DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION
KHORANA Village

RAJKOT District

PREPARED BY

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
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Chudasama Jigna B	Civil	180893106007
Sanghani Keyur K	Electrical	180893109049

Shree Labhubhai Trivedi Institute
of Engineering and Technology
Rajkot.

Assi. Prof. Mehul M Chavda
Civil Engineering Department

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad– 382424 Gujarat.

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CERTIFICATE

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

Detail Project Report for,

VILLAGE: KHORONA
DISTRICT: RAJKOT

Under

VishwakarmaYojana: Phase-VIII

In partial fulfillment of the project offered by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

During the academic year 2020-21.

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

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College Name:	Shri Labhubhai Trivedi Institute of Engineering and Technology, Rajkot
College Stamp:	

ABSTRACT

The Government of Gujarat has launched "Vishwakarma Yojana: An approach towards Urbanization" for the development of villages by identify the requirement of village and then implementation of that existing or new facility. The aim of this project is "Developing village with a 'rural soul' but with all urban amenities that a city may have" & provide basic facility in rural areas for minimize urbanization and give more employment chances in future. Rurbanization means urban facilities and amenities in rural area, developing village with help of rural soul and urban amenities. The main vision of this project is provide basic facilities like bank, post office, health care, transportation, local education, road, electricity, water problem solution, etc. with today techniques to the villages.

The allocated village is Khorana which is situated near Rajkot city. Khorana is far away 17.7 km from Rajkot. In Khorana village total population is 2154 with 1101 male and 1053 female is. The main occupation in Khorana village is agricultural. Khorana is a small village is beautiful because of agricultural land but some basic facilities are needed and some utilities to be improved.

The village did not have a poor road condition and other infrastructures facilities. In this village approach road is made of bituminous and other roads are made of C.C. There is no any facility provide for solid waste management. In Khorana village observed that there is no facilities like public latrine blocks, management of collecting waste from village, bus-stand, recreational centre, bank facilities, street lights, library, cyber cafe, bio-gas plant, etc.

In the part I, the basic data of are collected by Ideal, smart and allocated village survey with the help of Sarpanch, Talati and villagers. The requirements of various structures are finalize for the village development. The community hall should be built in village because in some function village people cannot afford the private venue for the function. The physical structure provision like public toilet is not available so public toilet design provided in for the village. Public library, recreational zone are also needed. Post office and bus stand required for enlargement as per present situation. Design of wind farm and solar panel can gives alternative source for the villages to make independent in the terms of electricity.

By providing the various basic requirement and amenities in the village, we should minimize the migration and increase socioeconomic development. We can only approach to digital facilities and sustainable technology for our village. For the future, we can approach towards more usage renewable energy. Now a day's awareness is more required rather than technology. As our village is heritage site and surrounded by other religious temples so we can develop village as tourism place.

Key Words: **Rural development, population, smart village, design.**

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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.

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

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

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An act of gratitude is expressed to our internal guide, Evaluator and Nodal Officer, **Ass. Prof. Mehul. M. Chavda from Shri Labhubhai Trivedi Institute of Engineering and technology, Rajkot** for their invaluable guidance, constant inspiration and active involvement in our project work.

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

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ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
ATM	Automated Teller Machine
CCTV	Closed Circuit Television
CEO	chief executive officer
CSO	Central Statistics Office
DDO	District developer officer
DTD	Document type definition
DDP	Deliver type definition
DPAP	Drought Prone Area Programme
ITDP	Integrated Tribal development Programme
IRDP	Integrated Rural Development Programme
IPC	Interpersonal Communication.
IMIS	Integrated Management Information System
IEEE	Institute of Electrical and Electronics Engineers
MFAL	Marginal farmers and Agricultural Labours Agencies
MDWS	Ministry of Drinking Water and Sanitation
NGO	Non-Government Organization
NH	National highway
NREP	National Rural Employment Programme
PHC	Primary health center
RCC	Reinforce Cement Concrete
RO	Rivers osmosis
SBM	Swachh Bharat Mission
SHG	Self-help group
SFDA	Small Farmers Development Agencies
SC	Scheduled Caste
ST	Scheduled Tribe
SPMRM	Shyam Prasad Mukherjee Rurbanization
TRYSEM	Training of a Rural Youth For self Employment
TDO	Transit oriented development
VDC	Village Development Committee
VY	Vishvkarma yojana capacity
VDC	Village development committee
ESR	Eelevated storage reservoir
SWOT	Strength, weakness, opportunity threats
GDP	Gross Domestic Product
ATMS	Advanced Traffic Manmission System

#Chapter 1#

Ideal village visit of Gavridad (Rajkot Dist., Gujarat)

1.1 Background & Study area location:-

- VY is one of the approaches to decrease urban city problems and lower the migration rate by developing village with a 'rural soul' but with all urban amenities that a city might have. The developmental work in village that could undertake as per the need of the village in particular includes physical, social and renewable infrastructure amenities. It is also proposed to frame "VY" to provide the benefit of real work experience to engineering students of Gujarat Technological University and at the same time apply their technical Knowledge in the development of infrastructure in Urbanization.

Figure 1.1 Gavridad panchayat office

- We visited ideal village Gavridad on 7th September.
- Gavridad village is located in Rajkot district, Gujarat.
- Gavridad is a Village in Rajkot Tehsil in Rajkot District of Gujarat State, India. It is located 12 KM from rajkot. 244 KM from State capital Gandhinagar. gavridad Pin code is 360003 and postal head office is Rajkot.guvridasis located on the edge of the National Highway No.27.The population of guridad Village in 2001 was 2618 according to census 2001 and is increased to 3749 in 2011 according to census 2011.
- Block/Tehsil: Rajkot
- District: Rajkot
- State: Gujarat
- Pin code: 360003

1.2 Concept:-Ideal village, Normal village:-

An ideal village is that village in which all the basic facilities are available like public health center, education system, proper road network, 24 hours electricity, 24 hours availability of water, sufficient water for irrigation, solid waste management, proper drainage facility and sanitation system etc.

Figure 1.2 Google map of Gavridad

An ideal village is that village in which all the basic facilities are available like public health center, education system, proper road network, 24 hours electricity, 24 hours availability of water, sufficient water for irrigation, solid waste management, proper drainage facility and sanitation system etc.

1.2.1Objectives of ideal village

Objectives of ideal village visit are as follows:

- ✓ To observe amenities needed for development of a village
- ✓To keep reference of amenities for development of allotted village
- ✓ So, see management of amenities in the village
- ✓ To see maintenance of amenities / Structures in the villages
- ✓ To see govt. Schemes for the development of the village
- ✓ To checkout basic needs of residents
- ✓ To understand the concept of ideal village
- ✓ To see the facilities of the ideal village
- ✓ Plans for development based on people and their assets

1.2.2 Example\Live Case study of Ideal village Gavridad, Rajkot

Gavridad village is located in 12 km away from Rajkot district. About 70 years ago, the village was declares as a desert and arid zone because all most 75 percent bores in village yielded no water. To face this situation amitbhai parmar led the villagers to construct 10 check dams between 1995 and 2010. The village has been developed in past few years.

Ms. Amitbhai parmar, an enthusiastic sarpanch, transformed his village with vision of development through cleanliness. Cleanliness of households, streets and entire village was declared compulsory duty of each citizen of the village and fine system was introduced in the code of conduct for strict implementation of rules since 1983 and today it is now habit of all residents to keep the village clean and plastic free.

Some fine and rules to be imposed on villagers to cleanliness Name of buyer is written by shopkeeper on wrappers of any items to detect easily who has thrown and fine should be imposed. First year fine collection is Rs.19,500.

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

Achievements Of Village:

- ➢ Best Sarpanch Award (District Level Award)
- ➢ Best Farmer Award (State Level Award)
- ➢ Village Development Award

- Samras Gram Panchayat Award
- Shresth Gram Panchayat Award (District Level)

Special Features:

. 100% Regular Recovery of Government Dues and Taxes.

- **Zero Crime Rate** from last 20 years, local disputes to be solved at Lok Adalat.
- **Water Harvesting** through Scientific Approach by Remote Sensing by developing Dykes and Lineaments with the help of ISRO.
- More than **1000 trees** to fight against Global Warming And pollution free environment.
- Self-sufficiency in drinking and agricultural water from last 30 years even in draught conditions.
- Water Tank of 10 lakhs. For 20 lacs rupees public role in form of money and labour.
- **Sports Encouragement** to young generation State Level Cricket Ground for local team to compete against under 19 teams from Rajkot, and near villages.
- Night Cricket Match Tournaments.
- **Mahila Samaras Gram Panchayat**.
- **Gram Panchayat Elections** since its establishment.
- Strict implementation of rules framed by Village Development Committee.
- **RO water Filter Plant** to eradicate water prone diseases.

1.2.3The Idea of a Smart village

- In Gavridad village the concept of smart village is introduced by headman Hardev Singh Jadeja. By the endeavor and the coordination of the villagers. We select this village to learn how to, make village an example for the other villages and challenges that they have faced.
- India is a country of villages, where more than 68% of the total population residein over 5.97 lakhs of villages. As said, 'India lives in its villages' Mahatma or 'India's soul is in villages', which is the backbone of Indian culture.
- The references of the villages as 'Sabha' is found in the time of Rig-Veda, which was the grass root level governing system.
- Agriculture is practiced in the country from antiquity (from Harappa Civilization) where, communities settled and civilized structure of villages evolved.
- The social, economic and scientific developments in these communities helped in the growth of such villages and also has become the building block of civilizations

1.2.4 Ancient History Civil concept about Indian Village / Foreign Countries Perspective and its Development

- 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 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 faraway 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.
- Wild life is more frequently found in rural areas than in cities because of the absence of people and buildings.
- Interact with the countries native wildlife.

1.3 Detail study (Socio economic, physical, demographic and infrastructure details) Of Gavridad Village with photograph

Physical & Demographical Growth

Guvridad village total population is 3749 among them 1909 are males and 1840 are females as per the census 2011. The population of children with age 0-6 is 172 which are 11.72% of total village population. There are about 690 houses in Guvridad village and average family size is 5 members.

Literacy rate of this village was 87.60% as per census 2011. The geographical area of village is 2591.21 hectares. Rajkot is nearest town to Raj Guvridad which is approximately 12 km away.

Figure 1.3 facilities in village

Guvridad village has sufficient physical infrastructure facilities like 12 check dams and 1 lake for main sources of drinking water, water tank, underground drainage, good road network, transportation facility and electricity distribution.

Economic profile

Around 60 % people of Guvridad is Educated. And income of around 70% people is depends on Agricultural activity. There are rules in village its compulsory to be occupied in employment for every adult healthy person and opportunities are provided for unemployed person by Village Development Committee.

Social scenario /profile

In Guvridad village all cast people are available. Around 98% people are Hindu in Guvridad village among them 50% are Patel, 20% are koli, 15% are scheduled castes and 15% are belongs to different categories. All people are living like a family. This village has own Village Development Committee (VDC) for effective growth of the village.

Infrastructures facilities

The followings are various important facilities in guvridad village:

- Drinking Water Facilities
- Main supply for drinking is Narmada water though the pipe line in gap of 1 day.
- There are 50,0000 liter water tank as reserve water.
- Road Network and Transportation Facilities.
- All the road in village is cement concrete road with underground drainage facility. There are one bus station with good condition and local transportation is also get on the road like Auto, Jeep, Chhakda, private vehicles and other.

Figure 1.4 Drinking Water Facilities & NH 27 pass on centrally Guvridad

Education Facilities:

Village has Anganwadi, Primary school and Secondary school with good condition. There is one library in under process for provide good education to village people. There are free WiFi facilities in village own by Panchayat office for learning purpose.

Figure 1.5 Aanganwadi & primary School

Recreational Facilities

In the village there are 5 temples.

Figure 1.6 Temple

Health Center

There is one Primary health center block in village to maintain health of village people and for solution of diseases.

Community Hall

Figure 1.7 PHC center & Community Hall

Table 1.1: Infrastructure Amenities in Guvridad

Sr. No	Item Name	Description
1	System used for water pumping	4 boreholes, Supported to pump water for farms
2	Water Tanks	There is one old ESR tanks of one lac litter capacity each to supply water by gravity flow.
3	Lakes & Ponds	12 ponds

4	Drainage System	Underground Drainage System is provided in whole Village
5	Power Supply	There is 24 hours' electricity for Residential, commercial and Industrial use, while 8 Hours Electricity is provided for Agricultural use. The power comes from a 66KV Power House.
6	Street Lights	There are power saving LED Street Lights running from 6:00 pm to 6:00 am
7	Ratio of Kuccha/ Pucca Houses	95.5 %
8	Road Network	The Road Network in the village is Excellent. There are No Blocked Streets & Road are wide enough as per requirements
9	Road Structure	The village approach road & main roads are bitumen roads in good enough condition. The street roads are C.C. Roads in excellent condition.
10	Educational Amenities	Anganwadi – 3 Govt. Primary Schools: 1 to 10th
11	Birth & death Registration	It is done at Panchayat Building
12	Gardens	well maintained public gardens
13	Banks & Post office	The village has 3 banks, 2 ATMs & 1 Post-Office

1.4 SWOT analysis of ideal village

- **Strength:** The Community of the village is great and has excellent unity for improvement. The Sarpanch is very creative, aggressive supportive to development of the village. All other amenities in the village are adequate for first class living.

These are the things that village should be proud of

- Quality Education and very good literacy rate
- Telecom and Internet connectivity
- Gravity powered water distribution system
- Excellent road network with Good Maintenance
- Great Hospitals
- Innovative features like CCTV cameras & Announcement System
- **Weakness:** The Weaknesses we found that there was no proper map of the village available at village Panchayat; we believe it should be there.

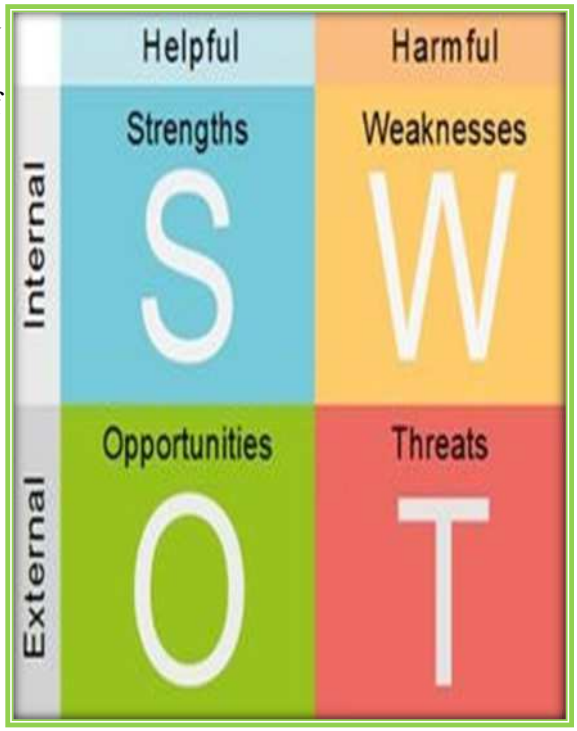


Figure 1.8 SWOT Analyses

- It is the general problem in every village in India

- **Opportunity:** The village can be more developed if it can get much more grant fund from Govt. of India. Current development is done by the funds of Village inhabitants themselves by paying regular tax at Panchayat, which is used by Panchayat to develop the village.
- **Threats:** There are no politicians allowed to enter the village. It may obstruct village to get grant from govt.

