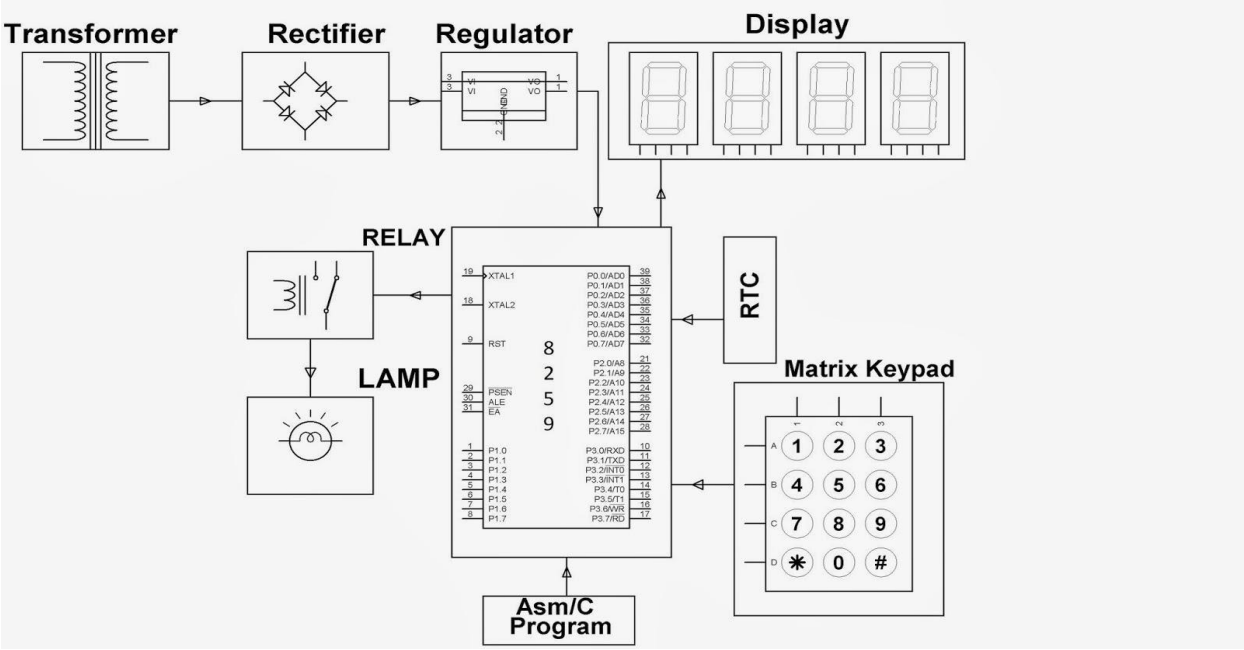


Figure 5.15 Block diagram

CIRCUIT DIAGRAM

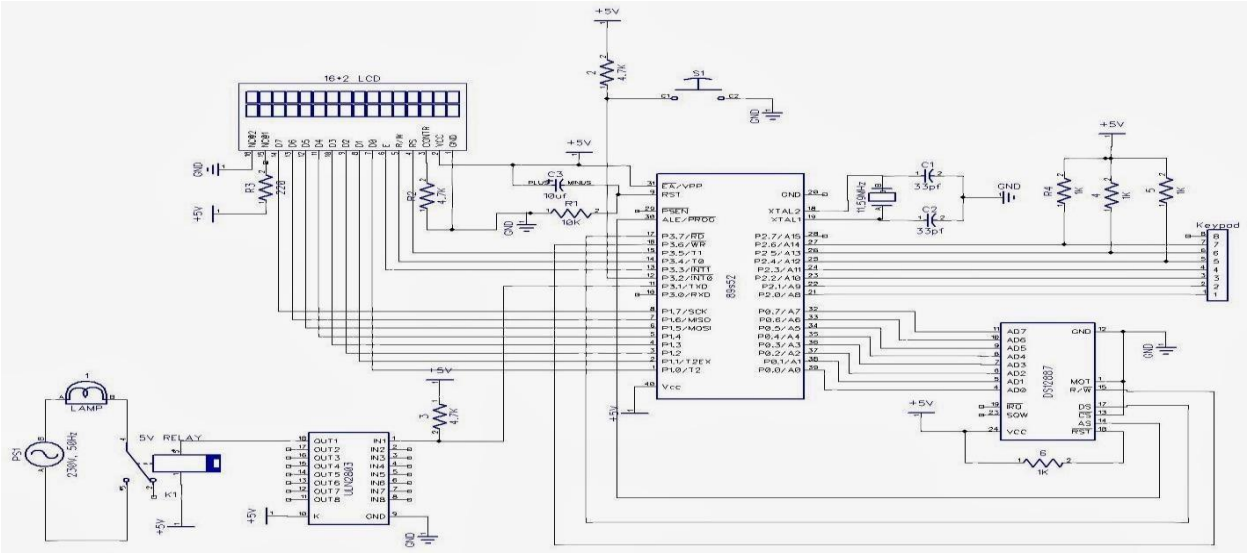


Figure 5.16. Circuit diagram

PROPOSED SYSTEM FEATURES

- Automatic Load shedding is possible.
- Differs from current system we can program the Load shedding process..
- RTC provides the real time.
- LCD provides the real time and Load shedding timings.
- KEYPAD to set the time..
- Easy to set up.
- Economical and reliable
- Manpower dependency is less..

5..8 Railway Security System using IoT

The increasing use of the Internet of Things (IoT) has profound implications across industries including the railways. Sensors, devices, systems, and applications are integrated on smart networks and work in a collaborative and cohesive railway ecosystem to enhance passenger safety, improve asset reliability and efficiency, and lower capital and operating expenses. The shift from legacy infrastructure to building holistic, cloud-based train management systems is the way forward for railway companies if they are to use assets—tracks, equipment, and stations—resourcefully and significantly bring down safety threats.

Fig-5.17 railway security

For the railway industry, this is not a new concept; elements of IoT are integrated into every modern train with multiple control units managing technical systems while communicating with each other. Examples include the mechanical and electrodynamics brake system, and the train control unit as a ‗master' of the information infrastructure in a train. This is true for both train-based and wayside systems.

5..9 Management through Energy Harvesting Concept:

- The objective of the Power Management through Energy Harvesting Concept project work has been designed and implemented in the power management through energy harvesting concept which deals with the power saving and optimization. The objective is to minimize the cost of supplied power to the load point.
- Energy harvesters provide a very small amount of power for low-energy electronics. While the input fuel to some large-scale generation costs resources (oil, coal, etc.), the energy source for energy harvesters is present as ambient background. For example, temperature gradients exist from the operation of a combustion engine and in urban areas, there is a large amount of

electromagnetic energy in the environment because of radio and television broadcasting.

➢ Accumulating energy

- Energy can also be harvested to power small autonomous sensors such as those developed using MEMS technology. These systems are often very small and require little power, but their applications are limited by the reliance on battery power. Scavenging energy from ambient vibrations, wind, heat or light could enable smart sensors to be functional indefinitely.

- Typical power densities available from energy harvesting devices are highly dependent upon the specific application (affecting the generator's size) and the design itself of the harvesting generator. In general, for motion powered devices, typical values are a few $\mu W/cm^3$ for human body powered applications and hundreds of $\mu W/cm^3$ for generators powered from machinery. Most energy scavenging devices for wearable electronics generate very little power

➢ Storage of power

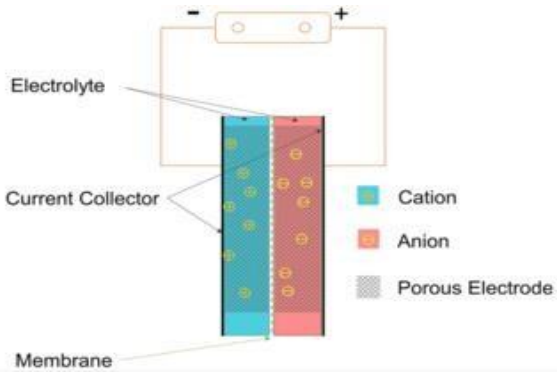
- In general, energy can be stored in a capacitor, super capacitor, or battery. Capacitors are used when the application needs to provide huge energy spikes. Batteries leak less energy and are therefore used when the device needs to provide a steady flow of energy. Compared to batteries, super capacitors have virtually unlimited charge-discharge cycles and can therefore operate forever enabling a maintenance-free operation in IoT and wireless sensor devices

➢ Use of the power

- Current interest in low power energy harvesting is for independent sensor networks. In these applications an energy harvesting scheme puts power stored into a capacitor then boosted/regulated to a second storage capacitor or battery for the use in the microprocessor or in the data transmission. The power is usually used in a sensor application and the data stored or is transmitted possibly through a wireless method.

Micro wind turbine

After I repeatedly encountered the problem of running out of batteries during longer trekking tours I started to wonder how professional adventurers deal with this situation. I contacted a number of mountaineers, climbers, film-makers and expedition leaders and asked them questions about their experiences, requirements and typical weather conditions. All of my contacts told me that they are usually using solar panels. But being entirely dependent on sunshine is a huge problem for them, sometimes putting them out of work for several days. They were instantly excited about a wind turbine but pointed out that weight, pack size and ease of use would be of greatest importance for them. Subsequently, a series of digital and physical models was created to test the stability, different folding mechanisms and the performance in varying wind conditions to eventually arrive at the final design. In parallel, the electronic system was developed: Numerous types of generators were tested to find suitable options, voltage converters and a battery pack were added and a circuit board to manage in- and outgoing loads was connected to the system. In the last phase, the integration of all components into one sleek and sturdy unit became the final challenge of the project.



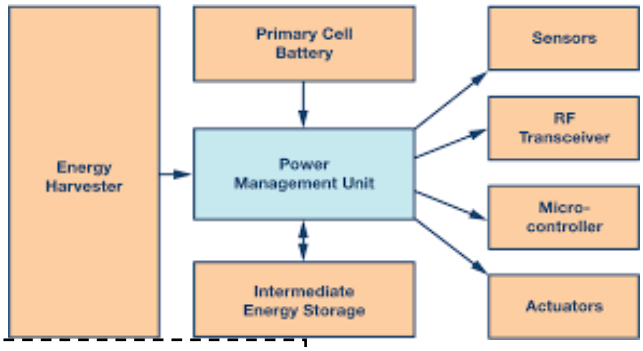


Figure 5.18. Micro wind

5.2.3 Moisture Monitoring System

Soil condition monitoring sensors allow farmers to collect data about rainfall, temperature, and other metrics over time to track trends and predict irrigation needs.

5.2.5 Home Automation using IoT / Any other methodology

- Home automation is an appealing context for the Internet of Things (IoT), by connecting the IP gateway directly to the Internet or through a home/residential gateway; this system can be managed remotely using a PC, Smart phone, Tablet or other devices.

IoT home automation – Smart homes and Internet of Things

- The data is then used for monitoring, controlling and transferring information to other devices via the internet. This allows specific actions to be automatically activated whenever certain situations arise That is a smart home powered by IoT.

- Home automation or domestics is building automation for a home, called a smart home or smart house. A home automation system will monitor and/or control home attributes such as lighting, climate, entertainment systems, and appliances. It may also include home security such as access control and alarm systems. When connected with the Internet, home devices are an important constituent of the Internet of Things ("IoT").
- A home automation system typically connects controlled devices to a central hub or "gateway". The user interface for control of the system uses either wall-mounted terminals, tablet or desktop computers, a mobile phone application, or a Web interface that may also be accessible off-site through the Internet.

- Home automation has high potential for sharing data between family members or trusted individuals for personal security and could lead to energy saving measures with a positive environmental impact in the future.

Applications and technologies

Home automation is prevalent in a variety of different realms, including:

- Heating, ventilation and air conditioning (HVAC): it is possible to have remote control of all home energy monitors over the internet incorporating a simple and friendly user interface.
- Lighting control system: a "smart" network that incorporates communication between various lighting system inputs and outputs, using one or more central computing devices.
- Occupancy-aware control system: it is possible to sense the occupancy of the home using smart meters and environmental sensors like CO_2 sensors which can be integrated into the building automation system to trigger automatic responses for energy efficiency and building comfort applications.
- Appliance control and integration with the smart grid and a smart meter, taking advantage, for instance, of high solar panel output in the middle of the day to run washing machines
- Home robots and security: a household security system integrated with a home automation system can provide additional services such as remote surveillance of security cameras over the Internet, or access control and central locking of all perimeter doors and windows.
- Leak detection, smoke and CO detectors
- Indoor positioning systems (IPS).
- Home automation for the elderly and disabled.
- Pet and Baby Care, for example tracking the pets and babies' movements and controlling pet access rights.
- Air quality control. For example, Air Quality Egg is used by people at home to monitor the air quality and pollution level in the city and create a map of the pollution.
- Smart Kitchen and Connected Cooking.
- Voice control devices like Amazon Alexa or Google Home used to control home appliances or systems.

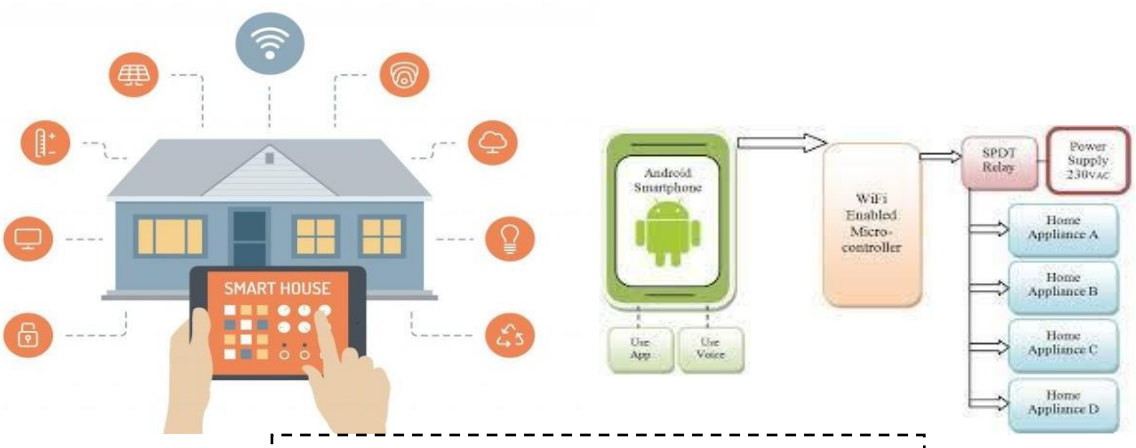


Figure5.19. Application and technologies

The best smart hubs for automation

- Samsung Smart Things Hub (3rd Gen): Best compatibility.
- Amazon Echo Plus (2nd Gen): Best voice controls.
- Logitech Harmony Hub: Best for media.
- Amazon Echo Dot (3rd Gen): Budget Alexa hub.
- Google Nest Mini: Budget Google hub.

5.2.6 PC Based Electrical Load Control

- Automation system is mostly depending upon the power system in industrial residential or commercial, which needs remote controlling and monitoring .by employing wireless technology. it is more component to execute a suitable technology depending upon the requirement of the proposed system like speed,cost,and distance.

- An electrical load is an electrical component or portion of a circuit that consumes (active) electric power. This is opposed to a power source, such as a battery or generator, which produces power. In electric power circuits examples of loads are appliances and lights. The term may also refer to the power consumed by a circuit.
- The term is used more broadly in electronics for a device connected to a signal source, whether or not it consumes power. If an electric circuit has an output port, a pair of terminals that produces an electrical signal, the circuit connected to this terminal (or its input impedance) is the load. For example, if a CD player is connected to an amplifier, the CD player is the source and the amplifier is the load
- Load affects the performance of circuits with respect to output voltages or currents, such as in sensors, voltage sources, and amplifiers. Mains power outlets provide an easy example: they supply power at constant voltage, with electrical appliances connected to the power circuit collectively making up the load. When a high-power appliance switches on, it dramatically reduces the load impedance.
- If the load impedance is not very much higher than the power supply impedance, the voltages will drop. In a domestic environment, switching on a heating appliance may cause incandescent lights to dim noticeably.
- When discussing the effect of load on a circuit, it is helpful to disregard the circuit's actual design and consider only the venin equivalent. (The Norton equivalent could be used instead, with the same results.) The venin equivalent of a circuit looks like this

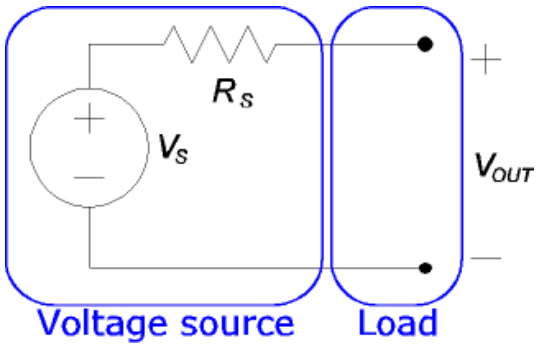


Figure 5.20. Pc based

With no load (open-circuited terminals), all of falls across the output; the output voltage is However, the circuit will behave differently if a load is added. We would like to ignore the details of the load circuit, as we did for the power supply, and represent it as simply as possible. If we use an input resistance to represent the load, the complete circuit looks like this

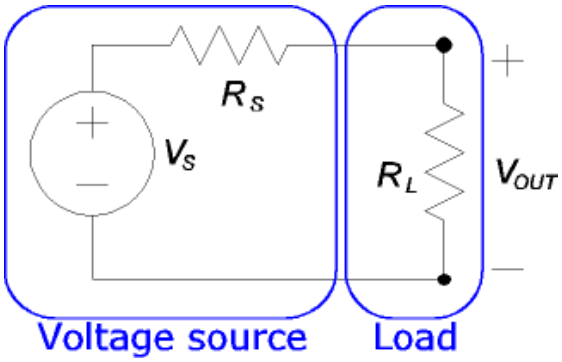


Figure 5.21. Load control

5.2.7 Electrical Parameters Measurements

- Electricity is measured in Watts and kilowatts

Electricity is measured in units of power called Watts, named to honor James Watt, the inventor of the steam engine. A Watt is the unit of electrical power equal to one ampere under the pressure of one volt.

- The electric current in one part of a circuit is measured with an ammeter, which gives a reading in ampere. To take the measurement, a gap is made in the circuit and the ammeter is connected into that gap, so that the charged particles moving around the circuit must pass through the meter.
- Electrical measurements are the methods, devices and calculations used to measure electrical quantities. Measurement of electrical quantities may be done to measure electrical parameters of a system. Using transducers, physical properties such as temperature, pressure, flow, force, and many others can be converted into electrical signals, which can then be conveniently measured and recorded. High-precision laboratory measurements of electrical quantities are used in experiments to determine fundamental physical properties such as the charge of the electron or the speed of light, and in the definition of the units for electrical measurements, with precision in some cases on the order of a few parts per million. Less precise measurements are required every day in industrial practice. Electrical measurements are a branch of the science of metrology.

Physical quantity	Symbol	Unit	Symbol	Measure device
Current	I	Ampere	A	Amperemeter
Voltage	U	Volt	V	Voltmeter
Power	P	Watt	W	Powermeter
Resistance	R	Ohm	Ω	Ohmmeter
Capacitance	C	Farad	F	Capacitance meter
Inductance	L	Henry	H	Inductance meter
Frequency	f	Hertz	Hz	Oscilloscope
Period	T	Second	s	Oscilloscope
Charge	Q	Coulomb	C	Charge meter
Conductance	G	Siemens	S	Conductivity meter

Measurable independent and semi-independent electrical quantities comprise:

- Voltage
- Electric current
- Electrical resistance and electrical conductance
- Electrical reactance and susceptance
- Magnetic flux
- Electrical charge by the means of electrometer
- Partial discharge measurement
- Magnetic field by the means of Hall sensor
- Electric field
- Electrical power by the means of electricity meter
- S-matrix by the means of network analyzer (electrical)
- Electrical power spectrum by the means of spectrum analyzer

Measurable dependent electrical quantities comprise:

- Inductance
- Capacitance
- Electrical impedance defined as vector sum of electrical resistance and electrical reactance
- Electrical admittance, the reciprocal of electrical impedance
- Phase between current and voltage and related power factor
- Electrical spectral density
- Electrical phase noise
- Electrical amplitude noise
- Trans conductance
- Trans impedance
- Electrical power gain
- Voltage gain
- Current gain
- Frequency
- Propagation delay

Figure 5.22. Measurement devises

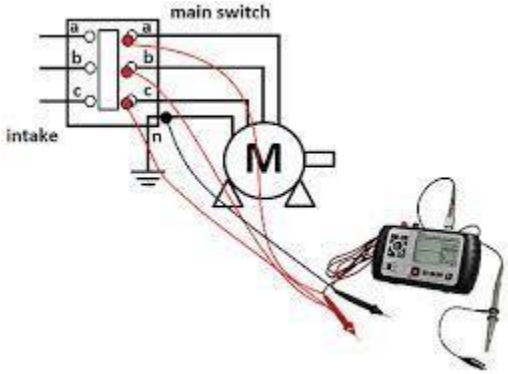


Figure 5.23. devises

CHAPTER -6
Swatchh Bharat Abhiyan (Clean India)

6.1 Swatchta needed in allocated village -Existing Situation with Photograph

➢ Swatchh Bharat Mission:

- To accelerate the efforts to achieve universal sanitation coverage and to put focus on sanitation, the Prime Minister of India, Shri Narendra Modi, launched the Swachh Bharat Mission on 2nd October, 2014. The Mission Coordinator shall be Secretary, Ministry of Drinking Water and Sanitation (MDWS) with two Sub-Missions – the Swachh Bharat Mission (Gramin) and the Swatchh Bharat Mission (Urban). The Mission aims to achieve a Swachh Bharat by 2019, as a fitting tribute to Mahatma Gandhi on his 150th birth anniversary.

- As per an independent survey released by Quality Council of India in August 2017, overall national rural "household access to toilet" coverage increased to 62.5% and usage of toilets to 91.3%, with Haryana topping the national ranking with 99% of households in rural areas covered and usage of toilets of 100%. World Health Organization (WHO) has in its report stated that at least 180,000 diarrhoeal deaths were averted in rural India since the launch of the Swachh Bharat Mission. According to a survey carried out in 2018 and published in 2019 by National Statistical Office (NSO), 71% of rural households had access to toilets as of 2018.

- The mission has two thrusts: Swachh Bharat Abhiyan ("gramin" or 'rural'), which operates under the Ministry of Drinking Water and Sanitation; and Swachh Bharat Abhiyan ('urban'), which operates under the Ministry of Housing and Urban Affairs.

➢ Swatchta Is Needed In Jaliya Village

In our jaliya village no any types of waste management system provided. We all very well know without any management of waste disposal in village is always full of illness. In the village all places are full of plastic waste. the villagers are through the waste in open area. So, village is seriously required to management of disposal of waste. Some farmer is use as fertilizer for organic waste.

6.2 Guidelines - Implementation in allocated village with Photograph

- Bring about an improvement in the general quality of life in the rural areas, by promoting cleanliness, hygiene and eliminating open defecation
- Need of this type of dustbins provide by gram Panchayat to village.
- Also forth need of waste collection system or vehicle some people are aware about swatch bharat but some people mindset is not good.
- In our village need of cameras monitor cleanliness of village and may help to
- Take action against villagers and also need awareness about swatch bharat program.

- In our village have individual toilets but, need of cluster and community toilets.

6.3 Activities Done by Students for allocated village with Photograph

- Our village also uses manpower for clean roads and households road side area.
- Some space is clean in our village and good cc roads.
- We are also talk with villagers for clean village and use dustbin.
- We click goods photographs of village
- We are also discussing with Sarpanch and Talati about cleanliness.

As we all see garbage and waste materials thrown on streets, public places, almost everywhere. Want to know simple steps to keep our city or village clean, then, few simple steps are discussed here

Steps to be taken by government:

- Rules should be made and action should be taken if someone breaks the rules.
- Dustbin should be kept at proper distance on roads.
- Proper waste containers should be kept area.
- Dustbin should be kept at all public places like bus- stand, railway station, and gardens.

The following Action should be taken for making village clean:

- While travelling doesn't throw any wrapper paper or any dry waste on road, keep it your bag or pocket.
- Don‘t dispose garbage in open area Follow government‘s rules and regulations. Proper waste containers should be kept in every area.
- Rules should be made and action should be taken if someone breaks the rule.
- Daily cleaning of public places is necessary.
- After effects of not keeping it clean (like diseases).
- Proper public toilets are to be made and they should be maintained regularly.
- While traveling doesn't throw any wrapper, paper or any dry waste on road. Keep it in your bag or pocket (as it is a dry waste you can keep them in your bag/pocket).

- Keep paper bags with yourself to store wet waste and throw them in dustbin only.
- Avoid spitting on roads (as it can be the reason of viral disease).
- Follow government's rules and regulations.
- Stop your friends if they are making such mistakes.
- Proper public toilets are to be made and they should be maintained regularly.

CHAPTER -7
Village condition due to Covid-19

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

- Common symptoms include fever, cough, fatigue, breathing difficulties, and loss of smell and taste. Symptoms begin one to fourteen days after exposure to the virus. While most people have mild symptoms, some people develop acute respiratory distress syndrome (ARDS), which can be precipitated by cytokine storms, multi-organ failure, septic shock, and blood clots. Longer-term damage to organs (in particular, the lungs and heart) has been observed, and there is concern about a significant number of patients who have recovered from the acute phase of the disease but continue to experience a range of effects—known as long COVID—for months afterwards, including severe fatigue, memory loss and other cognitive issues, low grade fever, muscle weakness, and breathlessness.
- Preventive measures include social distancing, quarantining, and ventilation of indoor spaces, covering coughs and sneezes, hand, and keeping unwashed hands away from the face. The use of face masks or coverings has been recommended in public settings to minimize the risk of transmissions.

Prevention

- Preventive measures to reduce the chances of infection include staying at home, wearing a mask in public, avoiding crowded places, keeping distance from others, ventilating indoor spaces, washing hands with soap and water often and for at least 20 seconds, practicing good respiratory hygiene, and avoiding touching the eyes, nose, or mouth with unwashed hands. Those diagnosed with COVID-19 or who believe they may be infected are advised by the CDC to stay home except to get medical care, call ahead before visiting a healthcare provider, wear a face mask before entering the healthcare provider's office and when in any room or vehicle with another person, cover coughs and sneezes with a tissue, regularly wash hands with soap and water and avoid sharing personal household items.

Taken steps in jaliya village

- Jaliya village in all people are wear a mask
- All people hands often with soap and water for at least 20 seconds.
- Clean and disinfect surfaces around they home and work frequently.
- Keep at least 6feet between yourself and other if you must be in public.
- Wear a cloth face covering over your mouth and nose when around others.
- "Sometimes people take it too lightly, as if nothing will happen to them just because they're breathing fresh air and eating fresh vegetables

- "Health infrastructure is poor in rural areas that are why they have to strictly follow social distancing norms, wear masks, avoid crowded areas and keep washing hands. Otherwise they'll suffer."
- In our village Sarpanch is strictly inform to avoid the village in outside person is not come in without my permission
- And our village in speed out are senitisor

Figure 7.5. Sanitizer

7.2 Activities Done by Students for allocated village Clean with Photograph

Figure 7.6.allocate village clear

7.3 Any other steps taken by the students / villagers

- Efficient Fund Flow System- Direct Beneficiary Transfer (DBT)
- Weekly Monitoring of Toilet Construction and No. of Masons Deployed
- Regular Field Visit and verification
- Active Nigrani Samiti
- Open Assembly and Oath taking in Gram Panchayat
- Weekly Review Meeting of Pradhans, Secretaries and Swachhagrahis by DM/CDO

CHAPTER- 8.
Sustainable Design Planning Proposal (Prototype Design)- Part- I
(Scenario / Existing Situation / Proposed Design in AutoCAD / Recapitulation Sheet / Measurement Sheet / Abstract Sheet / Sustainability of Proposal / Any other software)

8.1 Design Proposals

Different Facilities In **jaliya** Village Which We Observed As Below,

- **Physical Infrastructure Facility:**
- Piped Water Supply
- Drainage Cement
- Concrete Road
- Local Transportation
- Facility Electricity
- Distribution Surface
- Water (Pond)
- Overhead Tank Road
- Facilities Public
- Well And Tube Well
- **Social Infrastructure Facility:**
- Aganwadi
- Primary School.
- Panchayat building

- **Socio-Culture Infrastructure Facility:**
- Temple Assembly
- Birth & Death Registration Office

8.1.1Sustainable Design (Civil)

Drawing A3 size all sheet and design (Attached at the end of report)

1. Public library

public library as the local gateway to knowledge which provides a basic condition for lifelong learning, independent decision making in cultural development and social group.

Figure 8.1. Public library

Table 8.1: -ESTIMATE FOR LIBRARAY

NO	DESPECTION OF ITEM	NO	LENGTH (METER)	BREATH (METER)	HEIGHT (METRE	QTY (METER)
1	EXCAVATON FOR FOUNDATION	1	55.42	0.38	0.74	15.58
2	BBCC	1	55.94	0.23	0.15	1.92
3	BRICK WORK IN FOUNDATION	1	55.42	0.38	0.43	9.05
4	EARTH FILLING WORK					
	MAIN HALL	1	9.14	6.93	0.43	27.23
	RECEPTION	1	3.76	2.21	0.43	3.57
	STORE ROOM	1	2.21	2.69	0.43	2.55
	TOILET	1	2.7	2.21	0.43	2.56
	TOTAL					**35.91**
5	BRICK MASNORY IN SUPER STRUCTURE	1	45.67	0.23	2.9	30.46
	DEDUCTION FOR DOOR AND WINDOW					
	D1	1	1.5	0.23	2.1	0.72
	D2	3	0.91	0.23	2.1	1.31
	W1	2	0.4	0.23	1.22	0.22
	W2	1	1.81	0.23	1.2	0.5
	W3	1	1.8	0.23	1.81	0.74
	W4	1	1.83	0.23	0.41	0.17
	W5	1	1.52	0.23	1.52	0.53
	TOTAL					**4.19**
	DEDUCTION FOR LINTEL					
	D1	1	1.8	0.23	0.15	0.062
	D2	3	1.2	0.23	0.15	0.041
	W1	2	0.7	0.23	0.15	0.024
	W2	1	1.5	0.23	0.15	0.051
	W3	1	2.1	0.23	0.15	0.072
	W4	1	0.71	0.23	0.15	0.024
	W5	1	1.82	0.23	0.15	0.062
	TOTAL					**0.336**
6	PLASTER WORK					

	MAIN HALL	2(H)	9.14		2.9	53.01
		2(V)	6.93		2.9	40.19
	RECEPECTION	2(H)	3.76		2.9	21.8
		2(V)	2.21		2.9	12.81
	STORE ROOM	2(H)	2.69		2.9	15.6
		2(V)	2.21		2.9	12.81
	TOILET	2(H)	2.7		2.9	15.66
		2(V)	2.21		2.9	12.81
	TOTAL					**184.69 SQM**
	DEDUCTION FOR DOOR AND WINDOW					
	D1	1	1.5		2.1	3.15
	D2	3	0.91		2.1	5.73
	W1	2	0.4		1.22	0.97
	W2	1	1.81		1.2	2.17
	W3	1	1.8		1.81	3.25
	W4	1	1.83		0.41	0.75
	W5	1	1.52		1.52	2.31
	TOTAL					**18.34**
	TOTAL PLASTER WORK		**184.69-18.34**			**166.34 SQM**
11	**flooring work**	1				**63.34SQM**
12	**coloring work**	1				**184.69 SQM**
13	**water closet**					
	European types	2				2
14	**wash basin**	2				2
15	**urinal**					
	general (m &f)	2				2
16	**WATER TANK**	1	1000LIT			1000LIT

Table 8.2: -ABSTRACT SHEET						
SR.NO	**DESRIPTION OF ITEM**	**QUANTITY**	**AMOUNT**	**PER**	**TOTAL COST**	
1	Excavation of foundation	15.58	124	CU.M	₹	1,931.92
2	BBCC(1:3:6)	1.92	2930	CU.M	₹	5,625.60
3	Brick work in foundation	9.05	2443	CU.M	₹	22,109.15
4	Brick masonry in super structure	30.46	2443	CU.M	₹	74,413.78
5	R.C.C. slab	9.15	3236	CU.M	₹	29,609.40
6	Plastering work	166.34	230	SQ.M	₹	38,258.20
7	Flooring work	63.34	730	SQ.M	₹	46,238.20
8	Colouring work	184.69	50	SQ.M	₹	9,234.50
9	Water closet					
	European type	2	1250	nos	₹	2,500.00
10	Wash basin	2	1050	nos	₹	2,100.00
11	Urinal					
	1. Gents	1	350	nos	₹	350.00
	2. Ladies	1	160	nos	₹	160.00
12	water tank	1000	4	lit	₹	4,000.00
					₹	**2,36,530.75**

RATE AS PER SOR 2015-16 R &B

COMMUNTIY HALL

Community centres or community halls are public locations where members of a community tend to gather for group activities, social support, public information, and other purposes. They may sometimes be open for the whole community or for a specialized group within the greater community.

Figure 8.4. Community hall- side view

Table 8.4:- ESTIMATE FOR COMMUNITY HALL

NO	DESPECTION OF ITEM	NO	LENGTH (METER)	BREATH (METER)	HEIGHT (METRE	QTY (METER)
1	EXCAVATON FOR FOUNDATION	1	87.46	0.43	0.74	27.82
2	BBCC	1	88.83	0.23	0.3	6.12
3	BRICK WORK IN FOUNDATION	1	87.42	0.43	0.43	16.16
4	EARTH FILLING WORK					
	MAIN HALL	1	6.24	8.38	0.43	22.48
	RECEPTION	1	2.19	3.66	0.43	3.28
	OFFICE ROOM	1	3.1	3.66	0.43	4.87
	TOILET	1	4.98	1.98	0.43	4.23
	STORE ROOM	1	1.98	1.74	0.43	1.47
	KITCHEN	1	3.1	3.61	0.43	4.81
	EXIT SPACE	1	1.66	3.61	0.43	2.57
	TOTAL					43.72
5	BRICK MASNORY IN SUPER STRUCTURE					
	MAIN HALL	1	88.83	0.23	5	102.15
	SIDE PART	1	88.82	0.23	2.74	55.98
	DEDUCTION FOR DOOR AND WINDOW					
	W	6	1.21	0.23	1.8	3
	W1	2	0.61	0.23	1.8	0.5
	V	4	0.65	0.23	0.65	0.38
	D	3	1.51	0.23	2.1	2.18
	D1	4	1.01	0.23	2.1	1.95
	D2	1	0.91	0.23	2.11	0.44
	TOTAL					**10.4**
	DEDUCTION FOR LINTEL					
	W	6	1.51	0.23	0.15	0.31

	W1	2	0.9	0.23	0.15	0.062
	D	3	1.81	0.23	0.15	0.18
	D1	4	1.31	0.23	0.15	0.18

	D2	1	1.21	0.23	0.15	0.041
						0.773
	TOTAL					
			158.13-10.4-0.773			**146.95**
6	RCC SLAB					
	MAIN HALL SLAB	1	8.38	6.24	0.3	15.68
	RIGHT SIDE SLAB	1	3.61	6.55	0.3	7.09
	LEFT SIDE SLAB	1	3.66	7.28	0.3	7.99
	TOTAL					**30.76**
7	PARAPET WALL					
		2(H)	15.87	0.79	0.23	5.76
		2(V)	21.51	0.79	0.23	3.9
	TOTAL					**9.66**
8	PLASTER WORK					
	MAIN HALL	2(H)	8.38		5	
		2(V)	6.24		5	146.2
	RECEPTION	2(H)	3.66		2.74	20
		2(V)	2.19		2.74	12
	OFFICE ROOM	2(H)	3.66		2.74	20
		2(V)	3.1		2.74	16.98
	TOILET	2(H)	4.98		2.74	27.29
		2(V)	1.98		2.74	10.85
	EXIT SPACE	2(H)	3.61		2.74	19.74
		2(V)	1.66		2.74	9.09
	KITCHEN	2(H)	3.61		2.74	19.78
		2(V)	3.1		2.74	16.98
	STORE ROOM	2(H)	1.98		2.74	10.85
		2(V)	1.98		2.74	10.85
	TOTAL					**340.65**
	DEDUCTIONFOR DOOR AND WINDOW					
	W	6	1.21		1.8	13.06
	W1	2	0.61		1.8	2.19
	V	4	0.65		0.65	1.3
	D	3	1.51		2.1	9.51

	D1	4	1.01		2.1	8.48
	D2	1	0.91		2.11	1.92
	TOTAL					**36.46**

	TOTAL PLASTER					
			340.65-36.46			**304.14M^2**
11	**FLOORING WORK**	1				**45.93M^2**
12	**COLOURING WORK**	1				**340.65M^2**
13	**WATER CLOSET**					
	EUROPEAN TYPES	2				2
14	**WASH BASIN**	2				2
15	**URINAL**					
	GENERAL (M &F)	2				2
16	**WATER TANK**	2	1000LIT			2000LIT
17	STAGE	1	8.38	1.7	1.02	14.53M^3

Table 8.4: -ABSTRACT SHEET

SR.NO	DESRIPTION OF ITEM	QUANTITY	AMOUNT	PER	TOTAL COST
1	Excavation of foundation	27.82	124	CU.M	₹ 3,449.68
2	BBCC(1:3:6)	6.12	2930	CU.M	₹ 17,931.60
3	Brick work in foundation	16.16	2443	CU.M	₹ 39,478.80
4	Brick masonry in super structure	158.13	2443	CU.M	₹ 3,86,911.59
5	R.C.C. slab	30.76	3236	CU.M	₹ 99,539.36
6	Plastering work	304.14	230	SQ.M	₹ 69,952.20
7	Flooring work	45.93	730	SQ.M	₹ 33,528.90
8	Colouring work	340.65	50	SQ.M	₹ 17,032.50
9	Water closet				
	European type	2	1250	nos	₹ 2,500.00
10	Wash basin	2	1050	nos	₹ 2,100.00
11	Urinal				
	1. Gents	1	350	nos	₹ 350.00
	2. Ladies	1	160	nos	₹ 160.00
12	water tank	2000	4	liter	₹ 8,000.00
					₹ 6,80,934.63

PANCHAYAT BULIDING

A gram panchayat is the cornerstone of a local self-government organization in India of the Panchayat Raj system at the village or small town level and has a Sarpanch as its elected head.