`1.5 Future prospects of the Ideal Village

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

1.6 Benefits of Visit of Guvridad Village (Ideal Village)

The befits from village visit are

- We understood the development Programmed of the village.
- We observed amenities needed in the village.
- We got new ideas for increasing amenities in the village. I.e. Announcement System, CCTV surveillance, Name plates on houses, Waste Collection etc.
- We observed current scenario of the village.
- From this village we get the actual definition idea of developed village.
- We get idea about how to develop our village.
- Know about development of village only use by government scheme

1.7 Electrical / Civil aspects required in Ideal village / Smart Village

- This initiative is evaluating how to deliver energy access to rural communities so as to make smart villages a reality. Through a three-year programmed of engagement activities in Africa, Asia and Latin America, it will help to ensure that policies and development initiatives are better informed on the realities, challenges and opportunities of rural energy provision for development in key sectors. The following paragraphs elaborate on some of the characteristics of smart villages that will be explored by the initiative.

#Chapter 2#

KHORANA Village Literature Review.

2.1 Introduction: Urban & Rural village concept

- The word 'Rural' means an area which is marked by non-urban style of life, occupational structure, social organization and settlement pattern.

  Rural is noticeably agricultural, its settlement system consists of villages or homesteads Socially it signifies greater inter dependence among people, more deeply rooted community life and a slow moving rhythm of life built around nature and natural phenomenon; and occupationally it is highly dependent on crop farming, animal enterprises, tree crops and related activities.

Urban area

- An urban area or urban agglomeration is a human settlement with high population density and infrastructure of built environment. Urban areas are created through urbanization and are categorized by urban morphology as cities, towns, conurbations or suburbs.

Table 2.1 Urban Town (form reference book)

Name	Population
City	50000 to 1000000
Great city	1000000 and over
Super city	More then 3000000
Metropolis	1000000 and above
Megapolis	5000000 and above

2.2 Importance of the rural development

- The main objective of the rural development programmers is to raise the economic and social level of the rural people. Rural development implies both the economic betterment of people as well as greater social transformation. Rural Development refers to the process of improving or uplifting the living conditions of the people living in rural areas. The people of India live mostly in rural areas (villages). Therefore, it is in the heart of the villages that the nation lives. Indeed, "the soul of India is in the toil of the rural areas". The welfare of India depends upon the prosperity of the villages.

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

Definition of village

- A village is a clustered human settlement or community, larger than a hamlet but smaller than a town, with a population ranging from a few hundred to a few thousand. Though villages are often located in rural areas, the term urban village is also applied to certain urban neighborhoods.

- Villages are normally permanent, with fixed dwellings; however, transient villages can occur. Further, the dwellings of a village are fairly close to one another, not scattered broadly over the landscape, as a dispersed settlement.

Definition of: Rural area

- In general, a rural area or countryside is a geographic area that is located outside towns and cities. "all population, housing, and territory not included within an urban area. Whatever is not urban is considered rural."

2.4 Scenario: Rural / Urban village of India population Growth

- For the first time in history, the Census 2011 reported a decline in the population growth rate of rural India. However, at that time India was still predominantly rural, with the urban population being just 30 per cent. Between Census 2001 and Census 2011, the number of Census Towns increased from 1,362 to 3,894. This indicates that people in rural areas are quitting farming or joining non-farm livelihoods. Millions of farmers have quit agriculture and, worryingly, very few from the current generation are entering the sector.

2.5 Scenario: Rural / Urban India & Gujarat as per Census2011 and latest

- As per Official Census, Population of India has reached 1.21 Billion (121 Crore) in 2011 which is an increase of 17% from the earlier figure of 103 Crore of 2001. Although population growth rate has decreased but actual population continue to rise. As per estimates, it is expected that India would be most populous country by 2025 overtaking china.

- Gujarat Population Census Data shows that it has Total Population of 6.03 Crore which is approximately 4.99% of total Indian Population. Literacy rate in Gujarat has seen upward trend and is 79.31% as per 2011 population census. Of that, male literacy stands at 87.23% while female literacy is at70.73%.
- UrbanPopulationoftheStateis42.6%, which used to beat37.4% in2001.Ruralpopulation in the state in 2011, fell to 57.4% from 62.6% in2001.

Table 2.2 Population growth (from reference book)		
Description	2011	2011
Approximate population (Corers)	6.04	5.07
Actual population	60,439,692	50,617,017
Male	31,491,260	26,385,577
Female	28,948,432	28,285,440
Population growth	19.28%	22.48%
Percentage of total population	4.99%	4.93%
Sex ratio	919	920
Child sex ratio	890	883
Density/Km^2	308	258
Density/mt^2	798	669
Area(Km^2)	196,244	196,024
Area(mt^2)	75,770	75,685
Total child population (0-6 age)	7,777,262	7,532,404
Male population (0-6 age)	4,115,384	4,000,148
Female population (0-6age)	3,661,878	3,532,256
Literacy	78.03%	69.14%
Male literacy	85.75%	79.66%
Female literacy	69.68%	57.80%
Total literate	41,093,358	29,827,750
Male literate	23,474,873	17,833,273
Female literate	17,618,485	11,994,477

2.6 Rural development Issues – Concerns - measures

There are many issues with rural development in India. Though the government is spending a lot still there is lot to achieve.

- **Roads**

Many of the poor communities are isolated by distance, bad road conditions, lack of or broken bridges and inadequate transport. These conditions make it difficult for people to get their goods to Market and themselves to place of work, to handle health emergencies, to send children to school, and to obtain public services

- **Electricity**

As per latest data, about 19,909 villages are yet to be electrified (Progress report of village electrification as on 31-01-2015). However, not all electrified villages are getting quality power and it is estimated that nearly 33% of the population maybe facing under-electrification, accessing less than 50kWh of electricity per month/household.

- **Water**

The health burden of poor water quality is enormous. Its estimated that around 37.7 million Indians are affected by water borne diseases annually, 1.5 million children are estimated to die of diarrhoea alone and 73 million working days are lost due to waterborne disease each year. The resulting economic burden is estimated at $600 million a year. The problems of chemical contamination are also prevalent in India with 1, 95,813 habitations in the country are affected by poor water quality.

The major chemical parameters of concern are fluoride and arsenic. Iron is also emerging as a major problem with many habitations showing excess iron in the water samples. Most of these problems Prevailed in rural India.

- **Education**

Education is an empowering right and one of the most powerful tools by which economically and socially marginalized children and adults can lift themselves out of poverty.

- **Empowering girls**

When a girl has the opportunity to be educated and healthy, not only does she benefit society as a whole.benefit

- **Employment**

Unemployment is a big problem in rural India. Youth are being migrated in search of better employment in urban areas the aged remained in rural India. Agriculture land remained same but population is growing. With the advancement of civilization, machines with modern technologies have been introduced; the unemployment is increasing many folds

- **Migration to urban**

Economic Factors, Lack of Income Generating Opportunities in Rural Sector, Urban Job Opportunities, Social Factor, Health, Education & Finance Factor, Lack of available infrastructure are some of the major factors for migration in rural India.

- **Land reforms**

The Britishers in India were not at all keen in adopting progressive land reforms measures for the rural farmers. This had given the Zamindars and the big landlords a golden opportunity to exploit the rural poor to a great extent. The almost compelling case of land ceiling arises from the absolute and permanent shortage of land in relation to the population dependent on it, the limited prospect of transfer of population to non-agricultural occupations or and the need to step up production along with increase in employment.

- **Environment**

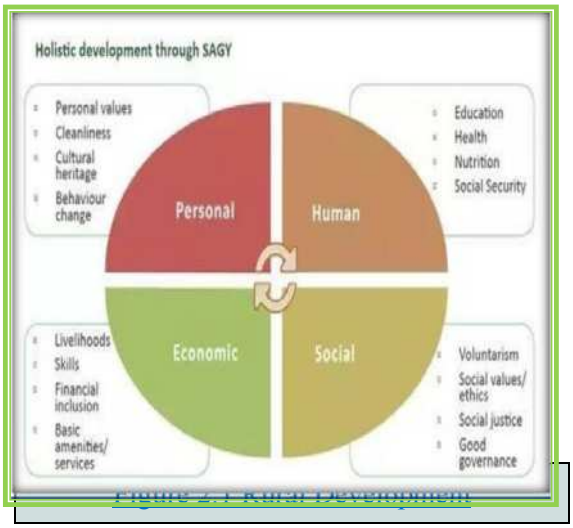
Environmental is the major issue in rural area as well as urban area. Now a days peoples and governments are very well aware and taking the necessary steps toward sustainable cities.

- **Gender Discrimination**

Despite the fact that women in developing countries provide nearly 70 percent of the agricultural labor.

Various Measures for Rural development

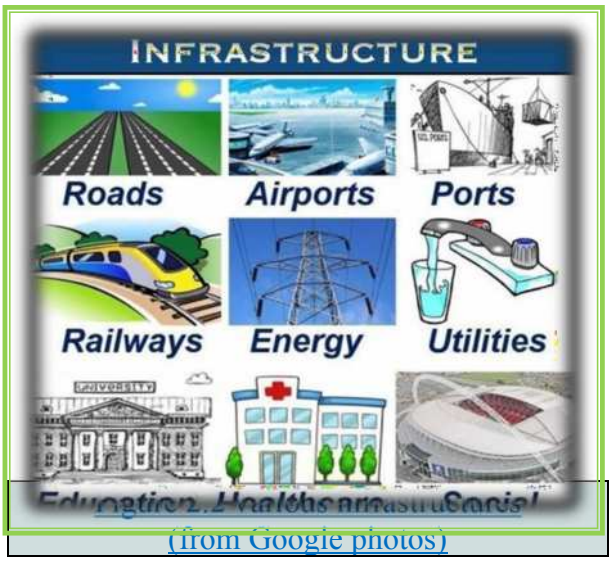
- Rural development can be defined as "an integrated development of the area and the people through optimum development and utilization of local resources-physical, biological and human and by bringing about necessary institutional, structural, and attitudinal changes of rural public."
- Village development by helping of various NGOs, local body, student project.
- Issuing various government schemes.
- Village development camping



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

Infrastructure facilities with types

- **Transportation**: -Roads, Bridges, Tunnels, ils tracks, Harbors, Airport, Distribution centers, etc.
- **Water supply**: -Dams, Reservoirs, Pipes, treatment Plant etc.
- **Water disposal: -**Sewers, used water treatment plants, etc.
- **Irrigation**: -Dams, Reservoirs, canals, Sprinkling system etc.
- **Garbage disposal**: - Land fill-incantations, recycling facilities, compost units, etc.
- **Power**: -Power plants, transmission etc.



(from Google photos)

- **Telecommunication**: -Telephone exchanges, telephone lines, oceanic cables, Cellular towers, fiber optic cables, web servers, etc.

Table 2.3 URDPFI Standards (2014)

Sr.No.	Category	Population served per unit
1	Anganwadi - Housing area/ cluster.	2500
2	Community Room.	5000
3	Community hall, mangal karyayala, barat ghar/ library.	5000
4	Music, dance and drama center.	1 lakh
5	Meditation and spiritual Centre.	1 lakh
6	Recreational Club.	1 lakh
7	Old age home.	5 lakh
8	Orphanage/ Children's Centre (One each).	10 lakh
9	Care center for physically /mentally challenged.	10 lakh
10	Socio – Cultural center/ Exhibition cum fair ground.	10 lakh
11	Science Centre.	10 lakh
12	International Convention Centre.	City level
13	Community park.	1 lakh
14	Police Post.	40,000 – 50,000
15	Police Station.	90,000
16	Fire Station.	2 lakh population or 5-7 km radius
17	Local Wholesale Market/ *Mandi.*	10 lakh
18	Pre Primary, Nursery School.	2500
19	Primary School.	5000
20	Senior Secondary.	7500
21	College.	1.25 lakh
22	Technical Education Centre (ITI).	10 lakh
23	Engineering College.	10 lakh
24	Nursing and Paramedical Institute.	10 lakh
25	Dispensary.	15000
26	Multi-Specialist Hospital.	1 Lakh
27	General Hospital.	2.5 lakh
28	Family Welfare Centre.	50,000

29	Cremation Ground.	5 lakh
30	Radio/ TV Station.	5 -8 lakh

Importance in rural context

- Shri. Narendra Modi has announced a project called rurbanisation and selected 50 towns for it.
- It can use "Rurban" concept to present to the world template of benign urbanization where the citizens are offered a chance to set the pace of change and arrive at different stages of urbanization when they deem fit. It is said that you can't resist an idea whose time has come but you can surely ease the pain that is attendant to the introduction of an idea
- Increase in job opportunities for the unemployed youth.
- New information and communication technologies promote education, social and cultural advances.
- Improvement in the defense system of the country resulting in peace in the country.
- Development of industries and increase in industrial production.
- Growth of GDP of the country.

Sustainable Village Development concept

- Sustainable development of existing infrastructure renovates rather than rebuild, so it can become usable as early as possible.
- The changes are made in the existing infrastructure must be economic.
- It is the only way to get early changes.
- There are five strands to the project elimination

1. child labor
2. health
3. social centers for citizens
4. environment
5. microfinance

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

This initiative is evaluating how to deliver energy access to rural communities so as to make smart villages a reality. Through a three-year programmers of engagement activities in Africa, Asia and Latin America, it will help to ensure that policies and development initiatives are better informed on the realities, challenges and opportunities of rural energy provision for development in key sectors.

The following paragraphs elaborate on some of the characteristics of smart villages that will be explored by the initiative.

2.9 Other Projects / Schemes of Gujarat / Indian Government

Setu bharatam project :-

Prime Minister Shri Narendra Modi launched the Setu Bharatam programme for building bridges for safe and seamless travel on National Highways, in New Delhi

Setu Bharatam programme aims to make all National Highways free of railway level crossings by 2019.This is being done to prevent the frequent accidents and loss of lives at level crossings. 208 Railway over Bridges (ROB)/Railway under Bridges (RUB) will be built at the level crossings at a cost of Rs. 20,800 crore as part of the programme.

Figure 2.3 Setubharatm Project Launching

Table 2.4Various Govt. Scheme

Sr. no	Govt. Scheme	Details
1	Digital India	• Launched on 1st July2015. • To transform India's economy. • The initiative includes plans to connect rural areas with high speed internet networks
2	Pradhan Mantri Gram Sinchai Yojana	• To provide water to all field in the Country. • It is a national mission to improve farm productivity and ensure better utilization of the resources in the country.
3	Pandit Deendayal Upadhyaya GraminKaushalya Yojana	• (Launched on 25th September 2014)- To provide employment to youth residing in rural area. • Demand led skill training at no cost to the rural poor. • Mandatory coverage of socially disadvantaged groups (SC/ST 50%; Minority 15%; Women33%).
4	Make in India	• It was launched on 25th September2014. • The campaign was designed by Wieden and Kennedy. • To make India a manufacturing hub.
5	Swachh Bharat Abhiyan	• Launched on 2nd October2014). • Eliminate open defecation by constructing toilets for households, communities. • Eradicate manual scavenging.