Figure 8.6. Side view (panchayat)

Table 8.5: -ESTIMATE FOR PANCHAYAT BULIDING

SR.NO	DESPECTION OF ITEM	NO	LENTGH (METER)	BREATH (METER)	HEIGHT (METER)	QTY (M^3)
1	**EXCAVATION FOR FOUNDATION**	1	68.28	0.38	0.58	15.04
2	**BBCC**	1	69.25	0.23	0.43	6.84
3	**BRICK WORK IN FOUNDATION**	1	68.28	0.38	0.43	11.15
4	**EARTH FILLING WORK**					
	PRESIDENT ROOM	1	4.64	2.84	0.43	5.66
	TALATI MANTRI ROOM	1	4.64	2.84	0.43	5.66
	SHEETING ROOM	1	9.3	3.25	0.43	12.99
	TOTAL					**24.31**
5	**BRICK MASONARY IN SUPER STRUCTURE**	1	68.25	0.23	2.9	46.18
	DEDUCTION FOR DOOR & WINDOW					
	D	1	1.81	0.23	2.1	0.87
	D1	2	0.9	0.23	2.1	0.87
	D2	3	0.76	0.23	2.1	1.1
	W	2	1.8	0.23	1.21	1
	W1	3	1.8	0.23	1.8	2.24
	W2	5	0.61	0.23	1.8	1.26
	V	3	0.65	0.23	0.65	0.29
	TOTAL					**7.63**
	DEDUCTION FOR LINTER					
	D	1	2.11	0.23	0.15	0.072
	D1	2	1.2	0.23	0.15	0.082
	D2	3	1.06	0.23	0.15	0.109
	W	2	1.51	0.23	0.15	0.104
	W1	3	2.1	0.23	0.15	0.217

	W2	5	0.91	0.23	0.15	0.156
	TOTAL					**0.74**
	TOTAL DEDUCTION					
			46.18-7.63-0.74			37.8
6	**R.C.C SLAB**	1	9.3	6.1	0.15	8.5
7	**PARAPET WALL**					
	H	2	9.3	0.1	0.76	1.41
	V	2	6.3	0.1	0.76	0.95
	TOTAL					**2.36**
8	**PLASTER WORK**					
	PRESIDENT ROOM					
	H	2	4.64		2.9	26.912
	V	2	2.84		2.9	16.47
	TALATI ROOM					
	H	2	4.64		2.9	26.19
	V	2	2.84		2.9	16.47
	SHEETING ROOM					
	H	2	9.3		2.9	53.44
	V	2	3.25		2.9	18.85
	TOILET (INNER)					
	H	2	1.64		2.9	9.512
	V	2	1.37		2.9	7.94
	TOILET (OUTER)					
	H	2	1.59		2.9	9.22
	V	2	1.36		2.9	7.88
	TOTAL					194.102
8	**DEDUCTION FOR DOOR AND WINDOW**					
	D	P- 1/2	1.81		2.1	1.9
	D1	P- 4/2	0.9		2.1	3.78
	D2	P-6/2	0.76		2.1	4.78
	W	P-2/2	1.8		1.21	2.17
	W1	P-3/2	1.8		1.8	4.86
	W2	P-5/2	1.8		0.66	2.97

						20.46
	TOTAL PLASTER WORK		194.102-20.46			**173.64**
11	**FLOORING WORK**					**56.73M^2**
12	**COLORING WORK**					**194.102M^2**
13	**WATER CLOSET**					
	EUROPEAN TYPES	3				3
14	**WASH BASIN**	3				3
15	**URINAL**					
	GENERAL (M &F)	3				3
16	**WATER TANK**	1	1000 LIT			1000 LIT

Table 8.6: -ABSTRACT SHEET

SR.NO	DESRIPTION OF ITEM	QUANTITY	AMOUNT	PER	TOTAL COST
1	Excavation of foundation	15.04	124	CU.M	₹ 1,864.96
2	BBCC(1:3:6)	6.84	2930	CU.M	₹ 20,041.20
3	Brick work in foundation	11.15	2443	CU.M	₹ 27,239.45
4	Brick masonry in super structure	46.18	2443	CU.M	₹ 1,12,817.74
5	R.C.C. slab	8.5	3236	CU.M	₹ 27,506.00
6	Plastering work	173.64	230	SQ.M	₹ 39,937.20
7	Flooring work	56.73	730	SQ.M	₹ 41,412.90
8	Colouring work	194.102	50	SQ.M	₹ 9,705.10
9	Water closet				
	European type	3	1250	nos	₹ 3,750.00
10	Wash basin	3	1050	nos	₹ 3,150.00
11	Urinal				
	1. Gents	2	350	nos	₹ 700.00
	2. Ladies	1	160	nos	₹ 160.00
12	water tank	1000	4	lit	₹ 4,000.00
					₹ 2,92,284.55

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PUBLIC TOILET: -

A public toilet is a room or small building with toilets (or urinals) and sinks that does not belong to a particular household. Local authorities or commercial businesses may provide public toilet facilities.

Figure 8.7. Pay and use

TABLE 8.7: -ESTIMATE OF MATERIAL

SR NO	DESCRIPTION OF ITEM	NO	LENGTH (METER)	BREATH (METER)	HEIGHT (METER)	QTY (CUBIE METER)
1	**EXCAVATION**	1	102	0.61	1.04	64.9
2	**BBCC**	1	105.12	0.35	0.3	11.037
3	**BRICK WORK IN FOUNDATION**	1	102.31	0.61	0.43	26.83
4	**EARTH FILLING WORK**					
	MALE TOILTE ROOM	1	5.74	8.52	0.61	29.83
	FEMALE TOILET ROOM	1	6.9	8.52	0.61	35.86
	TOTAL					65.69
5	**BRICK MASNORY IN SUPER STRUCTURE**	1	105.12	0.35	3.2	117.73
6	**DEDUCTION OF DOOR & WINDOW**					
	DOOR-1	10	0.91	0.35	2.1	6.68
	WINDOW	3	0.59	0.35	1.76	1.09
	VENTILATION	10	0.65	0.35	0.65	1.47
	TOTAL					**9.24**
6.1	DEDUCTION FOR LINTEL					
	DOOR	10	1.21	0.35	0.15	0.635
	WINDOW	3	0.89	0.35	0.15	0.126
	TOTAL					**0.761**
	BRICK MASNORY IN SUPER STRUCTURE					
	117.73-9.24-0.761					**107.73**
7	**RCC SLAB**	1	12.44	9.33	0.15	17.4
8	**BRICK WORK IN PARAPET WALL**	2 (H)	12.44	0.3	0.61	4.55
		2 (V)	9.33	0.3	0.61	3.41
	TOTAL					**7.96**

9	**PLASTER WORK**					
	MALE TOILTE ROOM	2 (V)	8.52		3.2	54.52M^2
		2 (H)	5.82		3.2	37.24 M^2
	T6 & T9	1	1.67	1.95	3.2	10.296M^2
	T7 & T8	1	1.9	1.95	3.2	11.85 M^2
	T 10	1	1.84	1.95	3.2	11.48M^2
	TOTAL					**147.53M^2**
	FEMALE TOILET ROOM	2(V)	8.5		3.2	54.52M^2
		2(H)	5.76		3.2	36.86M^2
	T1 &T5	1	1.65	1.92	3.2	10.13M^2
	T2 & T3	1	1.83	1.92	3.2	11.24M^2
	T24	1	1.74	1.92	3.2	10.69M^2
	TOTAL					**123.44M^2**
	TOTAL PLASTER WORK					**270.97M^2**
10	**DEDUCTION WORK IN PLASTER**					
	DOOR	P-20/2	0.91		2.1	19.11
	WINDOW	P-3/2	0.59		1.76	1.55
	VENTILATION	P-20/2	0.65		0.65	4.22
	TOTAL					**24.93M^2**
	TOTAL PLASTER WORK	270.97-24.93				
						246.04M^2
11	**FLOORING WORK**	1	20.16			20.16 m^2
12	**COLORING WORK**					
	INSIDE	2	135			270
	OUTSIDE	2	68.22			136.44
						406.44m2
13	**WATER CLOSET**					
	EUROPEAN TYPES	10				10
14	**WASH BASIN**	6				6
15	**URINAL**					
	GENTS	4				4
	LADIES	5				5
16	**WATER TANK**	1	1000 LIT			1000 LIT

TABLE 8.8: -ABSTRACT SHEET					
SR.NO	**DESRIPTION OF ITEM**	**QUANTITY**	**AMOUNT**	**PER**	**TOTAL COST**
1	Excavation of foundation	64.9	124	CU.M	₹ 8,047.60
2	BBCC(1:3:6)	11.03	2930	CU.M	₹ 32,317.90
3	Brick work in foundation	26.83	2443	CU.M	₹ 65,545.69
4	Brick masonry in super structure	117.73	2443	CU.M	₹ 2,87,614.39
5	R.C.C. slab	17.4	3236	CU.M	₹ 56,306.40
6	Plastering work	246.04	230	SQ.M	₹ 56,589.20
7	Flooring work	20.16	730	SQ.M	₹ 14,716.80
8	Colouring work	406.44	50	SQ.M	₹ 20,322.00
9	Water closet				
	European type	10	1250	nos	₹ 12,500.00
10	Wash basin	6	1050	nos	₹ 6,300.00
11	Urinal				
	1. Gents	4	350	nos	₹ 1,400.00
	2. Ladies	5	160	nos	₹ 800.00
12	water tank	1000	4	lit	4000
					₹ 5,66,459.98

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MARKET

A market is a place where two parties can gather to facilitate the exchange of goods and services. The parties involved are usually buyers and sellers. The term market also takes on other forms. For instance, it may refer to the place where securities are traded the securities market.

Figure 8.8. General market

Table 8.9: -ESTIMATE FOR MARKET

NO	DESPECTION OF ITEM	NO	LENGTH (METER)	BREATH (METER)	HEIGHT (METRE	QTY (CU.M)
1	EXCAVATON FOR FOUNDATION		61.64	0.38	0.61	14.28
2	BBCC	1	62.46	0.23	0.18	2.58
3	BRICK WORK IN FOUNDATION	1	59.55	0.39	0.43	9.98
4	EARTH FILLING WORK					
	BANK	1		3.95	0.43	4.52
	ATM	1		2.06	0.43	2.36
	TOILET	1	2.44	3.05	0.43	3.2
	ELE SHOP	1	3.06	3.05	0.43	4
	MEDICAL SHOP	1	3.05	3.05	0.43	4
	GROWSER SHOP	1	3.05	3.05	0.43	4
	VEG&FRUIT SHOP	1	3.05	3.05	0.43	4
	TOTAL					**26.1**
5	BRICK MASNORY IN SUPER STRUCTURE	1	63.46	0.23	2.9	41.66
	DEDUCTION FOR DOOR AND WINDOW					
	W1	1	0.61	0.23	1.8	0.25
	W2	7	1.21	0.23	1.8	3.56
	D	4	1.81	0.23	2.1	3.49

	D1	1	1.81	0.23	2.11	0.878
	D2	1	0.9	0.23	2.11	0.43
	TOTAL					8.54
	DEDUCTION FOR LINTEL					
	W1	1	0.91	0.23	0.15	0.031
	W2	7	1.51	0.23	0.15	0.36
	D	4	2.1	0.23	0.15	0.28
	D1	1	2.1	0.23	0.15	0.072
	D2	1	1.11	0.23	0.15	0.038
	TOTAL					0.78
	TOTAL BRICK WORK					
			41.66-8.54-0.78			32.33
6	RCC SLAB	1	10.67	9.14	0.18	17.55
7	PARAPET WALL	2(H)	10.67	0.1	0.7	1.49
		2(V)	9.14	0.1	0.7	1.27
	TOTAL					2.76
8	PLASTER WORK					
	BANK	2(H)	4.42		2.9	25.63
		2(V)	3.95		2.9	22.91
	ATM	2(H)	2.06		2.9	11.91
		2(V)	2.67		2.9	14.4
	TOILET	2(H)	2.44		2.9	14.45
		2(V)	3.04		2.9	17.63
	ELEC SHOP	2(H)	3.05		2.9	17.63

		2(V)	3.05		2.9	17.63
	MEDICAL SHOP	2(H)	3.05		2.9	17.63
		2(V)	3.05		2.9	17.63
	GROWSERI SHOP	2(H)	3.05		2.9	17.63
		2(V)	3.05		2.9	17.63
	VEG AND FRUIT SHOP	2(H)	3.05		2.9	17.63
		2(V)	3.05		2.9	17.63
	TOTAL					249.32
	DEDUCTION FOR DOOR AND WINDOW					
	W1	1	0.61		1.8	1.09
	W	7	1.21		1.8	2.17
	D	4	1.81		2.1	3.801
	D1	1	1.81		2.11	3.81
	D2	1	0.9		2.11	1.89
	TOTAL					**12.76**
	TOTAL PLASTER WORK					
			249.32-12.76			236.55
11	**FLOORING WORK**					97.52m^2
12	**COLORING WORK**					249.32m^2
13	**WATER CLOSET**					
	EUROPEAN TYPES	3				3
14	**WASH BASIN**	1				1
15	**URINAL**					

	GENERAL (M &F)	3				3
16	**WATER TANK**	1	1000 LIT			1000 LIT

Table 8.10: -ABSTRACT SHEET

SR.NO	DESRIPTION OF ITEM	QUANTITY	AMOUNT	PER	TOTAL COST
1	Excavation of foundation	14.28	124	CU.M	₹ 1,770.72
2	BBCC(1:3:6)	2.58	2930	CU.M	₹ 7,559.40
3	Brick work in foundation	9.98	2443	CU.M	₹ 24,381.14
4	Brick masonry in super structure	41.66	2443	CU.M	₹ 1,01,775.38
5	R.C.C. slab	17.55	3236	CU.M	₹ 56,791.80
6	Plastering work	236.55	230	SQ.M	₹ 54,406.50
7	Flooring work	97.52	730	SQ.M	₹ 71,189.60
8	Colouring work	249.32	50	SQ.M	₹ 12,466.00
9	Water closet				
	European type	3	1250	nos	₹ 3,750.00
10	Wash basin	1	1050	nos	₹ 1,050.00
11	Urinal				
	1. Gents	3	350	nos	₹ 1,050.00
	2. Ladies	0	160	nos	₹ -
12	water tank	1000	4	lit	₹ 4,000.00
					₹ 3,40,190.54

RATE AS PER SOR 2015-16 (R &B DEPARTMENT)

BUS STAND

A bus stop is a designated place where buses stop for passengers to get on and off the bus. Bus stops are, in some locations, clustered together into transport hubs allowing interchange between routes from nearby stops and with other public transport modes to maximise convenience.

Figure 8.10 bus stop

TABLE 8.11: -BUS STAND

NO	DESPECTION OF ITEM	NO	LENGTH (METER)	BREATH (METER)	HEIGHT (METRE	QTY (METER)
1	EXCAVATON FOR FOUNDATION	1	1.96	4.21	0.5	4.12
2	BBCC		1.96	4.21	0.43	3.54
3	BRICK WALL	1	3.93	0.3	2.49	2.93
4	COLUMN					
	VERTICAL	2	0.15	0.1	2.44	0.07
	HORIZONTAL	3	1.47	0.1	0.1	0.0147
5	UPPER PART	1	2.29	4.21	0.08	0.77

Table 8.16: -ABSTRACT SHEET

SR.NO	DESRIPTION OF ITEM	QUANTITY	AMOUNT	PER	TOTAL COST
1	Excavation of foundation	4.12	₹ 124.00	CU.M	₹ 510.88
2	BBCC(1:3:6)	3.54	₹ 2,930.00	CU.M	₹ 10,372.20
3	Brick work in foundation	4.12	₹ 2,443.00	CU.M	₹ 10,065.16
4	Brick masonry	3.01	₹ 2,443.00	CU.M	₹ 7,353.43
5	R.C.C. slab	0.77	₹ 3,236.00	CU.M	₹ 2,491.72
					₹ 30,793.39

RATE AS PER SOR 2015-16 (R &B DEPARTMENT)

ELECTRICAL: -

1. Solar Streetlight Installation Design

The solar streetlight does not need to setup the transmission line or route the cable, and no any special management and control are required. It can be installed in the end ire public place such as the square, the parking lot, the campus, the street or the highway etc.
WearegoingtodesignaSolarStreetLightInstallationforThemainStreetofourAllocated Village

Components required for a single Solar Street Light Pole:
(1) Solar cell
(2)LED lamp
(3)Light pole
(4)Control box(charger, controller, battery)

Calculation for Solar Street Light Installation

Awe seen above our basic components required are Solar Cell, LED Lamp, Light Poland Control Box (Itconsistsof Charger, Controller ,and Battery).Now these components are available in Different Ratings as per our requirement. And hence cost of that component also varies with the change in rating.

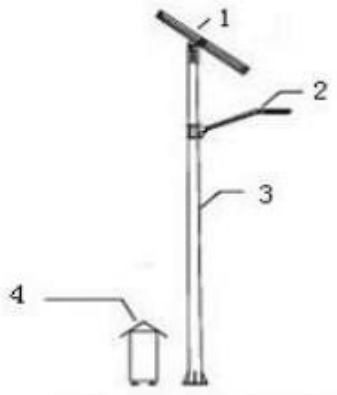

Figure8.14 single solar street light pole

Selection of Component Rating [16]

So here are some calculations formulae which will help us know threating of component to be Used
To calculate the power of Photo voltaic Cell required

$$p(pv)=(1/n1n2)\times(Pled\times hled/h(pv))\times k$$

Where:
1Charging efficiency of the battery
2Efficiency of the LED driver circuit
PLED ---------- Power consumption of the LED (W)
HLED----------Daily lighted time of Lamps (h)
H (pv)----------Average of daily peak sunshine hours
k ---------- Loss coefficient of solar panel

To calculate the capacity of Battery required
The capacity of the battery can be calculated by the following formula

$$C = (D + 1)\, k1(1 - k2)$$

In the formula
C -------- Standard capacity of the battery.
Q --------- Power consumption per day of the lamps.
D --------- Maximum number of continuous rainy days.
k1 ----------Depth of discharge (DOD), generally the DOD of VRLA is
0.75. k2 ---------Loss electricity of the battery's self-discharge.(10%)

Selection of LED depends on the site area and the light pole generally use dare of 9-12m height.

Cost Calculation

Table 8.13: - Rating & costing of street light:

Type	Led ratting (Watt)	Battery size (AH)	Controller size (A)	Pole height (m)
1	**Lexom mini 8 watt**	**25-30**	**5**	**7**
Cost(Rs)	**3500-4000**	**4000-6000**	**1000-2000**	**2000-3000**

Rating and Costing of Street Light

Mathematical parameters areas follow:
Capacity of solar panel=Rating of LED X no of running hours
No of charging hours

table 8.14 Specific design parameters for**7meter** pole height:

Parameters	Parameters specifications
Pole height	Pole height 7 meter
Thickness of pole	Top 2.5 meter: 3mm Bottom 4.5 meter: 4mm
Diameters of pole sections	Top 2.5 meter: at least 3 inch Bottom 4.5 meter: at least 4 inch
Weight of pole only	At least 75 kg

Specification according to height

Table 8.15: -Cost Estimation of single solar street light:

Parameters	Cost in INR
LED Light	**4000**
Solar panel	3000
Charge controller	5000

Pole	10000
Wire	2000
Installation cost	5000
Battery	5000
Total approx. cost	**34000**

Cost Estimate of Single Street Light Pole

Final Estimate cost for single pole: Approx.RS 34000

2. Over Voltage/Under Voltage Load Protection with GSM Alert

This project aims to build a system that monitors voltage and provides a breakpoint based low and high voltage tripping mechanism that avoids any damage to the load. Various industrial and domestic systems consist of fluctuation in the AC mains supply. There is a chance of damaging electronic devices that are quite sensitive to these fluctuations. So there needs to be a tripping system that avoids any damage to these loads. This system also includes 8051 microcontroller which finds out the voltage level which is displayed on the LCD screen. This microcontroller not only finds out the voltage level but also send SMS via GSM modem which alerts the user whenever the voltage level is crosses the limits.
Our system consists of a tripping mechanism that monitors the input voltage and trips according to limits provides. Here we use a quad comparator IC with two more comparators to be used as window comparators to it. Well the system delivers an error as soon as the input voltage falls out of the window range. This trigger then operates a relay that cuts off the load to avoid any damage to it. We here use a lamp to demonstrate as a load. Well the system is also configured with an alarm that goes on as soon as tripping takes place

Block Diagram:

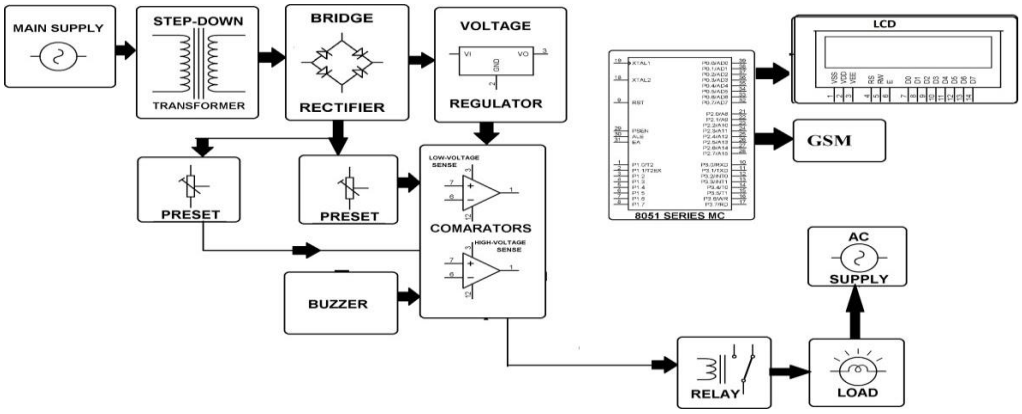

Figure 8.15 block diagram

Hardware Specifications

- 8051 Microcontroller
- LM 339 quad comparator
- Transformer
- Crystal
- Voltage Regulator
- Lamp
- Potentiometer
- Capacitors
- Diodes
- Resistors
- Relay
- LED
- GSM modem

Figure 8.16 GSM modem

Software Specifications

- Keil µVision IDE
- MC Programming Language: Embedded C

GSM Modem

The SIM900 is a complete Quad-band GSM/GPRS solution in a SMT module which can be embedded in the customer applications. Featuring an industry-standard interface, the SIM900 delivers GSM/GPRS 850/900/1800/1900MHz performance for voice, SMS, Data, and Fax in a small form factor and with low power consumption. With a tiny configuration of 24mm x 24mm x 3 mm, SIM900 can fit almost all the space requirements in your M2M application, especially for slim and compact demand of design.

3. Plant Moisture Monitoring System

Planting a tree in an environment where the seed or the plant would not get water adequately through natural sources like rain or ground water in its initial phases has been always a matter of concern for tree planters. This is where an autonomous moisture monitor for plants system can help.
The system timely monitors the moisture level of the soil. If at the time of monitoring it comes to know that the moisture level of the soil is lower than recommended then it will raise an audio visual alert. This alert is then received by the care taker of the plant. When the care taker waters the plant the alarm goes off and the monitoring cycle continues.

In this system we use a timer IC to time the monitoring process. A moisture level sensor is used to detect the moisture level of the soil. An LED is used to give visual alarm and a Buzzer is used to give audio alarm to the care taker of the plant. Thus in this project with the help of a simple combinational circuit and a sensor we can help save a plant by maintaining the moisture level of the soil of the plant, thus keeping the plant healthy

Block Diagram :

Hardware Specifications :

- IC CD4060
- Water level Sensor
- Resistors
- Capacitors
- Transistor
- LED
- Buzzer

8.2 Recommendations of the design

- As by gap analysis done by as we found the requirement of proposed designs.
- In village no any provision for sustainable facilities. So we design the bio-gas plant. As a sustainable infrastructure facility.
- There is not public garden is available for recreation purpose. So we design the public garden for recreation. As a socio-cultural infrastructure design.
- There is no provision of solid waste collection method. All villagers are disposing the solid waste on free space available on road. So we design solid waste collection method. As a physical infrastructure deign.

8.3 Suggestions / Benefit of the villages

There are two visions for providing Biogas plant, one is to provide as sustainable source to Villagers and second is to reduce the pollution and disease occurred due to cow dung, and

fertilizer waste.

- In village no any provision for recreation purpose so we design the public garden as arecreation purpose.

- By providing solar street light it also benefit in save energy.

- By providing community toilet it reduces diseases occurred due to mud.

CHAPTER - 9.
Proposing designs for Future Development of the Village for the PART-II Design

- According to techno economic survey and gap analysis of part 1, almost required design of the village is do. First, basic requirement of the village should be fulfill, therefore the design in part one is do according to that. Now in the second part, we will try a design that covers all the required maintenance in the village first.

- As the design of approach road, internal roads, library, coconut leaf dustbin and Primary Health Centre is do, the next step is to do maintenance of the required structure. In addition, will provide some different design to the villagers.

- The village needs some of unique or different design in order to make the village attractive and smart. Most of the focus of us is towards the maintenance of government properties such as anganvadi panchayat, etc. because all these structures are damage. Until now, the bus stand was not available because there was no any bus away from this village route for government bus. However, after the approach road is making, there is hope of continuous route for the bus.

- Next, there is no any market for vegetable so that we will give design of the market. Therefore, the planning for part 2 is based on the maintenance of the village, providing some different and economic design

Soil Testing Laboratory : In agriculture, a **soil test** commonly refers to the **analysis** of a **soil** sample to determine nutrient content, composition, and other characteristics such as the acidity or pH level.
Garden: - that maintains collections of plants for the purposes of **public** education and enjoyment
Reaction Centre : A **recreation center** is a place for **recreational** activities usually administered by a municipal government agency. Swimming, basketball, weightlifting, volleyball and kids' play areas are very common.
Biogas Plant : A **biogas plant** is where **biogas** is produced by fermenting biomass.
Aganwadi : Anganwadi is a type of rural child care centre in India.
Solid Waste Collection: Waste management includes the activities and actions required to manage waste from its inception to its final disposal.
Smart Garden: due to hole solar and smart wiring
Solar Laboratory : solar cleaning and system
Irrigation By Solar : by hole irrigation by solar

CHAPTER-10.

Conclusion of the Entire Village Activities of the Project

- Rural development has received a priority attention in our country. Since India got independence, nationwide rural development programmers were started by government of India with the objective of socio-economic development of rural people.
- Rural development is a process of qualitative and quantitative changes to improve conditions in rural regions. Such a process needs to be an integrated programme where all aspects of rural life should be taken into account.

- It can be help to develop the other village as increase basic services and after that smart facilities on any country with the help smart village visit and it‘s also help to boost GDP Of state And Also increase country image in front of world as superior infrastructure, economic profile as well as an Employment Solution.
- At the end of semester we finalize some of the facility which is not provided in allocated village and design them with approximate cost and easily available material.
- After analyzing all the data, we found that village needs some new facilities and some facilities need maintenance. We provided six new designs for our village, A Public Library, Bus Stand, community hall, solar street light, Public Toilet, panchayat building and general market to fulfill the requirement of existing population. Also village need initiative for the approach to various Govt. schemes by local bodies.
- Comparison with smart village data and gap analysis we proposed detail design of certain amenities which may be use full for the growth of village and other advantage of jaliya can be facilitated as like as other smart villages.

- Rural development is a process of qualitative and quantitative changes to improve conditions in rural regions. Such a process needs to be an integrated programme where all aspects of rural life should be taken into account.
- In first part of project we study the ideal village as RajSamadhiyala and smart village as moviya, and identify existing facility like Aganwadi, Primary school, Panchayat building, Public health center, Road network, Bus stand, Drinking water sources and waste management system etc.

CHAPTER 11.
References refereed for this project

- IS 9769 –glossary of terms related to solid wastes‖- 1980
- IS 12647 –Solid waste management system- collection equipment- guidelines‖- 1989
- IS 456 –Reinforced Concrete structure‖ - 2000
- IS: 13920 —Ductile detailing of reinforced concrete structure‖ -1993

- –B. N. Dutta‖, Estimation and costing in civil engineering, –UBS Publishers' Distributors Ltd‖
- –S. C. Rangwala‖,, Estimating and costing, –Charotar publishing house‖.
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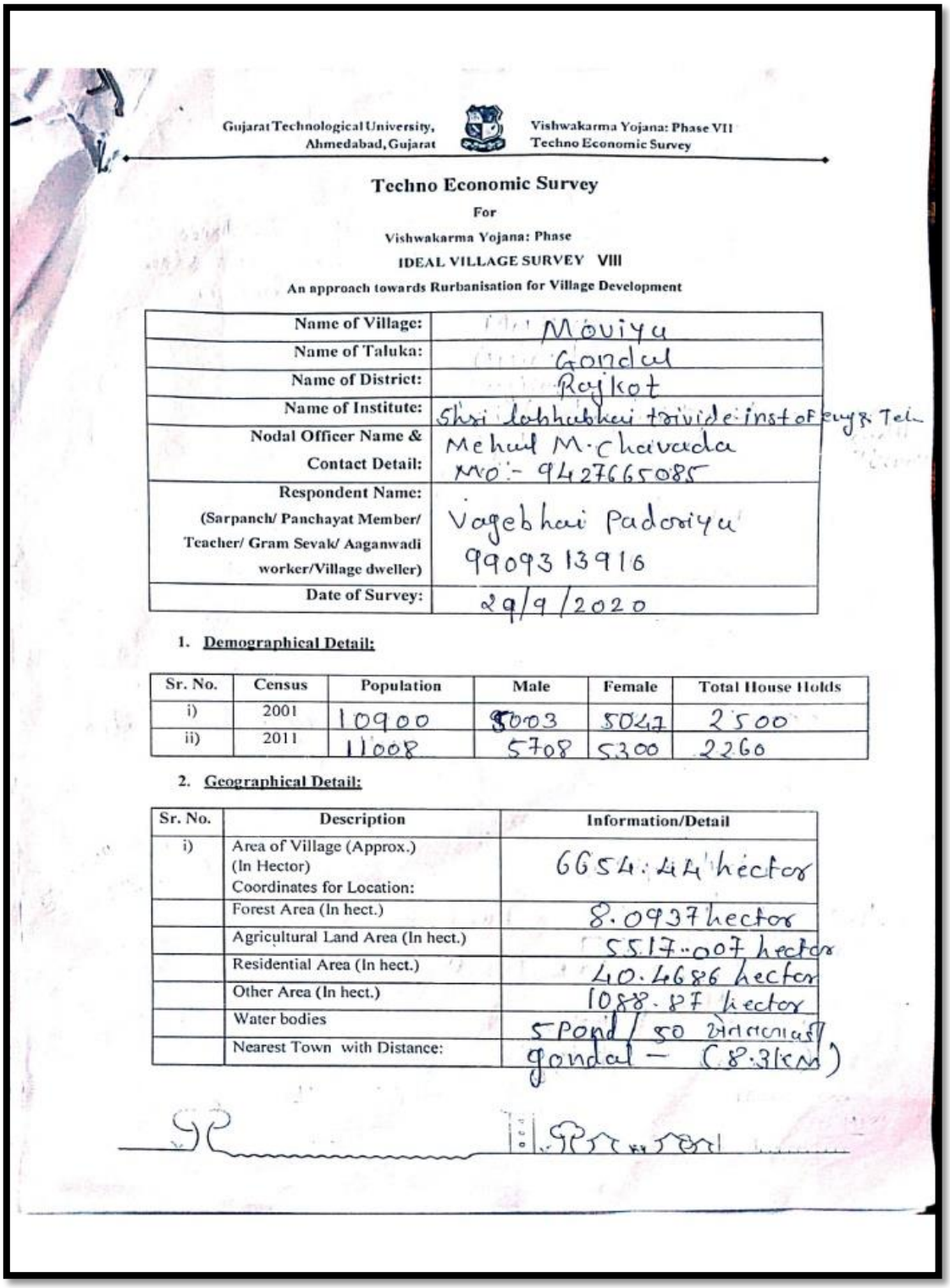
- Biogas book by LUDWIG SASSE (online).
- –B.H. Khan", Non-conventional energy resource, –Tata McGraw hill education private limited‖, New Delhi
- B.C. Punmia, A.K. Jain, Building construction, Laxmi publications.
- M.V. Chitawadagi, Building planning and drawing, –S.S. Bhavikati‖, –I.K. International publishing house Pvt. Limited, 2014‖.

CHAPTER-12

12. Annexure

12.1 Scanned copy (for Part-I), Ideal Village Moviya Survey Form



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Vishwakarma Yojana: Phase VII
Techno Economic Survey

Techno Economic Survey

For

Vishwakarma Yojana: Phase

IDEAL VILLAGE SURVEY VIII

An approach towards Rurbanisation for Village Development

Name of Village:	Moviya
Name of Taluka:	Gondal
Name of District:	Rajkot
Name of Institute:	Shri Labhubhai trivedi inst of engg & Tech
Nodal Officer Name & Contact Detail:	Mehul M. Chavada MO:- 9427665085
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Vagebhai Padoriya 9909313916
Date of Survey:	29/9/2020

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	10900	5003	5047	2500
ii)	2011	11008	5708	5300	2260

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	6654.44 hector
	Forest Area (In hect.)	8.0937 hector
	Agricultural Land Area (In hect.)	5517.007 hector
	Residential Area (In hect.)	40.4686 hector
	Other Area (In hect.)	1088.87 hector
	Water bodies	5 Pond / 50 [illegible]
	Nearest Town with Distance:	gondal – (8.3kms)

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3. Occupational Details:

Name of Three Major Occupation groups in Village	1. Dawat Industrial 2. Namkeen Industrie 3. Yogi Frog Factorie

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	✓ X ✓ ✓ ✓ ✓			
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	5,00,000 / 3,09,000 liter		
	Underground Sump	Capacity:			
Suggestions if any:					
C.	**Drainage Facility**				
	Available (~~Yes~~/ No)	Yes (Not working)			
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	closed			
	If Open than Pucca / Kutchcha	Pucca			
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	No			
Suggestions if any:					

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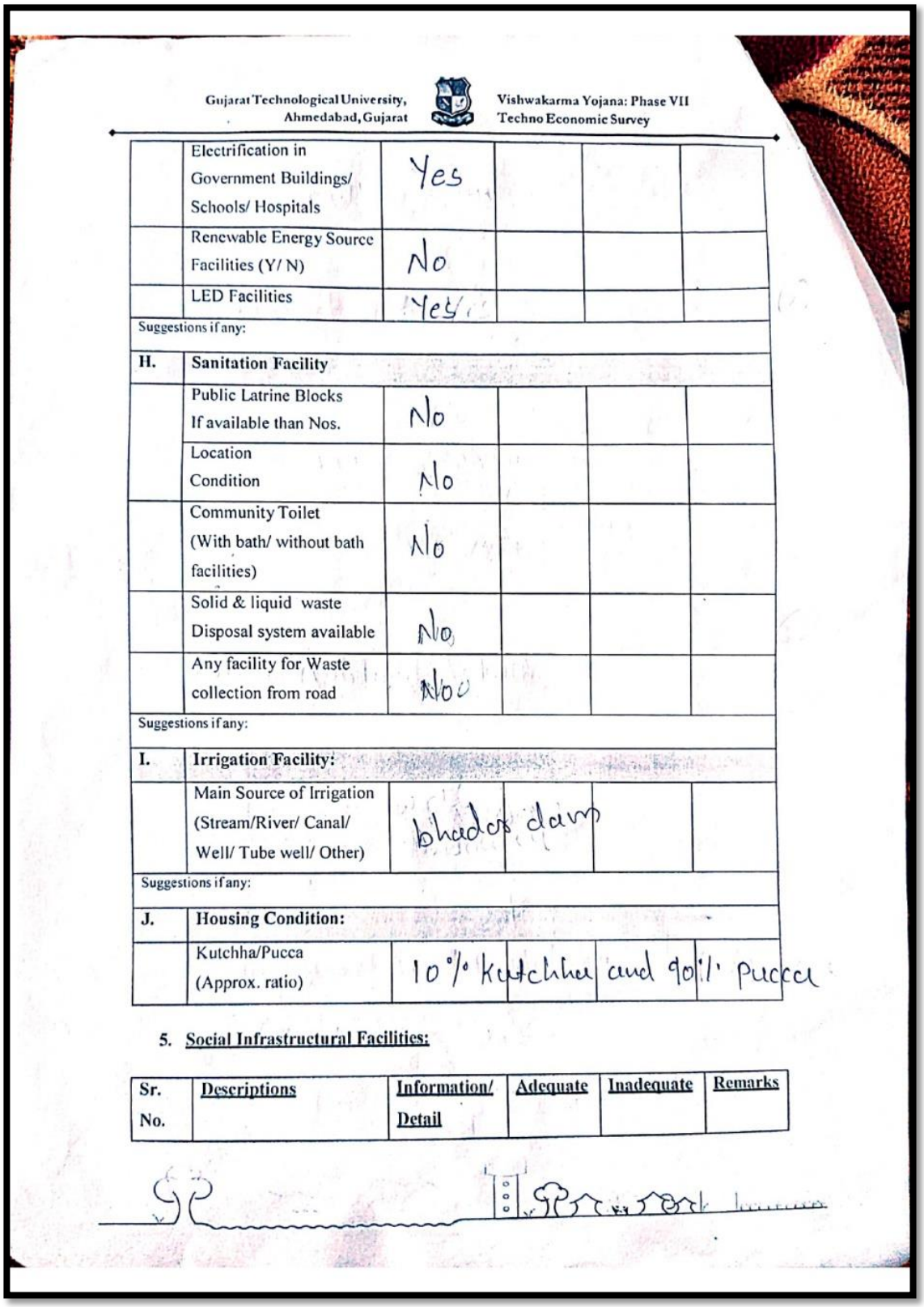
E.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	All weecether			
	Main road	C.C. Roced			
	Internal streets	C.C. Roced			
	Nearest NH/SH/MDR/ODR Dist. in kms.	N. H 8B	Rajkot-gondal		
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Gondal — 10 kms			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Moviyd			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	(Auto/ chhakda/ private vehicle)			
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Govt – More than - 6 hour (PGVCL)			
	Power supply for Domestic Use	Yes	PGVCL (24 hours)		
	Power supply for Agricultural Use	Yes			
	Power supply for Commercial Use	Yes			
	Road/ Street Lights	Yes			



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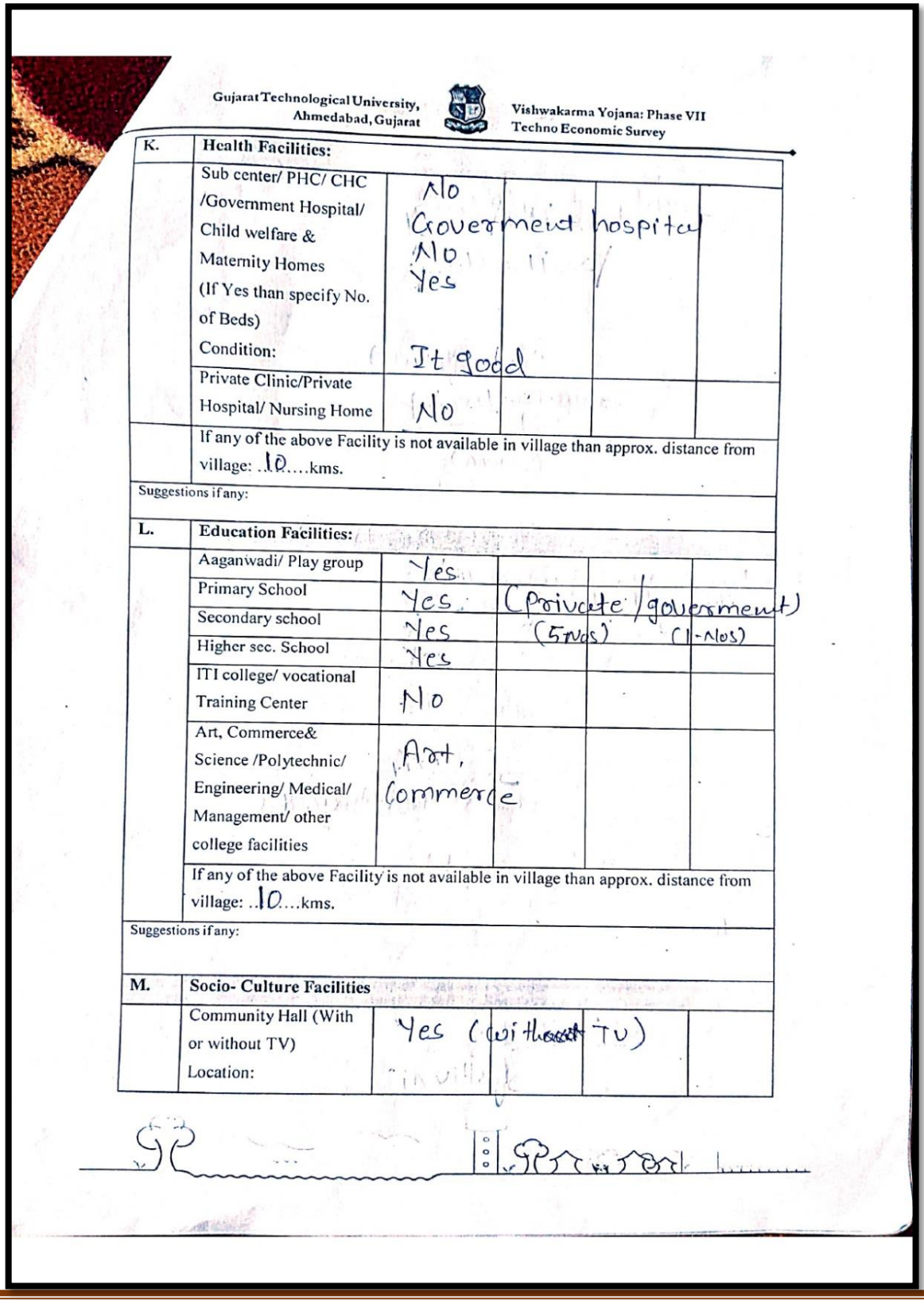
	Electrification in Government Buildings/ Schools/ Hospitals	Yes			
	Renewable Energy Source Facilities (Y/ N)	No			
	LED Facilities	Yes			
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	No			
	Location Condition	No			
	Community Toilet (With bath/ 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)	bhadar dam			
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	10% kutchha and 90% pucca			

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks



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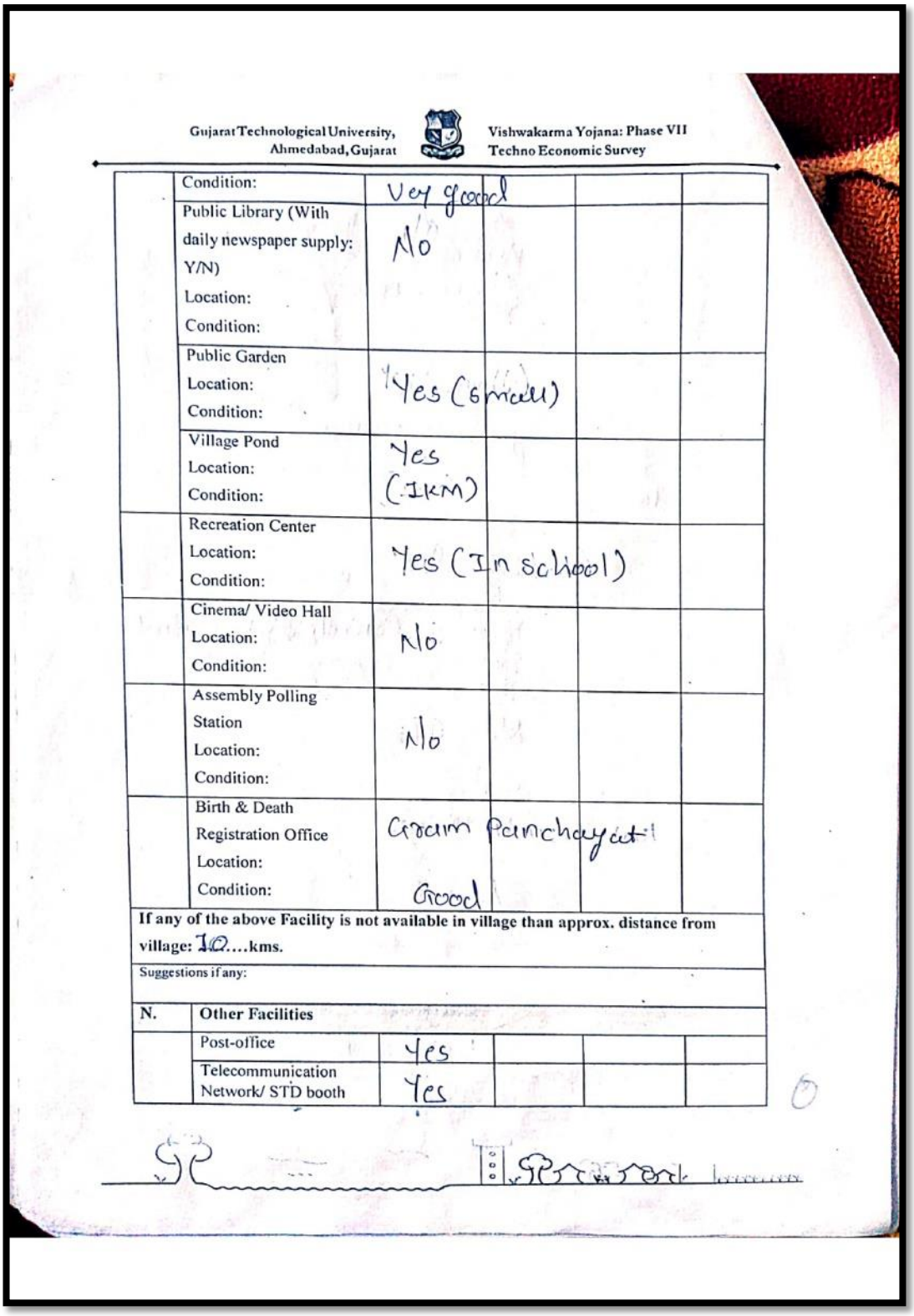
K.	Health Facilities:					
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	No Goverment hospital No Yes It good				
	Private Clinic/Private Hospital/ Nursing Home	No				
	If any of the above Facility is not available in village than approx. distance from village: ..10....kms.					
Suggestions if any:						

L.	Education Facilities:				
	Aaganwadi/ Play group	Yes			
	Primary School	Yes	(Private/government)		
	Secondary school	Yes	(5Nos)	(1-Nos)	
	Higher sec. School	Yes			
	ITI college/ vocational Training Center	No			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	Art, Commerce			
	If any of the above Facility is not available in village than approx. distance from village: ..10....kms.				
Suggestions if any:					

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



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	Condition:	Very goood			
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	No			
	Public Garden Location: Condition:	Yes (6 mile)			
	Village Pond Location: Condition:	Yes (.1KM)			
	Recreation Center Location: Condition:	Yes (In school)			
	Cinema/ Video Hall Location: Condition:	No			
	Assembly Polling Station Location: Condition:	No			
	Birth & Death Registration Office Location: Condition:	Gram Panchayat Good			

If any of the above Facility is not available in village than approx. distance from village: 10....kms.

Suggestions if any:

N.	Other Facilities				
	Post-office	Yes			
	Telecommunication Network/ STD booth	Yes			

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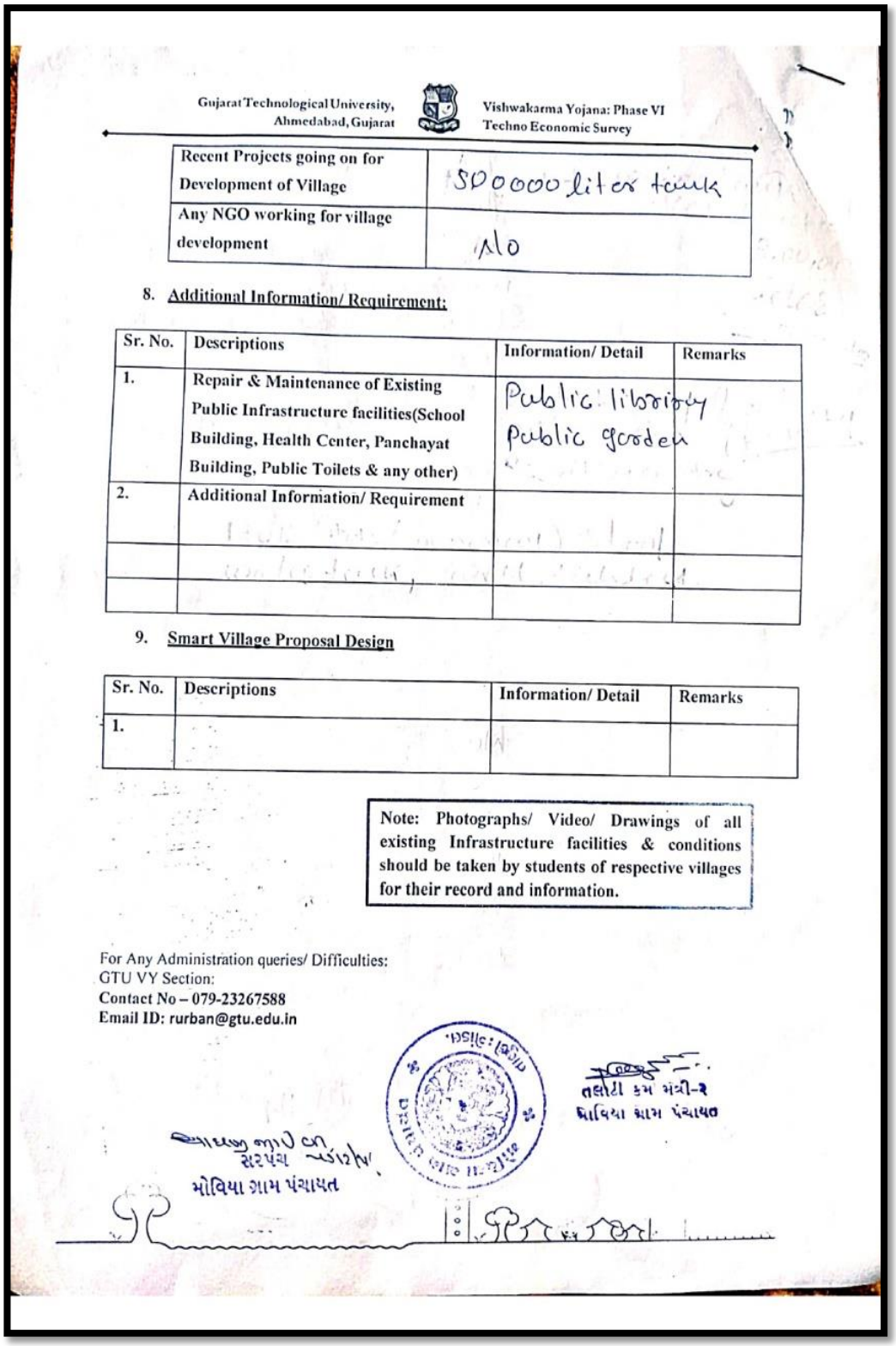
General Market	Yes	in village		
Shops (Public Distribution System)	Yes			
Panchayat Building	Yes	(It's good condition)		
Pharmacy/Medical Shop	medical shop - 3			
Bank & ATM Facility	SBI, BBC & Mouiy - Cooperation			
Agriculture Co-operative Society	No			
Milk Co-operative Soc.	Yes			
Small Scale Industries	Yes	(2 - Industries)		
Internet Cafes/ Common Service Center/Wi Fi	Yes			
Other Facility	No			
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 Yes Yes			
Q.	Any Other	No			

7. **Data Collection From Village**

Village Base Map ~~Available: Hard Copy/Soft Copy~~	Soft copy



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Vishwakarma Yojana: Phase VI
Techno Economic Survey

Recent Projects going on for Development of Village	50000 liter tank
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)	Public library Public garden	
2.	Additional Information/ Requirement		

9. Smart Village Proposal Design

Sr. No.	Descriptions	Information/ Detail	Remarks
1.			

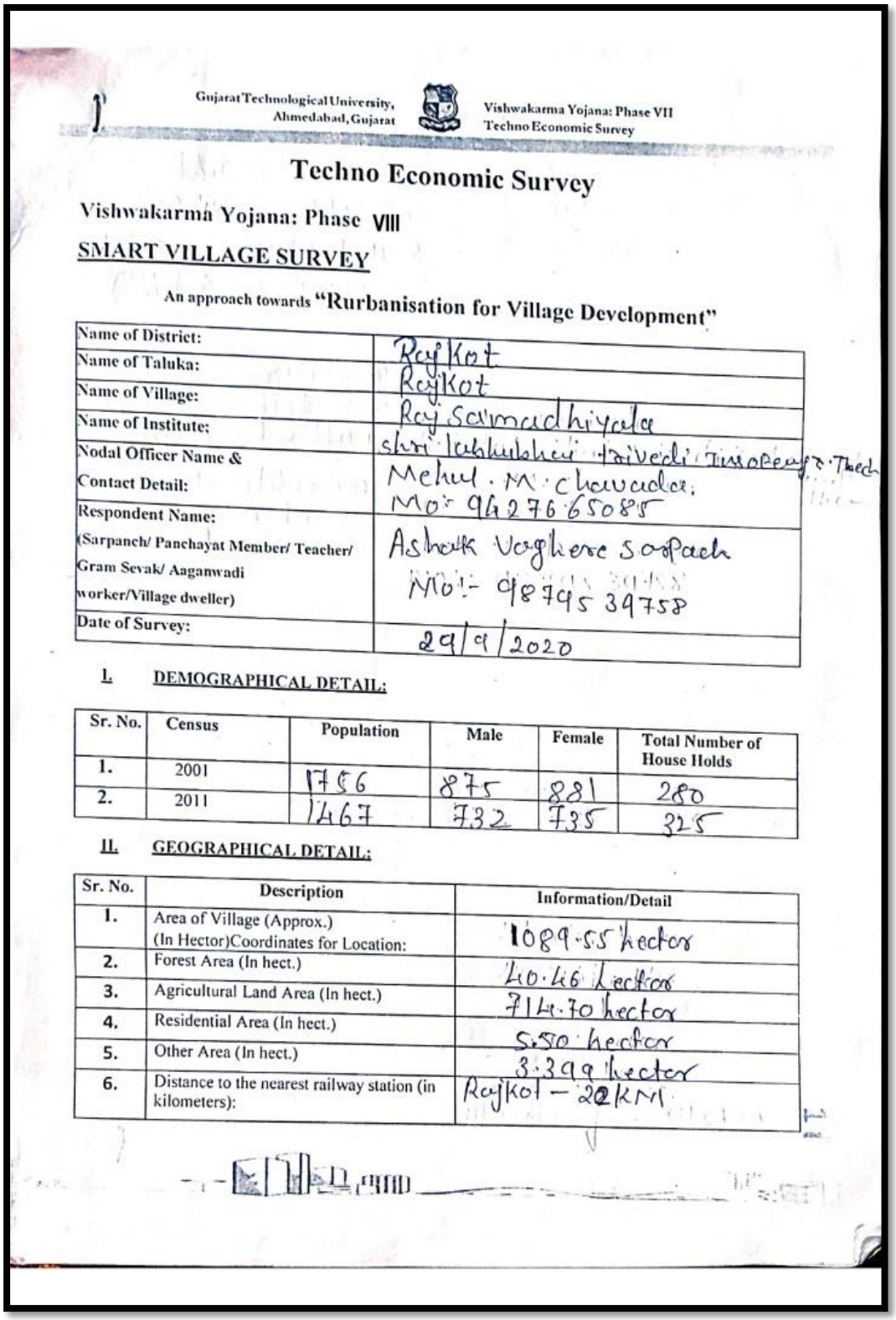
Note: Photographs/ Video/ Drawings of all existing Infrastructure facilities & conditions should be taken by students of respective villages for their record and information.

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

તલાટી કમ મંત્રી-૨
મોવિયા ગ્રામ પંચાયત

સરપંચ
મોવિયા ગ્રામ પંચાયત

12.2 Scanned copy (for Part-I), Smart Village rajsambhayn Survey details



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Vishwakarma Yojana: Phase VII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

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

Name of District:	Rajkot
Name of Taluka:	Rajkot
Name of Village:	Raj Samadhiyala
Name of Institute:	shri lakhubhai trivedi Institute of Tech
Nodal Officer Name & Contact Detail:	Mehul. M. Chavada. Mo: 9427665085
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Ashok Vaghera Sarpach Mo:- 98795 39758
Date of Survey:	29/9/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	1756	875	881	280
2.	2011	1467	732	735	325

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1089.55 hector
2.	Forest Area (In hect.)	40.46 hector
3.	Agricultural Land Area (In hect.)	714.70 hector
4.	Residential Area (In hect.)	5.50 hector
5.	Other Area (In hect.)	3.399 hector
6.	Distance to the nearest railway station (in kilometers):	Rajkot – 22KM

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7.	Name of Nearest Town with Distance:	22 KM (Rajkot)
8.	Distance to the nearest bus station (in kilometers):	Kothariya - (5.4 KM)
9.	Whether village is connected to all road for the any facility or town or City?	Rajkot - Bhavnagar Road (School, Industrial)

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1. Agriculture 2. Industries 3. Agricultural & Industrial labour
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	Yes			
	Piped To Yard/Plot	Yes			
	Public Tap/Standpipe	Yes			
	Tube Well Or Bore Well				
2.	**DUG WELL**				
	Protected Well				
	Un Protected Well				
3.	**WATER FROM SPRING**				
	Protected Spring	Yes			
	Unprotected Spring	Yes			
	Rainwater	Yes			
	Tanker Truck	Yes			
	Cart With Small Tank	Yes			
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/**				
	Irrigation Channel	Yes			
	Bottled Water	Yes			
	Hand Pump	Yes			
	Other(Specify)**Lake/ Pond**	Yes			

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	Power supply for Domestic Use	Yes			
	Power supply for Agricultural Use	Yes			
	Power supply for Commercial Use	Yes			
	Road/ Street Lights	Yes			
	Electrification in Government Buildings/ Schools/ Hospitals	Yes			
	Renewable Energy Source Facilities (Y/ N)	Yes			
	LED Facilities	Yes			
Suggestions if any:					
G.	Sanitation Facility				
	Public Latrine Blocks If available than Nos.				
	Location Condition	New [illegible] - 2 visitor center - 1			
	Community Toilet (With bath/ without bath facilities)	Yes [illegible] + 2 without bath [illegible] - 1			
	Solid & liquid waste Disposal system available	Yes			
	Any facility for Waste collection from road	Yes [illegible] panchayat employees			
Suggestions if any:					
H.	Main Source of Irrigation Facility:				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL OTHER (SPECIFY)	Yes Yes Yes Yes			
Suggestions if any:					
I.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)	5% Kutchha and 95% pucca			

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Suggestions if any:

B.	Water Tank Facility				
	Overhead Tank	Capacity:	–		
	Underground Sump	Capacity:	100,000		

Suggestions if any:

C.	The Type of Drainage Facility				
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	✓			

Suggestions if any:

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

Suggestions if any:

E.	Transport Facility				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No Rajkot = 22 KM			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes Good			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	All types of transportation to avial on S.H.			

Suggestions if any:

F.	Electricity Distribution				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Government more than 6 hours			

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Suggestions if any:

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

If any of the above Facility is not available in village than approx. distance from village: 22....kms.

Suggestions if any:

M.	Other Facilities	Condition	Location	Available (YES)	Available (NO)
	Post-office	Sub post office			
	Telecommunication Network/ STD booth				
	General Market	NO			
	Shops (Public Distribution System)	Yes			
	Panchayat Building	Yes			
	Pharmacy/Medical Shop	NO			
	Bank & ATM Facility	No			
	Agriculture Co-operative Society	No			
	Milk Co-operative Soc.	Yes			
	Small Scale Industries	Yes			
	Internet Cafes/ Common Service Center/Wi Fi	Yes	Brg Industries -②		
	Youth Club	NO			
	Mahila Mandal	Yes			

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	Yes			
	Sub-Centre	Yes			
	PHC	NO			
	BLOCK PHC	NO			
	CHC/RH	Yes			
	District/ Govt. Hospital	NO			
	Govt. Dispensary	NO			
	Private Clinic	NO			
	Private Hospital/ Nursing Home	NO			
	AYUSH Health Facility	NO			
	sonography /ultrasound facility	NO			
	If any of the above Facility is not available in village than approx. distance from village: 22 ....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	Yes			
	Primary School	Yes			
	Secondary school	Yes			
	Higher sec. School	No - Nearest	Sandhoskagtorbadhaum [illegible]		
	ITI college/ vocational Training Center	NO	ITI	Rajkot	- 22km
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	NO	RK university		- 7km.
	If any of the above Facility is not available in village than approx. distance from village: ....kms.				

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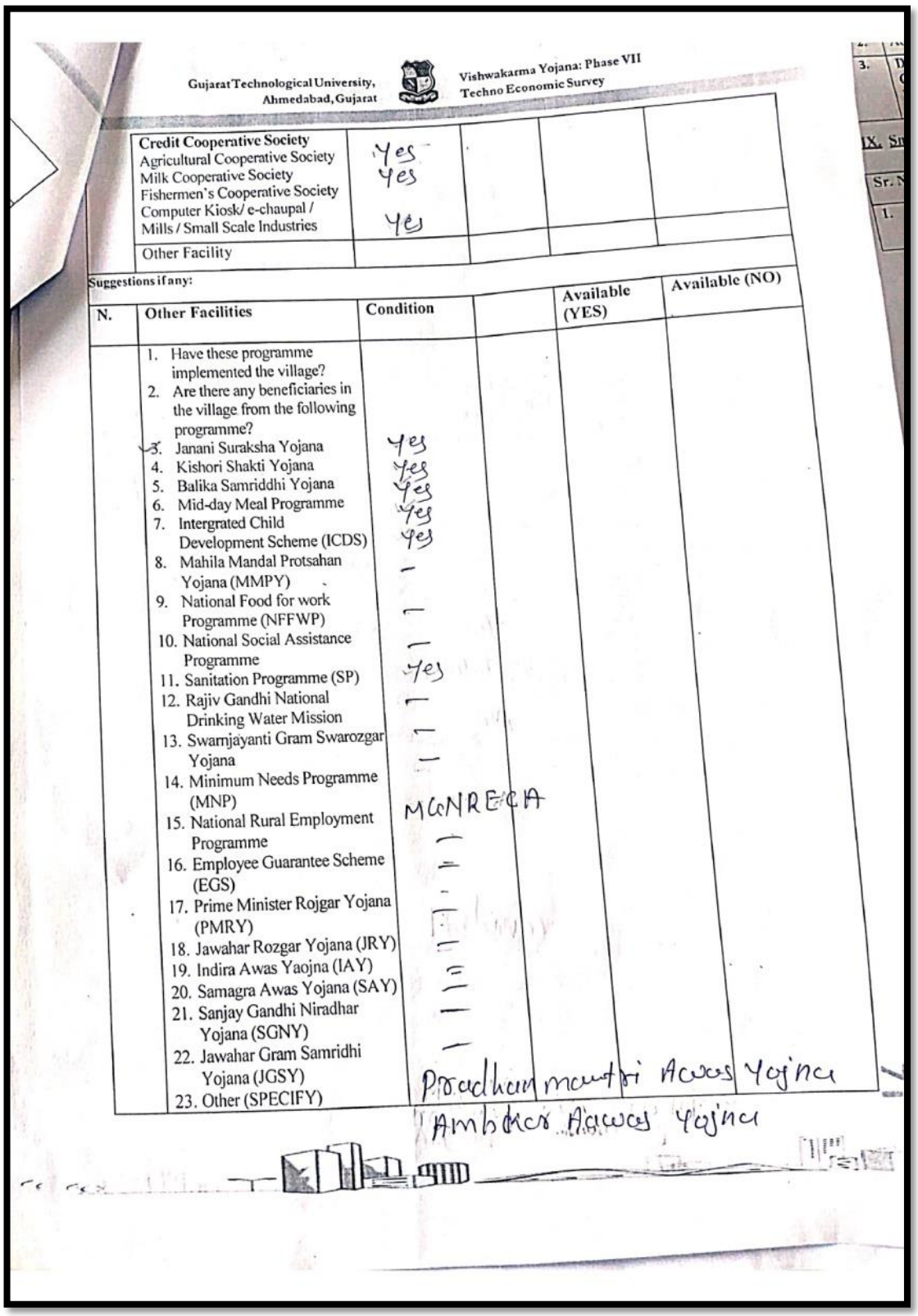

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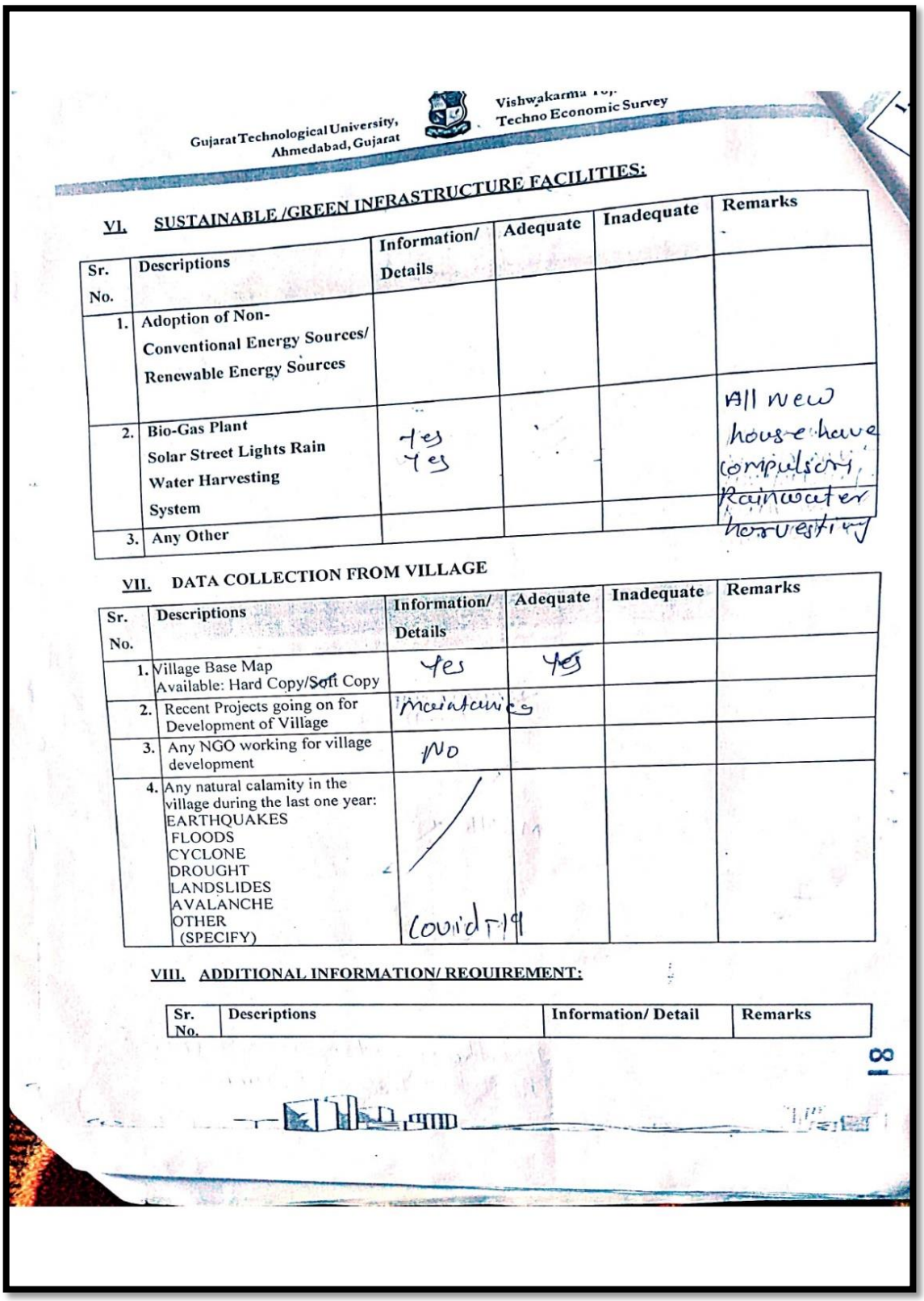
Credit Cooperative Society	Yes			
Agricultural Cooperative Society	Yes			
Milk Cooperative Society				
Fishermen's Cooperative Society				
Computer Kiosk/ e-chaupal /				
Mills / Small Scale Industries	Yes			
Other Facility				

Suggestions if any:

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



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Vishwakarma Yoj... Techno Economic Survey

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources				
2.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	Yes Yes			All new house have compulsory Rainwater harvesting
3.	Any Other				

VII. DATA COLLECTION FROM VILLAGE

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Village Base Map Available: Hard Copy/Soft Copy	Yes	Yes		
2.	Recent Projects going on for Development of Village	Maintance			
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)	/ Covid-19			

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

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1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	Yes Yes Yes Yes	
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING Monthly..... FOGGING..Not required..... 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:
Ms.Darshana Chauhan,Project Co-ordinator
Contact No – 079-23267588
Email ID: rurban@gtu.edu.in

સરપંચશ્રી,
રાજ સમઢીયાળા ગ્રા. પંચાયત

ગ્રામ પંચાયત

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12.3 Scanned copy (for Part-I), JALIYA VILLAGE

Jaliya (Gujarati)

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Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

Name of District:	Rajkot
Name of Taluka:	Rajkot
Name of Village:	Jaliya (360003)
Name of Institute:	Shri labhubhai trivedi ely of Engineering
Nodal Officer Name & Contact Detail:	mehul .M. chavada MO:- 9427665085
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	જાડેજા રાણાભાઈ હેરાજી 6C24394923
Date of Survey:	2/10/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	1130	627	503	275
2.	2011	1639	815	824	361

https://censusindia.gov.in

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	2731.07 hector
2.	Forest Area (In hect.)	- 47.58.26 hector
3.	Agricultural Land Area (In hect.)	400.38 hector
4.	Residential Area (In hect.)	2283.11 hector
5.	Other Area (In hect.)	47.58.26 hector
6.	Distance to the nearest railway station (in kilometers):	Khorana - 5.1Km Rajkot - 16.6 Km

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7.	Name of Nearest Town with Distance:	25 KM (Rajkot)
8.	Distance to the nearest bus station (in kilometers):	3 km (in village)
9.	Whether village is connected to all road for the any facility or town or City?	Rajkot

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Wind farm (8 acres)
	2.	-
	3.	-

Major crops grown in the village:	1.	ground nut
	2.	Pigeon
	3.	Cotton

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

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	Other(Specify)Lake/ Pond	lake / River			

Suggestions if any:

B.	Water Tank Facility				
	Overhead Tank	Capacity:	50,000 liter		
	Underground Sump	Capacity:	1,00,000 liter		

Suggestions if any:

C.	The Type of Drainage Facility				
	A. UNDERGROUND DRAINAGE 1	Yes (50% working)			

Suggestions if any:

D.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	✓	Bitumen		
	Main road	✓			
	Internal streets	✓	Bitumen		
	Nearest NH/SH/MDR/ODR Dist. in kms.	Rajkot - Morbi	Hwy		

Suggestions if any:

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

Suggestions if any:

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

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	Power supply for Domestic Use	✓			
	Power supply for Agricultural Use	✓			
	Power supply for Commercial Use	✓			
	Road/ Street Lights	✓			
	Electrification in Government Buildings/ Schools/ Hospitals	✓			
	Renewable Energy Source Facilities (Y/ N)	X			
	LED Facilities	X			

Suggestions if any:

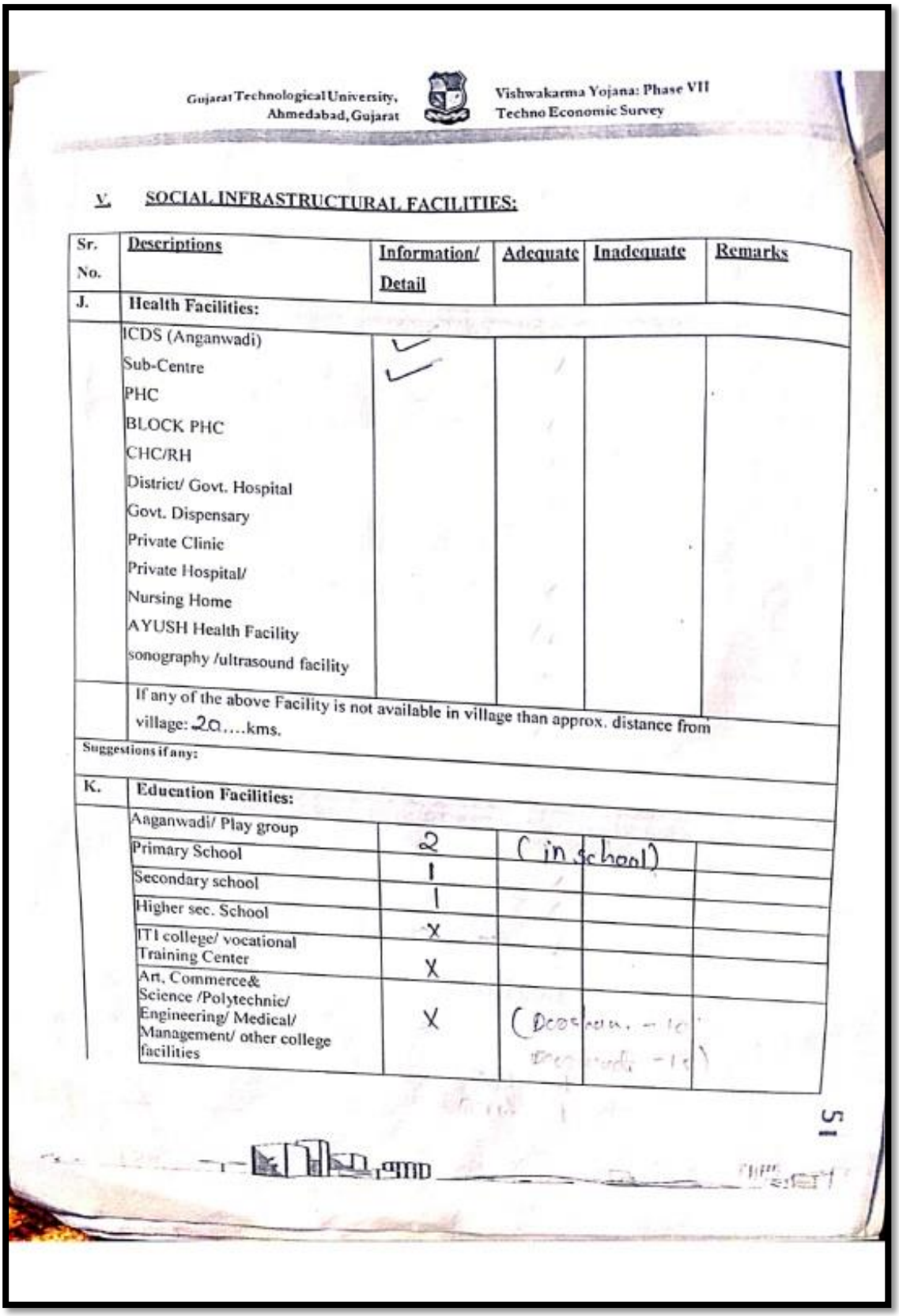
G.	Sanitation Facility				
	Public Latrine Blocks If available than Nos.	X			
	Location Condition	✓			
	Community Toilet (With bath/ without bath facilities)	X			
	Solid & liquid waste Disposal system available	✓			
	Any facility for Waste collection from road				

Suggestions if any:

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

Suggestions if any:

I.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)	K – 150 P – 400			



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V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	✓			
	Sub-Centre	✓			
	PHC				
	BLOCK PHC				
	CHC/RH				
	District/ Govt. Hospital				
	Govt. Dispensary				
	Private Clinic				
	Private Hospital/ Nursing Home				
	AYUSH Health Facility				
	sonography /ultrasound facility				
	If any of the above Facility is not available in village than approx. distance from village: 20....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	2	(in school)		
	Primary School	1			
	Secondary school	1			
	Higher sec. School	X			
	ITI college/ vocational Training Center	X			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	X	(Degree - 1 Degree - 1)		

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

Suggestions if any:

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

If any of the above Facility is not available in village than approx. distance from village: 22....kms.

Suggestions if any:

M.	Other Facilities	Condition	Location	Available (YES)	Available (NO)
	Post-office	I			
	Telecommunication Network/ STD booth	X	X		✓
	General Market	X	X		✓
	Shops (Public Distribution System)	X	X		✓
	Panchayat Building	Not good	increase	✓	
	Pharmacy/Medical Shop	X	X	goveridher	([illegible])
	Bank & ATM Facility	X	X	"	"
	Agriculture Co-operative Society	✓	✓	✓	
	Milk Co-operative Soc.	X	X		✓
	Small Scale Industries	X	X		✓
	Internet Cafes/ Common Service Center/Wi Fi	X	X		✓
	Youth Club	X	X		✓
	Mahila Mandal	✓	✓	✓	

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

Suggestions if any:

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

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Vishwakarma Yojana: Phase VII
Techno Economic Survey

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

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VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Description	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building, Health Center, Panchayat Building, Public Toilets & any other	Panchayat Building & Public Toilet and maintenance	& Biogas plant
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING ...[illegible]... FOGGING ...[illegible]... Drive was undertaken in the village?		

IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THERE 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:
Ms. Darshana Chauhan, Project Co-ordinator
Contact No. – 079-23267588
Email ID: [illegible]@gtu.edu.in

12.4 Gap Analysis

VILLAGE GAP Analysis					
Village Facilities	Planning Commission/UDPFI Norms	Village Name:			
		Population:			
		Existing	Required as per Norms	Smart Vilage / Cities / Heritage Future Projection Design	Gap
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	1	1		0
Primary School	Each Per 2500 population	1	1		0
Secondary School	Per 7,500 population	0	0		0
Higher Secondary School	Per 15,000 Population	0	0		0
College	Per 125,000 Population	0	0		0
Tech. Training Institute	Per 100000 Population	0	0		0
Agriculture Research Centre	Per 100000 Population	0	0		0
Skill Development Center	Per 100000 Population	0	0		0
Health Facility					
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	1	0		0
Primary Health & Child Health Center	Per 20,000 population	0	0		0
Child Welfare and Maternity Home	Per 10,000 population	0	0		0
Multispeciality Hospital	Per 100000 Population	0	0		0
Public Latrines	1 for 50 families (if toilet is not there in home, specially for slum pockets & kutcha house)	0	7		7
Physical Infrastructure Facilities					
Transportation		Inadequate			
Pucca Village Approach Road	Each village	Adequate	1		0
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	0	1		1
Drinking Water (Minimum 70 lpcd)		Adequate	0		0
Over Head Tank	1/3 of Total Demand	1	0		0
U/G Sump	2/3 of Total Demand	1	0		0
Drainage Network - Open		Adequate	0		0
Drainage Network - Cover		Adequate	0		0
Waste Management System		Inadequate	1		1
Socio- Cultural Infrastructure Facilities					
Community Hall	Per 10000 Population	0	1		1
community hall and Public Library	Per 15000 Population	0	1		1
Cremation Ground	Per 20,000 population	0	0		0
Post Office	Per 10,000 population	1	0		0
Gram Panchayat Building	Each individual/group panchayat	0	1		1
APMC	Per 100000 Population	0	0		0
Fire Station	Per 100000 Population	0	0		0
Public Garden	Per village	0	1		1
Police post	Per 40,000Population	0	0		0
Shopping Mall		0	1		1
Electrical Design					
Electricity Network		Adequate			
Any Smart Village Facility					
Technology					
		ESR cap	0		0
		Sump cap	0		0
		Lat	0		0

12.5 Summary Details of All the Villages Designs in Table form as Part-I and Part-II

Table- 12.1
Summary Details of All the Villages Designs in Table form ~~as~~ Part-I and Part-II

GROUP NO	VILLAGE NAME	CATEGORY	CIVIL / ELECTRICAL (PART-1)	CIVIL / ELECTRICAL (PART- 2)
1				
	JALIYA	CIVIL	Chanakya Library	Soil Testing Laboratory
			Panchayat Building	Garden
			Public toilet	Reaction Centre
			General Market	Biogas Plant
			Bus Stand	Aganwadi
			Community Hall	Solid Waste Collection
		ELE	Solar Street Lights	Smart Garden
			Solar Rooftop	Solar Laboratory
			Solar Cleaning System	Irrigation By Solar
2	KHORANA			
		CIVIL	Public Toilet	Atm
			Bus Stand	Post Office
			Community Hall	Sewage treatment plant
			Phc Center	Bank
			Public Garden	Rain Water Harvesting
			Public Libraray	Hall Paver Block
		ELE	Solar Roof Top	Solar Panel
			Street Light	Power Generate By River Water
			Solar Pump	Wind Farm
3	META KHAMBHALIYA			
		CIVIL	Public Library	Go Down
			Community Hall	Rain Water Harvesting
			Garden	Bank
			Water Tank	Play Ground
			Solid Waste Collection	Biogas Plant
			Public Toilet	Chabutro
4	ISRA			
		CIVIL	Biogas Plant	Community Hall
			Garden	Solid Waste Collection
			Public Toilet	Library

			Post Office	Internal Road
			Water Harvesting	Recreation Center
			Waste Water Treatment Plant	Police Station
		ELE	Solar Panel Fitting	Small Hydropower Station
			Solar Street Light	Temperature Control Fan
			Solar Cleaning System	Water Level Indicators
5				
		CIVIL	Compost Pit	Bio-Gas Plant
			Public Garden	Phc
			Solid Waste Management	Rain Water Harvesting
			Chabutro	Public Library
			Shopping Mall	Atm
			Community Hall	Road
	VISAMAN	ELE	Pizo Electricity Generation	Solar Street Light
			Smart Energy Meter	Central Control Unit For Irrigation Water Pump Construction
			Solar Tree	Design Proposal Of Electrical Wiring And Cost Estimation Of Post Office
6		CIVIL	Community Hall+ Library	Internal Road
			Post Office	Public Garden
			Panchayat Building	Biogas Plant
			Public Toilet Block	General Market
	NAGAR PIPALIYA		Skill Development Centre	Canteen For Old People
			Animal Shelter	Fire station
		ELE	Automatic On-Off Switch For Water Tank	Community Hall Wiring
			Photovolic Water Pump	Solar Cleaning System
			Solar Water Purifier	Street Light
7				
		CIVIL	Phc	Rain Water Harvesting
			Public Library	Cyber Cafe
	DERDI KUMBHAJI		Community Hall	Skill Development Center
			Public Garden	Gym
			Police Station	Soil Testing Laboratory
			Batchat Mandli	Agriculture Store

		ELE	Solar Street Light Installation Design	Cctv
			Solar Pump System	Solar Rooftop Installation Design
			Piezoelectric Speed Braker Power Generation Design	Purification Water Plant

12.6 Drawing A3 of Part-I and Part-II (Attached at the end of report)

12.7 Summary of Good Photographs in Table Format (village visits, Ideal, Smart Village or any other

Figure 12.4.Aganwadi

Fig 12.5 sarpancha &Talati mantri

Figure 12.6 phc center

Figure 12.1. Gate form ideal village

Figure 12.2. Small court

12.9 Sarpanch Letter (village design proposal shown to the Sarpanch interaction report)

MAHATMA GANDHI CHARITABLE TRUST MANAGED

SHRI LABHUBHAI TRIVEDI INSTITUTE OF ENGINEERING & TECHNOLOGY

SLTIET आत्मादिपोभवः

Approved by AICTE, New Delhi & Affiliated to GTU, Ahmedabad (Degree & Diploma)

VISHWAKARMA YOJANA PHASE-8

Village: Jaliya District: Rajkot

Subject: Permission to Village Survey and data collection for study (project) purpose

TO,

Talati Mantri/Sarpanch,
(Jaliya,Rajkot)

As per Vishwakarma Yojana guidelines, following students are selected Jaliya village Rajkot district as a part of project. From the actual visits of village and valuable information provided by you. As the outcome of our project they propose the designs with a detail Design Plan, Estimation and Coasting.