		• Introduce modern and scientific municipal solid waste management practices. • Enable private sector participation in the sanitation • sector Change people's attitudes to sanitation and create awareness.
6	Skill India.	• Launched on 15th July 2015 with an aim to train over 40 crore people in India in different skills by2022. It includes various initiatives of the government like "National Skill Development Mission", "National Policy for Skill Development and Entrepreneurship, 2015", PMKVY and the "Skill Loan scheme". • To create jobs for youth of the country. • Skill Development in Youth. • Making Skill available to All Youth of India.
7	Smart cities.	• Launched on 29th April2015. • A Smart City is an urban development. • Vision to integrate multiple ICT solutions in a secure fashion to manage a city's assets. • In a first Government of India will develop 100 Smart Cities in India.
8	National Rurban Mission	• This Is the latest scheme launched By PM Narendra Modi • National RU URBAN Mission Was Launched In Chhattisgarh • The Mission also dubbed as Shyama Prasad Mukherjee Rurbanmission (SPMRM) aims to spur social, economic and infrastructure development in rural areas by developing a cluster of 300 Smart Villages over the next 3 years across the country.

#Chapter 3#

Smart Village Concept idea and its Visit

3.1Introduction: Concepts. Definitions & Practice

Concept

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

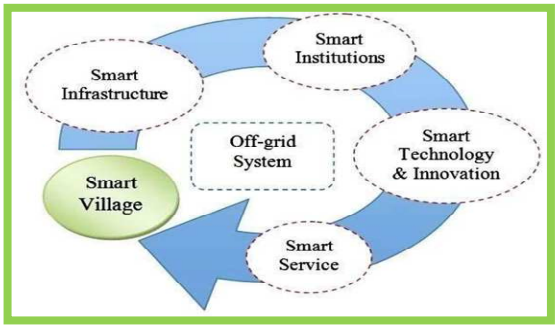


Figure 3.1 Smart village concept

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.

Practices (Civil)

Provide basic infrastructure for the good life style of villagers like,

1. Transportation facility
2. Water management
3. Health center facility
4. Library facility
5. Waste management
6. Rain water harvesting system
7. Recreation facility, etc.
8. Provide Good quality of life.
9. Clean and sustainable environment.

3.2Vision-Goals, Standards and Performance Measurement Indicators

Table 3.1 Benchmarks for Smart Village

Parameter	Benchmark
Sewerage and sanitation	• 100% household should have access to toilets. • 100% schools should have separate toilets for girls
Solid waste management.	• 100% households are covered by daily door-to doorstep collection system. • 100% collection of municipal solid waste.

Storm water drainage	• 100% coverage of road network with storm water drainage network. • Aggregate number of incidents of water logging reported.
Electricity	• 100% household have electricity connection. 27X7 supply of electricity. • 100% metering of electricity supply. 100% cost recovery. • Tariff slabs that work towards minimizing waste.
Telephone connection	• 100% household have a telephone connection including mobile.
Wi-Fi connectivity.	• 100% of the city has Wi-Fi connectivity. • 100 Mbps internet speed.

Smart Cities Bench Marks

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.

1.Smart traffic light
2.GPS and traffic management software Smart waste management systems
3.Sensor technology for irrigation
4.Smart solar energy systems for water heating Smart parking
5.Free Wi-Fi access points and devices everywhere in the city

Smart Cities standards in India:

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

1. Strategic – Aimed at the process of developing a clear and effective overall smart city strategy: ISO 37120: Sustainable development of communities — Indicators for city services and quality of life.

✓ ISO 37101: Sustainable development & resilience of communities – Management systems – General principles & requirements

2. Process – Procuring and managing smart city projects

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

Smart Cities Performance Measurement Indicators

By analyze the existing facilities and key performance indicators we can measure performance of any smart city. The dimensions of Key Performance Indicators can be categorized as below:

- Uses of renewable sources like bio gas, solar etc.
- Smart primary health care 27 X7.
- **Environmental sustainability:** Air quality, CO2 emissions, Energy, Indoor pollution, water, soil and noise

- **Information and Communication Technology:** Internet or Wi-Fi facility, mobile network, etc.
- **Productivity:** Capital investment, Employment, Inflation, Trade, Savings, Export/import, Household income/consumption, Innovation, Knowledge economy
- **Quality of life:** Education, Health, Safety, Convenience and comfort
- **Physical infrastructure:** piped water, sewage systems, electricity, waste management, knowledge infrastructure, health infrastructure, transport, roads, buildings

3.3 Technological Options for Smart Cities

Several concepts of the Smart city rely heavily on the use of technology; a technological Smart City is not just one concept but there are different combinations of technological infrastructure that build a concept of smart city.

- **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. The main purpose is to create an environment in which citizens are interconnected and easily share information anywhere in the city.

- **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.

- **Intelligent city:** It involves function as research or technological innovation to support learning and innovation procedure. The notion emerges in a social context in which knowledge, learning process and creativity have great importance and the human capital is considered the most precious resource within this type of technological city. In particular, one of the most significant features of an intelligent city is that every infrastructure is up to date, that means have the latest technology in telecommunications, electronic and mechanical technology.

- **Smart mobility:** Intelligent mobility; Advanced traffic management system (ATMS), Parking management, ITS-enabled transportation pricing system
- **Smart governance and smart education:** Government-on-the-Go; e-Government, e-Education, Disaster management solutions.
- **Smart healthcare:** Intelligent Healthcare, Technology, Use of e-Health and m-Health systems, Intelligent and connected medical devices.

3.4 Road Map and Safe Guards

1.Vision	Develop the Smart City strategy and business cases.
2.Plan	Develop the project plans and quality objectives.
3.Design	Gather business requirements and design smart city services.
4.Build	Implement and test smart city services
5.Deliver	Prepare business transition for smart city services
6.Operate	Actual operation and support of smart city services

Figure 3.2 Road map & Safe guard

3.5 Smart Cities: Issues & Challenges

- Urban Water and Sanitation Challenges
- More than 90% of the urban population has access to drinking water, and more than 60% of the population has access to basic sanitation. However, access to reliable, sustainable, and affordable water supply and sanitation (WSS) service is lagging behind. Operations and maintenance cost recovery through user charges is hardly 30-40%.
- Key Issues in development of Human Being
- Ecosystem services
- Access to water.
- Food security.
- Health situation.
- Access to education.
- Sustainable livelihoods
- Education / Job Opportunity Development
- Education is a basic determinant of the quality of life of individuals, people with limited skills and competencies are excluded from good jobs and have fewer prospects for

economic prosperity. Higher levels of educational attainment are generally linked to better occupational prospects and higher income for individuals, hence having a positive effect on their quality of life.

- Lack of Center-State Co-ordination: Fruitful implementation of a project can be done only if there is a co-ordination between various government bodies. There is a need of proper regulation when it comes to planning for the development of smart cities. Both horizontal and vertical co- ordination is the requisite right now.
- Availability of Master Plan: Most cities in India do not have their master plans and development plans in place. This is a tragic situation if we talk about developing them into smart cities. The presence of both the requisites is the key to the implementation and encapsulation of the smart city project as that is where the changes would be monitored and there is no other way to make it simple, better and efficient. Unfortunately, most cities in India lack the presence of it.

3.6 Smart Infrastructure

- The infrastructure of a city is the key to its development. It not only improves the live ability quotient of the city, but also makes housing and working conditions comfortable. The government is now providing a thrust to infrastructure through various initiatives which in turn will provide a larger push to the real estate sector.

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 fibre optic cables to provide telephone and broadband connectivity. There should be rain water harvesting to conserve water, five star appliances to save power, solar panels to use alternative sources of energy, low emissivity windows, reflective paints, native plants and more.

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. Last mile connectivity issues should be addressed by making bus stops within 300 meters from any point
- Transport infrastructure should be planned on priority for pedestrians, cyclists, electric vehicles and other private vehicles. For electric cars, charging points should be provided at a number of locations.

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.

Water 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.

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.

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.

Social infrastructure

- A well-developed social infrastructure ensures better live ability for citizens as they don't have to go far for basic amenities. This includes education facilities such as schools and colleges, good quality healthcare facilities and entertainment facilities that make people happy.

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

Cyber security, also referred to as information technology security, focuses on protecting computers, networks, programs, and data from unintended or unauthorized access, change, or destruction.

Cyber Security is important because government, military, corporate, financial, and medical organizations collect, process, and store unprecedented amounts of data on computers and other devices

Figure 3.3 Cyber Securities

For an effective cyber security, an organization needs to coordinate its efforts throughout its entire information system. **Elements of cyber** encompass all of the following:

1. Network security
2. Application security

3.Endpoint security
4.Data security
5.Identity management
6. Database and infrastructure
security 7.Mobile security

3.8 Retrofitting- Redevelopment- Green field Development District Cooling

Definition of Green Building

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. This practice expands and complements the classical building design concerns of economy, utility, durability, and comfort. Green building is also known as a sustainable or high- performance building.

Figure 3.4 Green Building (from Google)

Green buildings are designed to reduce the overall impact of the built environment on human health and the natural environment by:

- Efficiently using energy, water, and other resources
- Protecting occupant health and improving employee productivity
- Reducing waste, pollution and environmental degradation

3.9Strategic Options for Fast Development

Figure 3.5 Strategic Options for Fast Development

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

More than 90% of the urban population has access to drinking water, and more than 60% of the population has access to basic sanitation. However, access to reliable, sustainable, and affordable water supply and sanitation (WSS) service is lagging behind. Raw sewage often overflows into open drains.

Water challenges.

- In India, it ranges from16to300liters/day depending on the locality and the economic strata. Whereas this figure ranges from 100 to 600 liters/day in the developed countries.
- Most of the Indian cities depend upon underground water to meet their urban water demand. All the cities with pumping locations around the city face steep decline in water table.
- One of the main reasons is the high rate of water losses from the distribution system.
- Demographic, social and economic developments are the factors which increase pressure on water sources.
- Water availability, management and waste water disposal are three major issues related to water supply in the urban settlement.

Sanitation challenges.

- One of the major challenges for the government is to elevate India to the international levels of urban sanitation that is found in developed counties.
- As a step towards this, India along with other member states of the UN committed to the new global goals for sustainable development, which included target to ensure everyone, everywhere, has access to basic toilets by2030.
- But for this to be achieved, India must first concentrate on establishing the infrastructure needed to set up the required number of toilets, refurbish and build efficient sewage networks.
- It must also ramp up the waste treatment facilities so that water bodies are not polluted by effluent discharge.

Role of Indigenous Technologies

Indigenous water purification technologies: These technologies can improve the drinking water quality of smaller villages as well as larger cities. It uses the Pressure Driven Membrane Processes. These are suitable for all capacity units. Water purification technologies make use of the nuclear energy and solar energy also.

Environment friendly Plasma technologies:

Solid waste dumping sites orlandfill sites need more amount of land which is not available in urban areas. Incineration of solid waste pollutes the environment if the incinerators are not Designed or operated properly. Thermal Plasma Technology is ideally suited for waste treatment.

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 nation's 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.

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 74th amendment the constitution, have agar palika but derivetheirpowersfromtheindividualstategovernments,whilethepowerofrurallocalities have been formalized under the Panchayati raj system, under 73rd amendment to the constitution for the history of traditional local government in India and south Asia, see Panchayati raj.

3.12Smart Initiatives by District Municipal Corporation

Demography

- Total Population –1442975
- Area - 129.21 sq.km
- Sex ratio – 908 female /1000 Male
- Children (0-6)- 158,052 (10.95%)
- Youth (18-45) – 7, 05,107(48.8%)
- Average Literacy (%) 87.80%

Economy and Employment.

List of projects listed below:

1) 40 000 sq m Management & Convention Centre
2) 30 000 sq m Exhibition Centre
3) 10000 sq m incubation center
4) 5000 sq m skill Development center
5) Smart Hawker's zone

Figure 3.6 Rajkot SCP Preparation Process

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

Table 3.2Various Govt. Scheme

Sr.no.	Govt. Scheme	Details
1	Digital India	• Launched on 1st July2015. • To transform India's economy. • The initiative includes plans to connect rural areas with high speed internet networks

2	Pradhan Mantri Gram Sinchai Yojana	• To provide water to all field in the Country. • It is a national mission to improve farm productivity and ensure better utilization of the resources in the country.
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4	Make in India	• It was launched on 25th September2014. • The campaign was designed by Wieden and Kennedy. • To make India a manufacturing hub.
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6	**Skill India.**	• Launched on 15th July 2015 with an aim to train over 40 crore people in India in different skills by2022. It includes various initiatives of the government like "National Skill Development Mission", "National Policy for Skill Development and Entrepreneurship, 2015", PMKVY and the "Skill Loan scheme". • To create jobs for youth of the country. • Skill Development in Youth. • Making Skill available to All Youth of India.
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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.

Available evidence suggests that the use of iron, copper and other metals was widely prevalent in the Indian sub-continent at a fairly early period, which is indicative of the progress that this part of the world had made. By the end of the fourth millennium BC, India had emerged as a region of highly developed civilization.

Figure 3.7 Indian Village Contexts

#Chapter 4#

About Khorana Village

4.1 Introduction

4.1.1 Introduction about the KHORANA village in details

- Khorana village is located in Rajkot district in Gujarat, India. It is situated 15 KM away from Rajkot, which is district headquarters of RAJKOT.
- According to Census 2011 information the location code or village code of KHORANA village is 360003.
- As per 1957 stats, KHORANA is the gram panchayat of KHORANA village. Sarpanch of the village is Rameshbhai thakrshibhai ramani.
- Total area of Khorana village is 2090.68 hectares. Total population of village is 2154 among them 1101 are male and 1053 are female as per census 2011.
- Total households in Khorana village are 454 as per census. Main occupation of the Khorana village is Farming.

4.1.2 Justification/ need of the study

- For purpose of data collection. Data regarding the demographic, geographic, social, economic, educational etc.
- To know the current development going on in village.
- The developmental work in villages that could under taken as per the requirement of the village in particular includes.
- To know the various benefits to villagers though various government schemes in village.
- Ultimately after visit of ideal and smart village, this village gives the actual scenario of rural area.

4.1.3 Study Area (Broadly define)

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

4.1.4 Objectives of the study

- The main object of the study is to identify the village in all aspects.
- Reduce migration from rural to urban areas due to lack of basic services and sufficient economic activities in rural areas.
- Rural sociology can help to organize the disorganized Indian in detail.
- Rural sociology can help to organize the disorganized Indian in detail.
- To study the existing facilities and parameters of village.
- To identify the issues and problems of the village.
- To analyze existing social and physical utilities as well as infrastructure.
- To Design and planning for village basic facilities and needs.

4.1.5 Scope of the Study

- To provide an urban amenity to a village without affecting the soul of village Solutions of rural problems can bring the change in the rural society.
- The country and its society can be reconstructed only through rural developments.
- Rural sociology can help to organize the disorganized Indian in detail.