Kindly support our project students. Be assuring that this project is allocated by **Government of Gujarat** to **Gujarat Technological University**. So, we are proposing the design for study purpose only.

SR NO	ENROLLMENT NO	NAME	CONTACT NO
1	180893106058	RAMPARIA DEV S	6359401001
2	180893106056	RAMANI DARSHIT	6355429571
3	180893109039	NAKUM ROHIT M	6351149548

For the development of village under "Vishwakarma Yojana Phase-8" project, we are expecting positive approach by you.

for,

Prof. Mehul M Chavda
VY-Nodal officer
Shri Labhubhai Trivedi Engg. College,Rajkot
MO.9427665085

CIVIL SLTIET RAJKOT DEPARTMENT

Mavdi, Nr. Government Engineering College, Kalawad Road, Rajkot - 360005,
Tel: (0281) 6564011-16, Fax: (0281) 2466150, Mob. : 99045 44407,
Web: www.ltiet.com, Mail: info@ltiet.com

12.10 Comprehensive report preparation

Vishwakarma Yojana is provides special scheme for development of village by GTU and Government of Gujarat in which students work together and collect data and information regards village development with the help of gram panchayat and stake holders.

Village have some basic facilities likes drinking water, drainage system, pucca road, and other facilities like Chanakya Libraray, community hall, pay and use, panchayat building, general market, bus stand are proved in village develop. So, we will give proposal regarding sustainable energy sources and solution related to infrastructure problems and electrical they give as solar street light, solar rooftop and solar cleaning system. Efforts have been made in this project work to identify and plan some of the below facilities for sustainable development of village and to meet need of future population.

Vishwakarma Yojana is one of the initiatives towards Rurbanisation that is village development by the government of Gujarat, which was allotted as a real time situation type project provides to GTU. It is one of the strategies to reduce rural to urban the migration rate by developing village with a ‒rural soul‖ but with all urban amenities that a city may have.

In this project the students meet the relevant citizens of village and survey the existing facilities. Then design of the sustainable infrastructure which is to be modified is carried out for the village. This includes implementation of engineering skills to prepare detailed project reports for village as a part of the 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. Based on survey we tried to give design of basic facilities to fulfill their needs.

By providing these basic facilities to village for reduce urban city pressure and decrease migration rate, which is ultimate aim of Vishwakarma Yojana.

CHAPTER 13.

`From the Chapter- 9 future designs of the aspects (Feasibility, Construction, Operation and maintenance of various design options in Rural Areas along with cost with AutoCAD designs / planning with any software

CIVIL ENGINEERING DESIGN

1.) AGANWADI DESIGN

All designs add last page in A3 size

ESTIMATE FOR AGANWADI

NO	DESPECTION OF ITEM	NO	LENGTH (METER)	BREATH (METER	HEIGHT (METRE	QTY (METER
1	**EXCAVATON FOR FOUNDATION**	1	37.18	0.3	0.6	**6.69**
2	**BBCC**	1	41.32	0.3	0.02	**0.247**
3	**BRICK WORK IN FOUNDATION**	1	37.18	0.3	0.6	**6.69**
4	**EARTHFILL WORK**					
	CLASS ROOM -1	1	2.3	2.6	0.6	3.59
	CLASS ROOM -2	1	2.3	2.6	0.6	3.59
	KITCHEN	1	2.3	2.6	0.6	3.59
	PLAY & STORE	1	2.3	2.6	0.6	3.59
	PLAY GROUND	1	5.56	1.69	0.6	5.63
	TOTAL					**19.99**
5	**BRICK MASNORY SUPER STRUCTURE**	1	41.32	0.3	3	**37.188**
	DEDUTION FOR DOOR AND WINDOW					
	W	4	1.21	1.37		9.95
	D	4	0.94	2.13		8
						17.95
	DEDUTION FOR LINTER					
	W	4	1.21	0.3	0.15	0.22
	D	4	0.94	0.3	0.15	0.17
	TOTAL					**0.39**
	TOTAL BRICK MASNORY SUPER STRUCTURE		37.18-18.34			**18.84**
6	**RCC SLAB**		6.16	8.28	0.18	**9.18**

7	**PLASTER WORK**					
	CLASS ROOM	2H	2.6		3	15.6
		2V	2.3		3	13.8
	CLASS ROOM - 2	2H	2.6		3	15.6
		2V	2.3		3	13.8
	KITCHEN	2H	2.6		3	15.6
		2V	2.3		3	13.8
	PLAY & STORE	2H	2.6		3	15.6
		2V	2.3		3	13.8
	PLAY GROUND	H	5.56		2.13	11.84
		V	1.69		2.13	3.59
	TOTAL					**133.03**
	DEDUCTION FOR DOOR AND WINDOW					
	W	4	1.21	1.37		6.63
	D	4	0.94	2.13		8
						14.63
	TOTAL PLASTER WORK		133.03-14.6			**118.4**
8	**FLOORING**		6.16	8.28		**51**
9	**COLOURING WORK**					**118.4**

ABSTRACT FOR AGANWADI

NO	DESRIPTION OF ITEM	QUANTITTY	AMOUNT	PER	QTY
1	Excavation of foundation	6.69	124	CM.M	₹ 829.56
2	BBCC(1:3:6)	0.25	2930	CM.M	₹ 723.71
3	Brick work in foundation	6.69	2443	CM.M	₹ 16,343.67
4	Brick masonry in super structure	18.89	2443	CM.M	₹ 46,148.27
5	R.C.C. slab	9.18	3236	CM.M	₹ 29,706.48
6	Plastering work	118.4	230	SQ.M	₹ 27,232.00

7	Flooring work	51	730	SQ.M	₹ 32,230.00
8	Colouring work	43.32	50	SQ.M	₹ 2,166.00

2.) GARDEN

ESTIMATE FOR GARDEN

NO	DESPECTION OF ITEM	NO	LENGTH (METER)	BREATH (METER	HEIGHT (METRE	QTY (METER
	EXCAVATION FOR FOUNDATION	1	44.63	0.3	0.6	8.03
	BBCC	1	1.33	0.3	0.15	0.05
	BRICK WORK IN FOUNDATION	1	4.9	0.3	0.55	0.8
	EARTH FILLING WORK					
	GARDEN					
	TOILET & SHEETING AREA	1	13.88	9.04	0.6	75.28
	BRICK MASNORY IN SUPER STRUCTURE					
	COMPOUND WALL	2	13.88		2.13	59.133
		2	9.04		2.13	38.51
	TOILET	2	1.9		3	5.7
		2	2.67		3	8.01
	OFFICE	1	1.89		3	5.67
		1	1.68		3	5.04
	TOTAL					132.97
	DEDUCTION FOR DOOR AND WINDOW					
	D	3	0.91	1.98		5.4
	V	2	0.3	0.3		0.18
	W	1	1.2	1.52		1.82
	TOTAL					**7.4**
	DEDUCTION FOR LINTER					
	D	3	0.91	0.23	0.15	0.031
	W	1	1.21	0.23	0.15	0.041
	TOTAL					**0.072**
	TOTAL WORK					**125.49**

	PLASTER WORK					
	COMPOUND WALL	2H	9.04	2.13		38.51
		2V	13.88	2.18		60.51
	TOILET	2H	1.9	3		11.4
		2V	2.67	3		16.02
	OFFICE	2H	1.89	3		11.34
		2V	1.68	3		10.08
	TOTAL					**147.86**
	DEDUTION FOR DOOR AND WINDOW					**7.4**
	TOTAL PLASTER WORK					**140.46**
	RCC SLAB					**1.48**
	FLOORING					
	GARDEN	1	13.88	9.04		125.47
	TOILET	1	1.9	2.67		7.52
	OFFICE	1	1.89	1.68		3.17
	EQU. GARAGE	1	2.09	2.02		4.22
	TOTAL					**140.43**
	COLOURING WORK					**140.46**
1	WATER CLOSET					**2**
1	WATER CLOSET					**2**
1	WASH BASIN					**2**
1	WATER TANK					**1000 LITER**

ABSTRACT FOR GARDEN						
NO	**DESRIPTION OF ITEM**	**QUANTITTY**	**AMOUNT**	**PER**	**AMOUNT**	
1	Excavation of foundation	8.0	124	CM.M	₹	995.72
2	BBCC(1:3:6)	0.0	2930	CM.M	₹	146.50
3	Brick work in foundation	0	2443	CM.M	₹	1,954.44
4	Brick masonry in super structure	125.4	2443	CM.M	₹	3,06,572.07
5	R.C.C. slab	1.4	3236	CM.M	₹	4,789.28
6	Plastering work	127.3	230	SQ.M	₹	29,283.60
7	Flooring work	140.4	730	SQ.M	₹	1,02,513.90
8	Colouring work	127.3	50	SQ.M	₹	6,366.00
9	Water closet					
	European type		1250	NOS	₹	2,500.00
10	Wash basin		1050	NOS	₹	2,100.00
11	water tank	100	4	LITER	₹	4,000.00
					₹	**4,61,221.51**
			1.5% WATER		₹	6,918.22
			10% CONTRATER		₹	46,122.15
			TOTAL COST		**₹**	**5,14,261.66**

3.) SOIL TESTING LABORATARY

ESTIMATE FOR SOIL TESTING LABORATARY						
NO	**DESPECTION OF ITEM**	**NO**	**LENGTH (METER)**	**BREATH (METER)**	**HEIGHT (METRE**	**QTY (METER)**
1	EXCEAVATION FOR FOUNDATION	1	52.2	0.3	0.9	14.094
2	BBCC	1	52.2	0.9	0.09	1.4
3	BRICK WORK IN FOUNDATION	1	52.2	0.3	0.6	9.39
4	EARTHFILLING WORK					
	LABORATORY	1	2.68	2.37	0.6	3.81
	TOILET	1	1.61	1.06	0.6	1.02
	AIR PROOF ROOM	1	1.38	1.61	0.6	1.33
	RECEPTION	1	4.43	2.22	0.6	5.9
	SAMPLE COLLECTION ROOM	1	1.08	1.61	0.6	1.04
	ENTRY	1	2.82	1.08	0.6	1.12
	TOTAL					**14.92**
5	BRICK MANSORY IN SUPER STRUCTER		29.26		3	26.33
	DEDUTION FOR DOOR AND WINDOV					
	D	5	0.91	2.21		10.05
	W	5	1.2	1.8		10.8
	TOTAL					**20.85**
	DEDUTION FOR LINTER					
	D	5	0.9	0.23	0.15	0.03
	W	5	1.2	0.23	0.15	0.04

	TOTAL					**0.07**
	TOTAL WORK					**5.74**
6	PLASTER WORK					
	LABORATARY	2H	2.68		3	16.08
		2V	2.37		3	14.22
	TOILET	2H	1.61		3	9.66
		2V	1.06		3	6.36
	AIR PROOF ROOM	2H	1.38		3	8.28
		2V	1.61		3	9.66
	SAMPLE COLLECTION	2H	1.08		3	6.48
		2V	1.61		3	9.66
	RECEPTION	2H	4.43		3	26.58
		2V	2.22		3	13.32
	ENTRY	2H	2.82		3	16.92
		2V	1.8		3	10.8
	total					**148.02**
	DEDUCTION FOR DOOR AND WINDOV					
	D	5	0.9	2.21		9.95
	W	5	1.2	1.8		10.8
	total					**20.75**
	TOTAL PLASTER WORK					**127.87**
7	RCC SLAB	1	4.71	6.24		**29.36**
8	FLOORING					
	LABORATARY	1	2.37	2.68		6.35
	TOILET		1.61	1.06		1.7
	AIR PROOF		1.38	1.61		2.22
	SAMPLE COLLECTION		1.08	1.61		1.73
	RECEPTTION		4.43	2.22		9.83

	ENTRY		2.82	1.08		3.04
	TOTAL					**24.92**
9	COLOURING					127.87
10	WATER CLOSET	1				1
11	WASH BASIN	1				1
12	WATER TANK	1				1000 LITER

ABSTRACT FOR SOIL TESTING LABORATARY

NO	DESRIPTION OF ITEM	QUANTITTY	AMOUNT	PER	AMOUNT
1	Excavation of foundation	14.094	124	CM.M	₹ 1,747.16
2	BBCC(1:3:6)	1.4	2930	CM.M	₹ 4,110.40
3	Brick work in foundation	9.36	2443	CM.M	₹ 22,866.48
4	Brick masonry in super structure	66.93	2443	CM.M	₹ 1,63,509.99
5	R.C.C. slab	29.3	3236	CM.M	₹ 95,008.96
6	Plastering work	127.87	230	SQ.M	₹ 29,410.10
7	Flooring work	24.92	730	SQ.M	₹ 18,191.60
8	Colouring work	122.87	50	SQ.M	₹ 6,393.50
9	Water closet				
	European type	1	1250	NOS	₹ 1,250.00
10	Wash basin	1	1050	NOS	₹ 1,050.00
11	water tank	1000	4	LITER	₹ 4,000.00
					₹ 2,52,529.29
			1.5% WATER		₹ 3,787.93
			10% CONTRATER		₹ 25,252.92
			TOTAL COST		**₹ 2,81,570.14**

4.) RECREATION CENTER

ESTIMATE FOR RECREATION CENTER						
NO	**DESPECTION OF ITEM**	**NO**	**LENGTH (METER)**	**BREATH (METER)**	**HEIGHT (METRE**	**QTY (METER)**
	EXCAVATION FOR FOUNDAION	1	373.57	0.3	0.9	**100.86**
	BBCC	1	373.57	0.3	0.09	**10.08**
	BRICK WORK FOR FOUNDATION	1	373.57	0.3	0.6	**67.24**
	EARTH FILLING WORK					
	PLAY GROUND	1	13.6	5.87	0.5	39.91
	KITCHEN	1	2.36	2.93	0.6	4.41
	STUDIO ROOM	1	2.82	3.54	0.6	5.98
	CLASS ROOM	1	3.54	3.65	0.6	6.47
	WESTING ROOM	1	3.64	5.05	0.6	11.02
	LOCKER ROOM	1	3.28	2.83	0.6	5.56
	LOCKER ROOM 2	1	3.12	2.36	0.6	4.41
	TOILET	1	2.06	1.98	0.6	2.44
	OFFICE & STORE	1	1.91	3.43	0.6	3.93
	ENTRY	1	1.75	9.83	0.6	10.32
	TOTAL					**94.18**
	BRICK MASNORY FOR SUPER STRUCTER	1	146.5		3	**439.5**
	DEDUCTION FOR DOOR AND WINDOW					
	D	9	1	2.21		19.84
	W	10	1.2	1.45		17.4
	M.D	1	2.27	2.05		4.64
	TOTAL					**41.94**
	DEDUCTION FOR LINTER					

	D	9	1	0.23	0.15	0.31
	W	10	1.2	0.23	0.15	0.414
	M.D	1	2.05	0.23	0.15	0.07
	TOTAL					**0.794**
	TOTAL WORK					**396.77**
	RCC SLAB	1	9.37	14.06		**131.74**
	PLATER WORK					
	PLAY GROUND	2H	13.6		3	116.82
		2V	5.87		3	
	KITCHEN	2H	2.93		3	33.36
		2V	2.63		3	
	STUDIO ROOM	2H	2.82		3	38.16
		2V	3.54		3	
	WRESTING ROOM	2H	3.64		3	52.14
		2V	5.05		3	
	LOCKER ROOM	2H	3.28		3	36.66
		2V	2.83		3	
	LOCKER ROOM 2	2H	3.12		3	32.88
		2V	2.36		3	
	TOILET	2H	2.06		3	24.24
		2V	1.98		3	
	OFFICE ROOM	2H	3.43		3	28.44
		2V	1.91		3	
	ENTRY	2H	1.75		3	69.48
		2V	9.83		3	
	TOTAL					**433.23**
	DEDUTION FOR DOOR AND WINDOW					
	D	9	1	1.22		**41.94**
	W	10	1.2	1.45		
	M.D	1	2.25	2.05		
	TOTAL WORK					**391.29**

	FLOORING					
	PLAY GROUND	1	13.6	5.87		79.83
	KITCHEN	1	2.36	2.93		7.7
	STUDIO ROOM	1	2.82	3.54		9.98
	CLASS ROOM	1	3.54	3.65		12.92
	WESTING ROOM	1	3.64	5.05		18.28
	LOCKER ROOM	1	3.28	2.83		9.28
	LOCKER ROOM 2	1	3.12	2.36		7.36
	TOILET	1	2.06	1.98		4.07
	OFFICE & STORE	1	1.91	3.43		6.55
	ENTRY	1	1.75	9.83		17.2
	TOTAL					**173.17**
	COLOURING					**391.29**
1	WATER CLOSET					**2**
1	WASH BASIN					**2**
1	WATER TANK	2	1000			**2000 LITE**

ABSTRACT FOR RECREATION CENTER

NO	DESRIPTION OF ITEM	QUANTITTY	AMOUNT	PER	AMOUNT
1	Excavation of foundation	100.86	124	CM.M	₹ 12,506.64
2	BBCC(1:3:6)	10.08	2930	CM.M	₹ 29,594.88
3	Brick work in foundation	67.28	2443	CM.M	₹ 1,64,365.64
4	Brick masonry in super structur	396.77	2443	CM.M	₹ 9,69,309.11
5	R.C.C. slab	131.74	3236	CM.M	₹ 4,26,310.64
6	Plastering work	391.29	230	SQ.M	₹ 89,996.70
7	Flooring work	166.25	730	SQ.M	₹ 1,21,362.50
8	Colouring work	391.29	50	SQ.M	₹ 19,564.50
9	Water closet				
	European type	2	1250	NOS	₹ 2,500.00

10	Wash basin	2	1050	NOS	₹ 2,100.00
11	water tank	2000	4	LITER	₹ 8,000.00
					₹ 18,45,610.61
			1.5% WATER		₹ 27,684.15
			10% CONTRATER		₹ 1,84,561.61
			TOTAL COST		**₹ 20,57,856.37**

5.) SOILED WASTE COLLECTION

ESTIMATE FOR SOILED WASTE COLLECTION						
NO	**DESPECTION OF ITEM**	**NO**	**LENGTH (METER)**	**BREATH (METER)**	**HEIGHT (METRE**	**QTY (METEI**
1	EXCAVATION OF FOUNDATION		17.54	0.3	0.9	**4.73**
2	BBCC		17.54	0.3	0.09	**0.47**
3	BRICK WORK IN FOUNDATON		17.54	0.3	0.6	**9.47**
4	EARTH FILLING FOR FOUNDATION					
	WORK SHOP		5.74	5.89	0.3	10.14
	OFFICE		5.74	2.84	0.6	9.78
						19.92
5	BRICK MASONARY FOI SUPER STRUCTER		39.98		3	**116.94**
	DEDUCTION FOR DOOI AND WINDOW					
	W		1.2	1.5		7.2
	D		0.91	2.21		4.02
	M.D		2.27	2.05		4.65
	TOTAL					**15.87**
	DEDUCTION FOR LINTER					
	W		1.2	0.23	0.15	0.041
	D		0.9	0.23	0.15	0.03
	M.D		2.27	0.23	0.15	0.078
						0.14
	TOTAL WORK					**100.92**
6	RCC SLAB		5.74	2.84		16.3

7	PLASTER WORK					
	WORK SHOP	2H	5.74		3	
		2V	5.84		3	69.48
	OFFICE	2H	5.74		3	
		2V	2.84		3	51.48
	DEDUCTION FOR DOOF AND WINDOW					
	W		1.2	1.5		7.2
	D		0.91	1.22		2.22
	M.D		2.27	2.05		4.65
	TOTAL					**14.07**
	TOTAL PLASTER WORK					105.87
8	FLOORING					16.3
9	COLOURING					120.96
10	WATER TANK					1000 LITER

ABSTRACT FOR SOILED WASTE COLLECTION					
NO	**DESRIPTION OF ITEM**	**QUANTITTY**	**AMOUNT**	**PER**	**AMOUNT**
1	Excavation of foundation	4.73	124	CM.M	₹ 586.52
2	BBCC(1:3:6)	0.47	2930	CM.M	₹ 1,377.10
3	Brick work in foundation	9.47	2443	CM.M	₹ 23,135.21
4	Brick masonry in super structure	100.92	2443	CM.M	₹ 2,46,547.56
5	R.C.C. slab	16.32	3236	CM.M	₹ 52,811.52
6	Plastering work	105.87	230	SQ.M	₹ 24,350.10
7	Flooring work	16.3	730	SQ.M	₹ 11,899.00
8	Colouring work	120.92	50	SQ.M	₹ 6,046.00
11	water tank	1000	4	LITER	₹ 4,000.00
					₹ 3,70,753.01
			1.5% WATER		₹ 5,561.29
			10% CONTRATER		₹ 37,075.30
			TOTAL COST		**₹ 4,13,389.60**

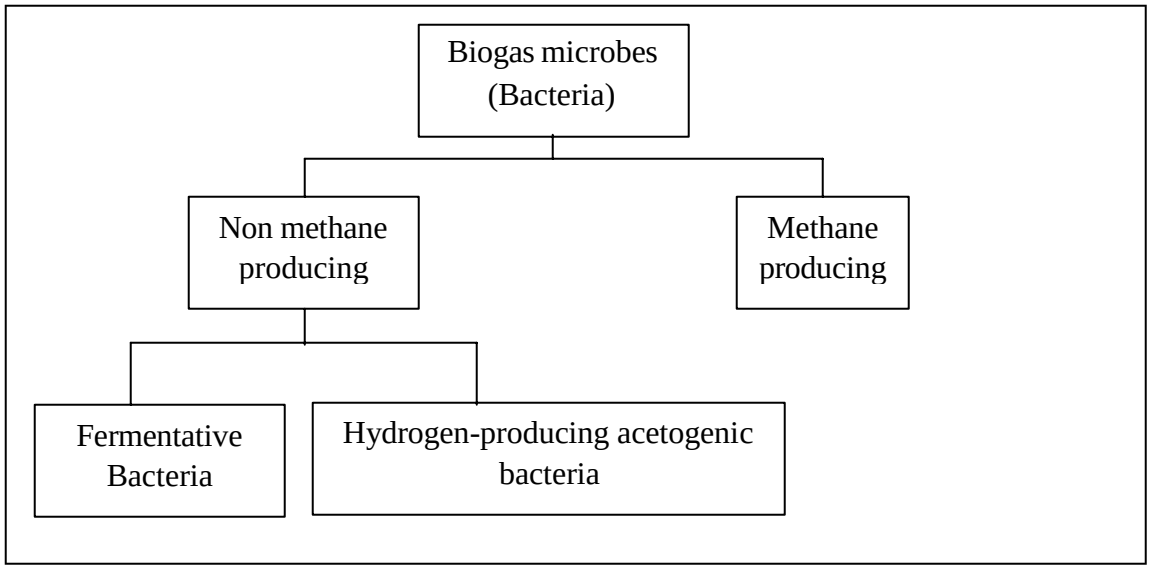
6) BIO GAS PLANT

6.1 INTRODECTION

Biogas can be obtained from any organic materials after anaerobic fermentation by three main phases.

6.2 Mechanism of biogas fermentation:

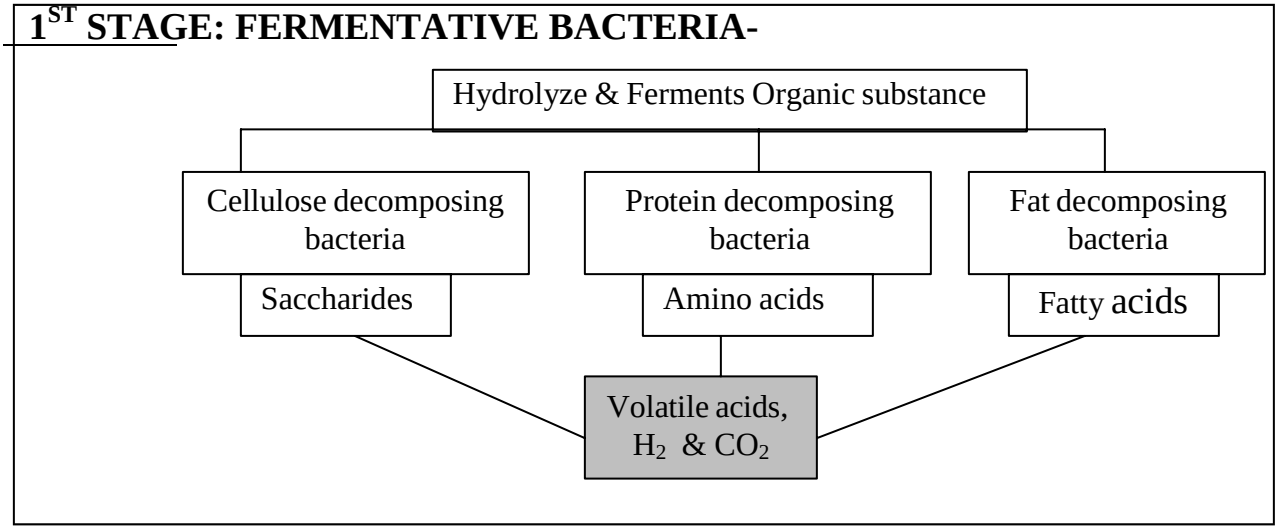
A) Groups of Biogas microbes-

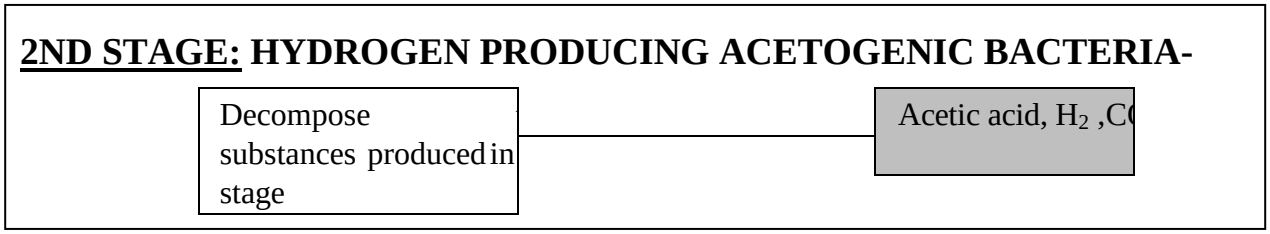


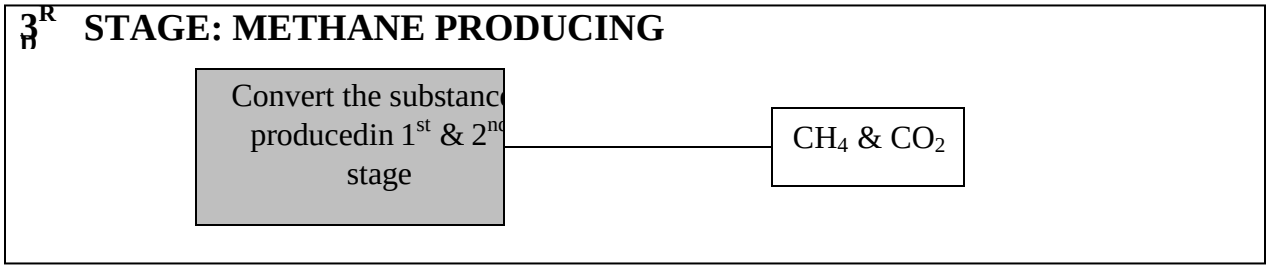
B) Groups of microbes involved in the 3 stages of biogas fermentation-

C)

1ST STAGE: FERMENTATIVE BACTERIA-







6.2 Design perameter:

A) Selection of materials :

Cow Muds

B) Total solid (TS) contains calculations of organic materials Organicmaterials-

Most favorable TS value desired is 08%

C) **Favorable temperature, P^H value & C/N ratio for goodfermentation-**

Temperature: Hemophilic; 20^o c to 35^o c (Annexure-II).
P^H value : Neutral P^H and ranges 6.8 to 7.2
C/N ration : Ranges from 20:1 to 30:1 (Annexure- VI)

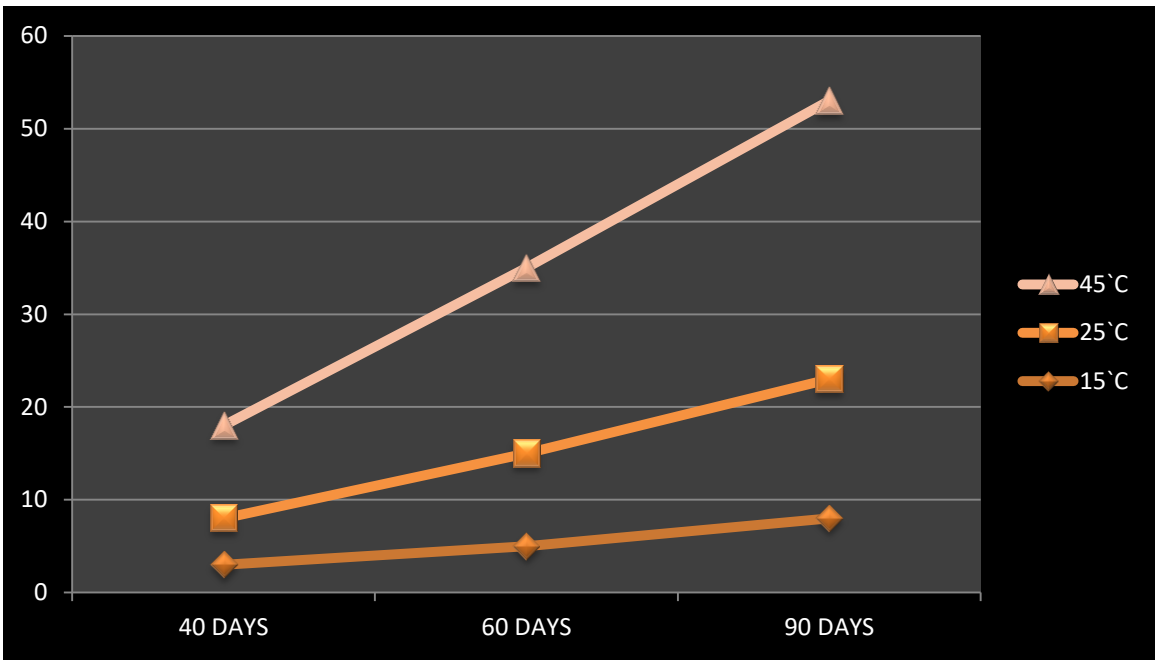
Table: 6.1 showing discharge per day, TS value of fresh discharge and water to be added to make favorable TS condition-

Kinds	Body weight(kg	Discharge per day (kg)	TS value of fresh discharge(% by wt	Water to be added with fresh discharge make the TS value 8% (kg)
Human	50	0.5		0.75
COW	**200**	**10**		**10**
Chicken	1.5	0.1		0.15
Pig	50	5		7.5

D) Hydraulic retention time (HRT)-

For Mesophilic digestion where temp. varies from 20^{o} c to 35^{o} C andHRT is greater than 20 days.

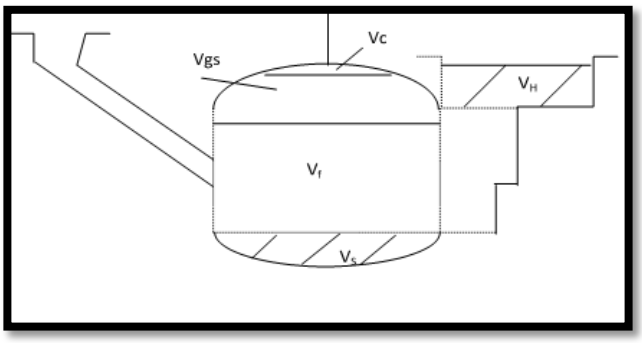
E) Relationship between temperature, HRT & TS value of 8% :



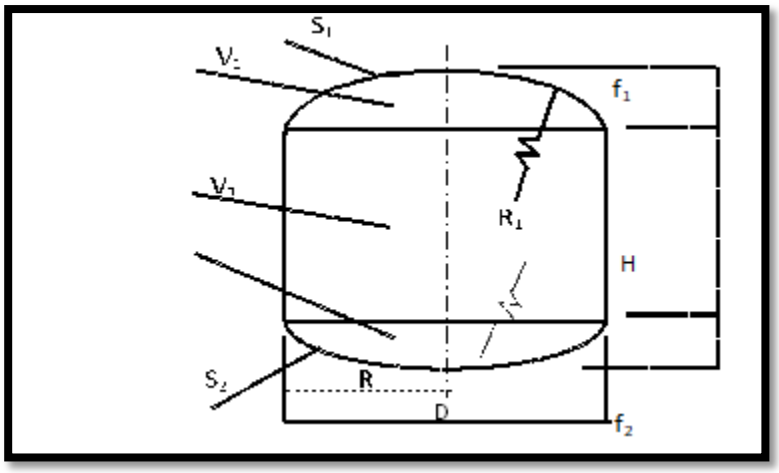
B) Cross-section of a digester:

I. Volume of gas collecting chamber = Vc
II. Volume of gas storage chamber = Vgs
III. Volume of fermentation chamber = V_f
IV. Volume of hydraulic chamber = V_H
V. Volume of sludge layer = Vs

VI. Total volume of digester
V=Vc+Vgs+V_f+Vs

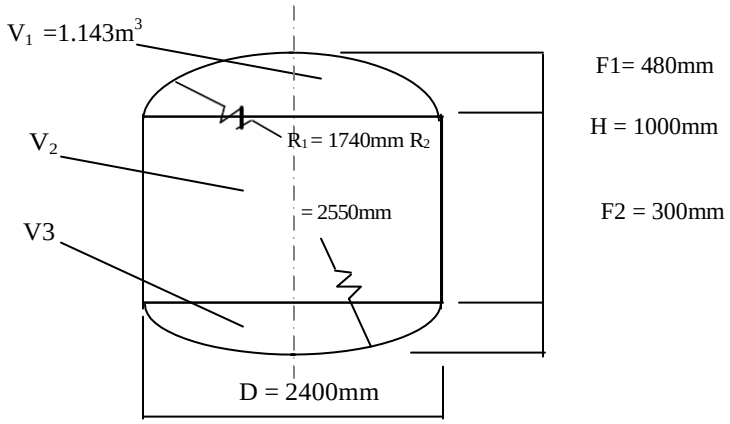


C) Geometrical dimensions of the cylindrical shaped biogas digesterbody:



D) Assumptions:

For volume	For geometrical dimensions
Vc= 5% V Vs =15% V Vgs + V_f = 80% V Vgs = V_H Vgs = 0.5 (Vgs + V_f + Vs) K Where K = Gas production rate per m^3 digester volume per day m^3/m^3d.	D=1.3078 X $V^{1/3}$ V_1=0.08 D^3 V_2 = 0.05011 D^3 V_3 = 0.3142 D^3 R_1= 0.725 D R_2= 1.0625 D f_1 = D/5 f_2 = D/8 S_1 = 0.911 D^2 S_2 = 0.8345 D^2



6.3 Volume calculation of digester and hydraulic chamber:

i. Volume calculation of digester chamber-

Given : 6 cows of body weight 200 Kg each.
Temp. = 30^{O}C (average)

Sol^{n}:
Let HRT = 40 days (for temp. 30^{O} C)
Total discharge = 10 kg X 6 = 60 Kg/dayTS of fresh discharge = 60 kg X 0.16 = 9.6 Kg.

In 8% concentration of TS (To make favourable condition)
8 Kg. Solid = 100 Kg. Influnt
1 Kg. Solid = 100 / 8 Kg influent
9.6 Kg Solid = 100 x 9.6/ 8 = 120 Kg. Influent.Total influent required = 120 Kg.

Water to be added to make the discharge 8% concentration of TS
=120 Kg - 60 Kg. = 60 Kg.
Working volume of digester = Vgs + V_f

Vgs + Vf = Q.HRT
= 120 Kg/day X 40 days
= 4800 Kg.(1000 Kg = 1 m^3) = 4.8 m^3.

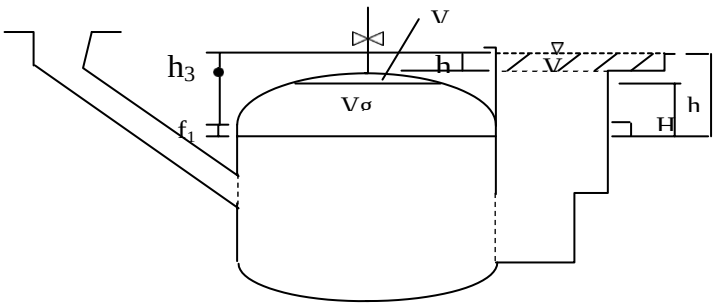
From geometrical assumptions:Vgs + V_f
= 0.80 V
Or
V= 4.8/0.8 = 6.0 m^3. (Putting value Vgs + Vf = 4.8 m^3)
&
D = 1.3078 $V^{1/3}$ = 2.376 m = 2.40 m.
Again

$$V_3 = \frac{3.14 \times D^2 \times H}{4}$$

V_3=0.3142D^3
(Putting V_3=0.3142D^3)
H= 0.96
= 1 M Consider

Now we find from assumption as we know the value of 'D' & 'H'

f_1= D/5 = 2.40 /5 = 0.480 m
f_2= D/8 = 0.30m
R_1= 0.725 D = 1.74 m
R_2= 1.0625 D = 2.55 m
V_1= 0.0827 D^3 = 1.143 m^3
Vc= 0.05V = 0.3 m^3



Volume calculation of hydraulic chamber-

From assumptions
Vc = 0.05 V = 0.3 m^3
Vgs = 0.50 x (Vgs + V_f + Vs) x K
(Where K = Gas production rate per m^3digeste vol./day)
= 0.5 x 5.7x 0.4 =1.14 m^3 ..... **(A)**

h = h_3+f_1+H_1= 800mm
Again, Vgs = 50% of daily gas yield
= 0.5 x TS x gas producing rate per Kg TS
= 0.5 x (60 kg x 0.16) x 0.28 m^3/kg TS (See Annex- III)
= 1.344 m^3 **(B)**

From **A & B let Vgs = 1.344** m^3**.**
Vc + Vgs = 0.3 m^3 +1.344 m^3 = 1.644 m^3
Again V_1 = [{(Vc + Vgs) - {□D^2 H_1}/4]
= [1.644 - {3.14 x $(2.4)^2$ x H_1}/4]Or, H_1 = 0.110m

We have fixed **h** = 800 mm water volume (I mm = 10 N/ m^2)h = h_3 + f_1 + H_1
Or, h_3 = 0.210m.