4.1.6 Methodology Frame Work for development of your village

Steps for Development of Village

Introduction of Vishvakarma Yojana (Phase VII)

1. Ideal and Smart village visit for TECHNO- ECONOMIC SURVEY
2. GTU allotted village visit TECHNO- ECONOMIC SURVEY
3. Meeting with sarpanch and Talati Mantri of Khorana village
4. Collection of data for physical, social, socio-cultural and other facilities available in village
5. Find out problems in existing facilities and proposal for required facilities for development of village.
6. Design proposal for physical and sustainable development
7. Literature review (Prepare Project)

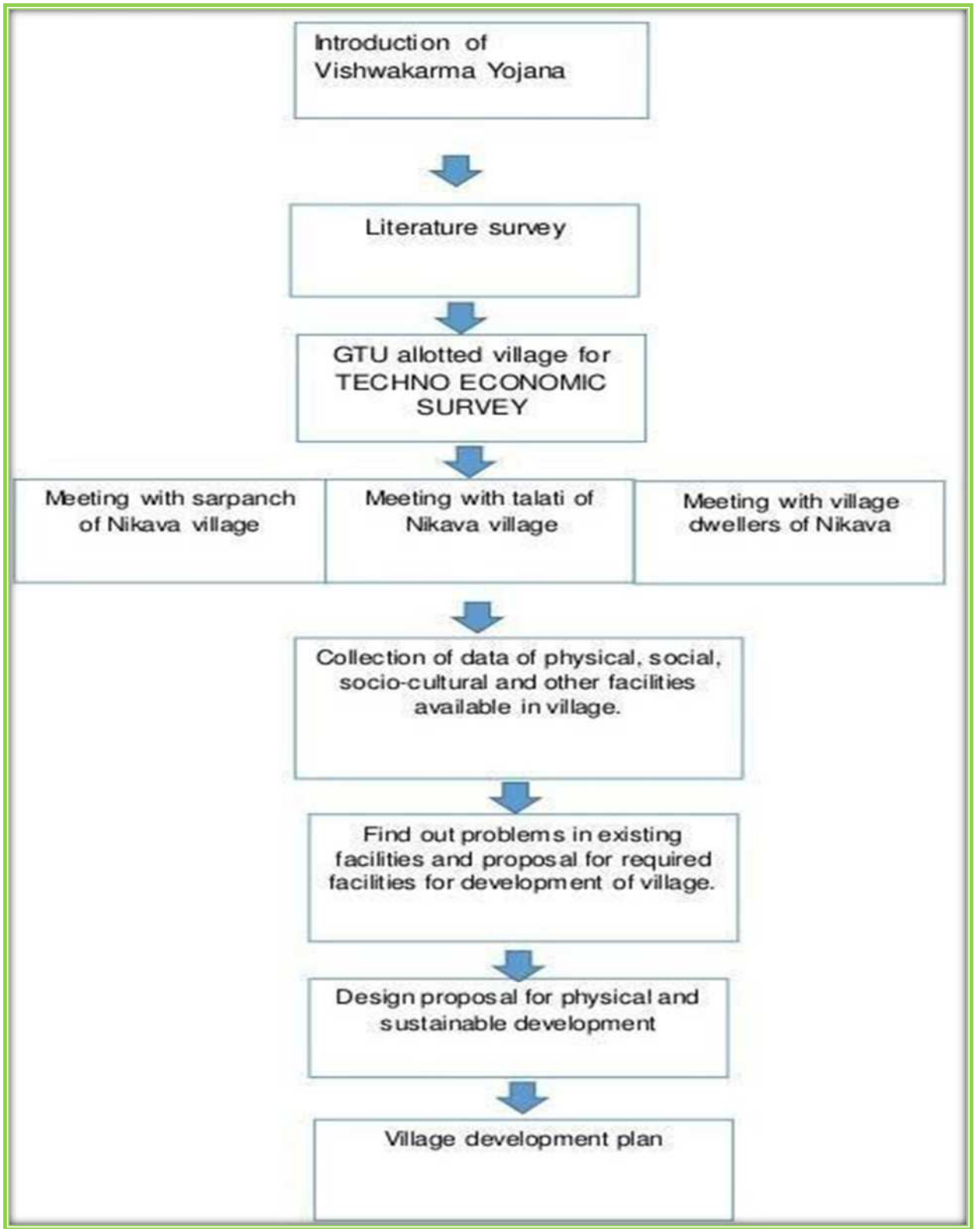

Figure 4. 1 Methodology Frame Work for development of your village

4.1.7 Available Methodology for development of related to Civil/Electrical Methodology

- To study the existing facilities and parameters of village.
- To identify the issues and problems of the village.
- The information and data from visit will help us to develop the methodology for improvement in village.
- The primary data collected through survey will give the level of services available in village and its requirements for improvement.
- Reduce migration from rural to urban areas due to lack of basic services and sufficient economic activities in rural areas

4.2 Khorana Village Study Area Profile

4.2.1 Study Area Location with brief History land use details

Village name	Khorana
Taluka	Rajkot
District	Rajkot
State	Gujarat
pin code	360003
Language	Gujarati

The village Khorana is located 15 km away from Rajkot. Village is spread over an area of 2098.68 hectare. Village peoples are mainly engaged with agricultural, Industrialism & Labor.

Major crops grown in village cotton. Khorana village has lower literacy rate compared to Gujarat. In 2011, literacy rate of Khorana village was 65.36 % compared to 78.03 % of Gujarat.

In Khorana Male literacy stands at 70.59 % while female literacy rate was 60.14 %.Total 2154 population residing in village as per census2011.From this schedule caste (SC) constitute646.In Khorana village population of children with age 0-6 is 140 which makes up 6.49 % of total population of village. Average Sex Ratio of Khorana village is 953 which are higher than Gujarat state average of 919. Child Sex Ratio for the Khorana as per census is 992, higher than Gujarat average of 890.

Table 4.1 Study Area land use detail of Khorana Village	
Khorana - Village Overview	
Gram Panchayat	Khorana
Block / Tehsil	Rajkot
District	Rajkot

State	Gujarat
Pin code	360003
Area	2090.68 hectares
Population	2154
Households	454
Assembly Constituency	Rajkot Rural
Parliament Constituency	Rajkot
Agricultural Land Area	1392.33 hectares
Residential Area	560.22 hectares
Other Area	117.77 hectares

4.2.2 Base Location map, Land Map, Gram Tal Map

Figure 4.2 location map (from Google map)

4.2.3 Physical & Demographical Growth.

Source of water
1. Overhead Water tank- 6, 00,000 lit capacity.

Road network
1. Village is connected by SH.
2. All connecting roads are bituminous road (good condition).
3. All internal roads are c.c.road or prewar block road.
4. Road development is going on in village.

Transportation facility
1. nearest railway station 1 Km. (Khorana railway station)
2. Bus, Auto, jeep, available.

	3. Nearest Air port Rajkot is 15 km
Sanitation	1. No public toilet.
	2. No any management are available for the disposal of solid waste
	3. Underground drainage.
Housing conditions	1. 70% houses in village are pucca house.
	2. All houses are consisting of lighting, and 75% sanitation with toilets

4.2.4 Economic profile / Banks

- In Khorana village most of people are connected with agricultural, Industrialism & Labour.
- Major crops grown in village are cotton. Other villagers are mostly Labour. There is one bank facility in village (Rajkot co-operative bank). There is No ATM facility in village.

4.2.5 Actual Problem faced by Villagers and smart solution

In Khorana village main problem is inadequate drinking water. So villagers are storing the water for drinking and daily use. In village many more problems are faced by villagers due lake of facilities like disposal of solid waste management, drainage facility insufficient, public latrine blocks, public health center, post office, public distribution system, etc. poverty, unemployment , transportation problem ,lack of awareness in government policy, superstition ,infrastructure and many more major problem in the Village.

In this project, it has been conducted Problem identification, Problem involution, Infrastructure feasibility Study & Design preparation 'for solving them. Which villagers actually needed in village.

4.2.6 Social scenario Preservation of traditions, Festivals, Cuisine

Table 4.2 Social Scenario

Particulars	Total	Male	Female
Population	**2,154**	1,101	1053
Child (0-6)	**140**	74	66
Schedule Caste	**646**	348	298
Schedule Tribe	**0**	0	0
Literacy	**65.36 %**	70.59 %	60.14 %
Total Workers	**954**	580	374

In Khorana village population of children with age 0-6 is 140 which make up 6.49 % of total population of village. Average Sex Ratio of Khorana village is 953 which are higher than Gujarat state average of 919. Child Sex Ratio for the Khorana as per census is 903, higher than Gujarat average of 890.Khorana village has lower literacy rate compared to Gujarat. In 2011, literacy rate of Khorana village was 65.36 % compared to 78.03 % of Gujarat. In Khorana Male literacy stands at 70.59 % while female literacy rate was 60.14 %.

Villagers greet each other by saying Namaste. Village consists of a cluster of house along a central street. A temple, village has two parts new & old, a few shops, a lake are found in village. Mostly people are vegetarian. Reflecting a strong influence of the Swaminarayan and the ramapir in the region

4.2.7 Migration reasons / Trends

Migration is a way to move from one place to another in order to live and work. Movement of people from their home to another city, state or country
for a job, shelter or some other reasons is called migration. Migration from rural areas to urban areas has increased in past few years in India.

People migrate for a number of reasons. The reasons and causes for migration would normally fall under these areas:

- Environmental – Better climate, calamities, and natural disasters are examples of environmental causes or reasons.
- Economic – Moving to find work or moving to follow a particular career path is an example of economic cause or reason.
- Cultural – Religious freedom and education is an example of cultural cause or reason.
- Political – Civil war or escaping from Political persecution is an example of political cause or reason.
- Social – Moving for a better quality of life or moving closer to a family member or friend is an example of a social cause or reason

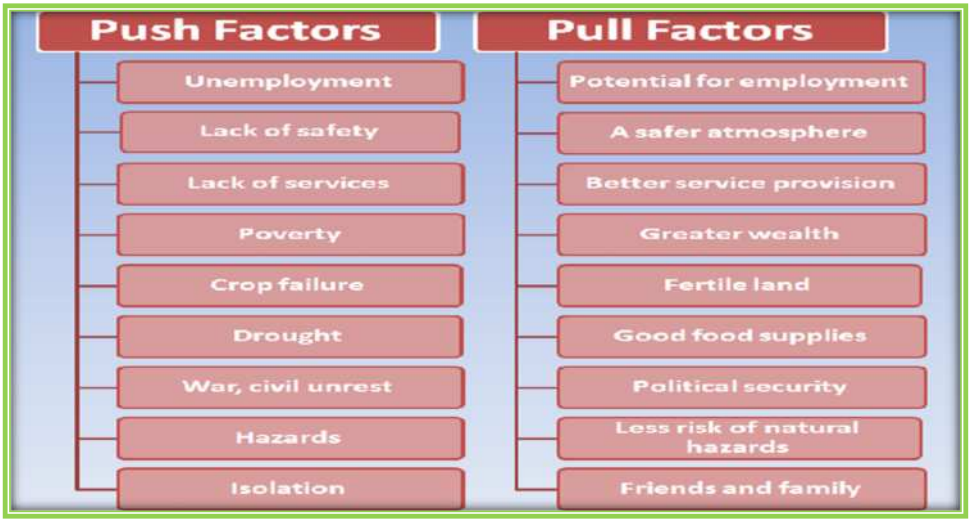

Figure 4.3 Reasons for Migration

4.3 Data Collection in Khorana (Photograph/Graphs/Charts/Table)

4.3.1 Describe Methods for data collection

In Vishwakarma Yojana we are collecting the data and analyzing it using appropriate method. The methodology of the total work process as shown below: -

We are conducted techno economic survey for data collection of Khorana village. We are met with sarpanch (Rameshbhai thakrshibhai ramani), Talati Mantri (Nirupaben makvana) and dweller of village and understand village actual situation, condition and existing structure of village. Available facilities are listed as below:

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

In Khorana there are basic Water, Road, and Street Light & Cleanliness problem. & in this project, it has been conducted Problem identification, Problem involution, Infrastructure feasibility Study & Design preparation 'for solving them

4.3.2 Primary details of survey details

Khorana village is located in Rajkot district in Gujarat, India. It is situated 40KM away from Rajkot, which is district headquarters of Rajkot. Khorana is near 11 KM from SH.

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

In Khorana, approximate ratio of the houses is 70% house pucca and 30% kutchha and the average bungalow type houses are more preferable to build by the dwellers. In that village total 420 families residing. The Khorana village has population of 2154 of which 1101 are males while 1053 are females as per Population Census 2011.

There are about 454 houses residing in Village.

4.3.4 No of Human being in One House

In village generally each family consist average 4to5 member. Child Sex Ratio for the Khorana per census is 992, higher than Gujarat average of 890.

4.3.5 Which Material used locally in the village and Material Out Sourced by the villagers

There are approximate 70% pucca house which made from brick masonry or some are brick masonry with plaster or some are Nadia houses. For the house, they used mainly bricks, sands and wood. As brick manufacturing is available in near village so it is economical for them.

All other commodities needed for villagers is imported from nearby cities Rajkot and Rajkot

4.3.6 Geographical Detail

Table 4.3Geographical Details in Khorana village	
Area	2090.68 hectares
Forest Area	20.33hector
Agricultural Land Area	1392.33 hector
Residential Area	560.22 hector
Other Area	117.77 hector

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

The village is home to 2154 people, among them 1101 (51%) are male and 1053 (49%) are female. 70% of the whole population are from general caste, 30% are from schedule caste. Child (aged under 6 years) population of Khorana village is 6.49%, among them 52.85% are boys and 47.14% are girls. There are 333 households in the village and an average 5 persons live in every family.

Table 4.4 Caste wise male female population 2011 - Khorana					
	Total	**General**	**Schedule Caste**	**Schedule Tribe**	**Child**
Total	2,154	1,368	646	0	140
Male	1101	708	336	0	74
Female	1053	660	310	0	66

4.3.8 Occupational Detail- occupations wise details / major business

Table 4.5 Occupation Detail of Khorana Village.	
Name of three major occupation groups in village	1. Agricultural.
	2. Industrialism
	3. Labour

Table 4.6 Percentage of working population - Khorana				
	Worker	**Main Worker**	**Marginal Worker**	**Non-Worker**
Total	954	954	0	1200
Male	580	580	0	521
Female	374	374	0	679

4.3.9 Agricultural Details / Organic Farming / Fishery

- In Khorana village total 1392.33 hector agriculture lend is available
- In Khorana village more than 50% villager depend upon farming.
- In Khorana village no one using organic farming and get fishery.

4.3.10 Physical infrastructure facilities - Manufacturing HUB / Ware Houses

Table 4.7 Manufacturing Hub /ware House in Khorana Village	
Major manufacturing hub	Iron Work

Table 4.8 Physical Infrastructure facilities at Khorana Village.		
Sr. No.	**Description**	**Detail**
1	Main Source of Drinking Water	• In village drinking is distributed through pipe line which is arriving from Macchu Juth Yojana & sardar sarover. • 1 well in village • 1tube well in village
2	Water Tank Facility	• 1no.USR with 6,00,000 lakh liter Capacity
3	Types Of Drainage	• Underground drainage facility
4	Road network	• Village approach road is 11 KM from SH. • Main road is 3 Meter wide & it is made up of Bituminous • Internal Street is made up of C.C Road & prewar block (Appro.75% done)
5	Transportation Facility	• Auto, jeep,GSRTC, bus all are available
6	Road street light	• 40% Street light is working & 60%light is not working.
7	Main source of irrigation facility.	• Tube well is the main source of irrigation. All farms has theirs individual tube well.

4.3.11 Tourism development available in the village for attracting the tourist

In a Khorana village no have any tourist place.

4.4 Infrastructure Details (With Exiting Photograph)

4.4.1 Drinking Water / Water Management Facilities

In Khorana village main source of drinking water is Macchu Juth Yojana, sardar sarover yojna,one tube well and one well is available. In village **One** USR tank and sump is situated in behind of Community Hall. For extra water requirement village has protected well and water tank of 6, 00,000 liter capacity.

Figure 4.4 Khorana village water tank

4.4.2 Drainage Network / Sanitation Facilities

In village Underground drainage facility is available but it is inadequate in village. There is no public toilet and community toilet available in Khorana village. But 70% houses have their own privet toilet.

4.4.3 Transportation & Road Network

All the main road of village is constructed by cement concrete (C.C.). no bus stand available for easy transportation and privet vehicles also available like rickshaw, private vehicle, etc

4.4.4 Housing condition

House in Khorana village has poor condition, near about 70% pucca house and 30% kutcha houses in village.

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

Health Facilities

There is no government Health center in village.

Education Facilities

In village has well maintained Primary school &Village has also 2 Anganwadi.

Figure 4.5 Aanganwadi

Community Hall

There is no community hall in village.

Public Library

There is no public library in the village.

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

Existing Condition of Public Buildings

- Condition of primary school is very good.
- Condition of Anganwadi is very good.
- Condition of panchayat building is very good.
- Gam Panchayat have their own building in good condition.
- E-Gram facility is available in village operator is available.
- Sub PHC is in not available in village.
- No bus stand is available in village,

Maintenance of existing Public Infrastructures

- Some internal roads need redevelopment and already this work is going on in old village at some mains trees.

4.4.7 Technology Mobile / WIFI / Internet Usage Details.

All most 70% peoples have smart phone and they use internet. As technological point of view internet users are limited to government offices only. No public WIFI is available in village.

4.4.8 Sports Activity as Gram Panchayat

Currently no activities organized at Gam Panchayat.

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

Table 4.9 Socio-cultural facilities in Khorana Village.

Sr. no	Facilities	Information/ Details
1	Community hall.	**No**
2	Public library.	**No**
3	Public garden	**No**
4	Village pond.	**No**
5	Recreational center.	**No**
6	Police station/ out post.	**No**

4.4.10 Other Facilities

Other facility like Dudh Mandali is also available in village and small-scale industries are in the village. Some facilities may require to be developed in village like, library, public garden, road development etc.

4.4.11 Any other details

- Gram Panchayat have their one building in good condition.
- E-Gram facility is available in village.
- Schools have their own building. It is new constructed so good condition
- Bus stand is not available in village.

Paver block road

Cement concrete road

Khorana gram panchayat

Khorana seva sahkari mandli

Figure 4.6 Available structures in allocated village Khorana

4.5 Electrical Concept

4.5.2 Irrigation Facilities

The pumps used for the transport of the water are equipped with solar cells. The solar energy absorbed by the cells is then converted into electrical energy via a generator which then feeds an

Electric motor driving the pump Most of the traditional pump systems mainly work with a diesel engine or with the local power grid. However, these two modes of operations present disadvantages compared to solar pumps.

In many rural areas, especially in developing and emerging countries, the access to the electricity grid is not always guaranteed. In this case, farmers cannot rely on the traditional irrigation system. Thus, using an independent and alternative energy system can be a solution for the farmer to secure a safe power source and for the public grid to avoid saturation.

Diesel pumps are slightly more efficient than AC powered pumps as they allow greater flexibility. However, one of the main constraints is that this system relies on the fuel availability, added to a greater impact on the environment. Diesel-driven pumps are cheaper than solar- powered pumps but the operating costs are quite high and depend heavily on the diesel price. In solar-powered systems, it works the other way round, that is, although this system is relatively expensive, the source of energy is free, therefore, after the amortization period, there are no longer operating costs (only the maintenance costs must be considered). Therefore, solar pumps turn out to be available long term investment.

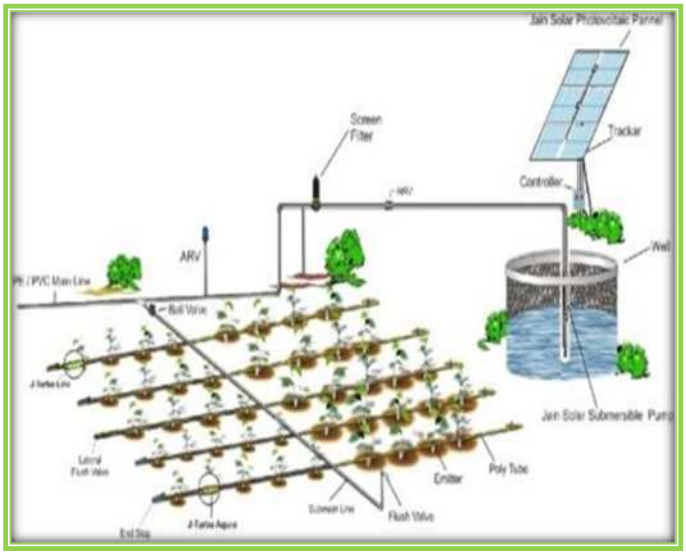

Figure 4.7 Deep irrigation systems by solar plate

4.6 Existing Institution like - Village Administration – Detail Profile

4.6.1 Bachat Mandli

In Bachat Mandli the group of women ‘s is working in different activities like production & marketing, Bio pesticide, spices packing, grading & marking etc. They are running Bachat Mandli for their group members in which members deposit money as savings and if needed, they can take loan from mandli. In our village no any Bachat mandli working

4.6.2 Dudh Mandali

Dairying is a source of income for millions of rural milk producers, which contributes towards strengthening the livelihoods of small holder milk producers who form majority of India‘s milk production system. In a market driven economy, it is all the more important to have producer

centric institutional structures that strictly conform to cooperative principles and provide rural milk producers a greater access to the organized market. In Khorana village one Dudh Mandli working. With the help of this dairy villagers are earn money.

4.6.3 Mahila forum

Mahila Mandal is a community based rural women organization with around 20 members. It has an elected executive body of Pradhan (Chief), Up Pradhan (Assistant Chief), Secretary and Treasurer. Mahila Mandal acts as a village level forum for women to discuss their personal, social, political, spiritual and economic concerns. Women contribute their energy and passion towards each other‘s welfare. This mutual reinforcing model of the Mahila Mandal makes it unique. Many women have been empowered by this process, finding new strength not only to help themselves, but thosearound them. In Khorana village not any Sakhimandal is working.

4.6.4 Plantation for the Air Pollution

Trees give off oxygen that we need to breathe. **Trees** reduce the amount of storm water runoff, which reduces erosion and pollution in our waterways and may reduce the effects of flooding. Many species of wildlife depend on **trees** for habitat. **Trees** provide food, protection, and homes for many birds and mammals. But unfortunately, in the Khorana village no any activity working for plantation.

4.6.5 Rain Water Harvesting- Waste Water Recycling

In Khorana village no any facility provided for Rain Water Harvesting.

4.6.6 Agricultural Development

Major occupation in the village is Agriculture. Due to less educated people in village they have no any smart idea for the farming. So, in the village very need to development of Agriculture.

#Chapter: - 5#

Sustainable Technical Options with Case Studies of the Existing Village

5.1 Concept (Civil)

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- The concept of 'needs,' in particular the essential needs of the world's poor, to which overriding priority should be given
- The idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.
- There are three pillars of sustainability - Economic viability, environmental Protection and social equity.

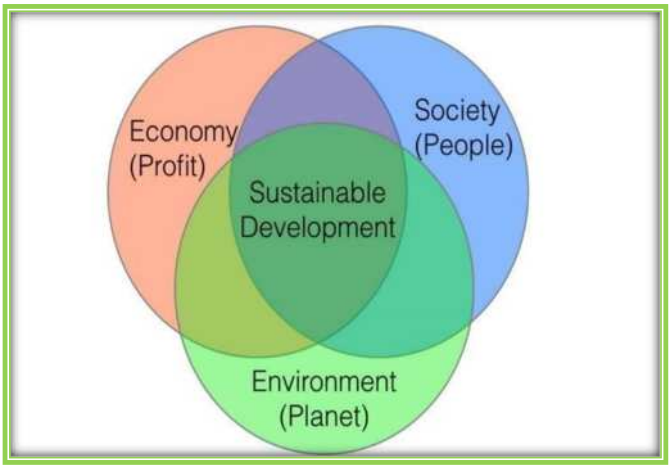

Figure 5.1 Sustainable Development

5.1.1 Case study on Millau bridge

The term '**advanced construction technology**' covers a wide range of modern **techniques** and practices that encompass the latest developments in materials **technology**, design procedures, quantity surveying, facilities management, services, structural analysis and design, and management studies.

Construction Success Millau Bridge

- The Millau Viaduct is a cable-stayed road-bridge that spans the valley of the river Tarn near. Millau in southern France.
- It is the tallest bridge in the world with one mast's summit at 343.0 meters (1,125 ft) above the base of the structure.
- It is the 12th highest bridge deck in the world, being 270 meters (890 ft) between the road deck and the ground below.
- Millau bridge estimate cost around 31028.70lacks
- It is an example of advance construction technique.

1) Do not use excessive cement in the mortar mix. Because as a general rule, the richer the mix is, the greater the shrinkage will be. And shrinkage is one of the major causes of occurrence of cracks.

2) Use largest possible aggregate and the materials should be of good grading and quality. 3)As soon as initial setting has taken place, the curing should be started and be continued for at least seven to ten days.

4) Fine materials which contain silt, clay and dust should not be used. The coarse sand/fine aggregate used in cement concrete and cement mortar mix should has silt and clay less than

4%.

Figure 5.2 Millau Bridge (from googol chrome)

5.1.2 Soil Liquefaction

Soil liquefaction occurs when a saturated or partially saturated soil substantially loses strength and stiffness in response to an applied stress such as shaking during an earthquake or other sudden change in stress condition, in which material that is ordinarily a solid behaves like a liquid.

In soil mechanics, the term "liquefied" was first used by Allen Hazen in reference to the 1918 failure of the Calaveras Dam in California. He described the mechanism of flow liquefaction of the embankment dam as: If the pressure of the water in the pores is great enough to carry all the load, it will have the effect of holding the particles apart and of producing a condition that is practically equivalent to that of quicksand… the initial movement of some part of the material might result in accumulating pressure, first on one point, and then on another, successively, as the early points of concentration were liquefied.

Type of soil causes liquefaction: Poorly drained fine-grained soils such as sandy, silty, and gravelly soils are the most susceptible to liquefaction.

5.1.3 Sustainable Sanitation

Sustainable sanitation is a sanitation system designed to meet certain criteria and to work well over the long-term. Sustainable sanitation systems consider the entire "sanitation value chain", from the experience of the user, excreta and wastewater collection methods, transportation or conveyance of waste, treatment, and reuse or disposal. The Sustainable Sanitation Alliance (SuSanA) includes five features (or criteria) in its definition of "sustainable sanitation": Systems need to be economically and socially acceptable, technically and institutionally appropriate and protect the environment and natural resources. The purpose of sustainable sanitation is the same as sanitation in general: to protect human health. However, "sustainable sanitation" attends to all processes of the system: This includes methods of collecting, transporting, treating and the disposal (or reuse) of waste.

5.1.4 Transport Infrastructure / system

Transport infrastructure consists of the fixed installations necessary for transport and includes roads, railways, airways, waterways, and terminals.

Transport is vital to the well-functioning of economic activities and a key to ensuring social well-being and cohesion of populations. Transport ensures everyday mobility of people and is crucial to the production and distribution of goods. Adequate infrastructure is a fundamental precondition for transport systems. In their endeavour to facilitate transport, however, decision-makers in governments and international organizations face difficult challenges. These include the existence of physical barriers or hindrances, such as insufficient or inadequate transport infrastructures, bottlenecks and missing links, as well as lack of funds to remove them. Solving these problems is not an easy task. It requires action on the part of the governments concerned, actions that are coordinated with other governments at international level.

5.1.5 Vertical Farming

Vertical farming is the practice of growing crops in vertically stacked layers. It often incorporates controlled-environment agriculture, which aims to optimize plant growth, and soilless farming techniques such as hydroponics, aquaponics, and aeroponics. Some common choices of structures to house vertical farming systems include buildings, shipping containers, tunnels, and abandoned mine shafts. As of 2020, there is the equivalent of about 30 ha (74 acres) of operational vertical farmland in the world. The modern concept of vertical farming was proposed in 1999 by Dickson Despommier, professor of Public and Environmental Health at ColumbiaUniversity. Despommier and his students came up with a design of a skyscraper farm that could feed 50,000 people. Although the design has not yet been built, it successfully popularized the idea of vertical farming. Current applications of vertical farming coupled with other state-of-the-art technologies, such as specialized LED lights, have resulted in over 10 times the crop yield than would receive through traditional farming methods.

5.1.6 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure

In the case of Reinforced concrete structure the ingress of moisture or air may lead to corrosion of steel, cracking and spalling of the concrete cover thereby reducing durability of the concrete structure . Repair has been suggested as the protective solution for damaged structure due to corrosion. Corrosion of reinforcing steel is a significant economic and safety problem, preventing many buildings from attaining their design life. It is now a must look into field as corrosion of reinforcing steel is seen almost in every 10 out of 100 constructions within a life of 10 years. Nowadays the increase content of pollutants in the city atmosphere has very much affected the lifespan of RCC structures. The increased content of pollutants include a very high rates of Sulphates and Chlorides which when these mixes with rain water and falls over these structures and damages the visible parts.

5.2 Concept (Electrical)

5.2.1 E – Waste disposal / Any West disposal

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

All electronic waste is made up of deadly chemicals such as lead, cadmium, beryllium, mercury and brominates flame retardants. Disposing of gadgets and devices improperly increases the

chances of these dangerous chemicals contaminating the soil, polluting the air and leaching into water bodies.

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When e-waste is deposited in a landfill, it tends to leach when water passes through it picking up trace elements. After which the contaminated landfill water reaches natural groundwater with increased toxic levels, this can be harmful if it enters any drinking water bodies

Why Is Electronics Recycling Important?

- **Rich Source of Raw Materials** Internationally, only 10-15 percent of the gold in e-waste is successfully recovered while the rest is lost. Ironically, electronic waste contains deposits of precious metal estimated to be between 40 and 50 times richer than ores mined from the earth, according to the United Nations.
- **Solid Waste Management** Because the explosion of growth in the electronics industry, combined with short product life cycle has led to a rapid escalation in the generation of solid waste.
- **Toxic Materials** Because old electronic devices contain toxic substances such as lead, mercury, cadmium and chromium, proper processing is essential to ensure that these materials are not released into the environment. They may also contain other heavy metals and potentially toxic chemical flame retardants.

Table 5.1 Comparison between Methods of Corrosion Control

Parameters	CPCC	FBEC	CRSD
Thickness of Coating	175 mm – 300 mm	300 mm – 675 mm	No coating required
Type of Protection to rebar	Extrinsic	Extrinsic	Intrinsic
Pre-treatment	Pretreatment is Required before coating	Pretreatment is required before coating	No pre-treatment required
Treatment to surface	Before coating the surface made little rough when some damage is introduced.	Before coating the surface made little rough when some damage is introduced.	The surface of thefinished good is not disturbed or damaged at all.
Temperature treatment	The whole processis done at room temperature.	230°C – 400°C	No treatment required

#Chapter:- 6#

Swatchh Bharat Abhiyan (Clean India)

6.1 Swatchhta needed in allocated village -Existing Situation with photograph

Swachh Bharat Abhiyan is a campaign that was launched on 2 October 2014 and aims to eradicate open defecation by 2019.The national campaign spans 4,041 statutory cities and towns. It is the current of a few prior campaigns, including Nirmal Bharat Abhiyan and the Total Sanitation Campaign, which had similar goals (see history section below). The Times of India reported that the idea for Swachh Bharat was developed in March 2014 at a sanitation conference organized by UNICEF India and the Indian Institute of Technology as part of the larger Total Sanitation Campaign, which the Indian government launched in 1999.[9]

The Indian government aims to achieve an Open-Defecation Free (ODF) India by 2 October 2019, the 150th anniversary of the birth of Mahatma Gandhi, by constructing 12 million toilets in rural India at a projected cost of 1.96 lakh crore (US$31 billion).