Again we know that
Vgs = V_H Or, 1.344 m^3= 3.14 x $(D_H)^2$ x h_3/4 Or, D_H = 2.85m

ELECTRICAL ENGINEERING DESIGN

7) E- BIKE

The **principle** of **electric bikes** motor is to generate the rotating magnetic field by using the electrified coil (that is, the stator winding) and act on the rotor squirrel-cage closed aluminum frame to form the magneto **electric** rotating torque Generally speaking, **e-bikes** are bicycles with a battery-powered "assist" that comes via pedaling and, in some cases, a throttle. When you push the pedals on a pedal-assist **e-bike**, a small motor engages and gives you a boost, so you can zip up hills and cruise over tough terrain without gassing yourself.

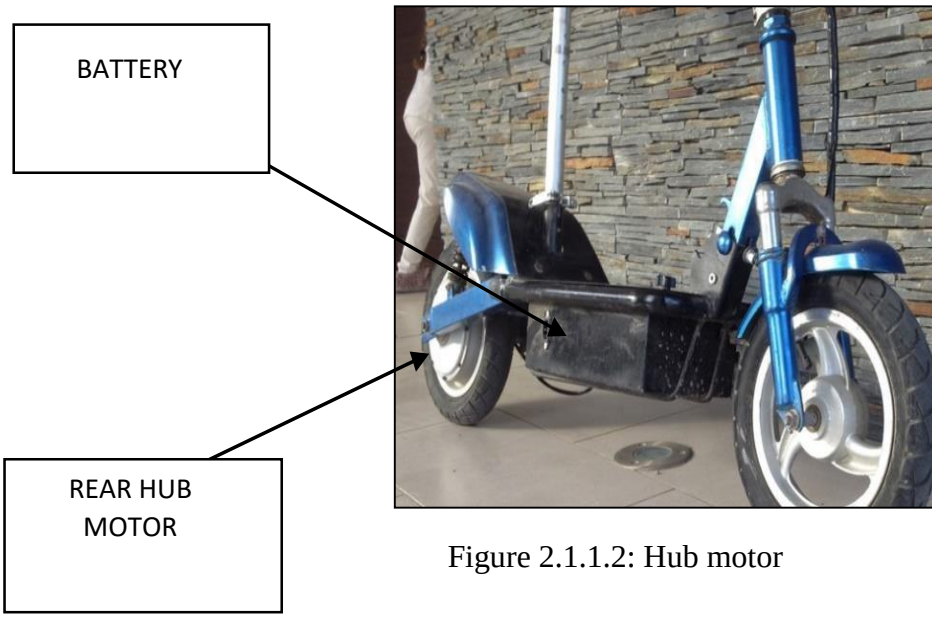


Figure 2.1.1.2: Hub motor

E-bikes use rechargeable batteries that can travel up to 25 to 45 km/h, much faster than most people would cycle, getting you to your **destination** quicker and in better **shape**. In a nutshell they offer low cost, energy efficient, and emission-free transportation which also has physical and health **benefits**.

TECHNICAL REQUIREMENTS

1. Electric scooter must meet design blueprint
2. Electric motor should be powerful enough to carry the weight of the rider and the weightof scooter itself
3. Electric component should be insulated to avoid any short circuit
4. The structure strength should bear the force taken
5. High efficiency in transferring power from motor to tyre
6. Seats must able to hold any size of riders
7. Low vibration on rider

UNIVERSITI TEKNOLOGI MARA

SURVEY ON A STUDENTS' OPINION OF FOR ELECTRIC SCOOTER FOR UNIVERISTY STUDENT

Assalamualaikum and hi to everyone! We are semester 5 Mechanical Engineering students from UiTM conducting a survey on the relevance of electric scooters to university students - which we plan to fabricate next semester!

This is part of our project for Mechanical Engineering Design 1 subject, MEC531. We would like to request to please answer the following questions to help us understand the market better. Your response is very much appreciated.

Instructions

Answer questions as they relate to you. For most answers, check the boxes most applicable to you.

Section A

Gender

- Female
- Male

Are you a university student?

- Yes
- No
- Others

What is your residency status?

- College
- Non-resident

Section B

What is you most frequent mode of transportation?

- Walk
- Car
- Bicycle
- Motorcycle
- Bus

How much do you usually spend for your main transportation per month

- less than RM100
- Between RM 100
- Between RM 300 to RM 500
- More than RM 500

Electric scooter are relevant to you as a university student

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

TABLE 13.1 Structure design

Types Task	Standard commercial electric scooters'	Own-made electric scooters
Images		
Top Speed	55km/hr	45km/h
Safety	**Front and Rear Lights**	Sidemirrors, signals, front & rear light, horn, fillet edges, speedomete
Power usage	1600 Watt	360watt
Acceleration	36 km/m^2	36 km/m^2
voltage	48 volt	48volts (ac)
Driving Mode	All terrain	Easy urban environment
Range	20 km	30km
Battery lifetime	250 cycle	Up to 6 hours
Features	Heavy, versatile, expensive, moderately safe	Lightweight, versatile, affordable, safer, convenient, ergonomic
Weight support	Up to 120 kg	120kg maximum
Product Weight	53 kg	45kg

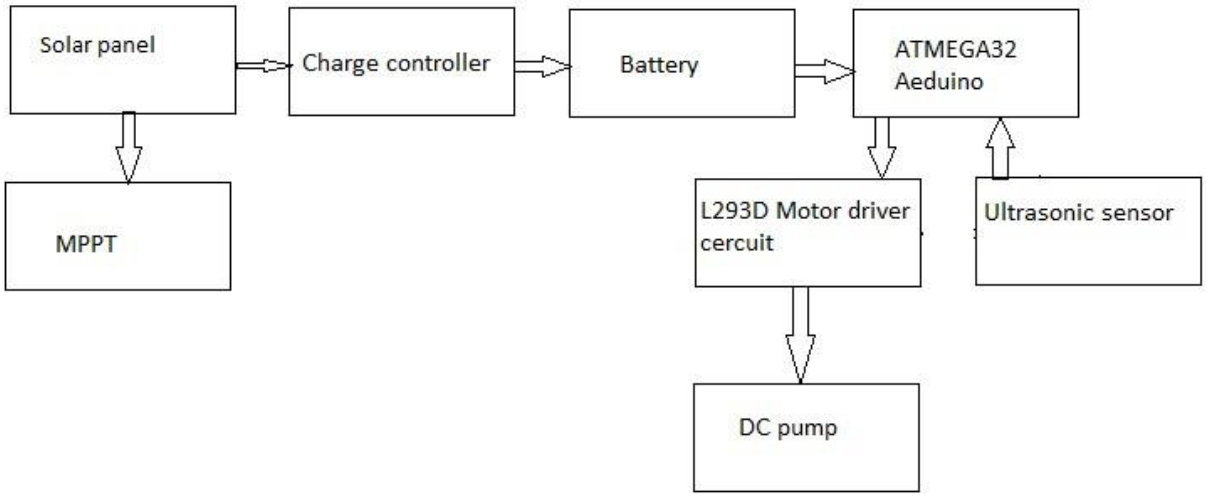
TABLE 13.2 Advantages

Task	Descriptions
Economical	With the rising prices of fuel and increasesin the concern of global warming and the environment, electric scooters and motorbikes are becoming in demand
Noise	Extremely quiet performance leads no sound pollution.
Environment	Very environmentally friendly, no emissions at source. There's no fuel consumptions which there's no exhaust fumes generated.
Privacy	Very covenant to recharge, it can be done at home!
Maintenance	Small amount of parts lead to lower maintenance, which equals lowe maintenance costs as compared to petrol vehicle.
Convenient	electric scooters and motorcycles can be ridden indoors, means safe energy & time.

TABLE 13.4ESTIMATION & COSTING

EQUIPMENT	PRISE
Electric hub motor	12000
Battery	10000
Chassis	5000
Handle	3000
Brake	1000
Tire	5000
Total cost	36000

8) Solar pump system



Block Diagram of solar pump system

Solar panel – Here we are going to use solar power as input of dc hand pump. The solar panel works on principle of photovoltaic cell. When sun light falling on solar panel the solar cells converts this solar energy into electrical energy.

MPPT – maximum power point tracking is a device which is used for change the direction of solar panel automatically. When sun changes his direction sun light falling on panel gets decreases and panel generates small amount of power to avoid this kind of situation mppt is used it will sense the direction of sun and rotates solar panel in the direction of sun light.

Charge controller – charge controller is a device which is used to protect battery from over charge. We will charge our battery through charge controller so when battery gets charged the charge controller won't allow battery to charge more and it will protect and increase life of battery.

Ultrasonic sensor – ultrasonic sensor is a device which is measures distance using ultrasonic waves. The sensor head emits un ultrasonic wave and receives the wave reflected back from the target. Ultrasonic sensors measures the distance to the target by measuring the time between the emission and reception.

L293D motor driver circuit – L293D is a typical Motor driver or motor Driver IC which allows DC motor to drive on either direction . L293D is a 16-pin IC which can control a set of two DC motors simultaneously in any direction. It means that we can control two DC motor with a single L293D IC.

ATMEGA32 Arduino –here we are making automatic hand pump so we can called Arduino as heart of our controlling system. As ultrasonic sensor and L293D motor driver IC both are connected with Arduino and it will control both IC. Ultrasonic sensor will sense the distance of garget and gives signals to Arduino than Arduino will give signal to motor driver IC and motor will run and we will get water from pump.

Pump – pump is a device which is used to lift fluid from bottom to top. Pumps lift water from underground and discharge it directly into a distribution system. Most water distribution pumps are of the centrifugal type, in which a rapidly rotating impeller adds energy to the water and raises the pressure inside the pump casing.

Voltage multiplied by amperage is the power produced. It is measured in units of watts (Pw), as shown in Equation 1:

Watts = Volts x Amps

Power losses in an electrical circuit are proportional to the square of the current, as shown in Equation 2:

Power Loss = Current^2 R

TABLE 13.5 WIRE

Electricity in a Wire	Water in a Pipe
Amp (flow of electrons)	**Q (flow rate of water)**
Volts (energy potential)	**Pressure (energy potential)**
Watts (power) = Amps x Volts	**Hydraulic/Water Power = Q x Pressure**
Resistance	**Friction + Minor Losses**
High Voltage, Small Wire = High Amps, High Resistive losses, Heat and Fires	**High Pressure, Small Pipe = High Velocity, High Friction Losses, Blown Pipe**

TABLE 13.6 Cost Estimation:

Component	No. Of comp.	cost
DC Pump Set (2 HP)	**1**	**10000**
Solar Panel (300 watt)	**4 (9000)**	**36000**
Charge Controller	**1**	**600**
Battery System (100 Ah)	**2 (5000)**	**10000**
Arduino	**1**	**1500**
Ultrasonic Sensor	**1**	**100**
L193D motor driver IC	**1**	**100**
Other Miscellaneous Charge	**1**	**2000**
Total Cost		**61000**

Cost Estimate of Solar Pump System

9) Aganwadi Wiring

- **Steps for load calculation & cost estimation:**
  - Identifying basic components
  - Rating of components
  - Cost of individuals
  - Summation of cost
- **Different electrical component Involved:**
  - **Primary component**

1. Cables
2. Fuses
3. Sockets
4. Switch-boards
5. sockets

- **Externally Installed components**
  - fan
  - LED Bulb
  - Tube Light
  - Computer

Entire cost estimation with including costing of different components:

TABLE 13.7**Ratings of different components**

Component	Rating	No of Component
Fan	60W	4
Tube light	40 W	5
LED Bulb	18 W	6
Computer	150 W	According to
printer	100 W	According to
Basic socket	5A	According to
High Rating	15A	According to
Protective	5,15A	According to

rating for component

- **TABLE 13.8 Cost of individuals component**

Component	Rating(	Cost of
Fan	60	1500
Tube light	40	400
LED Bulb	18	90
Computer	150	According to requirement
Printer	100	According to requirement

{cost of individuals}

- **TANLE 13.9 Load calculation of externally connected devices: Load =** Rating of individual X no of component

Component	Rating	No of Component	Load
Fan	60W	4	240W
Tube light	40 W	5	200W
LED Bulb	18 W	6	108W
Computer	150 W	According to requirement (for n=1)	600W
Printer	100 W	According to (for n=1)	200W
Total load of externally connected devices			1348W

(The load calculation

- **TABLE 13.10 Approximate Estimation of cost of complete electrical installation:**

Name of Component	No of Component	Price of Individual(In INR)	Cost(In INR)
Fan	4	1500	6000
Tube light	5	400	2000
LED Bulb	6	70	420
Computer	1	30000	30000

Printer	2	5000	10000
Switch Board	8	100	800
Switch	40	10	400
Regulator	4	50	200
Holder	7	30	210
Cable (for single	1(430m)	11000	11000
Nut,Bolts etc.	10 set	50	500
Fuse	5	50	2500
Piping	50m	25	1250
Labour cost			5000
Total approximate cost			70280

13.2 Reason for Students Recommending this Design

- In Jaliya Village, all types of basic facilities like physical and social infrastructures, as mentioned above, are already available. But some of the socio-cultural facilities are missing. So in our report we have suggested some of the designs of the building as follows;

(Civil Design Proposal)

1) Soil Testing Laboratory
2) Garden
3) Recreation Center
4) Anganwadi
5) Solid Waste Collection

(Electrical Design Proposal)

1) Smart Garden
2) Solar Laboratory
3) Irrigation By Solar

- The Solid Waste Management System Of The Village Must Be Improved For The Sake Of The Cleanliness And Health Of The Populace Of Village For The Reason That There Is No Provision For Disposal Of Solid Waste Generated.
- Recreational Amenities Can Be Provided Like Public Garden, Playground Etc. For The Recreational Purpose Because There Are No Such Supplies Made In The Village.
- Renewable Energy Sources Can Be Used For Energy Protection And To Reduce Load On Conventional Energy Sources.
- Solar Energy Sources Can Be Used For Power Purposes In Agriculture Area.

13.3 About designs Suggestions / Benefit of the villagers

- A suggestion or proposals as to the best course of action, especially one put forward by an authoritative body.

- Panchayat building is in bad condition, so it must need maintanance to proper work done for villages.
- Road network of some area is not in good condition; so it should need the proper maintanance.
- Anganvadi School also required maintenance, so students and teacher can feel comfortable.
- suggestions / benefits of the villages about new path technology /design proposals by the students:
- There are following structures need to build up to progress of villages and there people.
- Physical infrastructure facilities should needed such as primary school, drainage system bus stand, sanitation facilities, etc.
- Social infrastructure facilities should need such as hospital, community housing, general market.

CHAPTER 14:

Technical Options with Case Studies

14.1 Civil Engineering

- Civil engineering is a professional engineering discipline that deals with the design, construction, and maintenance of the physical and naturally built environment, including public works such as roads, bridges, canals, dams, airports, sewerage systems, pipelines, structural components of buildings, and railways.
- Civil engineering is traditionally broken into a number of sub-disciplines. It is considered the second-oldest engineering discipline after military engineering, and it is defined to distinguish non-military engineering from military engineering. Civil engineering can take place in the public sector from municipal public works departments through to federal government agencies, and in the private sector from locally based firms to global Fortune 500 companies

Fig.14.1 Multi-level stack interchange building

Civil engineering as a discipline

- Civil engineering is the application of physical and scientific principles for solving the problems of society, and its history is intricately linked to advances in the understanding of physics and mathematics throughout history. Because civil engineering is a broad profession, including several specialized sub-disciplines, its history is linked

Fig.14.2 Earthquake Resistant Wooden Structure

- to knowledge of structures, materials science, geography, geology, soils, hydrology, environmental science, mechanics, project management, and other fields.
- Throughout ancient and medieval history most architectural design and construction was carried out by artisans, such as stonemasons and carpenters, rising to the role of master builder. Knowledge was retained in guilds and seldom supplanted by advances. Structures, roads, and infrastructure that existed were repetitive, and increases in scale were incremental.

- One of the earliest examples of a scientific approach to physical and mathematical problems applicable to civil engineering is the work of Archimedes in the 3rd century BC, including Archimedes Principle, which underpins our understanding of buoyancy, and practical solutions such as Archimedes' screw. Brahmagupta, an Indian mathematician, used arithmetic in the 7th century AD, based on Hindu-Arabic numerals, for excavation (volume) computations.

History of structural engineering

- Engineering has been an aspect of life since the beginnings of human existence. The earliest practice of civil engineering may have commenced between 4000 and 2000 BC in ancient Egypt, the Indus Valley Civilization, and Mesopotamia (ancient Iraq) when humans started to abandon a nomadic existence, creating a need for the construction of shelter. During this time, transportation became increasingly important leading to the development of the wheel and sailing.

14.1.1 Advanced Earthquake Resistant

- Earthquake-resistant or seismic structures are designed to protect buildings to some or greater extent from earthquakes. While no structure can be entirely immune to damage from earthquakes, the goal of earthquake-resistant construction is to erect structures that fare better during Seismic activity than their conventional counterparts. According to building codes, earthquake-resistant structures are intended to withstand the largest earthquake of a certain probability that is likely to occur at their location.
- This means the loss of life should be minimized by preventing collapse of the buildings for rare earthquakes while the loss of the functionality should be limited for more frequent ones.

- Model of the Gladiola pombalina (pombaline cage), an architectural, earthquake-resistant wooden structure developed in Portugal in the 18th century for the reconstruction of Lisbon's pombaline downtown after the devastating 1755 Lisbon earthquake
- To combat earthquake destruction, the only method available to ancient architects was to build their landmark structures to last, often by making them excessively stiff and strong.
- Currently, there are several design philosophies in earthquake engineering, making use of experimental results, computer simulations and observations from past earthquakes to offer the required performance for the seismic threat at the site of interest. These range from appropriately sizing the structure to be strong and ductile enough to survive the shaking with an acceptable damage, to equipping it with base isolation or using structural vibration control technologies to minimize any forces and deformations.

- While the former is the method typically applied in most earthquake-resistant structures, important facilities, landmarks and cultural heritage buildings use the more advanced (and expensive) techniques of isolation or control to survive strong shaking with minimal damage. Examples of such applications are the Cathedral of Our Lady of the Angels and the Acropolis Museum.[citation needed]
- Some of the new trends and/or projects in the field of earthquake engineering structures are presented

Fig.14.3 Seismically Retrofitted

Building materials

- Based on studies in New Zealand, relating to Christchurch earthquakes, precast concrete designed and installed in accordance with modern codes performed well.According to the Earthquake Engineering Research Institute, precast panel buildings had good durability during the earthquake in Armenia, compared to precast frame-panels.

Earthquake shelter

- One Japanese construction company has developed a six-foot cubical shelter, presented as an alternative to earthquake-proofing an entire building.

Concurrent shake-table testing

- Concurrent shake-table testing of two or more building models is a vivid, persuasive and effective way to validate earthquake engineering solutions experimentally.
- Thus, two wooden houses built before adoption of the 1981 Japanese Building Code were moved to E-Defense for testing (see both pictures aside). The left house was reinforced to enhance its seismic resistance, while the other one was not. These two models were set on E-Defense platform and tested simultaneously.

Combined vibration control solution

Close-up of abutment of seismically retrofitted Municipal Services Building in Glendale, California

- Seismically retrofitted Municipal Services Building in Glendale Designed by architect Merrill W. Baird of Glendale, working in collaboration with A. C. Martin Architects of Los Angeles, the Municipal Services Building at 633 East Broadway, Glendale was completed in 1966. Prominently sited at the corner of East Broadway and Glendale Avenue, this civic building serves as a heraldic element of Glendale's civic center.
- In October 2004 Architectural Resources Group (ARG) was contracted by Nabih Yourself & Associates, Structural Engineers, to provide services regarding a historic resource assessment of the building due to a proposed seismic retrofit.

- In 2008, the Municipal Services Building of the City of Glendale, California was seismically retrofitted using an innovative combined vibration control solution: the existing elevated building foundation of the building was put on high damping rubber bearings.

Steel plate walls system

- he Ritz-Carlton/JW Marriott hotel building engaging the advanced steel plate shear walls system, Los Angel
- A steel plate shear wall (SPSW) consists of steel infill plates bounded by a column-beam system. When such infill plates occupy each level within a framed bay of a structure, they constitute a SPSW system. Whereas most earthquake resistant construction methods are adapted from older systems, SPSW was invented entirely to withstand seismic activity
- SPSW behaviour is analogous to a vertical plate girder cantilevered from its base. Similar to plate girders, the SPSW system optimizes component performance by taking
- advantage of the post-buckling behaviour of the steel infill panels.
- The Ritz-Carlton/JW Marriott hotel building, a part of the LA Live development in Los Angeles, California, is the first building in Los Angeles that uses an advanced steel plate shear wall system to resist the lateral loads of strong earthquakes and winds

Fig. 14.4 Steel Plate Sear Walls

14.1.2 Seismic Retrofitting of Building

- 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 centres, 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.
- The retrofit techniques outlined here are also applicable for other natural hazards such as tropical cyclones, tornadoes, and severe winds from thunderstorms.

Fig.14.5 Infill Sear Trusses

- 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.
- Seismic retrofit (or rehabilitation) strategies have been developed in the past few decades following the introduction of new seismic provisions and the availability of advanced materials (e.g. fiber-reinforced polymers (FRP), fiber reinforced concrete and high strength steel).
- Increasing the global capacity (strengthening). This is typically done by the addition of cross braces or new structural walls.
- Reduction of the seismic demand by means of supplementary damping and/or use of base isolation systems.
- Increasing the local capacity of structural elements. This strategy recognises the inherent capacity within the existing structures, and therefore adopts a more cost-effective approach to selectively upgrade local capacity (deformation/ductility, strength or stiffness) of individual structural components.
- Selective weakening retrofit. This is a counter-intuitive strategy to change the inelastic mechanism of the structure, while recognising the inherent capacity of the structure.
- Allowing sliding connections such as passageway bridges to accommodate additional movement between seismically independent structures.
- Addition of seismic friction dampers to simultaneously add damping and a selectable amount of additional stiffness.
- Recently more holistic approaches to building retrofitting are being explored, including combined seismic and energy retrofitting. Such combined strategies aim to exploit cost savings by applying energy retrofitting and seismic strengthening interventions at once, hence improving the seismic and thermal performance of buildings.

Expansion rockers

- Many short bridge spans are statically anchored at one end and attached to rockers at the other. This rocker gives vertical and transverse support while allowing the bridge span to expand and contract with temperature changes. The change in the length of the span is accommodated over a gap in the roadway by comb-like expansion joints.
- During severe ground motion, the rockers may jump from their tracks or be moved beyond their design limits, causing the bridge to unship from its resting point and then either become misaligned or fail completely. Motion can be constrained by adding ductile or high-strength steel restraints that are friction-clamped to beams and designed to slide under extreme stress while still limiting the motion relative to the anchorage.

Deck rigidity

- Additional diagonals were inserted under both decks of this bridge Suspension bridges may respond to earthquakes with a side-to-side motion exceeding that which was designed for wind gust response. Such motion can cause fragmentation of the road surface, damage to bearings, and plastic deformation or breakage of components. Devices such as hydraulic dampers or clamped sliding connections and additional diagonal reinforcement may be added.

Lattice girders, beams, and ties

- Obsolete riveted lattice members Lattice girders consist of two "I"-beams connected with a cross-cross lattice of flat strap or angle stock. These can be greatly strengthened by replacing the open lattice with plate members. This is usually done in concert with the replacement of hot rivets with bolts.

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

- The Indian advanced construction techniques industry is experiencing a period of fast growth. Aiming to overcome the housing problem, it also has to face the dual challenge of fulfilling the needs of the client and maintain the quality standards.
- At the same time, the up-gradation of technology through the adoption of new techniques has become necessary to survive in a tough competitive environment.
- The traditional methods of construction are inadequate in executing the work speedily with economy and quality. The construction industry in India must switch over to advanced construction techniques to achieve its goal in "minimum time with maximum efficiency".

Fig 14.6 Construction Field

ADVANCED CONSTRUCTION TECHNIQUES – NECESSITY

- 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 laborers 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, ne can save material, reduce labour expenses, and

  increase the speed of work, leading to the economy
  in construction.
- Though the scope of the subject is vast, in this chapter we shall discuss only the advanced techniques to be used in advanced construction techniques activity

EQUIPMENT USED FOR SMALL AND MEDIUM CONSTRUCTION WORk

- The equipment with proven utility in building construction may be as listed below
- Chain and pulley block.
- Grouting pumps.
- Sprayers for painting work.
- Tile cutters.
- Portable hand drilling machines.
- Horizontal trolleys, wheelbarrows.
- Pumps.
- Vibrators for compaction of concrete, surface vibrators.
- Auto ramming concrete block machine.
- Sand washing machine.
- Vertical lifts, hoists, winches.
- M.S. tubular scaffolding and formwork.
- Concrete mixers.
- Cranes.
- Earth excavators.
- Earthmovers.

1. The engineer in-charge should study, develop, and implement the advanced techniques, to improve the quality of work, with speed and economy. Some of the techniques are listed below
2. The different work stages through which basic material is converted into the finished product, maybe studied.
3. The relation between different work stages are established as a flowchart.
4. Works are planned and executed according to the work and time study.
5. Planning and execution of the activities ís done according to bar charts, C.P.M., and P.E.R.T.
6. Suggestions are put forth, discussed, and implemented to improve quality.

7. Prefabricated and precast units are utilized, wherever possible.
8. Admixtures and plasticizers are used for concreting and water-proofing.
9. 'Design mix and weigh batching' are used for mass concreting.
10. Easily detachable lightweight tubular structures are used.
11. Modern methods of curing are adopted.
12. Advanced adhesives and chemicals are used.
13. Simultaneous execution of the activities are arranged.
14. Work is executed in shifts.
15. Activities are crashed.
16. Task work is delegated to the laborers along with incentives.

USE OF COMPUTER IN BUILDING CONSTRUCTION TECHNOLOGY

- With the evolution of computer technology, the dimensions of the computer have shrunk while increasing its power and speed. The advanced technology of computers has valuable applications in building construction. They are

1. Construction management.
2. Structural design.
3. Estimation and costing
4. Architects and interior designers in pune.
5. Financial management.

1. COMPUTER FOR CONSTRUCTION MANAGEMENT

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

2. COMPUTER FOR STRUCTURAL DESIGN

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

3. COMPUTER FOR ESTIMATION AND COSTING

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

4. COMPUTER FOR ARCHITECTURAL AND INTERIOR DESIGNS

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

5. COMPUTER FOR FINANCIAL MANAGEMENT

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

OTHER BUILDING CONSTRUCTION TECHNIQUES – TECHNOLOGY

Some new, cost-effective and time-saving techniques used in building advanced construction technology are

1. LIGHTWEIGHT BLOCKS & CONCRETE

- The density of normal concrete varies from 2200 to 2600 kg/m3 while that of lightweight concrete varies from 300 to 1850 kg/m³.

Advantage

- Reduction of dead load.
- Increases the progress of work.
- Lowers the handling cost.
- This leads to a lighter structural design.
- Advantageous for structures resting on weak soils.

2. FERROCRETE TECHNIQUES

- Ferrocrete consists of wire mesh and cement mortar. The wire mesh is spaced closely & impregnated with a rich cement mortar mix.

Advantages

- It has got a higher ratio of tensile strength to weight and superior cracking behavior compared to R.C.C.
- It can be used for septic tanks, water tanks, fishing boats, roofs and wall panels for low-cost housing, bio-gas digesters, silos, kitchen otta, door and window frames, cupboard, etc.
- It is cheaper than conventional concrete.

3. EARTH MOVING MACHINES

- For mass excavation works & a huge amount of filling, earthmoving machines are useful. They save considerable time & manpower.

Advantages

- Save time.
- Cost-effective.
- Save manpower.
- Useful for mass excavation & filling basements, canals, etc.

4. SLIP TUNNEL FORMWORK TECHNIQUES

- For mass concreting of high rise buildings, slip tunnel formwork can be used.

Advantages

- Save the de-shuttering & shuttering time.
- More number of repetitions for formwork
- More accuracy in work.
- Reduce labour.
- Overall quality increases, with a reduction in cost.
- Most suitable for identical vertical lifts.

5. PRECAST COMPONENTS

- They are factory-made components of the building which are joined to form the structure.

Advantages

- Controlled quality of the final product.
- Better curing and higher strength due to mechanization.
- Saves space for raw material stackings.
- Reduces the requirement of skilled labour.
- Increase in construction speed due to symmetrical and simple joining methods.
- Saves, total project time.
- Dependability of the activities can be nullified & most of the activities can be taken up simultaneously.

14.1.4 Engineering Aspects Of Soil mechanics – Environmenta Impact Assessment

Introduction

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

means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers.

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

History of EIA in India

- The Indian experience with Environmental Impact Assessment began over 20 years back. It started in 1976-77 when the Planning Commission asked the Department of Science and Technology to examine the river-valley projects from an environmental angle.
- Till 1994, environmental clearance from the Central Government was an administrative decision and lacked legislative support.
- On 27 January 1994, the then Union Ministry of Environment and Forests, under the Environmental (Protection) Act 1986, promulgated an EIA notification making Environmental Clearance (EC) mandatory for expansion or modernisation of any activity or for setting up new projects listed in Schedule 1 of the notification.
- The Ministry of Environment, Forests and Climate Change (MoEFCC) notified new EIA legislation in September 2006.
- The notification makes it mandatory for various projects such as mining, thermal power plants, river valley, infrastructure (road, highway, ports, harbours and airports) and industries including very small electroplating or foundry units to get environment clearance.
- However, unlike the EIA Notification of 1994, the new legislation has put the onus of clearing projects on the state government depending on the size/capacity of the project.

The EIA Process

- EIA involves the steps mentioned below. However, the EIA process is cyclical with interaction between the various steps.

Screening:

- The project plan is screened for scale of investment, location and type of development and if the project needs statutory clearance.

Scoping:

- The project's potential impacts, zone of impacts, mitigation possibilities and need for monitoring.

Collection of baseline data:

- Baseline data is the environmental status of study area.

Impact prediction:

- Positive and negative, reversible and irreversible and temporary and permanent impacts need to be predicted which presupposes a good understanding of the project by the assessment agency.

Mitigation measures and EIA report:

- The EIA report should include the actions and steps for preventing, minimizing or by passing the impacts or else the level of compensation for probable environmental damage or loss.

Public hearing:

- On completion of the EIA report, public and environmental groups living close to project site may be informed and consulted.

Decision making:

- Impact Assessment Authority along with the experts consult the project-in-charge along with consultant to take the final decision, keeping in mind EIA and EMP (Environment Management Plan).

Monitoring and implementation of environmental management plan:

- The various phases of implementation of the project are monitored.
- Assessment of Alternatives, Delineation of Mitigation Measures and Environmental Impact

Assessment Report:

- For every project, possible alternatives should be identified, and environmental attributes compared. Alternatives should cover both project location and process technologies.
- Once alternatives have been reviewed, a mitigation plan should be drawn up for the selected option and is supplemented with an Environmental Management Plan (EMP) to guide the proponent towards environmental improvements.
-

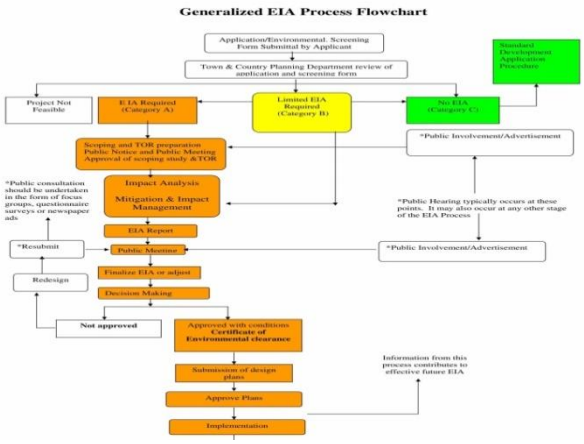


Fig14.7 EIA Flowchart

Risk assessment:

- Inventory analysis and hazard probability and index also form part of EIA procedures

Stakeholders in the EIA Process

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

Salient Features of 2006 Amendments to EIA Notification

- Environment Impact Assessment Notification of 2006 has decentralized the environmental clearance projects by categorizing the developmental projects in two categories,

- i.e., Category A (national level appraisal) and Category B (state level appraisal).
- Category A projects are appraised at national level by Impact Assessment Agency (IAA) and the Expert Appraisal Committee (EAC) and Category B projects are apprised at state level.
- State Level Environment Impact Assessment Authority (SEIAA) and State Level Expert Appraisal Committee (SEAC) are constituted to provide clearance to Category B process.

After 2006 Amendment the EIA cycle comprises of four stages:

- Screening
- Scoping
- Public hearing
- Appraisal

Category A projects require mandatory environmental clearance and thus they do not undergo the screening process

Category B projects undergoes screening process and they are classified into two types.

- Category B1 projects (Mandatorily requires EIA).
- Category B2 projects (Do not require EIA).
- Thus, Category A projects and Category B, projects undergo the complete EIA process whereas Category B2 projects are excluded from complete EIA process.

Importance of EIA

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

Shortcomings of EIA Process

Applicability:

- There are several projects with significant environmental impacts that are exempted from the notification either because they are not listed in schedule I, or their investments are less than what is provided for in the notification.
- Composition of expert committees and standards: It has been found that the team formed for conducting EIA studies is lacking the expertise in various fields such as environmentalists, wildlife experts, Anthropologists and Social Scientists.

Public hearing:

- Public comments are not considered at an early stage, which often leads to conflict at a later stage of project clearance.
- A number of projects with significant environmental and social impacts have been excluded from the mandatory public hearing process.
- The data collectors do not pay respect to the indigenous knowledge of local people.

Quality of EIA:

- One of the biggest concerns with the environmental clearance process is related to the quality of EIA report that is being carried out.

Lack of Credibility:

- There are so many cases of fraudulent EIA studies where erroneous data has been used, same facts used for two totally different places etc.
- Often, and more so for strategic industries such as nuclear energy projects, the EMPs are kept confidential for political and administrative reasons.
- Details regarding the effectiveness and implementation of mitigation measures are often not provided.
- Emergency preparedness plans are not discussed in sufficient details and the information not disseminated to the communities.

Way Forward

Independent EIA Authority.

- Sector wide EIAs needed.
- Creation of a centralized baseline data bank.
- Dissemination of all information related to projects from notification to clearance to local communities and the general public.

Applicability:

- All those projects where there is likely to be a significant alteration of ecosystems need to go through the process of environmental clearance, without exception.
- No industrial developmental activity should be permitted in ecologically sensitive areas.

Public hearing:

- Public hearings should be applicable to all hitherto exempt categories of projects which have environmental impacts.
- The focus of EIA needs to shift from utilization and exploitation of natural resources to conservation of natural resources.
- It is critical that the preparation of an EIA is completely independent of the project proponent.

Grant of clearance:

- The notification needs to make it clear that the provision for site clearance does not imply any commitment on the part of the impact Assessment agency to grant full environmental clearance.
- Composition of expert committees: The present executive committees should be replaced by expert people from various stakeholder groups, who are reputed in environmental and other relevant fields.

Monitoring, compliance and institutional arrangements:

- The EIA notification needs to build within it an automatic withdrawal of clearance if the conditions of clearance are being violated and introduce more stringent punishment for noncompliance. At present the EIA notification limits itself to the stage when environmental clearance is granted.
- The composition of the NGT needs to be changed to include more judicial persons from the field of environment.
- Citizen should be able to access the authority for redressal of all violation of the EIA notification as well as issues relating to non-compliance.

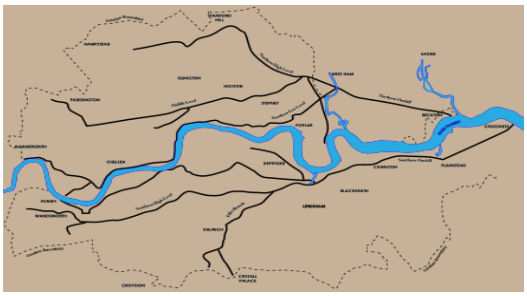


Fig14.8 River

Capacity building:

- NGOs, civil society groups and local communities need to build their capacities to use the EIA notification Towards Better Decision Making on Proj

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

- Sewerage is the infrastructure that conveys sewage or surface runoff (storm water, melt water, rainwater) using sewers. It encompasses components such as receiving drains, manholes, pumping stations, storm overflows, and screening chambers of the combined sewer or sanitary sewer.
- Sewerage ends at the entry to a sewage treatment plant or at the point of discharge into the environment. It is the system of pipes, chambers, manholes, etc. that conveys the sewage or storm water.
- In American colloquial English, "sewer system" is applied more
- frequently to the large infrastructure of sewers that British speakers more often refer to as "sewerage".

Fig 14.10 Seattle Sewer

Components & Types

- The main part of such a system is made up of large pipes (i.e. the sewers, or "sanitary sewers") that convey the sewage from the point of production to the point of treatment or discharge.

Types of sanitary sewer systems that all usually are gravity sewers include:

- Combined sewer
- Simplified sewerage
- Storm drain
- Sanitary sewers not relying solely on gravity include:
- Vacuum sewer
- Effluent sewer
- Water table

Fig14.9Sewers Under Construction Water Table

- Sewer system infrastructure often reduces the water table in areas

especially in densely populated areas where rainwater (from house roofs) is directly piped into the system, as opposed to being allowed to be absorbed by the soil.

- In certain areas it has resulted in a significant lowering of the water table. In the example of Belgium, a lowering of the water table by 100 meters has been the result. The freshwater that is accumulated by the system is then piped to the sea.

Regulations

- In many European countries, citizens are obliged to connect their home sanitation to the national sewerage where possible. This has resulted in large percentages of the population being connected.
- For example, the Netherlands have 99% of the population connected to the system, and 1% has an individual sewage disposal

- system or treatment system, e.g., septic tank. Others have slightly lower (although still substantial) percentages; e.g., 96% for

14.2 Electrical Engineering

14.2.1 Design of Power Electronics converter

- **A Power electronic converter** uses **power electronic** components such as SCRs, TRIACs, IGBTs, etc. to control and **convert** the **electric power**. The main aim of the **converter** is to produce conditioning **power** with respect to a certain application

- The **design of power electronics converter** circuits requires **design** the **power** and control circuits. The voltage and current harmonics that are generated by the **power converters** can be reduced or minimized with a proper choice of the control strategy.
  - Diode rectifier
  - AC to DC Converter (Controlled Rectifier)
  - DC to DC Converter (DC Chopper)
  - AC to AC Converter (AC voltage regulator)
  - DC to AC Converter (Inverter)
  - Static switch
- Diode Rectifiers. A diode rectifier circuit converts AC voltage into a fixed DC voltage. The input voltage to rectifier could be either single phase or three phase.
- AC to DC Converters. An AC to DC converter circuit can convert AC voltage into a DC voltage. The DC output voltage can be controlled by varying the firing angle of the thrusters. The AC input voltage could be a single phase or three phase.
- AC to AC Converters. These converters can convert from a fixed ac input voltage into variable AC output voltage. The output voltage is controlled by varying firing angle of TRIAC. These type converters are known as AC voltage regulator.
- DC to DC Converters. These converters can converter a fixed DC input voltage into variable DC voltage or vice versa. The DC output voltage is controlled by varying of duty cycle.
- Static Switch. Because the power devices can be operated as static switches or contactors, the supply to these switches could be either AC or DC and the switches are called as AC static switches or DC static switches.
- Power electronic technology deals with processing and controlling the flow of electrical energy in order to supply voltages and currents in a form that optimally suited for end user's requirements.
- A power electronic converter uses power electronic components such as SCRs, TRIACs, IGBTs, etc. to control and convert the electric power. The main aim of the converter is to produce conditioning power with respect to a certain application.
- The block diagram of a power electronic converter is shown in figure above. It consist of an electrical energy source, power electronic circuit, a control circuit and an electric load. This converter changes one form of electrical energy to other form of electrical energy.
- The power electronic circuit consists of both power part and control part. Power part transfers the energy from source to load and it consists of power electronic switches (SCR or TRIAC), transformers, electric choke, capacitors, fuses and sometimes resistors.
- The control circuit or block regulates the elements in the power part of the converter. This block is built with a complex low power electronic circuit that consists of either analog or digital circuit assembly.
- Power electronic converters perform various basic power conversion functions. This converter is a single power conversion stage that can perform any of the functions in AC and DC power conversion systems.