Prime Minister Narendra Modi spoke of the need for toilets in his 2014 Independence Day speech: **“Has it ever pained us that our mothers and sisters have to defecate in open? Poor womenfolk of the village wait for the night; until darkness descends, they can't go out to defecate. What bodily torture they must be feeling, how many diseases that act might engender. Can't we just make arrangements for toilets for the dignity of our mothers and sisters?**

In our Khorana 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. All the villagers are through the waste in open area. So, village is seriously required to management of disposal of waste. Few people are trying to clean area which is around their home.

Second problem is that in village public toilet is not available. There are few homes which have toilet facility in the village.

In our village already there is one bio gas plant is not available. As our part of project, we provided one biogas plant in village as primary basis.

Also, for the purposed of waste collection we gave solid waste collection system. Which include collection of waste from house to house and also from public places. We provide waste collection equipment and also costing of that to Khorana Gram Panchayat.

Figure 6.1 making village clean

6.2 Guidelines - Implementation in allocated village with Photograph

The Swachh Bharat Mission is split into two sub Missions Swachh Bharat Mission (Gramin) and Swachh Bharat Mission (Urban).

Swachh Bharat Mission (Gramin), Gram Panchayat and Zilla Parishads will work on war footingtomakesurethatallhouseholdsinallvillageshavefunctionalwatersupplyandtoilet facilities. Productive use of night soil as bio-fertilizers is also on the cards.

Implementation of SBM (G) is proposed with 'District's the base unit, with the goal of creating ODF GPs. The District Collectors/Magistrates/CEOs of Zilla Panchayat are expected to lead the Mission themselves, so as to facilitate district wide planning of the Mission and optimum utilization of resources. The Baseline Survey data of 2013 collected by StatesandenteredontheIMISofMDWSby31.1.2015willbeconsideredasthebasefor States where the survey is complete. For other States the data entered on completion of the Survey will be taken as the base data.

A project proposal shall be prepared by the District, scrutinized and consolidated by the State Government into a State Plan. The State Plan with district wise details will be shared with the Government of India (Swachh Bharat Mission-Ministry of Drinking Water and Sanitation). This Plan will include a 5 year Plan along with 5 independent Annual Plans which merge into the 5 year Plan. These plans shall be approved by the Ministry each year. On the basis of formative research and consultation rounds, the State shall develop a tailor- made Communication Strategy, a Communication Plan, and material and will train community mobilisers to use these tools.

Funds are to be made available for these preliminary IEC works including for triggering behavior change. This will endeavor to re ache every household in every community and shall disseminate information regarding the need for safe sanitation, the ill effects of open defecation, and getting the population oriented towards satisfying their felt-needs. Individual households will be provided a menu of options for their household latrines, both in terms of technology, design and cost.

To bring about the desired sustainable behavioral changes for relevant sanitary practices, intensive IEC and advocacy, based on Inter Personal Communication (IPC) with participation of one or more of the following - Government representatives like Swachhatas Doots/ ASHAs, ANM workers, Anganwadi workers/CSOs/NGOs/Panchayati Raj Institutions/resource organizations/local SHGs with a good track record is envisaged. Thus a mix of Individual and Community led approaches is envisaged to achieve the desired out comes.

6.3 Activity Done by Students / village

So, After all corrective point we have given suggestion to villager for the making clean village:

1. Don't less use of plastic bag use paper bag or homemade cotton bag.
2. Don't throw garbage on road or any other places but proper put it in dustbin for separate
3. Solid and liquid garbage.
4. Ensuring safe sanitation in all households, public offices, institutions and places along with ensuring comfortable girl/women friendly designs.
5. Ensuring a zero-waste regime for all households and public institutions.
6. Set the water and sanitation goals and targets for the Gram Panchayat.
7. Select appropriate technology choice for water supply and sanitation in the Gram Panchayat based on participatory assessment

#Chapter: - 7#

Village condition due to covid19

The reason for this shift appears to be migrant workers who have been returning to their villages since lockdown was eased at the end of June. The medical response to stop the spread and treat those infected has been inadequate, according to media reports. With one trained doctor for every 1,497 people, against the World Health Organization recommended one per 1,000, and public health expenditure for 2018 at just 1.3% of GDP, India faces an uphill struggle in dealing with the pandemic. While two-thirds of India's population lives in rural areas, there are almost four times as many health workers per person in cities.

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

During interaction with the Talati, he told us that quarantine place and home quarantine facility were implemented during the lockdown. According to Talati, Sarpanch and villagers in the khorana village the sanitization process was done during the lockdown period and Talati said no any positive case during lockdown and after lockdown in the village. During the lockdown gram Panchayat distributed mask and sanitizer and Gram Panchayat written slogan for safety aging covid19.

Figure 7.1 Against covid19 slogan

7.2 Activities Done by Students for allocated village Clean with Photograph

- Distribution mask & sanitizer by Panchayat & school.

7.3mAny other steps taken by the students / villagers

- Sensitizing all village by villager & part of all activity aging covid-19

#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)

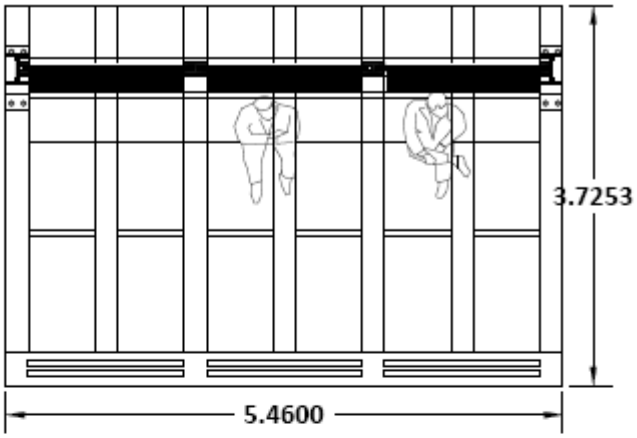
8.1Design Proposals

The village has many facilities and many needs to be developed.

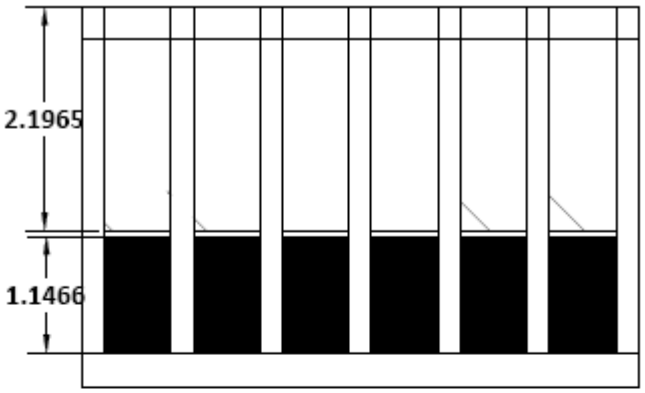
Civil design	Electric design
Bus stand	Solar street light
Public toilet	Solar pump system
Garden	Solar rooftop
Public library	
Community hall	
PHC center	

…..

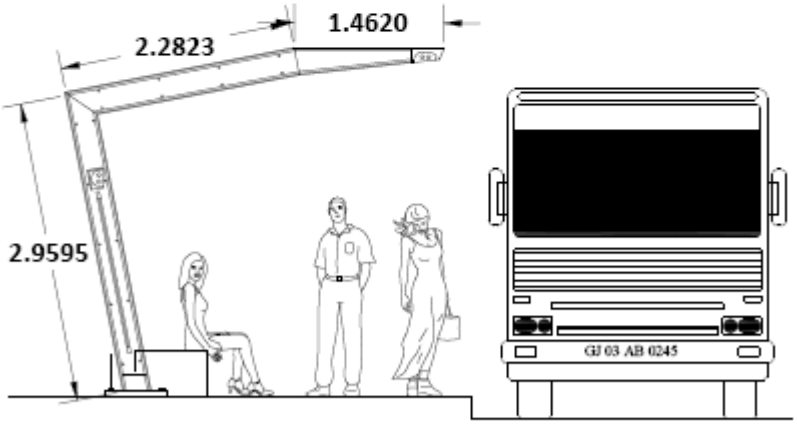
8.1.1Bus Stand



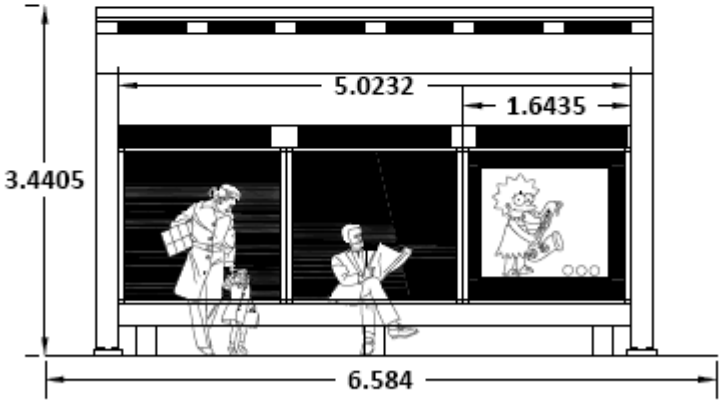
TOP VIEW



BACK VIEW



SIDE VIEW



FRONT VIEW

BUS STAND LAYOUT

KHODIDAS B. MOGARIYA - 180893106035	
JIGNA B. CHUDASAMA - 18089316007	
SLTIET, RAJKOT.	N
BUS STAND	

Figure 8.1 Design of Bus Stand

Table 8.1 Quantity Sheet of Bus stand

BUS STAND

QUANTITY SHEET

Sr No.	Item Description	No.	Length (m)	Width/ Breadth (m)	Height/ Depth (m)	Quantity (m^3)
1	PCC Base					
	0.15m Thick	1	6.58	3.72	0.150	3.67
		Total Qty of PCC Base=				3.67
2	Steel Plate Roof					
	Thickness = 0.12m	1	5.46	3.72	0.120	2.43
		Total Qty of Steel Plate Roof=				2.43
3	Steel Sheet Rounded Roof					
	Thickness=0.015m	1	6.58	3.72	0.015	0.36
		Total Qty of Footing RCC=				0.36
4	Steel Supports for Rounded Roof					
		2	0.280	0.150	2.95	0.24
		Total Qty of Steel Supports				0.24

Table 8.2 Abstract Sheet of Bus Stand

ABSTRACT SHEET BUS STAND				
Sr No.	**Description of Item**	**Quantity (Cu.m)**	**Rs. per Cu.m In Rs.**	**Total Cost In Rs.**
1	P.C.C base	3.67	2400	8810.00
2	Steel Plate Roof	2.43	10584	25720.00
3	Steel Sheet Rounded Roof	0.36	12350	4450.00
4	Steel Supports for Rounded Roof	0.24	11000	2640.00
			Total	41620.00

Total Construction Cost including Labour Cost = 41,620 Rupees. Contractor's Profit = 6,245Rupees (15%).

Water charges =625Rupees (1.5%).

Total Cost without considering wastage: 41,620+6,245+625 = 48490 So, the cost is said to be **48,490Rupees**.