- Depending on the type of function performed, power electronic converters are categorized into following types.

a. **AC to DC** = Rectifier: It converts AC to unipolar (DC) current
b. **DC to AC** = Inverter: It converts DC to AC of desired frequency and voltage
c. **DC to DC** = Chopper: It converts constant to variable DC or variable DC to constant DC
d. **AC to AC** = Cyclo converter, Matrix converter: It converts AC of desired frequency and/or desired voltage magnitude from a line AC supply.

14.2.2 Electronic Soft Starter for 1/3 Phase Induction Motor for Agriculture

Introduction

- The ac motor starters are increasingly becoming popular due to its controlled soft-starting capability. The ac motor starter provides limited starting current and hence conventional electromagnetic line starters and reducedvoltage starters are replaced with ac motor starters. Thyristor-based soft starters have many desirable properties and provide a viable solution to starting problems in three phase induction motors.
- These power semiconductor based starters are cheap, simple, and reliable and occupies less volume.
- The power density of these soft starters is also very high. A three phase induction motor produces electromagnetic torque on its shaft but initial switching instants of all three phases to the supply produces pulsations on the electromechanical torque when it is controlled by a direct- online starter.
- These severe pulsations in electromagnetic torque might cause shocks to the shaft and hence to the driven equipment. These pulsations might damage mechanical system components, such as shafts, couplings and gears etc.
- The electromagnetic torque pulsations also causes long term effects on various mechanical system components if the strength of materials is exceeded which might lead to fatigue also.
- The reduced voltage starting by soft starters eliminates stress from the electrical supply and it also reduces the possibility of voltage dip and brown out conditions. Soft and smooth starters provide smooth acceleration of rotor of three phase induction motor.
- Reduced voltage starting reduces high amount of starting torque applied on the shaft and therefore eliminates the shock on the driven load. An instantaneous high amount of starting torque can cause a jolt on the conveyor which can damage products, pump cavitations and water hammer in pipes.
- Therefore, a soft starter ramps up the voltage applied to the motor from the initial voltage to the full voltage. The voltage is initially kept low to avoid sudden jerks during the start.
- The voltage and torque increases gradually so that the induction motor starts to accelerate. This ramp up voltage provides sufficient torque for the load to accelerate gradually and hence

mechanical and electrical shocks are minimized from the system, The voltage supplied to stator windings are adjustable and it has ramp characteristics. II.

OPERATING PRINCIPLE OF SOFT STARTER

- A soft starter provides reduced voltage to stator windings of three phase induction motor by controlling the acceleration of an electric motor. A three phase induction motor is a self-starting motor and electromagnetic torque is produced due to an interaction between revolving magnetic field around rotor and rotor current.
- Initially during starting, a rated voltage is applied which causes high current to flow through stator windings. Now this high current is greater than the rated current which can cause heating of the stator windings and eventually damaging the insulation applied on stator windings.
- To avoid the problem of high starting current, there is a need of motor starters in an electric motor.
- The motor can be started in three ways. Firstly by applying full load voltage i.e. direct on line starting. Secondly, by applying voltage gradually using star-delta starter and soft starter.
- Thirdly, by applying part winding starting i.e. autotransformer starter. A soft starter provides reduced voltage and hence reduced torque on electric motor. A soft starter comprises of solid state devices like thyristors.
- The supply voltage to the motor is controlled by power semiconductor devices like thyristors. In a three phase induction motor, the torque is proportional to the square of the starting current which in turn, is proportional to the applied voltage.
- The starter works on the principle described above. Therefore, the torque and the current can be controlled by applying the reduced voltage at the time of starting of an electric motor.
- The two types of control are possible using soft starter. The first one is open loop control and second is closed loop control. In an open loop control, a start voltage is applied with time.
- This start voltage is applied irrespective of the current drawn or the speed of the motor. For each phase, two SCRs are connected in antiparallel direction and SCR are initially started at a delay angle of 1800 during respective half wave cycles.
- Each SCR conducts in each half cycle. This delay is reduced gradually with time when applied voltage reaches to the full supply voltage. The reduced voltage ramps up to the full voltage and simultaneously, the firing angle is reduced from 1800 to 00 . This type of system is known as time voltage ramp system.
- This method has a drawback that it cannot control the acceleration of motor. In a closed loop control, any characteristic of the motor is monitored for the desired response.
- The starting voltage is modified depending on required motor current or motor speed. The current in each phase is monitored properly and time voltage ramp is stopped when current in each phase exceeds a certain set point. The supply voltage applied to stator windings of three phase induction motor is controlled by controlling the conduction angle of SCRs.

- A soft starter basically comprises of two anti-parallel SCRs in each phase of three phase induction motor. There are total six SCRs required for all three phases for smooth acceleration of electric motor.
- These SCRs are power semiconductor devices which normally are in OFF state but these SCRs starts to conduct when firing signals are given to them and hence allows voltage and current to pass through them.
- Initially to perform soft starting, a firing pulse are given to the SCRs so that only the remaining part of each half period of sinusoidal voltage curve passes through them.
- Then the instants of firing pulses are reduced which allows larger part of the voltage to pass through SCRs. Finally, the firing pulses are applied exactly at the zero crossing of the voltage which allows 100% of the voltage to pass through. This is also seen as the ramping up of voltage from reduced voltage at starting by allowing more voltage to pass through SCRs. In this way, a full voltage is applied from reduced voltage at the starting. The opposite procedure is followed for soft stop.
- The full voltage is allowed to pass through the thyristors and when the stop time is about to reach, the firing pulses are delayed which allows less voltage to pass through.
- The instants of firing pulses are increased till the end of voltage is arrived. Then, no more voltage is applied to the motor and in this way, the motor is stopped.
- An Induction motor can self start owing to the interaction between the rotating magnetic field flux and the rotor winding flux, causing a high rotor current as torque is increased. As a result, the stator draws high current and by the time the motor reaches to full speed, a large amount of current (greater than the rated current) is drawn and this can cause heating up of the motor, eventually damaging it. To prevent this, motor starters are needed.

Motor starting can be in 3 ways

- Applying full load voltage at intervals of time: Direct On Line Starting
- Applying reduced voltage gradually: Star Delta Starter and Soft starter
- Applying part winding starting: Autotransformer starter

Defining Soft Starting

- Now let us shift our particular attention to soft starting.In technical terms, a soft starter is any device that reduces the torque applied to the electric motor. It generally consists of solid-state devices like thyristors to control the application of supply voltage to the motor.
- The starter works on the fact that the torque is proportional to the square of the starting current, which in turn is proportional to the applied voltage. Thus the torque and the current can be adjusted by reducing the voltage at the time of starting the motor.

There can be two types of control using soft starter:

Open Control:

- A start voltage is applied with time, irrespective of the current drawn or the speed of the motor. For each phase, two SCRs are connected back to back and the SCRs are conducted

initially at a delay of 180 degrees during the respective half-wave cycles (for which each SCR conducts). This delay is reduced gradually with time until the applied voltage ramps up to the full supply voltage. This is also known as Time Voltage Ramp System. This method is not relevant as it doesn't control the motor acceleration.

Closed-Loop Control:

- Any of the motor output characteristics like the current drawn or the speed is monitored and the starting voltage is modified accordingly to get the required response. The current in each phase is monitored and if it exceeds a certain set point, the time voltage ramp is halted.
- Thus the basic principle of the soft starter is by controlling the conduction angle of the SCRs the application of supply voltage can be controlled.

2 Components of a basic soft starter

- **Power switches** like SCRs which need to be phase controlled such that they are applied for each part of the cycle. For a 3 phase motor, two SCRs are connected back to back for each phase. The switching devices need to be rated at least three times more than the line voltage.

- **Control Logic** using PID controllers or Microcontrollers or any other logic to control the application of gate voltage to the SCR, i.e. to control the firing angle of SCRs to make the SCR conduct at the required part of the supply voltage cycle.

Working Example of Electronic Soft Start System for 3 phase induction motor

The system consists of the following components.

- Two back to back SCRs for each phase, i.e. 6 SCRs in total.
- Control Logic circuitry in the form of two comparators- LM324 and LM339 to produce the level and the ramp voltage and an optoisolator to control the application of gate voltage to each SCR in each phase.

A power supply circuitry to provide the required dc supply voltage.

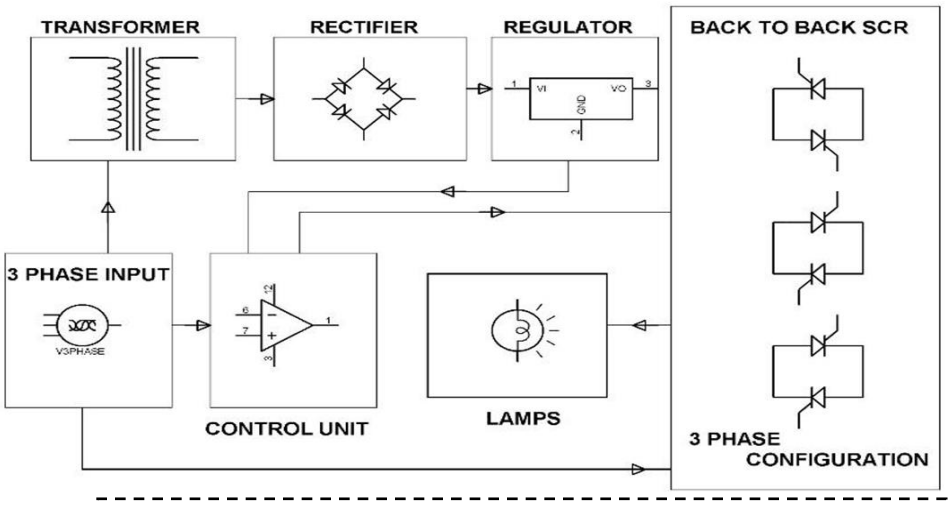


FIG 14.11Block Diagram showing Electronic Soft Start System for 3 phase Induction Motor

- The level voltage is generated using the comparator LM324 whose inverting terminal is fed using a fixed voltage source and the noninverting terminal is fed through a capacitor connected to the collector of an NPN transistor.

- The charging and discharging of the capacitor cause the output of the comparator to change accordingly and the voltage level to change from high to low. This output level voltage is applied to the noninverting terminal of another comparator LM339 whose inverting terminal is fed using a ramp voltage.
- This ramp voltage is produced using another comparator LM339 which compares the pulsating DC voltage applied at its inverting terminal to the pure DC voltage at its noninverting terminal and generates a zero voltage reference signal which is converted to a ramp signal by the charging and discharging of an electrolyte capacitor.
- The 3rd comparator LM339 produces a High pulse width signal for every high-level voltage, which decreases gradually as the level voltage reduces. This signal is inverted and applied to the Optoisolator, which provides gate pulses to the SCRs. As voltage level falls, the pulse width of the Optoisolator increases and more the pulse width, lesser is the delay and gradually the SCR is triggered without any delay.
- Thus by controlling the duration between the pulses or delay between applications of pulses, the firing angle of SCR is controlled and the application of supply current is controlled, thus controlling the motor output torque.
- The whole process is an open-loop control system where the time of application of gate triggering pulses to each SCR is controlled based on how earlier the ramp voltage decreases from the level voltage.

Advantages of Soft Start

- Now that we have learned about how an electronic soft start system works, let us recollect a few reasons why it is preferred over other methods.

Improved Efficiency:

- The efficiency of the soft starter system using solid-state switches is more owing to the low on-state voltage.

Controlled startup:

- The starting current can be controlled smoothly by easily altering the starting voltage and this ensures smooth starting of the motor without any jerks.

Controlled acceleration:

- Motor acceleration is controlled smoothly.

Low Cost and size:

- This is ensured with the use of solid-state switches.

CIRCUIT DIAGRAM

- The circuit diagram of soft-starting of three phase IM is shown in Fig.1. The circuit diagram comprises of voltage regulator, zero crossing detector, bridge rectifier, 4N25 opt-Isolator,

Atmega 328P microcontroller and TRIAC circuit. TRIAC circuit performs the role of soft starter in each phase of three phase induction motor.

- TRIAC circuit basically consists of two antiparallel SCRs connected back to back. This soft starter is used to give soft starring to Induction motor. A 12 V DC regulated supply is obtained with the help of step-down transformer and bridge circuit.
- The step down transformer converts 230V to 12V ac supply and then it is fed to bridge circuit. The bridge circuit in turn converts ac supply to dc supply. This dc supply is given to regulator IC to get positive 12V dc regulated supply.
- The main part of the circuit is zero crossing detector circuit which is made up of four diodes connected to form bridge rectifier circuit and output of bridge rectifier is fed to 4N25 optoIsolator. Then output of 4N25 optoIsolator is applied to interrupt pin of Atmega 328P.
- Whenever the input AC waveform crosses the zero reference point, a high pulse signal triggered from 4N25 optoIsolator is given to interrupt pin of Atmega 328P. When Atmega 328P receives high signal from interrupt pin, it interrupts Atmega 328P by providing high signal on interrupt pin and then it initiates delay counter from that point and hence it provides triggering pulse to gate signal of TRIAC through MOC3021 optoIsolator.

ADVANTAGES AND DISADVANTAGES OF SOFT STARTERS

- The soft starters used in three phase induction motor eliminate high inrush current and high mechanical torque on startup. It reduces cable and switch-gear rating in power supply network.
- It prevents any dip in line voltage. The soft starter has desirable features of soft, step-less acceleration & deceleration. It also avoids current and torque peaks and provides less electrical stress on the power supply network and mechanical stress on entire drive.
- It reduces stress on couplings and other transmission devices such as gear boxes, shafts, belts etc. The soft starters also suffer from certain drawbacks like harmonics, problems of speed regulation, dependency of acceleration and deceleration time on load etc. It produces harmonics less than inverter.
- The operating speed of an electric motor is fixed throughout the operation. The speed regulation of an electric motor is not possible when soft-starters are employed in three phase induction motor.
- The speed regulation is possible only at the time of starting and stopping of motor.
- The acceleration & deceleration time also depend on load.

14.2.3 Advanced Wireless Power Transfer System

Wireless Power Transmission Through Solar Power System&Working

- Traditional wired power transmission systems usually require lying of transmission wires between the distributed units and the consumer units. This produces a lot of constraints as the

cost of the system- the cost of the cables, the losses incurred in the transmission as well as in distribution. Just imagine, only the resistance of the transmission line results in loss of about 20-30% of the generated energy.

- If you talk about the DC power transmission system, even that is not feasible as it requires a connector between the DC power supply and the device.
- Imagine a system completely devoid of wires, where you can get AC power to your homes without any wires. Where you can recharge your mobile without having to physically plug into the socket. Where the battery of the pacemaker (placed inside a human heart) can be recharged without having to replace the battery. Of course, such a system is possible and that's where the role of Wireless Power Transmission comes.
- This concept is actually not a new concept. This whole idea was developed by Nicolas Tesla in 1893, where he developed a system of illuminating vacuum bulbs using wireless transmission techniques.
- We cannot imagine a world without Wireless Power Transfer is feasible: mobile phones, domestic robots, MP3 players, computers, laptops, and other conveyable gadgets fit for charging themselves while never being connected to, liberating us from that final and ubiquitous power wire. Some of these units may not even require many numbers of electric cells/batteries to operate.

3 Types of Wireless Power Transfer Methods:

Inductive Coupling:

- One of the most prominent methods of transferring energy is through inductive coupling. It is basically used for near field power transmission. It is based on the fact that when current flows through one wire, a voltage is induced across the ends of the other wire. The power transmission takes place through mutual inductance between the two conductive materials. A general example is a transformer.

Microwave Power Transmission:

- This idea was developed by William C Brown. The whole idea involves converting the AC power to RF power and transmitting it through space and again reconverting it to AC power at the receiver. In this system, power is generated using microwave power sources like klystron, and this generated power is given to the transmitting antenna via the waveguide (which protects the microwave power from reflected power) and the tuner (which matches the impedance of the microwave source with that of the antenna).

- The receiving section consists of the receiving antenna which receives the microwave power and the Impedance matching and filter circuit which

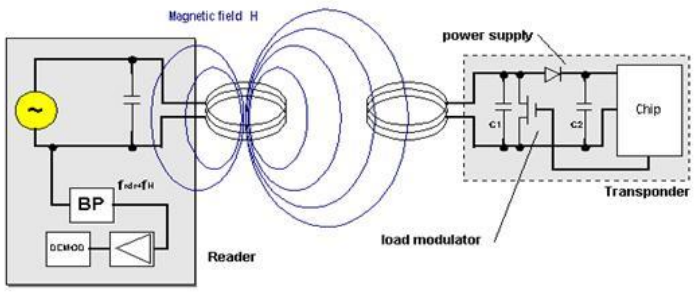


FIG 14.13Wireless Power Transmission using Microwave

matches the output impedance of the signal with that of the rectifying unit. This receiving antenna along with the rectifying unit is known as the Rectenna. The antenna used can be a dipole or a Yagi-Uda Antenna.

- The receiver unit also consists of the rectifier section consisting of Schottky diodes which is used to convert the microwave signal to DC signal. This transmission system uses frequencies in the range of 2GHz to 6GHz.

Laser Power Transmission:

It involves the use of a LASER beam to transfer power in the form of light energy, which is converted to electric energy at the receiver end. The LASER gets powered using sources like Sun or any electricity generator and accordingly generates high intensity focused light. The beam size and shape are determined by a set of optics and this transmitted LASER light is received by the photovoltaic cells, which convert the light to electrical signals.

- It generally uses optical fiber cables for transmission. Like in the basic solar power system, the receiver used in LASER based transmission is the array of photovoltaic cells or solar panels which can convert the incoherent monochromatic light into electricity.

Wireless Transfer of Solar power

- One of the most advanced wireless power transfer systems is based on transferring solar power using a microwave or LASER beam. The satellite is stationed in the geostationary orbit and consists of photovoltaic cells that convert sunlight into an electric current which is used to power a Microwave generator and accordingly generate microwave power.

- This Microwave power is transmitted using RF communication and received at the based station using a Rectenna, which is a combination of an antenna and a rectifier and is converted back to electricity or required AC or DC power. The satellite can transmit up to 10MW of RF power.

Working Example of Wireless Power Transfer

- The basic principle involves converting the AC power to DC power using rectifiers and filters and then again converting it back to AC at high frequency using inverters. This low voltage high-frequency AC power then passes from transformer primary to its secondary and is converted to DC power using a rectifier, filter and regulator arrangement.

- The obtained DC signal passes through the feedback winding1, which acts as the oscillator circuit.
- Current passing through the feedback winding1 causes the transistor1 to conduct, allowing DC current to flow through the transistor to the primary of the transformer is left in the right direction.
- When current passes through the feedback winding2, the corresponding transistor starts conducting and the DC current flows through the transistor, to the primary of the transformer in right to left direction.
- Thus an AC signal is developed across the primary of the transformer, for both half cycles of the AC signal. The frequency of the signal depends on the oscillation frequency of the oscillator circuits.
- This AC signal appears across the secondary of the transformer and as the secondary is connected to primary of another transformer, a 25 kHz AC voltage appears across the primary of the step-down transformer.
- This AC voltage is rectified using a bridge rectifier and is then filtered and regulated using LM7805 to obtain a 5V output to drive an LED.
- The voltage output of 12 V from a capacitor is used to power the DC fan motor to operate the fan.

14.2.4Industrial Temperature Controller

Industrial temperature controller

- As the name implies, a **temperature controller** is an instrument used to control temperatures, mainly without extensive operator involvement. A controller in a temperature control system will accept a temperature sensor such as a thermocouple or RTD as input and compare the actual temperature to the desired control temperature, or setpoint. It will then provide an output to a control element.
- A good example would be an application where the controller takes an input from a temperature sensor and has an output that is connected to a control element such as a heater or fan. The controller is usually just one part of a temperature control system, and the whole system should be analyzed and considered in selecting the proper controller.

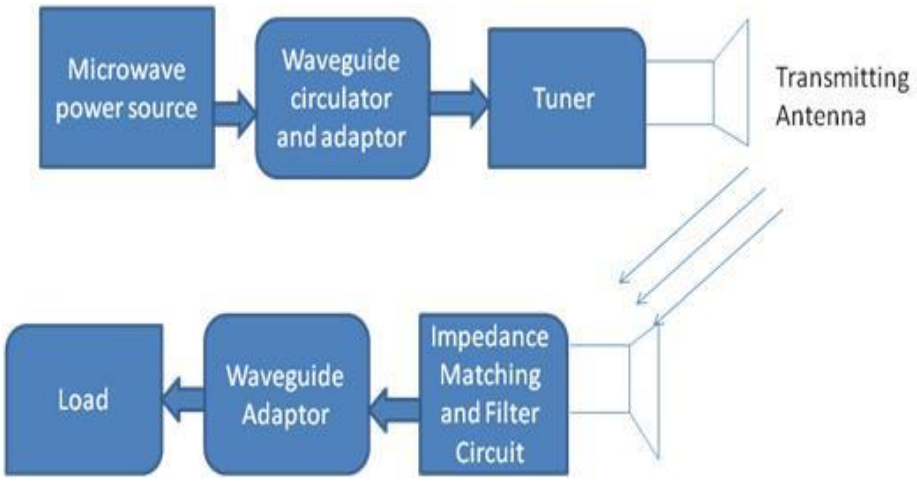


FIG 14.14 LASER Power Transmission System

What Are the Different Types of Process or Temperature Controllers, and How Do They Work?

- There are three basic types of process controllers: on-off, proportional and PID. Depending upon the system to be controlled, the operator will be able to use one type or another to control the process.

On/Off temperature Controller

- An on-off temperature controller is the simplest form of control device. The output from the device is either on or off, with no middle state. An on-off controller will switch the output only when the temperature crosses the setpoint. For heating control, the output is on when the temperature is below the setpoint, and off above setpoint.
- Since the temperature crosses the setpoint to change the output state, the process temperature will be cycling continually, going from below setpoint to above, and back below. In cases where this cycling occurs rapidly, and to prevent damage to contactors and valves, an on-off differential, or "hysteresis," is added to the controller operations.

- This differential requires that the temperature exceed setpoint by a certain amount before the output will turn off or on again. On-off differential prevents the output from "chattering" or making fast, continual switches if the cycling above and below the setpoint occurs very rapidly. On-off control is usually used where a precise control is not necessary, in systems which cannot handle having the energy turned on and off frequently, where the mass of the system is so great that temperatures change extremely slowly, or for a temperature alarm. One special type of on-off control used for alarm is a limit controller. This controller uses a latching relay, which must be manually reset, and is used to shut down a process when a certain temperature is reached.

Proportional Control

- Proportional controls are designed to eliminate the cycling associated with on-off control. A proportional controller decreases the average power supplied to the heater as the temperature approaches setpoint.
- This has the effect of slowing down the heater so that it will not overshoot the setpoint, but will approach the set point and maintain a stable temperature. This proportioning action can be accomplished by turning the output on and off for short time intervals. This "time proportioning" varies the ratio of "on" time to "off" time to control the temperature. The proportioning action occurs within a "proportional band" around the setpoint temperature.
- Outside this band, the temperature controller functions as an on-off unit, with the output either fully on (below the band) or fully off (above the band). However, within the band, the output is turned on and off in the ratio of the measurement difference from the setpoint. At the setpoint (the midpoint of the proportional band), the output on:off ratio is 1:1; that is, the on-time and off-time are equal. If the temperature is further from the setpoint, the on- and off-

times vary in proportion to the temperature difference. If the temperature is below setpoint, the output will be on longer; if the temperature is too high, the output will be off longer

PID Control

- The third controller type provides proportional with integral and derivative control, or PID. This controller combines proportional control with two additional adjustments, which helps the unit automatically compensate for changes in the system.
- These adjustments, integral and derivative, are expressed in time-based units; they are also referred to by their reciprocals, RESET and RATE, respectively. The proportional, integral and derivative terms must be individually adjusted or "tuned" to a particular system using trial and error. It provides the most accurate and stable control of the three controller types, and is best used in systems which have a relatively small mass, those which react quickly to changes in the energy added to the process.
- In this other article, how to tune a PID controller is covered in more detail.
- It is recommended in systems where the load changes often and the controller is expected to compensate automatically due to frequent changes in setpoint, the amount of energy available, or the mass to be controlled. OMEGA offers a number of controllers that automatically tune themselves. These are known as autotune controllers.

Standard Sizes

- Since temperature controllers are generally mounted inside an instrument panel, the panel must be cut to accommodate the temperature controller. In order to provide interchangeability between temperature controllers, most temperature controllers are designed to standard DIN sizes. The most common DIN sizes are shown below.

Choose a temperature controller for your application

On-Off Controllers

- On-Off process controllers are the simplest type of controllers featuring on-off control action designed to provide the functionality of general purpose PID controllers but at a price suited to On/Off applications.

Autotune PID Controllers

- PID controllers provide very tight control but the PID algorithm requires tuning. Autotune controllers provide that function.

Multiloop Controllers

- Each control loop normally consists of one input and at least one output. OMEGA offers numerous multiloop controllers which can handle more than a single control loop. OMEGA's CS8DPT can handle up to 6 control loops.

Safety Limit Controllers

- A safety limit controller is an off-off controller with a latching output. When the output changes state it requires a manual reset to change it back. Safety limit controllers are typically used as redundant controllers, to shut down a process when undesirable limits are reached.

Temperature Switches

- An adjustable temperature switch is suited for applications which require an economical solution to temperature control. Temperature switches are typically less complicated and easier to setup than more sophisticated electronic controls.

14.2.5 Accident Alerts in Modern Traffic Signal Control System camera Surveillance System

- An Intelligent Traffic Management Framework has been proposed in this section as depicted in The planned framework deals with traffic control system STMS as the core module and it has the sub-modules such as video control system, Traffic Control System,, Supervisory computer control system and peripheral devices. The Traffic Control System manages and controls the heavy traffic during pre-defined rush period on the road.
- It uses the video monitoring system to identify excess traffic through video camera and when the amount of vehicles in particular path increases a pre-calculated threshold value, it informs the traffic control in charge of STMS with an alarm indicating “traffic limit reached” and prevents any further vehicle to enter in that path.

Accident Alerts in Modern Traffic Signal Control System by using Camera Surveillance System

- The Block diagram of the proposed system Fig.1 shows the basic block diagram of the proposed system with all the functional components and controlling system. So the next vehicles would be diverted towards another selected path, hence controlling the traffic. This traffic control system incorporates efficient transmission and uninterrupted communication by sending and receiving correct signal in proper time events.
- The smart peripheral devices handle the correct configuration of input sensors and output actuators to capture and detect the events and send the response and required information to control points.
- Similarly deployment of CCTV Camera at noticeable traffic points which covers maximum range of scenario is also important activity of this module. 3.1 Intelligence Computation and

Data Analytics In the proposed system, smart data analytics has been used to tactfully handle the congestion scenario and control the congestion with the implementation of dynamic mobile agent. The designed procedure used for preventing traffic congestion is as follows.

- Step 1- Total number of vehicle information transiting, crossing and waiting for a specific traffic at a particular time range is sent by the traffic signal sensor device to the central server.
- Step 2- The above real time data from sensors serves as input to the data analytic engine and used by the mobile agent at the STMS supervisory computer control system which is connected to the GIS mapping of the roads.
- Step 3 – When the congestion level crosses a particular threshold value, the data analytic engine sends a broadcast message to all the agent computers through mobile agent service situated at traffic controllers to divert the next two and four wheeler passengers to an alternate route.

Design of Smart Vehicles

- This section provides an average assessment of basic pre requisites before implementing the proposed model in a metropolitan city. Generally, the fundamental requirement for the proposed traffic control framework includes one urban traffic control centre, centralization of around 200 intersection points in the city, approximately 4,700 vehicle loop detectors, 60 video detection cameras, fifty signalisation devices for blind persons , replacement of approx. 1,400 signal points, Continuous service maintenance applications .
- Coordination among all the major systems in a smart city such as all critical city systems like transportation, energy, public services, public safety, health care, telecommunications are capable of communicating with each other to allow coordination and improve efficiency . They are capable of generating, transmitting and processing data about a wide variety of related activities within the city.
- The proposed applications focus on how emerging transportation data, technologies, and applications can be integrated with existing systems across a city, helping both cities, citizens, and businesses achieve goals for safety, mobility, sustainability, and economic vitality in an increasingly complex, interdependent and multimodal world.
- As the proposed smart application in this article is meant for traffic control in a smart city context, a particular traffic scenario has been considered for simulation purpose and it is assumed that a smart e-board has been embedded to every registered vehicle of the system. Ultimately every vehicle of the city has to be automatically registered through Govt. RTO Office to be used in the proposed syst

Chapter 15.

Smart and/or Sustainable features of Chapter 8 & 13 designs, Impact on society. (For Allocated village development, villagers' happiness, comfortable and for enhancement of the village)(With the Smart village development Concept as Per Your Idea and Village Visit, modern technology with innovation).

With doing small changes, Period, Amount Expenditure and Benefit

a) **Immediately b) within 1 year c) Long term (3-5 years) along with cost estimation.**

b) **If possible, List the sources of the funding available with the Village gram panchayat**

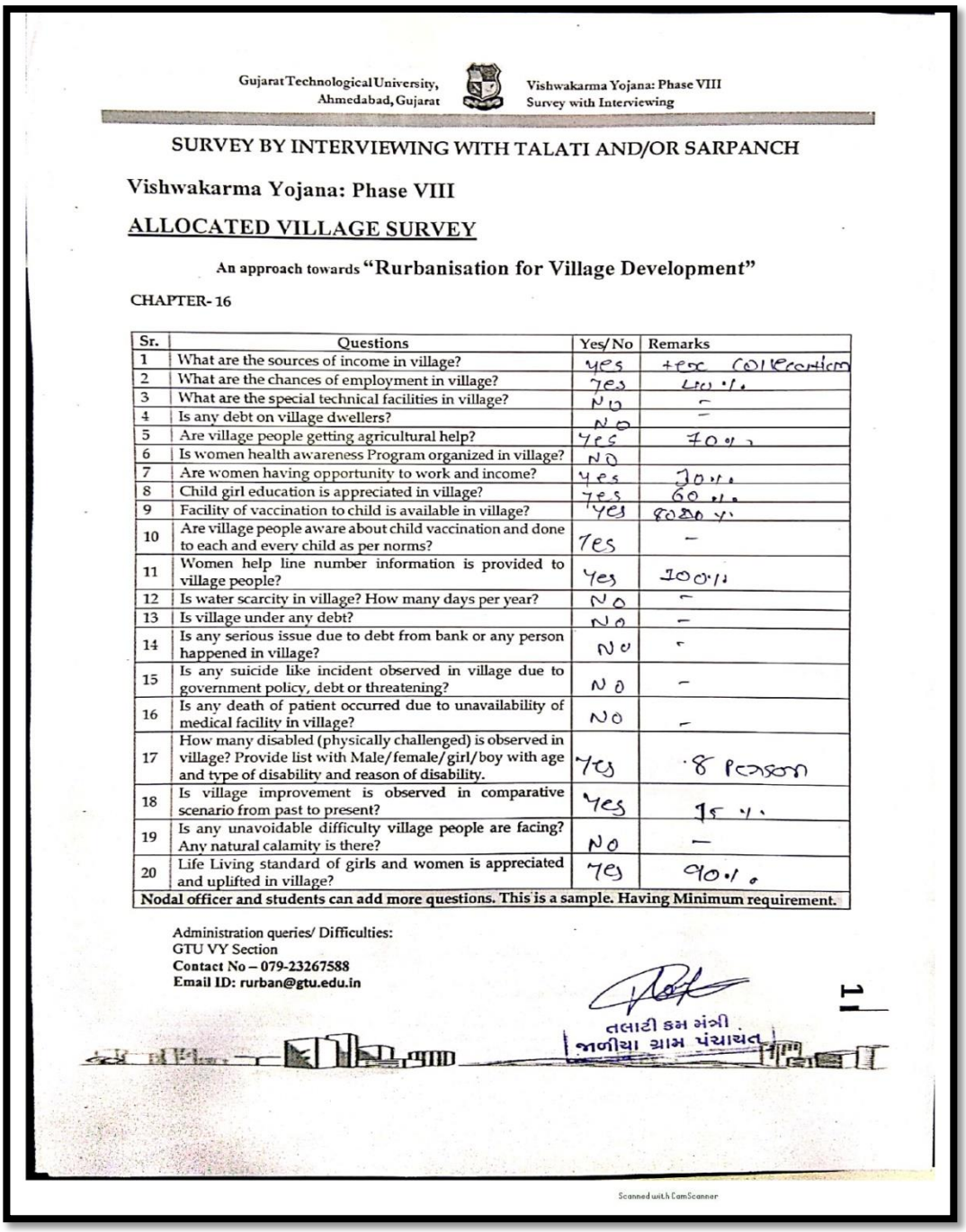
Sr. No.	Design Name	Period	Amount Expenditure	Benefits
1	Chanakya Library	Long-Term	**2,36,530.75**	This all design is after complete to using is very good This village is requirement form village side to do this design.
2	Panchayat Building	Long-Term	**2,92,284.55**	
3	Public Toilet	Long-Term	**5,66,459.98**	
4	General Market	Long-Term	**3,40,190.54**	
5	Bus Stand	Immediately	30,793.39	
6	Community Hall	Long-Term	**6,80,934.63**	
7	Soil Testing Laboratory	Within 1 Year	**281570.14**	
8	Garden	Within 1 Year	**514261.66**	
9	Recreation Center	Immediately	**2057856.37**	
10	Biogas Plant	Long-Term		
11	Anganwadi	Immediately	**5,75,000**	
12	Solid Waste Collection	Immediately	**413389.6**	

Sr.No.	Design Name	Period	Amount Expenditure	Benefits
1	Solar Street Light	Within 1 Year	34000	This design to reduce a power and safe design
2	Solar Rooftop	Long-Term	**59,017**	
3	Solar Cleaning System	Within 1 Year	**4800**	
4	E BIKE	Long-Term	36000	
5	Solar Laboratory	Long-Term	**70280**	
6	Irrigation By Solar	Immediately	**61000**	

Benefits of proposed design

- Biogas is the solution for providing people in rural areas with reliable, clean and cheap energy.
- It could provide various benefits beyond clean fuel as well, including improved sanitation, health and environmental sustainability.
- Eliminates the spread of diseases by treating excreta and other waste, converting this waste into a valuable resource; and avoiding contamination of water and food.
- Avoids Contamination of scarce water resources.
- The public garden can be beneficial to the environment and atmosphere of village.
- Reduce the carbon content in air and increase oxygen.
- Solar street lights are independent of the utility grid resulting to lessened operation costs.
- Solar street lights require lesser maintenance than conventional street lights.
- To reduce environment pollution and make rural areas clean.
- To promote recycling and reuse of solid waste.

Chapter 16
Survey by interviewing with Talati or Sarpanch



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

An approach towards "Rurbanisation for Village Development"

CHAPTER- 16

Sr.	Questions	Yes/No	Remarks
1	What are the sources of income in village?	Yes	+ex collection
2	What are the chances of employment in village?	Yes	40 %
3	What are the special technical facilities in village?	No	-
4	Is any debt on village dwellers?	No	-
5	Are village people getting agricultural help?	Yes	70 %
6	Is women health awareness Program organized in village?	NO	
7	Are women having opportunity to work and income?	Yes	30 %
8	Child girl education is appreciated in village?	Yes	60 %
9	Facility of vaccination to child is available in village?	Yes	8080 %
10	Are village people aware about child vaccination and done to each and every child as per norms?	Yes	-
11	Women help line number information is provided to village people?	Yes	100 %
12	Is water scarcity in village? How many days per year?	No	-
13	Is village under any debt?	No	-
14	Is any serious issue due to debt from bank or any person happened in village?	No	-
15	Is any suicide like incident observed in village due to government policy, debt or threatening?	No	-
16	Is any death of patient occurred due to unavailability of medical facility in village?	No	-
17	How many disabled (physically challenged) is observed in village? Provide list with Male/female/girl/boy with age and type of disability and reason of disability.	Yes	8 Person
18	Is village improvement is observed in comparative scenario from past to present?	Yes	15 %
19	Is any unavoidable difficulty village people are facing? Any natural calamity is there?	No	-
20	Life Living standard of girls and women is appreciated and uplifted in village?	Yes	90 %

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

તલાટી કમ મંત્રી
જાળીયા ગ્રામ પંચાયત

1

Scanned with CamScanner

Chapter 17
Irrigation/agriculture activates and agro industry, alternate techniques and solution

Irrigation system

India's irrigation is mostly groundwater well based. At 39 million hectares (67% of its total irrigation), India has the world's largest groundwater well equipped irrigation systemIndia has spent ₹ 16,590 crore on irrigation development between 1950 and 1985.

Irrigation activates

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

Five types of irrigation system

Surface Irrigation

In this system, no irrigation pump is involved. Here, water is distributed across the land by gravity

Localized Irrigation

In this system, water is applied to each plant through a network of pipes under low pressure.

Sprinkler Irrigation

Water is distributed from a central location by overhead high-pressure sprinklers or from sprinklers from the moving platform.

Drip Irrigation

In this type, drops of water are delivered near the roots of the plants. This type of irrigation is rarely used as it requires more maintenance.

Centre Pivot Irrigation

In this, the water is distributed by a sprinkler system moving in a circular pattern.

Sub Irrigation

Water is distributed through a system of pumping stations gates, ditches and canals by raising the water table.

Manual Irrigation

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

Major problem in irrigation activates

- Reduced river flow.
- Increased groundwater recharge, waterlogging, soil salinity.
- Reduced downstream river water quality.

- Affected downstream water users.
- Lost land use opportunities.
- Groundwater mining with wells, land subsidence.
- Case studies.
- Reduced downstream drainage and groundwater quality.