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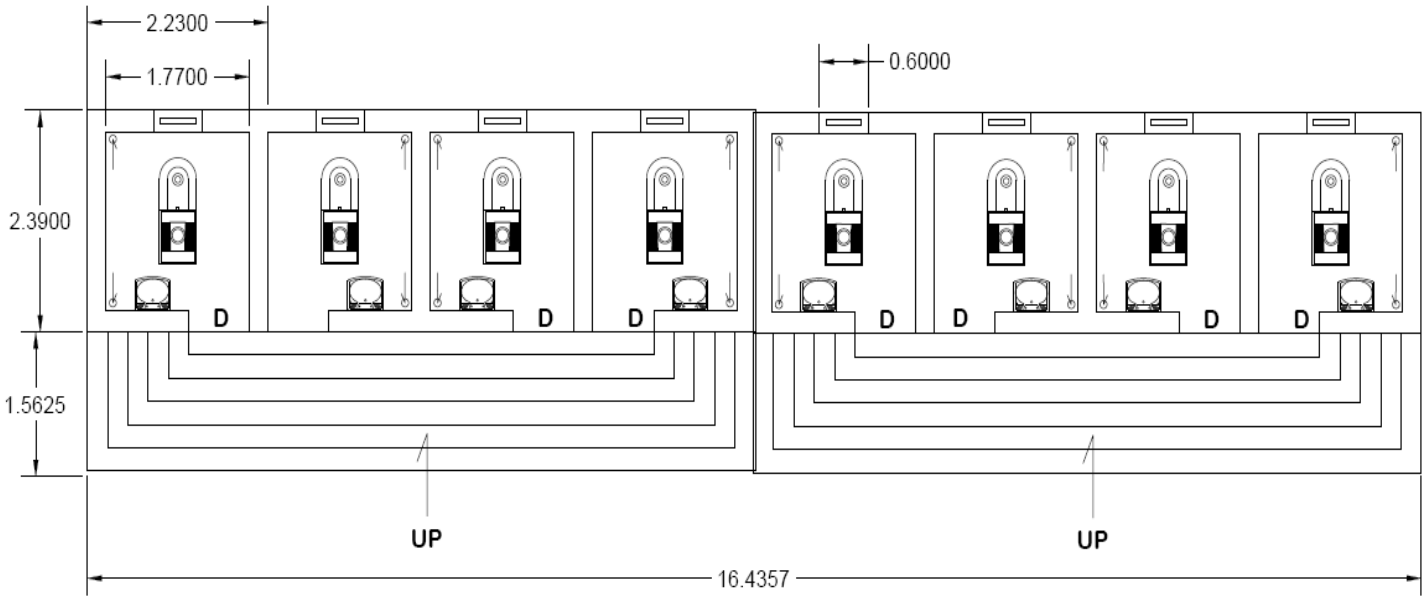
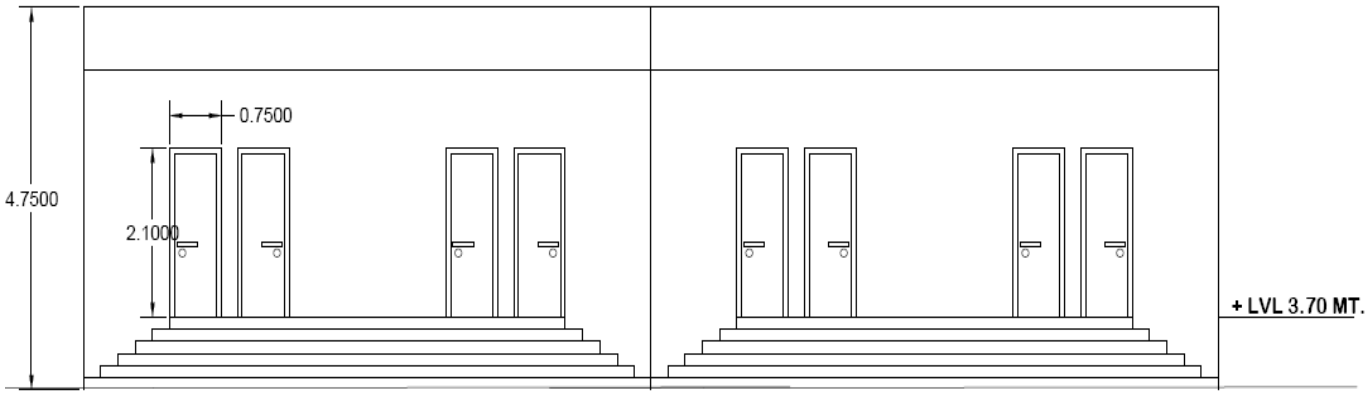
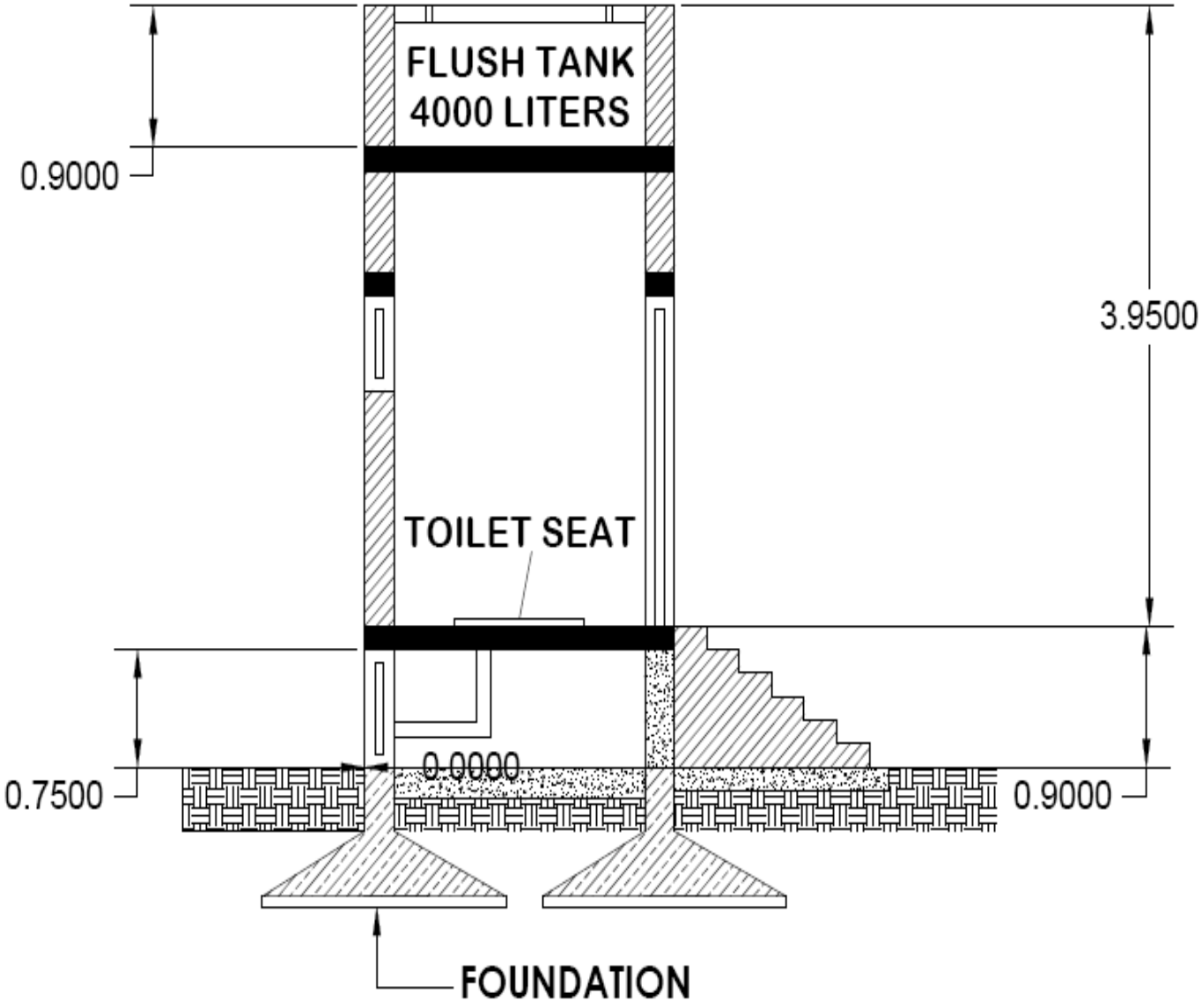
8.1.2Public Toilet



PLAN LAYOUT OF TOILET BLOCKS



ELEVATION LAYOUT OF TOILET BLOCKS



KHODIDAS B. MOGARIYA - 180893106035	
JIGNA B. CHUDASAMA - 18089316007	
SLTIET, RAJKOT.	N
TOILET BLOCK	

Figure: 8.2 Design Of Public Toilet

Table 8.3 Quantity Sheet of Public Toilet

TOILET BLOCKS

QUANTITY SHEET

Sr. No.	Item Description	No.	Length (m)	Width/ Breadth (m)	Height/ Depth (m)	Quantity(m^3)
1	**Earthwork in Excavation in Foundation:**					
	Footing 1mx1m	1	32.00	1.60	0.890	**45.56**
	Depth From GL = 0.3 + 1+ 0.3					
	0.6 =Extra For working space					
					Total Qty of Excavation =	**45.56**
2	**Footing PCC with 1:3:6 Ratio**					
	Footing	1	26.00	1.30	0.075	**2.54**
	Thickness = 0.075m					
	D = 0.150 + 1.0 + 0.150					
					Total Qty of Footing PCC=	**2.54**
3	**Footing RCC with 1:1.5:3 Ratio**					
	Footing					
	Thickness=0.6m	1	20.00	1.00	0.60	**12.00**
					Total Qty of Footing RCC=	**12.00**
4	**Column up to Tank**					
	Column 1:1.5:3 Mix Ratio	1	83.88	0.23	0.21	**4.05**
					Total Qty of Footing Column=	**4.05**
5	**Brick Masonry with 1:4 Ratio**					
	0.25m thick wall Brick Masonry	1	52.50	0.25	2.90	38.06

	Deduction					
	Vent V	-8	0.60	0.23	0.60	-0.66
	Doors D	-8	0.75	0.23	2.10	-2.89
		Total Qty of 0.23mt. Thick Walls=				**34.15**
6	**Slab with 1:1:2 RCC Ratio**					
	0.16m Thick Slab	1	16.46	2.390	0.16	6.29
					Total Qty of Slab=	**6.29**
7	**Flush Tank**					
	Brick Work	1	52.22	0.25	0.90	**11.74**
	Internal Plaster	1	14.80	0.020	0.90	**0.26**
8	**Internal Plaster with 1:4 Ratio**					
	20mm thick					
		16	1.93	1.77	0.02	**1.10**
		16	1.77	2.9	0.02	**1.64**
		16	1.93	2.9	0.02	**1.80**
		-8	0.6	0.6	0.2	**-0.58**
		-8	0.75	2.1	0.2	**-2.52**
		-8	0.6	0.3	0.2	**-0.28**
		Total Quantity of Toilets only				**1.43**
9	**Staircase**					
	CC Bed - Base of The Stairs	1	8.23	1.65	0.14	**1.90**
	Brick Work of Stairs Steps	1	8.23	1.5	0.15	**1.85**
		1	7.73	1.25	0.15	**1.45**
		1	7.23	1	0.15	**1.08**
		1	6.73	0.75	0.15	**0.76**
		1	6.23	0.5	0.15	**0.47**
		1	5.73	0.25	0.15	**0.21**
		Total Quantity of Brick Work of Stair				**5.82**

10	**External Plaster**					
	25mm thick	1	42.48	4.93	0.025	**5.23**
		-8	0.60	0.60	0.025	**-0.072**
		-8	0.750	2.10	0.025	**-0.31**
		Total Quantity of External Plaster				**4.84**

Table 8.4 Abstract Sheet of Public Toilet

ABSTRACT SHEET

TOILET BLOCKS

Sr No.	Description of Item	Quantity (Cu.m)	Rs.	Total Cost In Rs.
1	Excavation	45.56	110	5020.00
2	PCC (1:3:6)	2.54	2400	6100.00
3	Footing RCC with 1:1.5:3 Ratio	43.55	3800	165490.00
4	Column up to Tank	4.05	3800	15390.00
5	Brick Masonry with 1:4 Ratio	34.15	1200	40980.00
6	Slab with 1:1:2 RCC Ratio	6.29	3800	23900.00
7	Flush tank			
	Brick Work	11.74	1200	14100.00
	Internal Plaster	0.22	150	40.00
8	Inside plaster with 1:4 ratio	1.43	150	220.00
9	External Plaster	4.84	300	1450.00
10	Staircase	5.82	1200	7000.00
11	No. Of doors & ventilation	16.00	1000	16000.00
Total				295700.00

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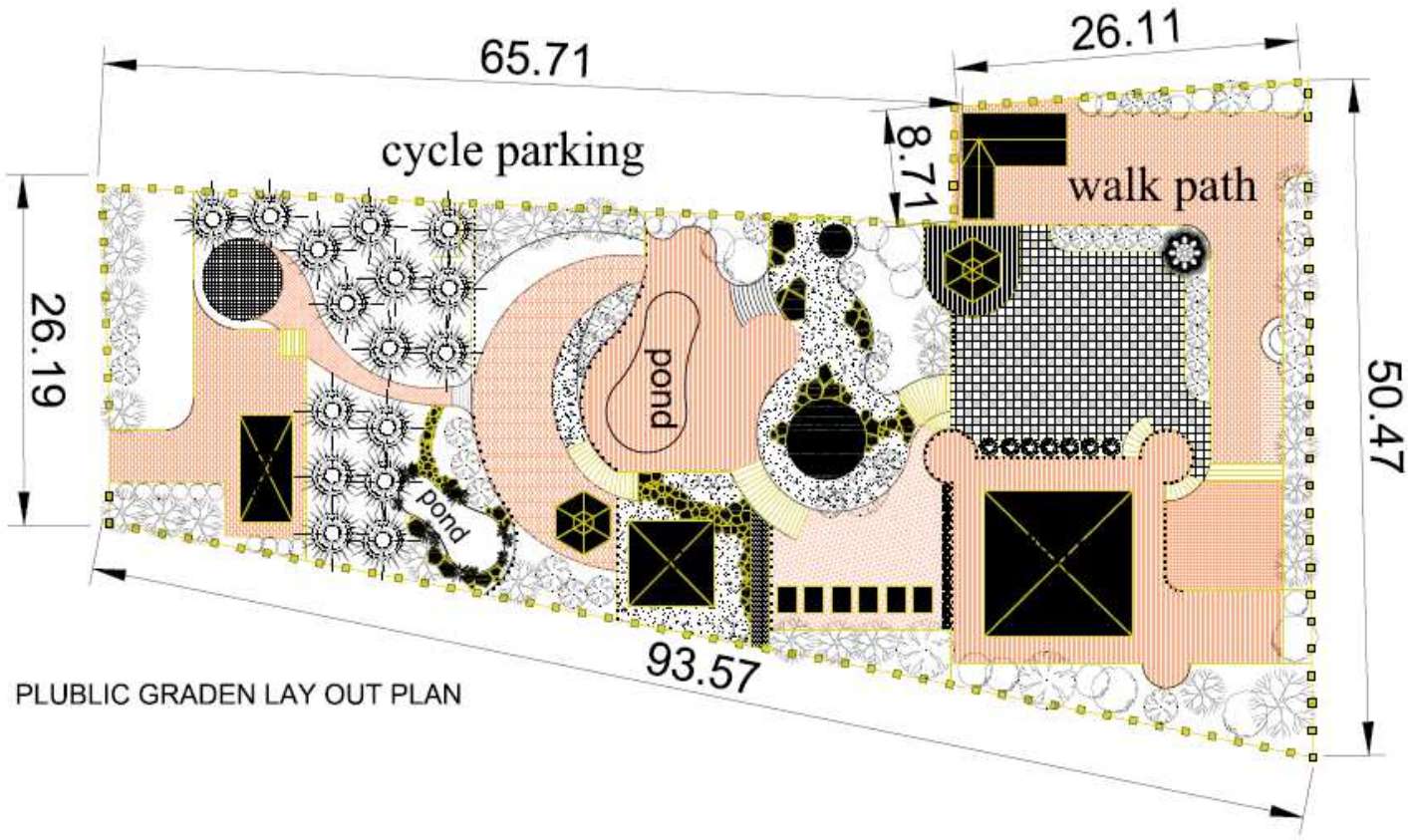
8.1.3 Public Garden



KHODIDAS B. MOGARIYA - 180893106035	
JIGNA B. CHUDASAMA - 18089316007	
SLTIET, RAJKOT.	N
PUBLIC GARDEN	

Figure: 8.3 Design of Public Garden

Table 8.5 Quantity Sheet of Public Garden

GARDEN

QUANTITY SHEET

Sr. No.	Item Description	No.	Length (m)	Width/ Breadth (m)	Height/ Depth (m)	Quantity (m^3)
1	**Earthwork in Excavation in Foundation:**					
	Footing 1mx1m	1	79.87	2.00	0.60	**95.84**
	Depth From GL = 0.6 + 0.6+ 0.6					
	0.6 =Extra For working space					
		Total Qty of Excavation =				**95.84**
2	**Footing PCC with 1:3:6 Ratio**					
	Footing	1	79.87	0.90	0.075	**5.39**
	Thickness = 0.075m					
	D = 0.150 + 0.6+ 0.150					
		Total Qty of Footing PCC=				**5.39**
3	**Footing RCC with 1:1.5:3 Ratio**					
	Footing					
	Thickness=0.6m	1	79.87	0.60	0.40	**19.16**
		Total Qty of Footing RCC=				**19.16**
4	**Column up to Plinth Level RCC**					
	Column 1:1.5:3 Mix Ratio	1	79.87	0.23	0.125	**2.29**
		Total Qty of Footing Column=				**2.29**
5	**Plinth Beam RCC with 1:1.5:3 Ratio**					
		1	79.87	0.23	0.23	**4.25**
		Total Qty of Plinth Beam=				**4.25**
6	**Back-filling**					
6.a	**Back-filling In Footing**					
	Excavation Area	1	79.87	2.00	0.60	95.84
	Deduction					

	Footing P.C.C	-1	79.87	0.90	0.075	-5.39
	Footing RCC	-1	79.87	0.60	0.40	-19.16
	Footing Column	-1	79.87	0.23	0.125	-2.29
					6.a Total Qty=	**69.00**
6.b	**Back Filling from Ground Level to Plinth Level**					
	Plinth area in to in	1	79.87	19.81	0.20	316.44
					6.b Total Qty=	**316.44**
					Total Qty of Back Filling of 6a+6b=	**385.44**
7	**Brick Masonry with 1:4 Ratio**					
7a	**0.23m thick wall Brick Masonry**	1	64.12	0.23	0.90	13.27
					Total Qty of 0.23mt. Thick Walls=	**13.27**
7b	**0.1m thick wall Brick Masonry**	1	15.75	0.10	0.90	1.41
					Total Qty of 0.1mt. Thick Walls=	**1.41**
					Total Qty of 7a+7b Walls=	**14.68**
8	**Brick Masonry in Stairs**					
		10	0.60	0.10	0.45	0.27
		13	0.40	0.10	0.45	0.23
		1	10.50	0.30	0.45	1.41
		1	10.50	0.30	0.23	0.72
		1	5.39	0.30	0.45	0.73
		7	5.39	0.30	0.23	2.60