Solution of irrigation activates problem

1. Inadequate trenching
2. Lack of head-to-head design
3. Incorrect pipe sizes used
4. Poor quality cabling
5. Mixing heads with different precipitation rates and pressure ratings
6. Pipes crimped by tree roots
7. Overwatering

Types of agro farming : -

1. Nomadic Herding
2. Shifting Cultivation
3. Intensive Subsistence Agriculture
4. Commercial Dairy Farming
5. Commercial Grain Cultivation
6. Livestock Ranching
7. Mediterranean Agriculture

Chapter 18
Social activates

1. Environment day celebration in village
This day to tree grow to maxi 100 tress in village entry. To fill amazing

2. Corona mask awareness .
Due to corona awareness to mask and sanities and help to other

3. Sport activities
Sport to give a proper knowledge and play

4. Electrical wire and solar benefit
Proper solar knowledge and how to maintains and wiring knowledge

But, we have planned to this activates in jaliya village and during this covid-19 all activates has been postponed

Chapter 19

SAGY Questionnaire survey form with Sarpanch signature

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Jaliya Gram Panchayat: Jaliya Ward No._____

Block: Rajkot District: Rajkot

State: Gujarat L S Constituency: [illegible]

1. Family Identity and Size

Name of Head of Household	[illegible] Bhai Himmat Bhai							Male/ Female	M
SECC Survey ID:	-	Family Size	4	Over 18	2	6 to 18	2	Under 6	0

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]
[illegible] Bhai	40	M	No	[illegible]	10th	Y	Y	
Himmat Bhai								/
[illegible]								
[illegible] Bhai	40	F	No	"	9th	Y	No	

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
1) [illegible] Darshan	14	M	N	-	[illegible]	Y	8th	Y
2) [illegible] Om	10	M	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	NO	NO
Children	NO	NO

9. House & Homestead Data

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

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

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

11. Source of Lighting and Power

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

12. Landholding (Acres)

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

13. Principal Occupations in the Household

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

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

15. Agriculture Inputs

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

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

Name	Unit	Quantity
—	—	—

17. Livestock Numbers

Cows: 0	Bullocks: 0	Calves: 0
Female Buffalo: 0	Male Buffalo: 0	Buffalo Calves: 0
Goats/ Sheep: 0	Poultry/ Ducks: 0	Pigs: 0
Any other: Type _____		No. _____
Shelter for Livestock: Pucca / Kutcha / None		
Average Daily Production of Milk(Litres): _____		

18. What games do Children Play
Cricket , cycling ,

19. Do children play musical instrument (mention)
NO

Schedule Filled By:
Principal Respondent:
Date of Survey: 02/06/2021

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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: Jaliya

b. Block: 8 1

c. District: Rajkot

d. State: Gujarat

e. Lok Sabha Constituency: [illegible]

f. Number of Wards in the Gram Panchayat: 8

g. Number of Villages in the Gram Panchayat: 1

h. Names of Villages: Jaliya

Demographic Information

Number of Households 994 Total Population 1800 Male 923 Female 877

SC HHs 218 ST HHs 304 OBC HHs 570 Other HHs 708

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	Y	In village
b.	Nearest Primary Health Centre (PHC)	Y	(9 km)
c.	Nearest Community Health Centre (CHC)	No	
d.	Nearest Post Office	Y	In village
e.	Nearest Bank Branch (Any)	Y	7 KM
f.	Nearest Bank with CBS Facility	N	-
g.	Nearest ATM	Y	7 KM
h.	Nearest Primary School	Y	In village
i.	Nearest Middle School	Y	In village
j.	Nearest Secondary School	Y	11
k.	Nearest Higher Secondary School / +2 College	Y	30 KM
l.	Nearest Graduate College	Y	28 KM
m	Nearest ITI / Polytechnic Centre	Y	20 KM
n	Kisan Seva Kendra	Y	In village

1

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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	NO
p	Nearest Agro Service Centre	NO	NO
p	MSP based Government Procurement Centre	NO	NO
q	Milk Cooperative /Collection Centre	NO	NO
r	Veterinary Care Centre	NO	NO
s	Ayurveda Centre	NO	NO
t	E – Seva Kendra	Y	For village
u	Bus Stop	NO	NO
v	Railway Station	NO	NO
w	Library	NO	NO
x	Common Service Centre	NO	NO

IV. Sports Facilities in the Gram Panchayat

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

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 2

b. Number of villages without Angan Wadi Centres 0

Names of such villages: _____

c. Schools (Number)

Primary Private: 0 Primary Govt.: 1

Middle Private: 0 Middle Govt.: 1

Secondary Private: 0 Secondary Govt.: 1

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)	-	-	-	-	Gov.	Yes	-
b.	Kerosene	0	-	-	-	Gov.	yes	-
c.	Other (mention)	-	-	-	-	-	-	-

2

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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	— Jaliya	— —
b.	Hand Pump Coverage in Villages:	Covered Not Covered	— —	— —
c.	Coverage under Covered Drains:	Covered Not Covered	Yes Jaliya Jaliya —	— —
d.	Coverage under Open Drains:	Covered Not Covered	— —	— —
e.	Villages with Household Electricity Connection (Numbers)	Connected Not Connected	Jaliya (	

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land		d.	Pasture / Grazing Land		g.	Check Dam	6
b.	Irrigated Land		e.	Forests/ Plantations		h.	Wells/Bore Wells	1
c.	Un-irrigated Land		f.	Other Common Land		i	Tanks /Ponds	5

[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)	7
b)	Number of Households receiving pension (old age, widow, disability)	7
c)	Number of eligible Households who are not receiving pension	987
d)	Number of Households eligible for Ration Card	994
e)	Number of eligible HHs having ration cards	0
f)	Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	830
g)	Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	0
h)	Number of active Job Card holders under MGNREGA	85
i)	Number of Job Card holders who completed 100 days of work during 2013-14	65
j)	Number of shops selling alcohol	0
k)	Number of BPL families	300
l)	Number of landless households	0
m)	Number of IAY beneficiaries	120
n)	Number of FRA[2] beneficiaries	0
o)	Number of Community Sanitary Complexes	0
p)	Number of Households headed by single women	512
q)	Number of Households headed by physically handicapped persons	8
r)	Total number of Persons with Disability in the village	10
s)	Number of SHGs	0
t)	Number of active SHGs	0
u)	Number of SHG Federations	0
v)	Number of Youth Clubs	0
w)	Number of Bharat Nirman Volunteers	0

Name and Signature of Surveyor and Respondent'

Surveyor	PRI Respondent (Preferably Gram Panchayat Chairperson)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	Date of Survey
	[illegible]	તલાટી કમ મંત્રી	

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

4

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: Jaliya
b. Ward Number: 6
c. Gram Panchayat: Jaliya
d. Block: Gondal
e. District: Rajkot
f. State: Gujarat
g. Lok Sabha Constituency: Wakaner
h. Number of Habitations / Hamlets in the Gram Panchayat: 0 –
i. Names of Habitations / Hamlets: Jaliya –

Demographic Information

Number of Households 994 Total Population 1800 Male 923 Female 877

SC HHs 218 ST HHs 304 OBC HHs 570 Other HHs 708

II. Access to Infrastructure/Amenities etc.

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

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

1

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

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: AM

iii. Drinking Water Facilities
a.Piped Water Supply Coverage to Habitations: _____ (1-All 2-None 3-Some)
If 3 mention the name of the habitations not covered: _____

b.Hand Pump Coverage in Habitations: _____ (1-All 2-None 3-Some)
If 3 mention the name of the habitations not covered: _____

iv. Coverage of Habitations under Waste Management System
a. Coverage under Covered Drains: _____ (1-All 2-None 3-Some)
If 3 mention the name of the habitations not covered: _____

b. Coverage under Open Drains: _____ (1-All 2-None 3-Some)
If 3 mention the name of the habitations not covered: _____

c. Coverage under Doorstep Waste Collection: (1-All 2-None 3-Some)
If 3 mention the name of the habitations not covered: _____

v. Coverage of Habitations under Electrification
a. Coverage under Household Connections: (1-All 2-None 3-Some)
If 3 mention the name of the habitations not covered: _____

b.Coverage under Street Lighting: All(1-All 2-None 3-Some)
If 3 mention the name of the habitations not covered: _____

vi. Sports Facilities in the Village
a.Number of Play Grounds in the Village (minimum size 200 square meters): No
b.Mini Stadium : N Yes(Y) /No (N)

vii. Education, ICDS
a. Number of Anganwadi Centres: 2
c. Schools (Number)
Primary Private: 0 Primary Govt.: 1
Middle Private: 0 Middle Govt.: 1
Secondary Private: 0 Secondary Govt.: 1
Higher Secondary Private: 0 Higher Secondary Govt: 0

2

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

ix. Entitlement Related Parameters		
1	Number of active Job Card holders under MGNREGA	85
2	Number of active Job Card holders who have completed 100 days of work	65
3	Number of shops selling alcohol	0
4	Number of BPL families	300
5	Number of landless households	0
6	Number of IAY beneficiaries	420
7	Number of FRA beneficiaries	0
8	Number of common sanitation complexes	0
9	Number of SHGs	0
10	Number of active SHGs	0
11	Existence of SHG Federation in the Village (Yes / No)	0
12	Number of Youth Clubs	0
13	Number of Bharat Nirman Volunteers	0

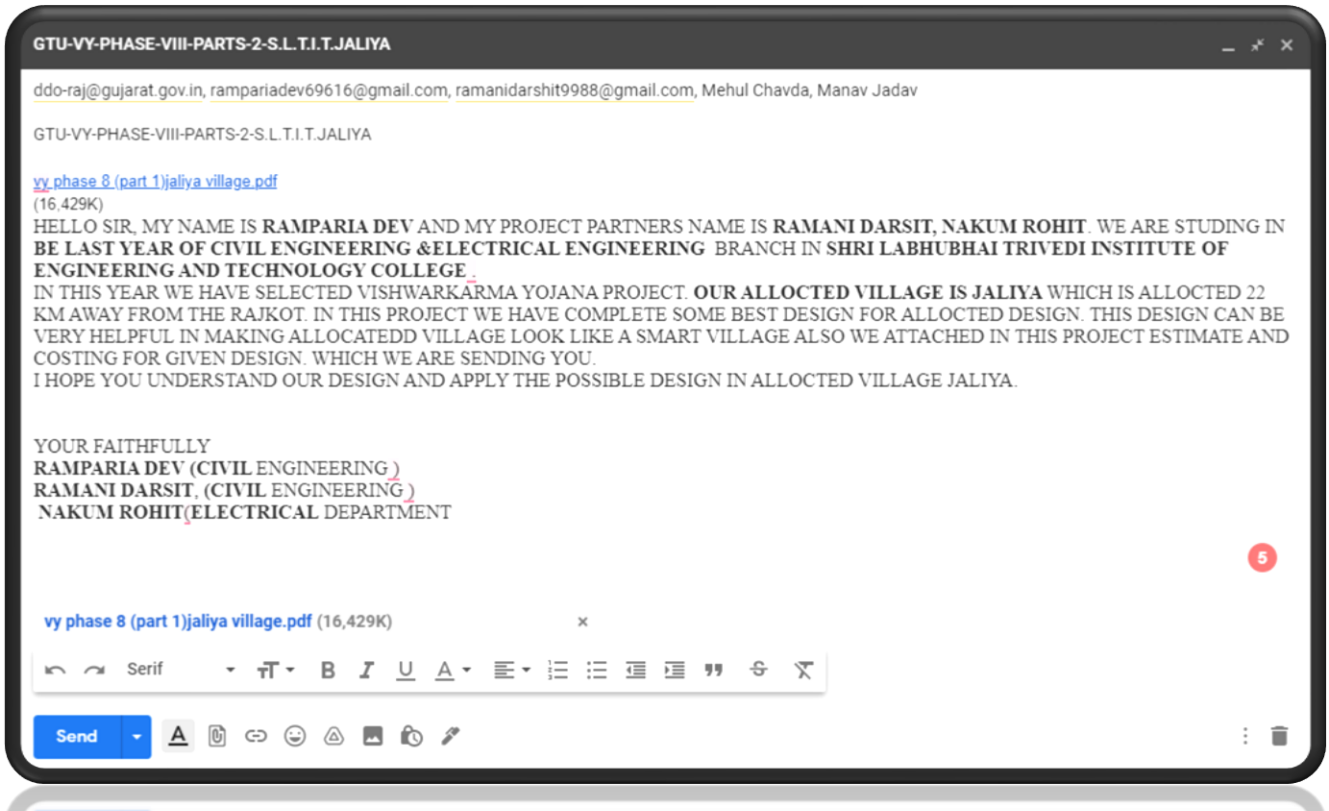
Name and Signature of Surveyor and Respondent'

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

3

CHAPTER 20

TDO-DD-collecter email sending soft copy attachment in the report



GTU-VY-PHASE-VIII-PARTS-2-S.L.T.I.T.JALIYA

ddo-raj@gujarat.gov.in, rampariadev69616@gmail.com, ramanidarshit9988@gmail.com, Mehul Chavda, Manav Jadav

GTU-VY-PHASE-VIII-PARTS-2-S.L.T.I.T.JALIYA

vy phase 8 (part 1)jaliya village.pdf
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HELLO SIR, MY NAME IS **RAMPARIA DEV** AND MY PROJECT PARTNERS NAME IS **RAMANI DARSIT, NAKUM ROHIT**. WE ARE STUDING IN **BE LAST YEAR OF CIVIL ENGINEERING &ELECTRICAL ENGINEERING** BRANCH IN **SHRI LABHUBHAI TRIVEDI INSTITUTE OF ENGINEERING AND TECHNOLOGY COLLEGE** .
IN THIS YEAR WE HAVE SELECTED VISHWARKARMA YOJANA PROJECT. **OUR ALLOCTED VILLAGE IS JALIYA** WHICH IS ALLOCTED 22 KM AWAY FROM THE RAJKOT. IN THIS PROJECT WE HAVE COMPLETE SOME BEST DESIGN FOR ALLOCTED DESIGN. THIS DESIGN CAN BE VERY HELPFUL IN MAKING ALLOCATEDD VILLAGE LOOK LIKE A SMART VILLAGE ALSO WE ATTACHED IN THIS PROJECT ESTIMATE AND COSTING FOR GIVEN DESIGN. WHICH WE ARE SENDING YOU.
I HOPE YOU UNDERSTAND OUR DESIGN AND APPLY THE POSSIBLE DESIGN IN ALLOCTED VILLAGE JALIYA.

YOUR FAITHFULLY
RAMPARIA DEV (**CIVIL** ENGINEERING)
RAMANI DARSIT, (**CIVIL** ENGINEERING)
NAKUM ROHIT(**ELECTRICAL** DEPARTMENT

vy phase 8 (part 1)jaliya village.pdf (16,429K)

Serif

Send

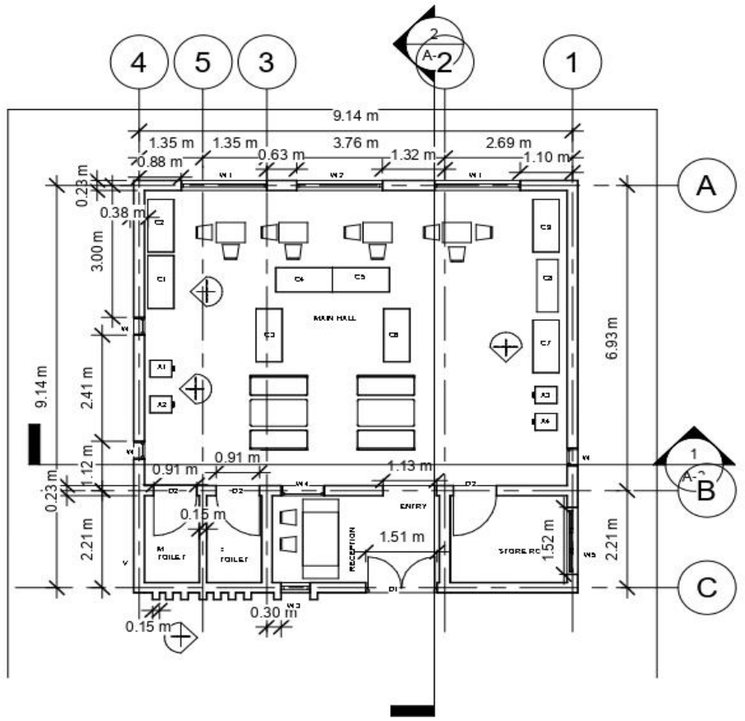
Chapter 21
Comprehensive report for the entire village

Vishwakarma Yojana is provides special scheme for development of village by GTU and Government of Gujarat in which students work together and collect data and information regards village development with the help of gram Panchyat and stake holders. Village have some basic facilities likes PANCHAYAT BULIDING, CHANAKYA LIBRARY, COMMUNITY HALL, PAY AND USE, GENERAL MARKET sufficient so that village can develop. So, we will give proposal regarding sustainable energy sources and solution related to infrastructure problems. Efforts have been made in this project work to identify and plan some of the below facilities for sustainable development of village and to meet need of future population. Vishwakarma Yojana is one of the initiatives towards Urbanization that is village development by the government of Gujarat, which was allotted as areal time situation type project provides to GTU.It is one of the strategies to reduce urban city pressure and lower the migration rate by developing village with a "rural soul" but with all urban amenities that a city may have. In this project the students meet the relevant citizens of village and survey the existing facilities. Then design of the sustainable infrastructure which is to be modified is carried out for the village. This includes implementation of engineering skills to prepare detailed project reports for village as a part of the 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. Based on survey we tried to give design of basic facilities to fulfill their needs. By providing these basic facilities to village for reduce urban city pressure and decrease migration rate, which is ultimate aim of Vishwakarma Yojana. Under this project we survey about village, village people, village condition, etc. after study all point we conclude 12 design of civil engineer and 6 design of electrical engineer.

SR.NO	DESIGN (CIVIL)	DESIGN (ELECTRICAL)
1	PANCHAYAT BULIDING	SOLAR STREET LIGHT
2	CHANAKYA LIBRARY	ROOF TOP SOLAR
3	COMMUNITY HALL	SOLAR CLEANING SYSTEM
4	PAY AND USE	E- bike
5	GENERAL MARKET	Solar pump system
6	BUS STAND	Aganwadi wiring
7	Bio gas plant	
8	Soil testing laboratory	
9	Garden	
10	Recreation centre	
11	Aganwadi (renew)	
12	Solid waste collection	

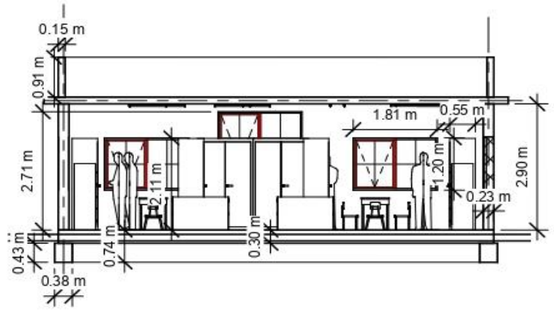
① VIEW2
1 : 1



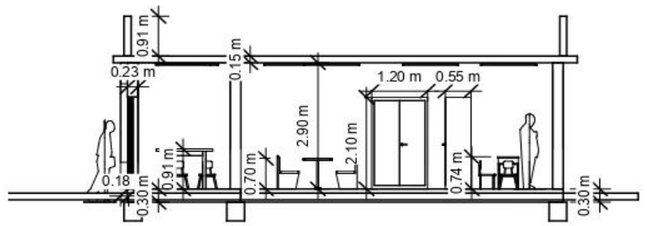
② GROUND FLOOR AREA
1 : 96

CHANAKYA LIBRARY

Gujarat Technological University	Shri Labhubhai Trivedi Institute of Engineering and Technology	CHANAKYA LIBRARY	DATE : - 11/11/2020		CIVIL	RAMPARIA DEV	180893106058
					CIVIL	RAMANI DARSIT	180893106056
		JALIYA VILLAGE , RAJKOT	A-1		ELEC	NAKUM ROHIT	180893109039



1 Section 1
1 : 96



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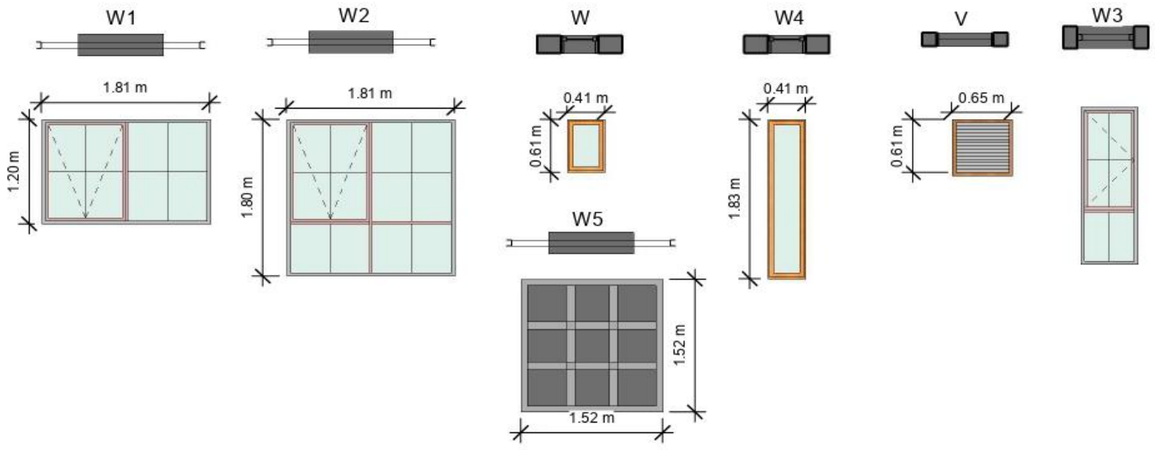
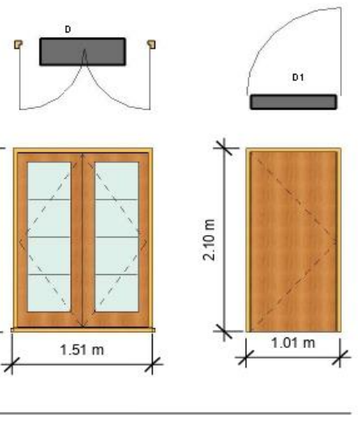


WINDOW
1 : 48



DOOR
1 : 48

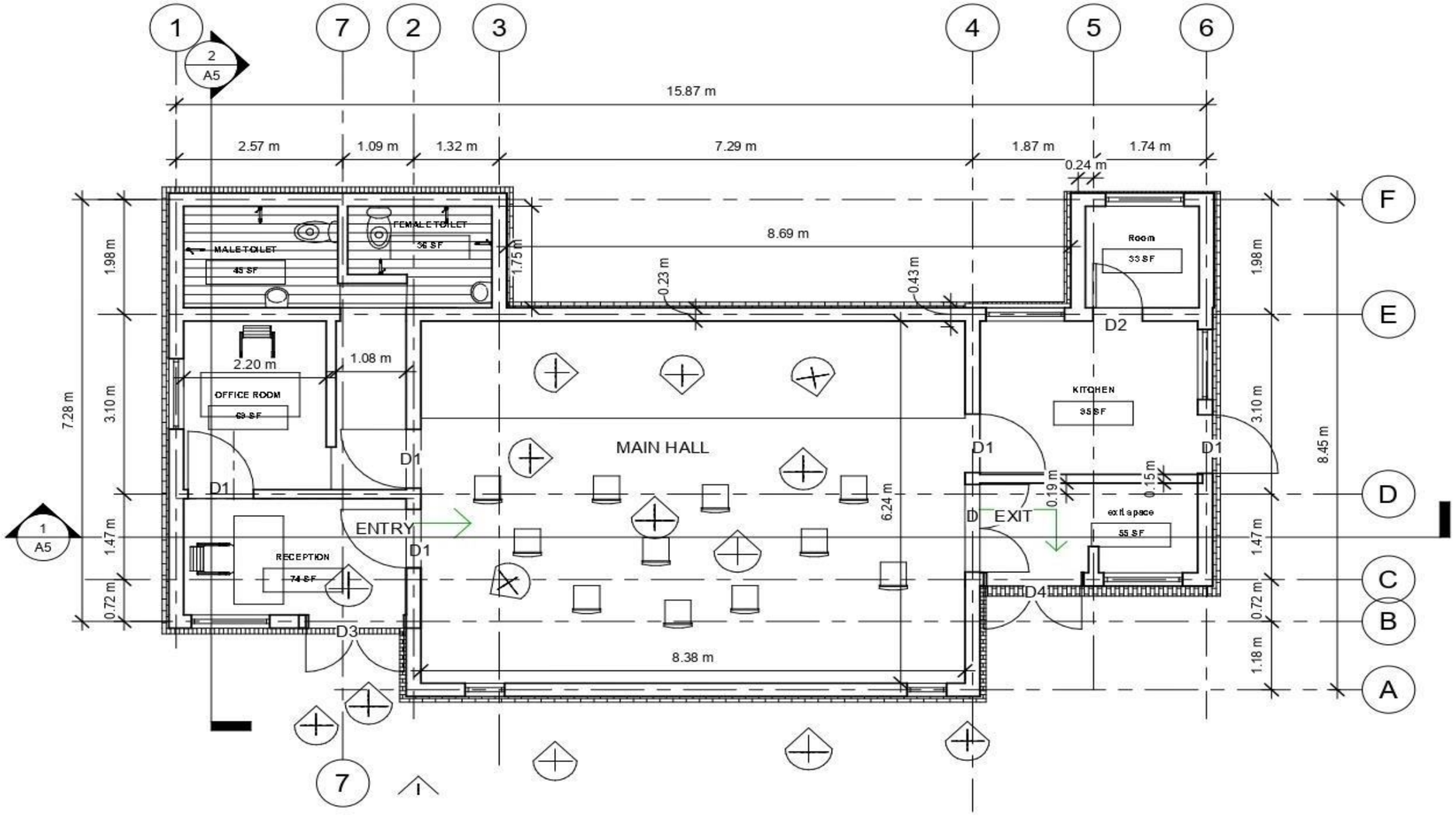
Gujarat Technological University	Shri Labhubhai Trivedi Institute of Engineering and Technology	CHANAKYA LIBRARY	DATE : - 11/11/2020	CIVIL	RAMPARIA DEV	180893106058
		JALIYA VILLAGE , RAJKOT	A-3	CIVIL	RAMANI DARSIT	180893106056
				ELEC	NAKUM ROHIT	180893109039

① FRONT VIEW
1 : 1

COMMUNITY HALL

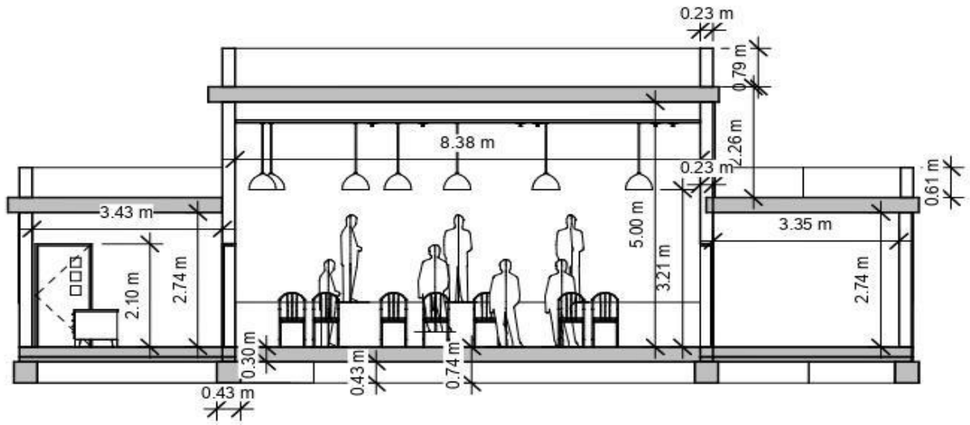
② SIDE VIEW
1 : 1

Gujarat Technological University	Shri Labhubhai Trivedi Institute of Engineering and Technology	COMMUNITY HALL	DATE : - 11/11/2020		CIVIL	RAMPARIA DEV	180893106058
					CIVIL	RAMANI DARSIT	180893106056
		JALIYA VILLAGE , RAJKOT	A1		ELEC	NAKUM ROHIT	180893109039

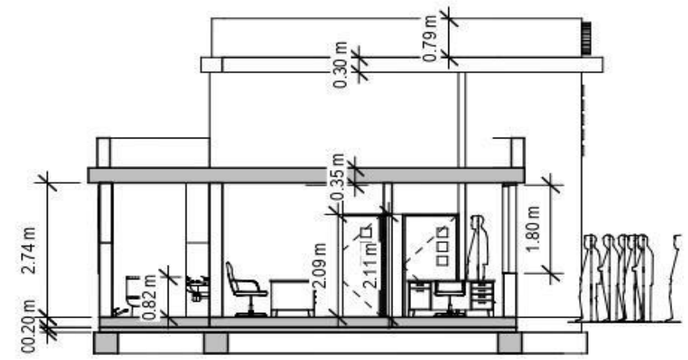


1 GROUND LEVEL FLOOR
1 : 64

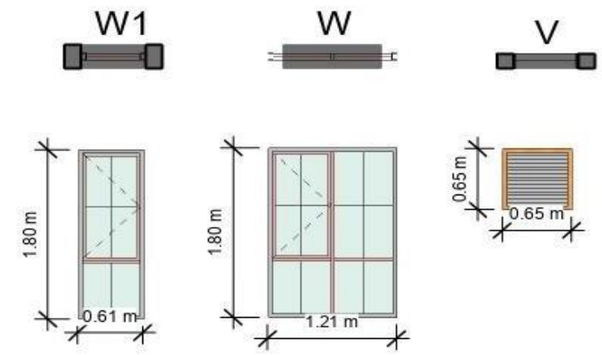
Gujarat Technological University	Shri Labhubhai Trivedi Institute of Engineering and Technology	COMMUNITY HALL	DATE : - 11/11/2020		CIVIL	RAMPARIA DEV	180893106058
		JALIYA VILLAGE , RAJKOT	A2		CIVIL	RAMANI DARSIT	180893106056
					ELEC	NAKUM ROHIT	180893109039



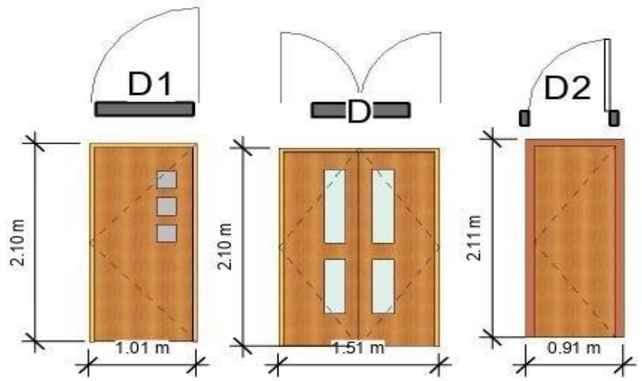
1 Section 1
1 : 96



2 Section 2
1 : 96



WINDOW
1 : 50

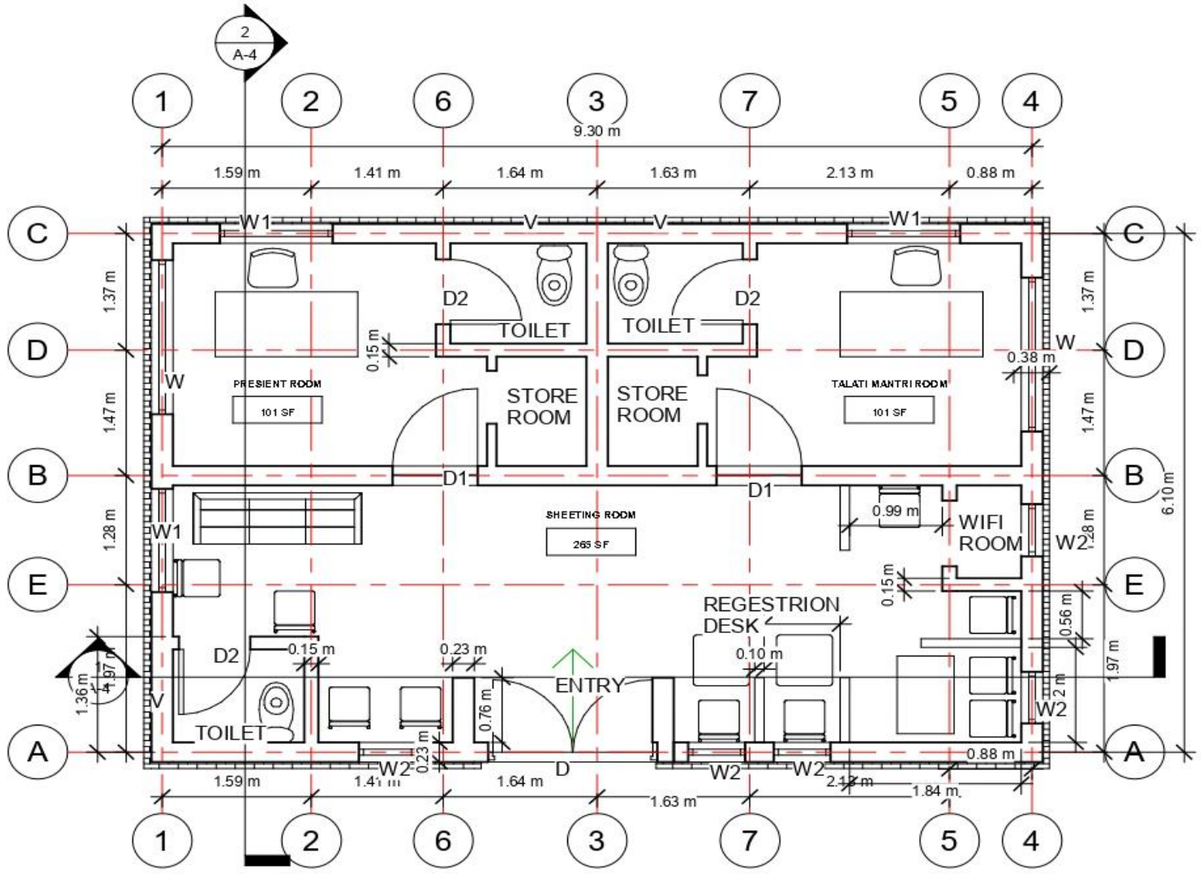


DOOR
1 : 50

Gujarat Technological University	Shri Labhubhai Trivedi Institute of Engineering and Technology	COMMUNITY HALL	DATE : - 11/11/2020	W S N m	CIVIL	RAMPARIA DEV	180893106058
		JALIYA VILLAGE , RAJKOT	A5		CIVIL	RAMANI DARSIT	180893106056
					ELEC	NAKUM ROHIT	180893109039

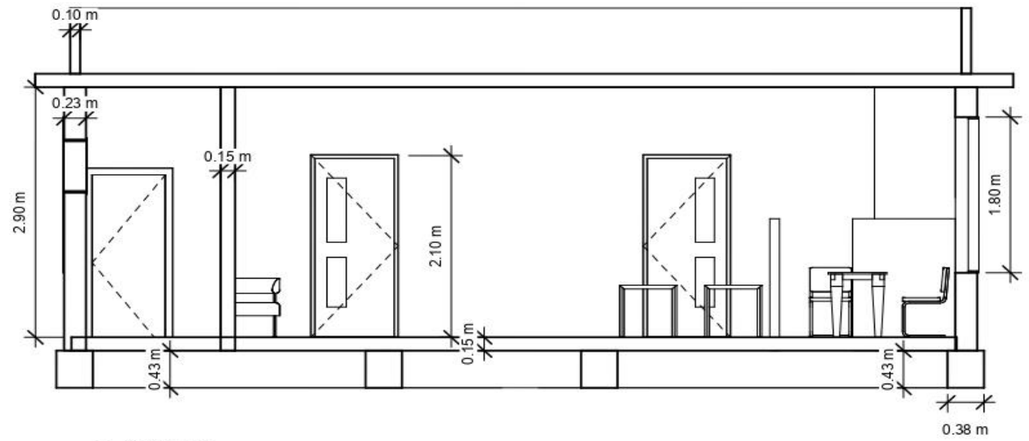
1 3D View 2_1
1 : 1

PANCHAYAT BUILDING

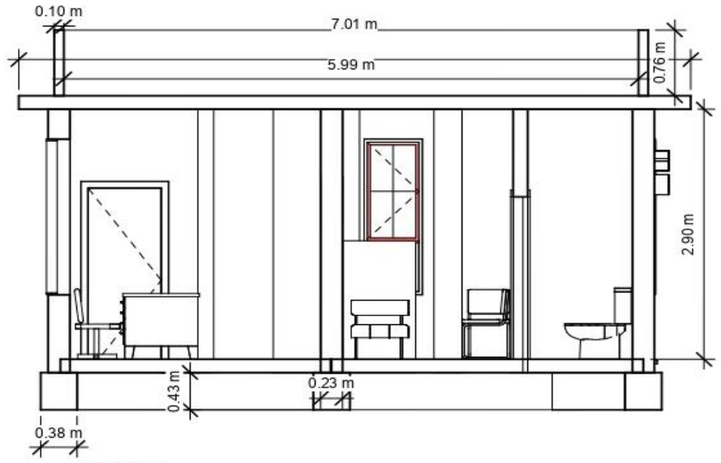


2 ground floor AREA (C. L)
1 : 50

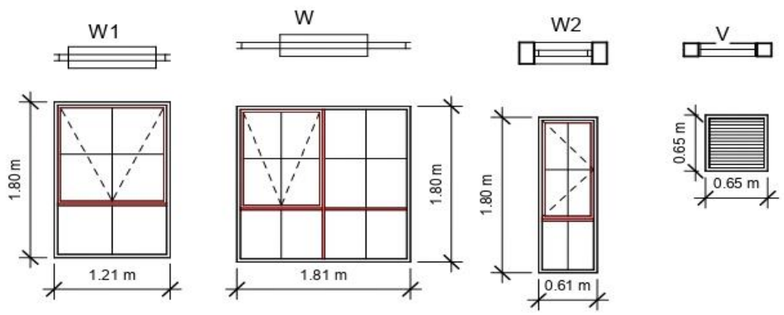
Gujarat Technological University	Shri Labhubhai Trivedi Institute of Engineering and Technology	PANCHAYANT BUILDING	DATE : - 11/11/2020	CIVIL	RAMPARIA DEV	180893106058
		JALIYA VILLAGE , RAJKOT	A-1	CIVIL	RAMANI DARSIT	180893106056
				ELEC	NAKUM ROHIT	180893109039



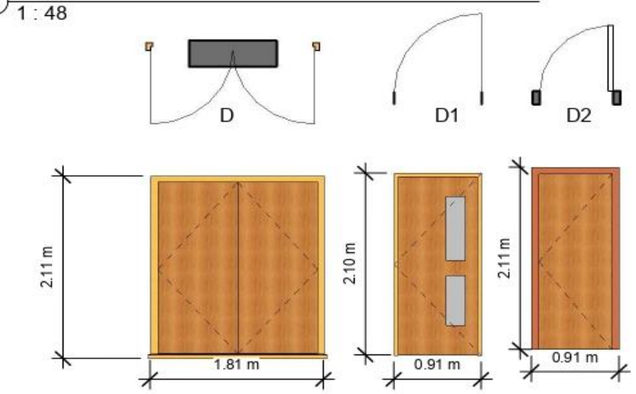
① Section 1
1 : 48



② Section 2
1 : 48



WINDOW
1 : 48

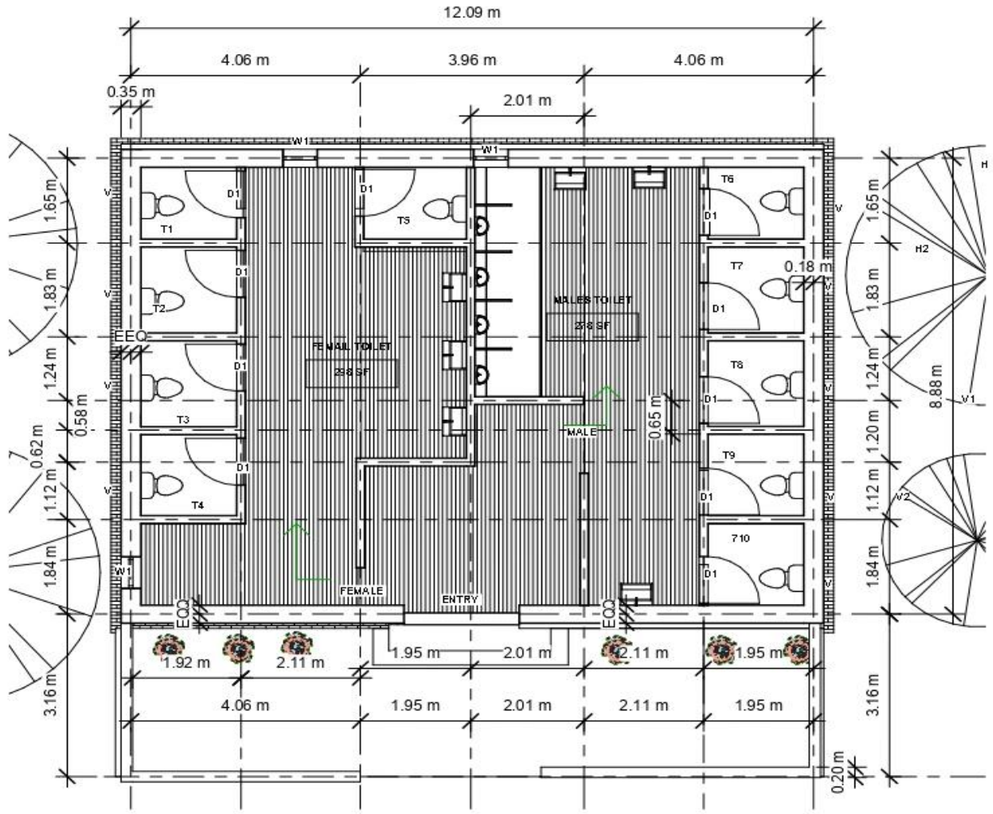


DOOR
1 : 48

Gujarat Technological University	Shri Labhubhai Trivedi Institute of Engineering and Technology	PANCHAYANT BUILDING	DATE : - 11/11/2020	CIVIL	RAMPARIA DEV	180893106058
		JALIYA VILLAGE , RAJKOT	A-4	CIVIL	RAMANI DARSIT	180893106056
				ELEC	NAKUM ROHIT	180893109039

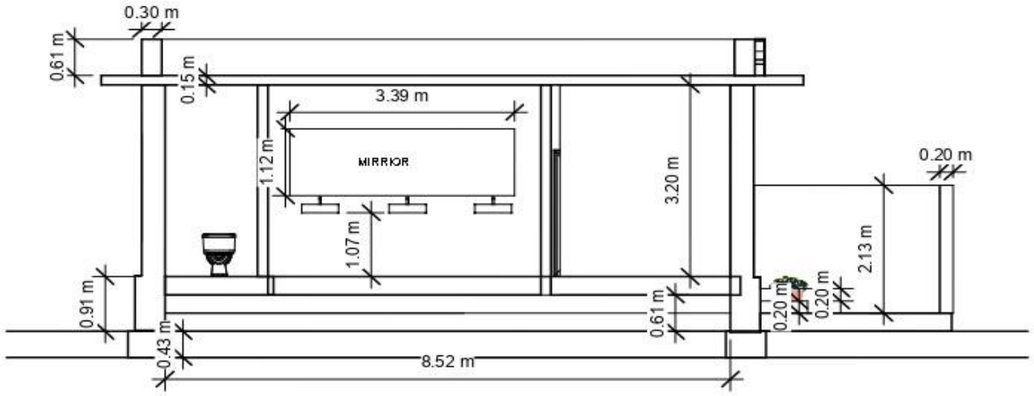
② 3D View 2_1
1 : 1

public toilet

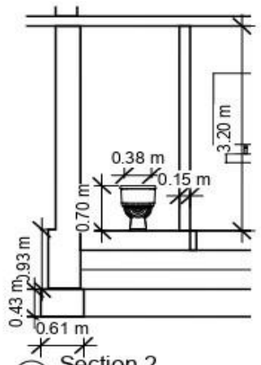


① LeveL PLAN
1 : 85

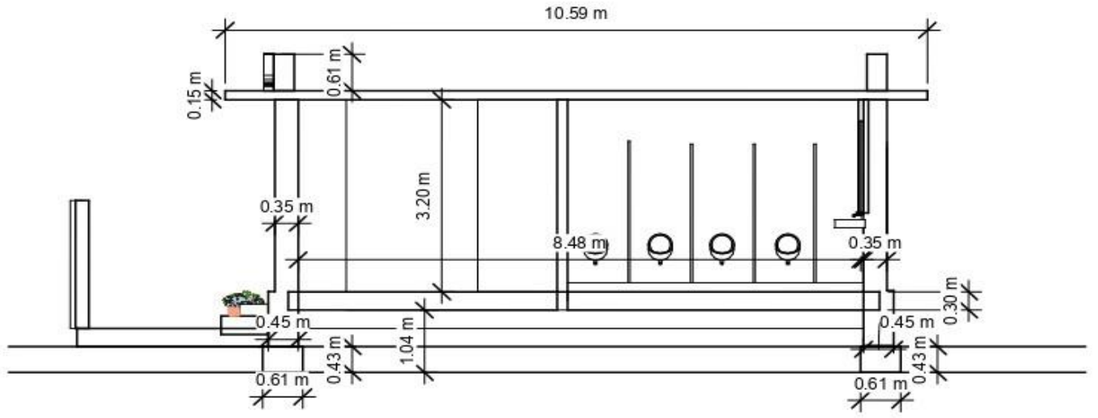
Gujarat Technological University	Shri Labhubhai Trivedi Institute of Engineering and Technology	PAY AND USE	DATE : - 9-11-2020		CIVIL	RAMPARIA DEV	180893106058
		JALIYA VILLAGE , RAJKOT	A-1		CIVIL	RAMANI DARSIT	180893106056
					ELEC	NAKUM ROHIT	180893109039



1 Section 3 FEMALE
1 : 80



3 Section 2
1 : 75

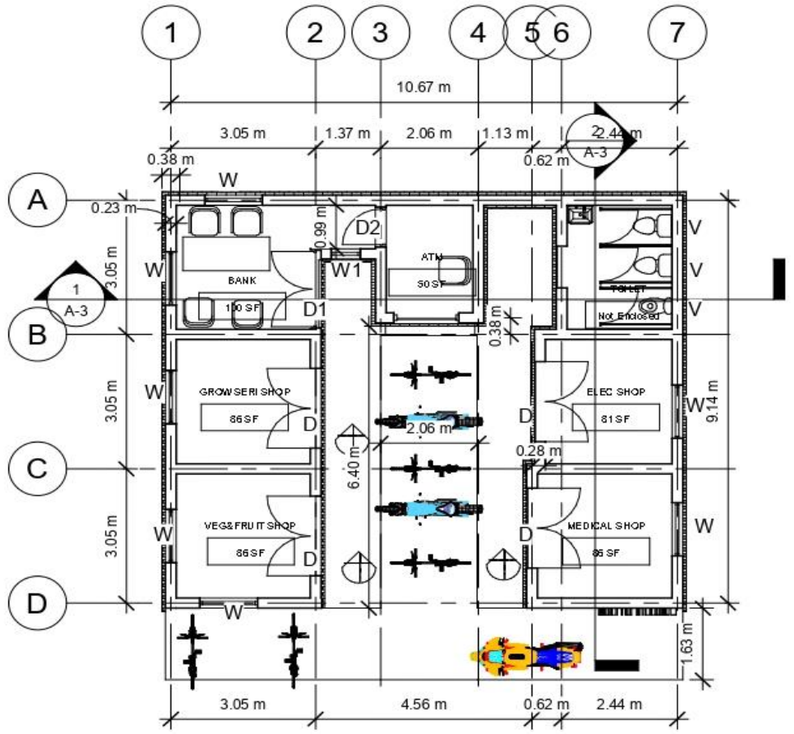


2 Section 4 MALE
1 : 80

Gujarat Technological University	SLTIET आत्मदीपोभव	Shri Labhubhai Trivedi Institute of Engineering and Technology	PAY AND USE	DATE : - 9-11-2020		CIVIL	RAMPARIA DEV	180893106058
			JALIYA VILLAGE , RAJKOT	A-4		CIVIL	RAMANI DARSIT	180893106056
						ELEC	NAKUM ROHIT	180893109039

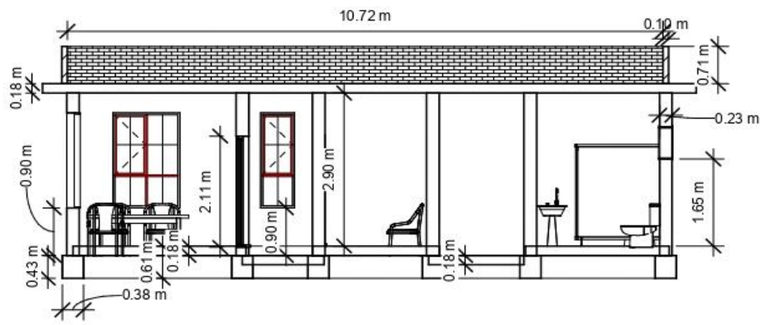
② 3D View 3_1
1 : 1

GENERAL MARKET

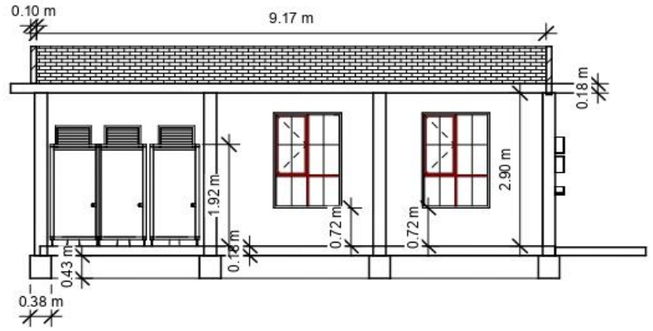


① GROUND FLOOR AREA
1 : 96

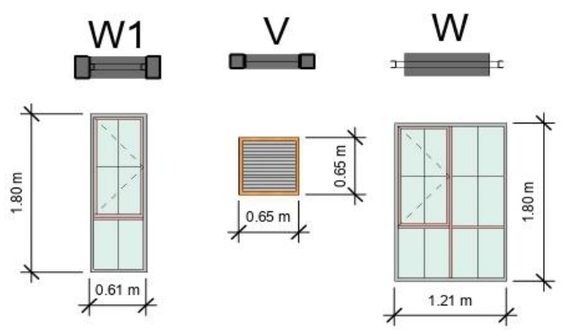
Gujarat Technological University	Shri Labhubhai Trivedi Institute of Engineering and Technology	GENERAL MARKET	DATE : - 11/11/2020		CIVIL	RAMPARIA DEV	180893106058
					CIVIL	RAMANI DARSIT	180893106056
		JALIYA VILLAGE , RAJKOT	A-1		ELEC	NAKUM ROHIT	180893109039



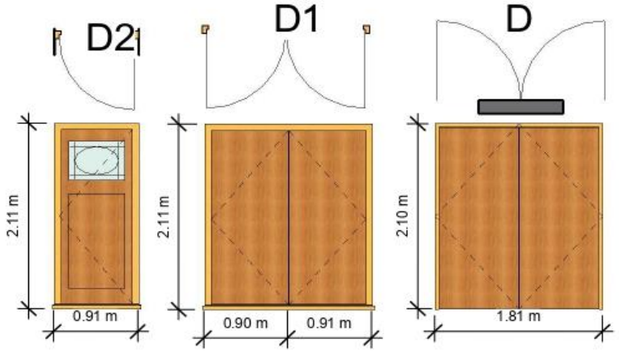
① Section 1
1 : 80



② Section 2
1 : 80



WINDOW
1 : 48



DOOR
1 : 48

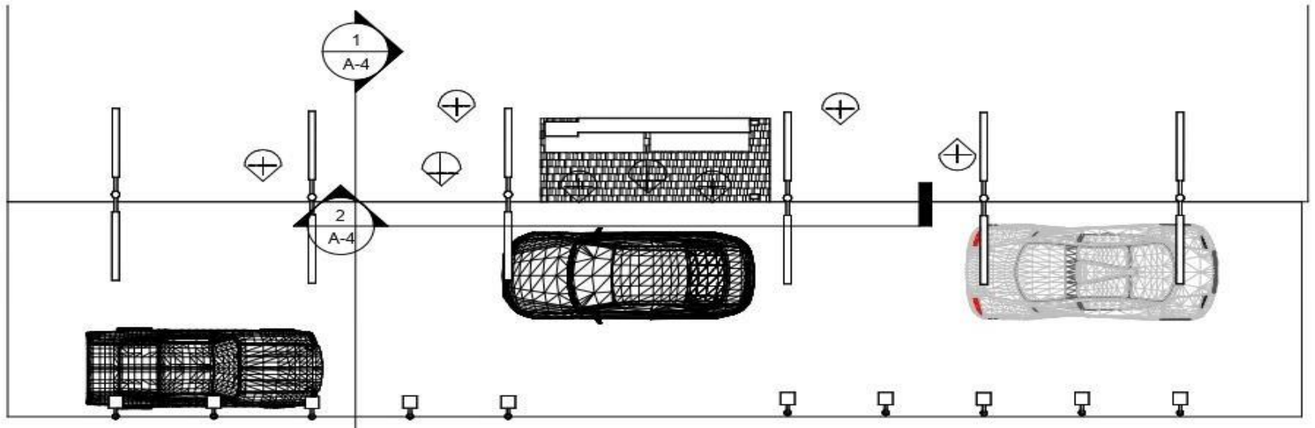
Gujarat Technological University	Shri Labhubhai Trivedi Institute of Engineering and Technology	GENERAL MARKET	DATE : - 11/11/2020	W E S N	CIVIL	RAMPARIA DEV	180893106058
					CIVIL	RAMANI DARSIT	180893106056
		JALIYA VILLAGE , RAJKOT	A-3		ELEC	NAKUM ROHIT	180893109039

③ 3D View 1_3
1 : 1

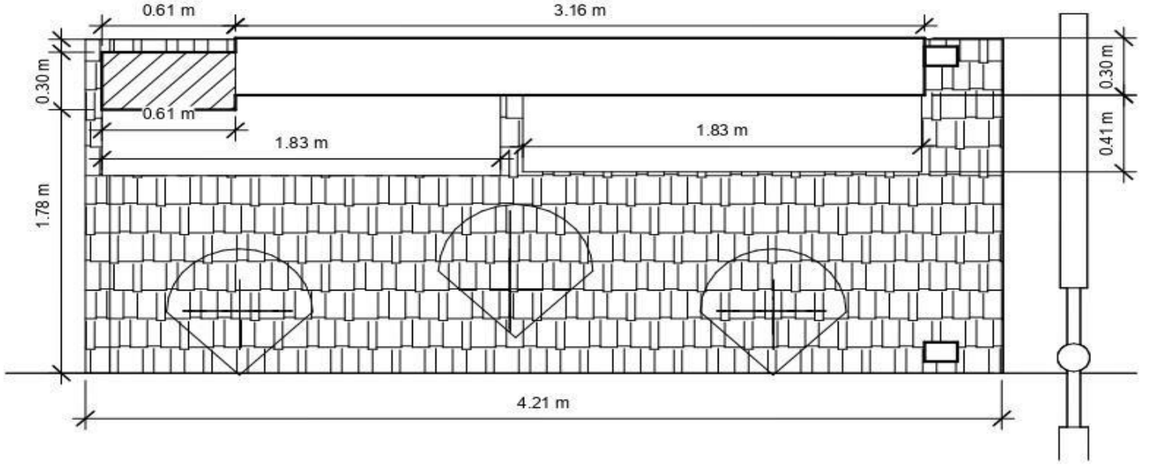
BUS STAND

② 3D View 1_2
1 : 1

Gujarat Technological University	Shri Labhubhai Trivedi Institute of Engineering and Technology	BUS STAND	DATE : - 07-03-2021 19:50:48	N W S E	CIVIL	RAMPARIA DEV	180893106058
		JALIYA VILLAGE , RAJKOT	A-1		CIVIL	RAMANI DARSIT	180893106056
					ELEC	NAKUM ROHIT	180893109039

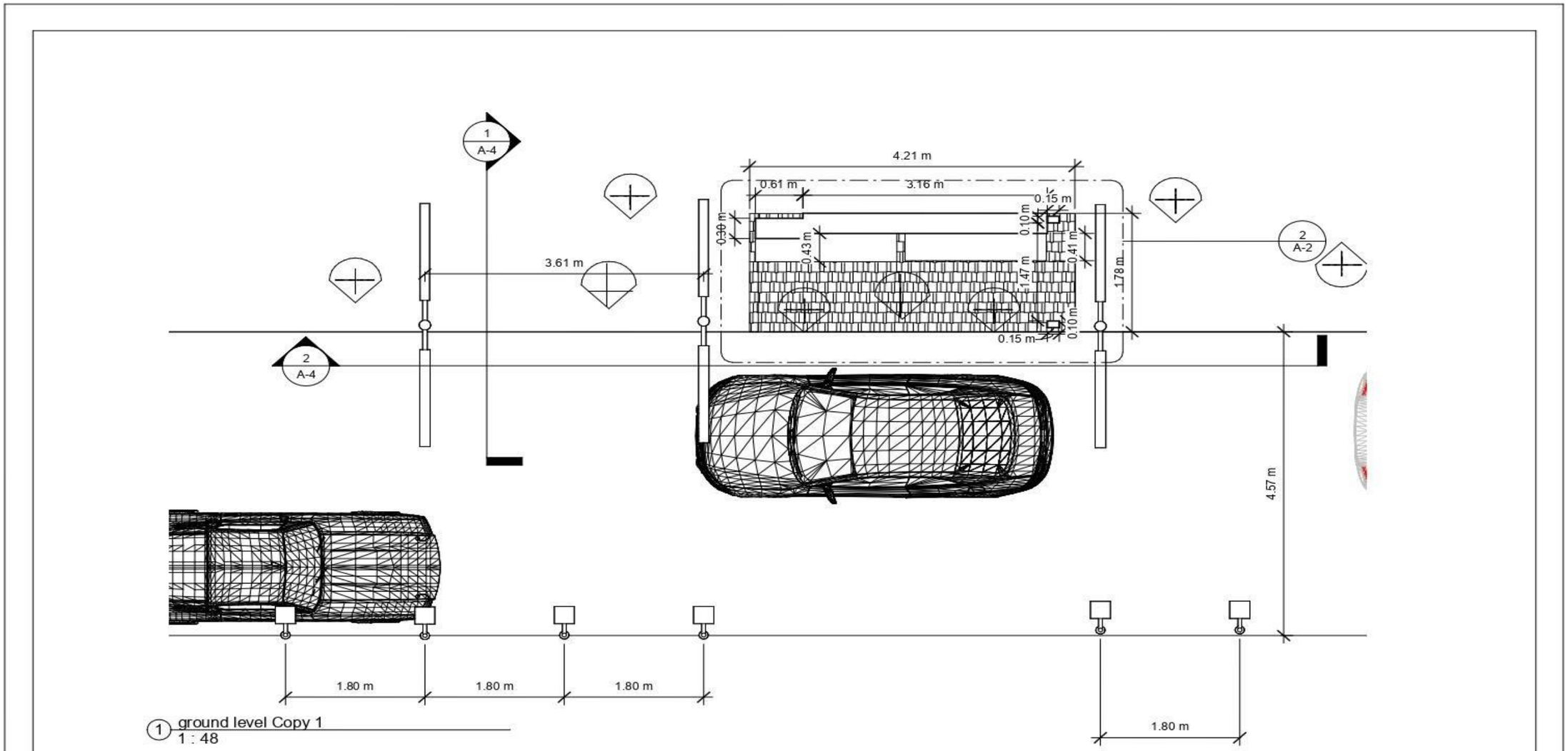


① ground level
1 : 96



② ground level Copy 1 - Callout 1
1 : 24

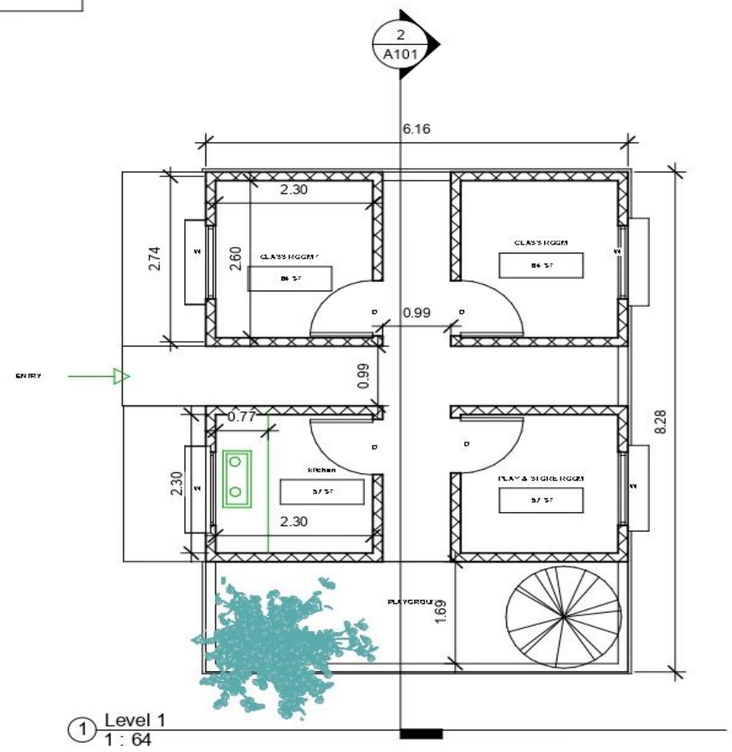
Gujarat Technological University	Shri Labhubhai Trivedi Institute of Engineering and Technology	BUS STAND	DATE : - 12-11-2020 00:42:29	W N S m	CIVIL	RAMPARIA DEV	180893106058
		JALIYA VILLAGE , RAJKOT	A-2		CIVIL	RAMANI DARSIT	180893106056
					ELEC	NAKUM ROHIT	180893109039



Gujarat Technological University	SLTIET	Shri Labhubhai Trivedi Institute of Engineering and Technology	BUS STAND	DATE : - 12-11-2020 00:42:32		CIVIL	RAMPARIA DEV	180893106058
						CIVIL	RAMANI DARSIT	180893106056
			JALIYA VILLAGE , RAJKOT	A-3		ELEC	NAKUM ROHIT	180893109039

Part -2 designs

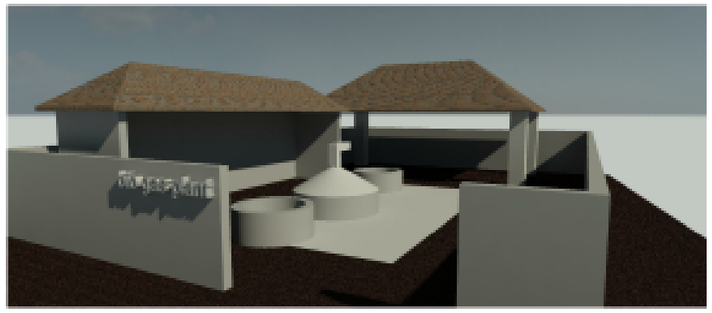
AGANWADI

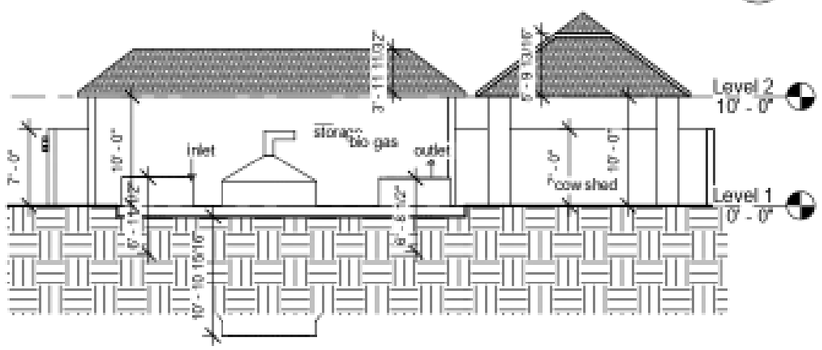


1 Level 1
1 : 64

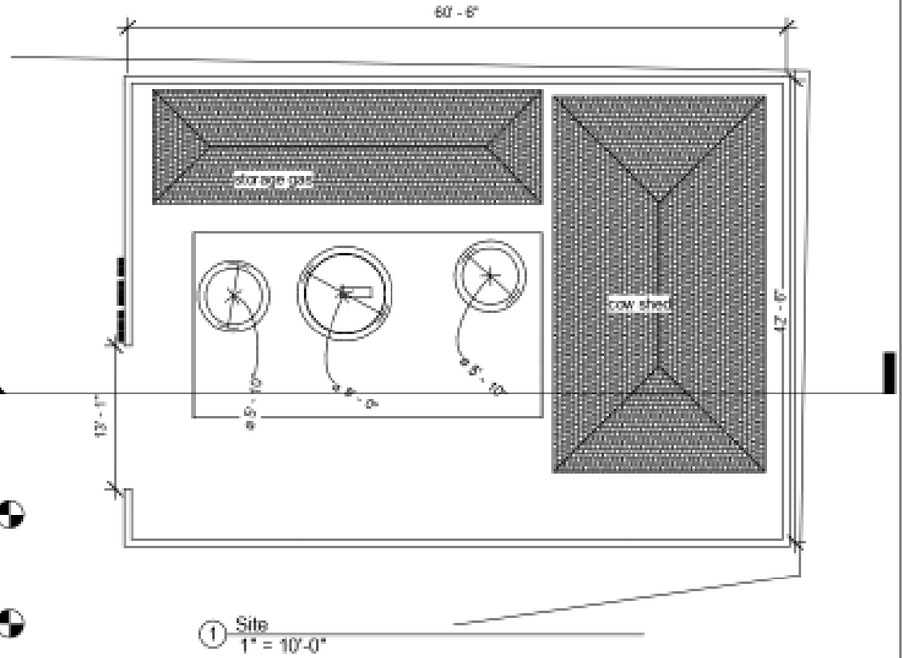
2 Section 1
1 : 64

Gujarat Technological University	Shri Labhubhai Trivedi Institute of Engineering and Technology	Project Name	DATE : -		CIVIL	RAMPARIA DEV	180893106058
		JALIYA VILLAGE , RAJKOT	A101		CIVIL	RAMANI DARSIT	180893106056
					ELEC	NAKUM ROHIT	180893109039



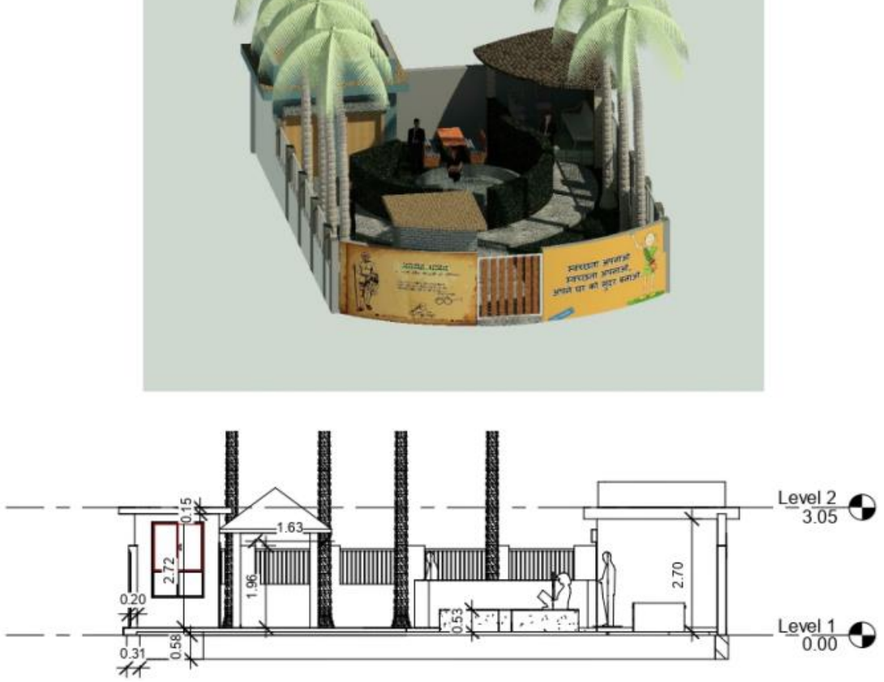


2 Section 1
1" = 10'-0"

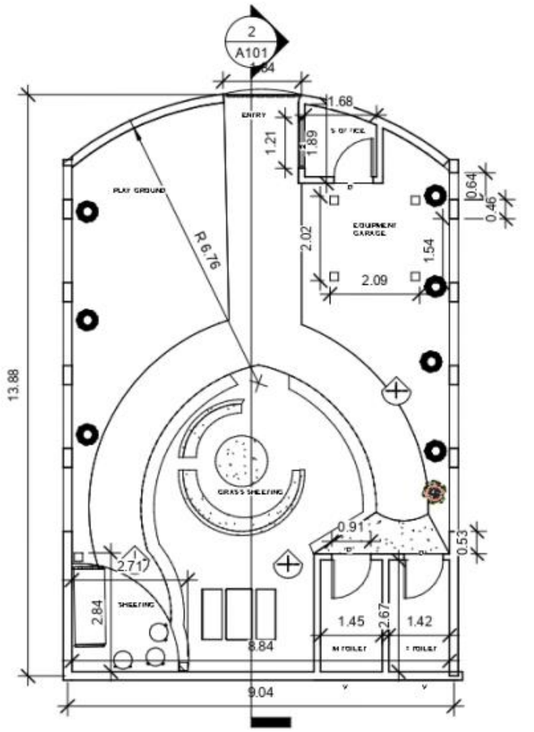


1 Site
1" = 10'-0"

Gujarat Technological University	Shri Labhubhai Trivedi Institute of Engineering and Technology	Project Name	DATE : -		CIVIL	RAMPARIA DEV	180893106058
					CIVIL	RAMANI DARSIT	180893106056
		JALIYA VILLAGE , RAJKOT	A101		ELEC	NAKUM ROHIT	180893109039

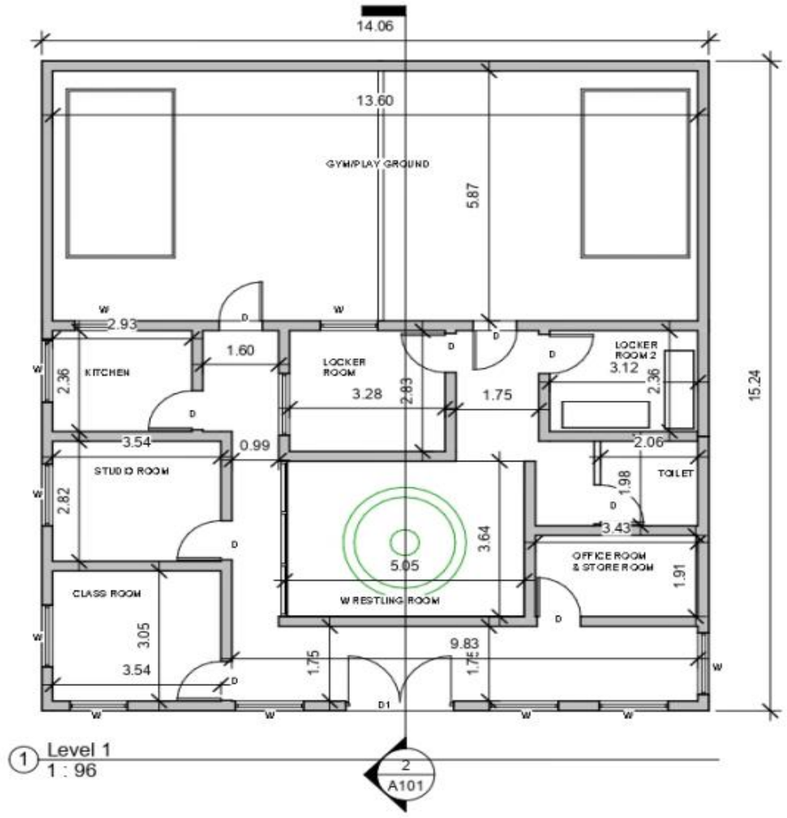


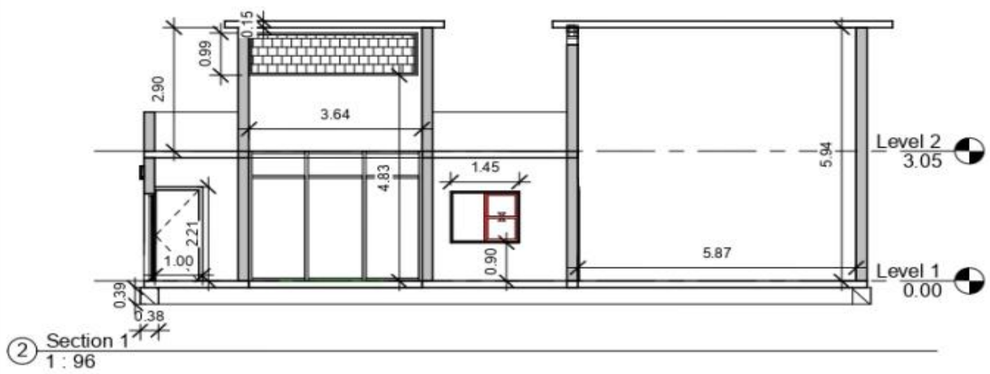
② Section 1
1 : 96



① Level 1
1 : 96

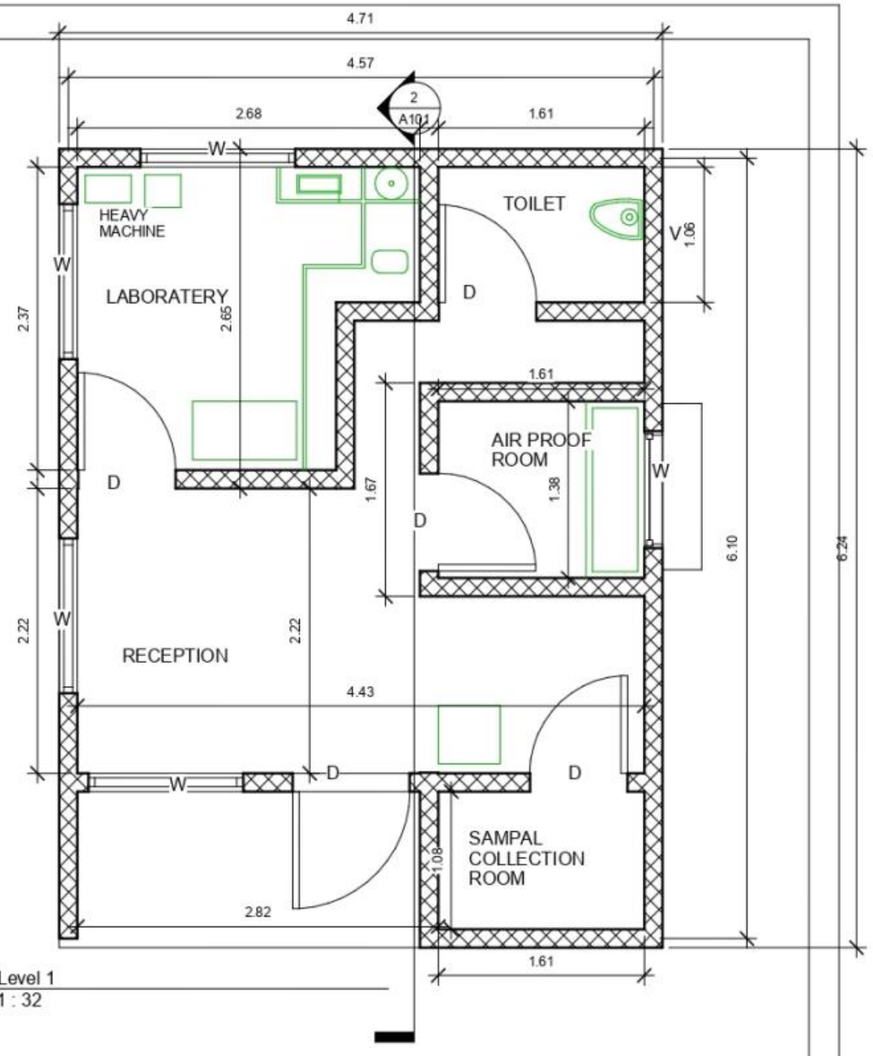
Gujarat Technological University	Shri Labhubhai Trivedi Institute of Engineering and Technology	GARDEN	DATE : - 21/3/2021	N W S E	CIVIL	RAMPARIA DEV	180893106058
		JALIYA VILLAGE , RAJKOT	A101		CIVIL	RAMANI DARSIT	180893106056
					ELEC	NAKUM ROHIT	180893109039





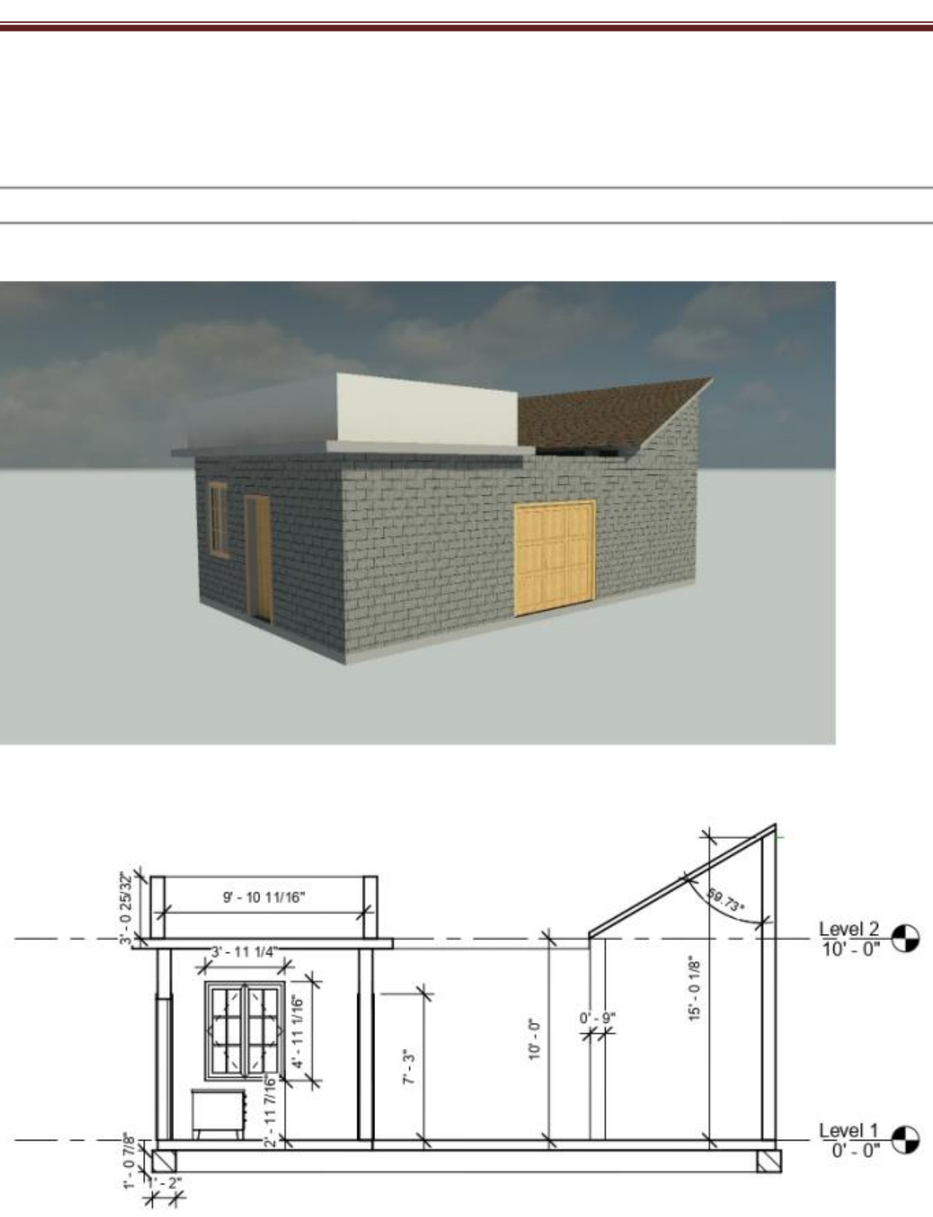
Gujarat Technological University	Shri Labhubhai Trivedi Institute of Engineering and Technology	RECREATION CENTER	DATE : - 22/3/2021	CIVIL	RAMPARIA DEV	180893106058
		JALIYA VILLAGE , RAJKOT	A101	CIVIL	RAMANI DARSIT	180893106056
				ELEC	NAKUM ROHIT	180893109039

② Section 1
1 : 64

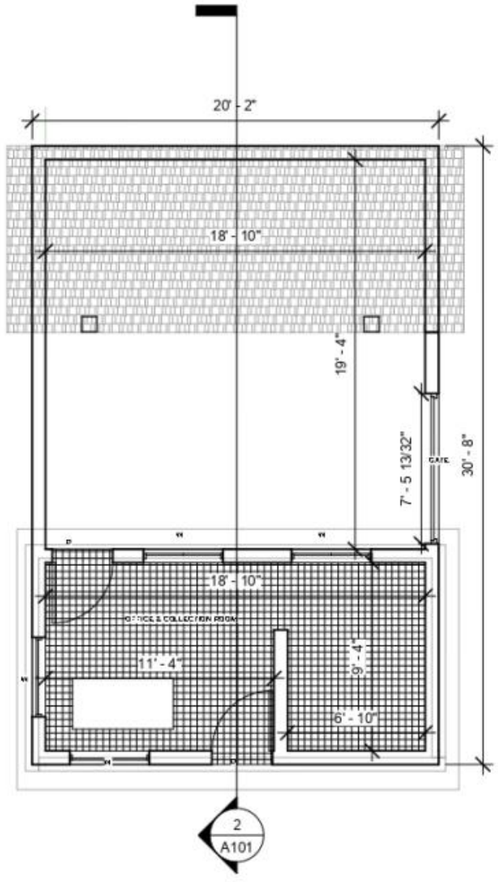


① Level 1
1 : 32

Gujarat Technological University	Shri Labhubhai Trivedi Institute of Engineering and Technology	SOIL TESTING LAB	DATE : - 21/3/2021	CIVIL	RAMPARIA DEV	180893106058
		JALIYA VILLAGE , RAJKOT	A101	CIVIL	RAMANI DARSIT	180893106056
				ELEC	NAKUM ROHIT	180893109039



② Section 1
3/16" = 1'-0"



① Level 1
3/16" = 1'-0"

Gujarat Technological University	Shri Labhubhai Trivedi Institute of Engineering and Technology	Project Name	DATE : -	CIVIL	RAMPARIA DEV	180893106058
				CIVIL	RAMANI DARSIT	180893106056
		JALIYA VILLAGE , RAJKOT	A101	ELEC	NAKUM ROHIT	180893109039