		1	3.59	0.25	0.45	0.40
		1	3.59	0.25	0.23	0.21
		Total Qty of Brick Work in Stairs=				**6.57**
9	**Blocks for Walk Path Way**					
	0.08m Thick	1	53.15	15.47	0.08	65.77
		-1	11.560	6.450	0.060	-4.47
		-1	6.450	5.120	0.060	-1.98
		-1	4.050	2.300	0.060	-0.56
		-1	3.140	1.520	0.060	-0.29
		-1	2.950	1.720	0.060	-0.30
		Total Qty of Blocks=				**58.47**
10	**External Plaster with 1:4 Ratio**					
	25MM Thick					
		1	79.87	0.025	1.01	2.02
		Total Qty of External Plaster=				**2.02**

Table 8.6 Abstract Sheet of PUBLIC GARDEN

ABSTRACT SHEET GARDEN

Sr No.	Description of Item	Quantity (Cu.m)	Rs.	Total Cost In Rs.
1	Excavation	95.84	110	10545.00
2	PCC	5.39	2400	12940.00
3	Footing RCC	19.16	3800	72810.00
4	Column up to Plinth Level RCC	2.29	3800	87000.00
5	Plinth Beam RCC	4.25	3800	16150.00
6	Back filling	358.44	90	32260.00
7	Brick Masonry	14.68	1200	17615.00
8	Brick Masonry in Stairs	6.57	1200	7885.00
9	Blocks for Walk Path Way	58.47	100	5850.00
10	Plaster	2.02	300	610.00
11	Bench	20 nos	1500	30000.00
12	Fountain	3 nos	10000	30000.00
			Total	245365.00

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8.1.4Public Library

This drawing is available in page no 196

Table 8.7 Quantity Sheet of Public Library

PUBLIC LIBRARY						
QUANTITY SHEET						
Sr. No.	**Item Description**	**No.**	**Length (m)**	**Width/ Breadth (m)**	**Height/ Depth (m)**	**Quantity (m^3)**
1	**Earthwork in Excavation in Foundation:**					
	Footing	1	44.12	2.20	1.00	**97.06**
	Depth From GL = 0.6 + 1 + 0.6					
	0.6 =Extra For working space					
		Total Qty of Excavation =				**97.06**
2	**Footing PCC with 1:3:6 Ratio**					
	Footing	1	44.12	1.30	0.075	**4.30**
	Thickness = 0.075					
	D = 0.150 + 1.0 + 0.150					
		Total Qty of Footing PCC=				**4.30**
3	**Footing RCC with 1:1.5:3 Ratio**					
	Footing					
	Thickness=0.6m	1	44.12	1.00	0.60	**26.47**
		Total Qty of Footing RCC=				**26.47**
4	**Column up to Plinth Level RCC**					
	Column 1:1.5:3 Mix Ratio	1	44.12	0.46	0.33	**6.69**
		Total Qty of Footing Column=				**6.69**
5	**Plinth Beam RCC with 1:1.5:3 Ratio**					
		1	44.12	0.23	0.45	**4.56**
		Total Qty of Plinth Beam=				**4.56**
6	**Back-filling**					
6.a	**Back-filling In Footing**					

	Excavation Area	1	44.12	2.20	1.00	**97.06**
	Deduction					
	Footing P.C.C	-1	44.12	1.30	0.075	**-4.30**
	Footing RCC	-1	44.12	1.00	0.60	**-26.47**
	Footing Column	-1	44.12	0.46	0.33	**-6.69**
		6.a Total Qty=				**59.60**
6.b	**Back Filling from Ground Level to L.C. Bed below Level**					
	Plinth area in to in	1	25.50	18.62	0.20	94.96
		-1	25.50	1.80	0.20	-9.18
		-1	18.62	1.80	0.20	-6.70
		6.b Total Qty=				**79.08**
		Total Qty of Back Filling of 6.a+6.b=				**138.68**
7	**L.C. Bed RCC with 1:1.5:3 Ratio**					
		1	25.50	18.62	0.20	94.96
		-1	25.50	1.300	0.20	-6.63
		-1	18.62	1.30	0.20	-4.84
		Total Qty of L.C. Bed=				**83.49**
8	**Brick Masonry with 1:4 Ratio**					
	0.33m thick wall Brick Masonry	1	44.12	0.33	3.20	46.59
	Deduction					
	Window W	-1	5.19	0.23	1.52	-1.81
	Window W1	-3	1.83	0.23	1.20	-1.52
	Window W2	-3	1.20	0.23	1.20	-1.66
	Vent V	-2	0.60	0.23	0.60	-0.17
	M.D.	-1	1.20	0.23	2.10	-0.58
	D1	-4	0.90	0.23	2.10	-1.74
	D2	-2	0.75	0.23	2.10	-0.72
		Total Qty of 0.33mt. Thick Walls=				**38.39**

9	**Chhajja with 1:1.5:3 RCC Ratio**					
		1.00	2.14	0.54	0.15	0.17
		2.00	4.270	0.540	0.150	0.69
		Total Qty of Chajjas =				**0.86**
10	**Slab with 1:1:2 RCC Ratio**					
	0.16m Thick Slab	1	26.10	19.22	0.16	80.26
		Total Qty of Slab=				**80.26**
11	**Parapet Wall**					
		1	45.32	0.230	1.000	10.42
		Total Qty of Parapet Wall=				**10.42**
12	**Internal Plaster with 1:4 Ratio**					
	15mm thick					
		1	44.12	0.015	3.100	2.05
	Deduction					
	Window W	-1	5.19	0.015	1.52	0.11
	Window W1	-3	1.83	0.015	1.20	0.098
	Window W2	-3	1.20	0.015	1.20	0.064
	Vent V	-1	0.60	0.015	0.60	0.005
	M.D.	-1	1.20	0.015	2.10	0.037
	Door D1	-4	0.90	0.015	2.10	0.11
	Door D2	-2	0.75	0.015	2.10	0.047
		Total Qty of Internal Plaster=				**1.24**
13	**External Plaster with 1:4 Ratio**					
	25mm Thick					
		1	44.12	0.025	4.800	5.29

	Deduction					
	Window W	-1	5.19	0.025	1.52	0.19
	Window W1	-3	1.83	0.025	1.20	0.16
	Window W2	-3	1.20	0.025	1.20	0.10
	Vent V	-1	0.60	0.025	0.60	0.009
	M.D.	-1	1.20	0.025	2.10	0.063
	Door D1	-4	0.90	0.025	2.10	0.18
	Door D2	-2	0.75	0.025	2.10	0.078
					Total Qty of External Plaster=	**3.94**

Table 8.8 Abstract Sheet Of Public Library

ABSTRACT SHEET PUBLIC LIBRARY

SR NO.	**Description of Item**	**Quantity (Cu.m)**	**Rs.**	**Total Cost In Rs.**
1	Excavation	97.06	110	10680.00
2	PCC	4.30	2400	10320.00
3	Footing RCC	26.47	3800	100585.00
4	Column up to Plinth Level RCC	6.69	3800	25425.00
5	Plinth Beam RCC	4.56	3800	17320.00
6	Back filling	138.68	90	12480.00
7	L.C. Bed RCC	83.49	3800	317260.00
8	Brick Masonry	38.39	1200	46070.00
9	Chhajja	0.86	3800	3270.00
10	Slab	80.26	3800	304990.00
11	Parapet Wall	10.42	1200	12500.00
12	Internal Plaster	1.24	150	200.00
13	External plaster	3.94	300	1180.00
14	Door, window, ventilation	15	1000	15000.00
			Total	877280.00

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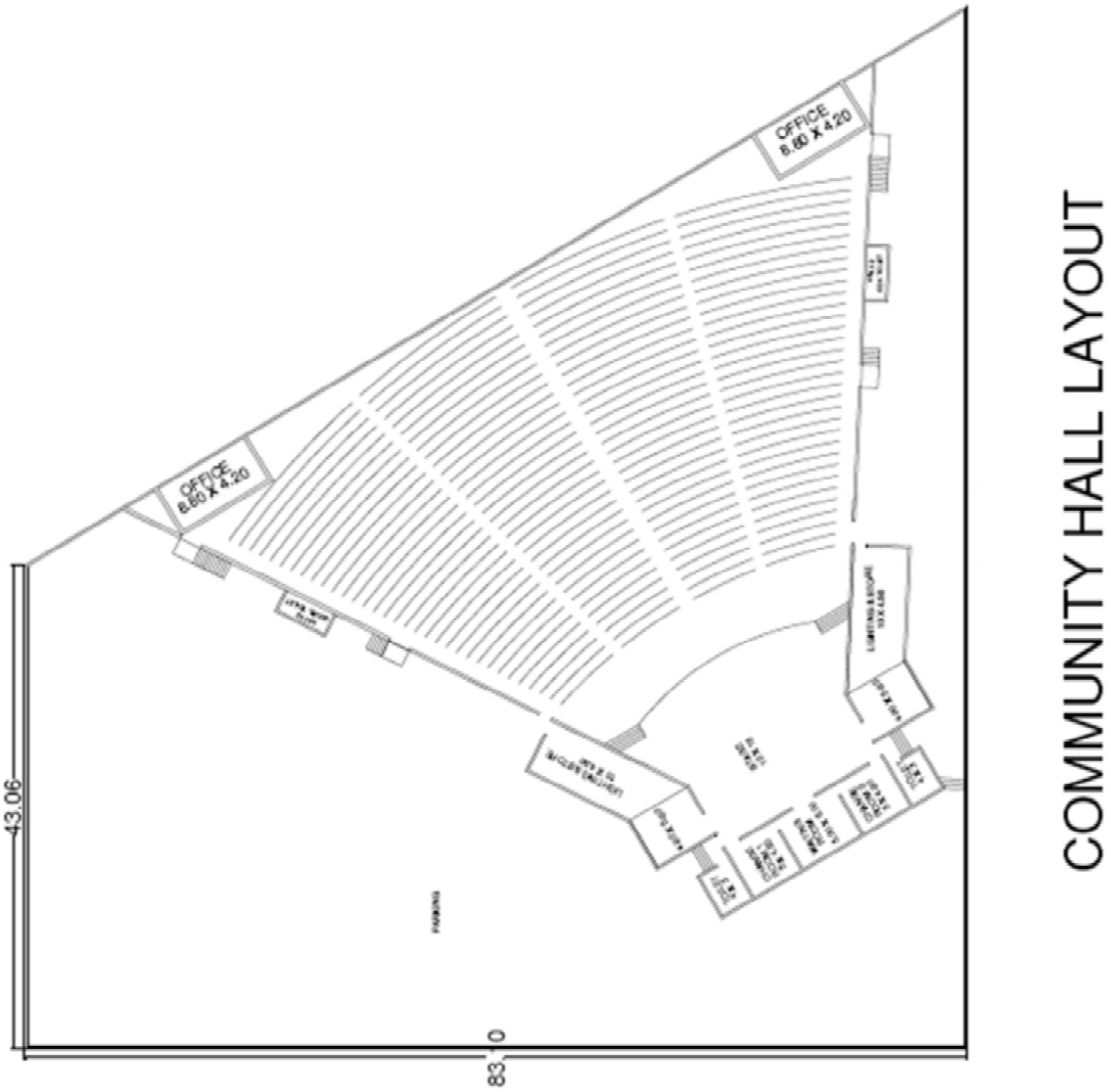
8.1.5Community Hall



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KHODIDAS B. MOGARIYA - 180893106035	
JIGNA B. CHUDASAMA - 18089316007	
SLTIET, RAJKOT.	N
COMMUNITY HALL	

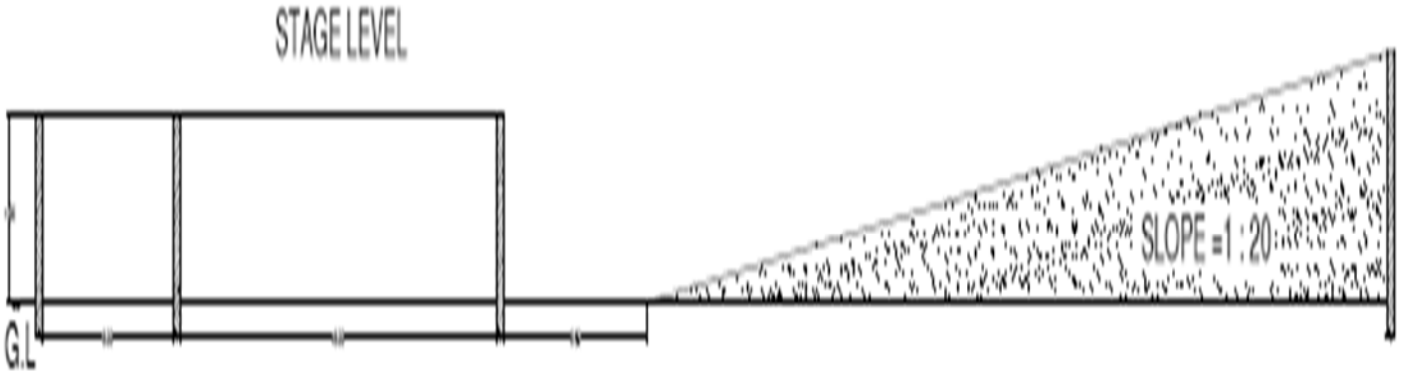

Figure : 8.5 Design of Community Hall

Table 8.9 Quantity sheet of Community Hall

COMMUNITY HALL

QUANTITY SHEET

Sr. No.	Item Description	No.	Length (m)	Width/ Breadth (m)	Height/ Depth (m)	Quantity(m^3)
1	**Earthwork in Excavation in Foundation:**					
	Footing 1mx1m	1	90.52	2.20	1.00	**199.14**
	Depth From GL = 0.6 + 1 + 0.6					
	0.6 =Extra For working space					
		Total Qty of Excavation =				**199.14**
2	**Footing PCC with 1:3:6 Ratio**					
	Footing					
	Thickness = 0.075m					
	D = 0.150 + 1.0 + 0.150	1	90.52	1.30	0.075	8.82
		Total Qty of Footing PCC=				**8.82**
3	**Footing RCC with 1:1.5:3 Ratio**					
	Footing					
	Thickness=0.6m	1	90.52	1.00	0.60	**54.31**
		Total Qty of Footing RCC=				**54.31**
4	**Column up to Plinth Level RCC**					
	Column 1:1.5:3 Mix Ratio	8	0.23	0.46	0.33	**0.27**
		Total Qty of Footing Column=				**0.27**
5	**Plinth Beam RCC with 1:1.5:3 Ratio**					
		1	90.52	0.230	0.450	**9.36**
		Total Qty of Plinth Beam=				**9.36**
6	**Back-filling**					
6.a	**Back-filling In Footing**					
	Excavation Area	1	90.52	2.20	1.00	199.14
	Deduction					
	Footing P.C.C	-1	90.52	1.30	0.075	-8.82
	Footing RCC	-1	90.52	1.00	0.60	**-54.31**

	Footing Column	-8	0.23	0.46	0.33	**-0.27**
					6.a Total Qty=	**135.74**
6.b	**Back Filling from Ground Level to L.C. Bed below Level**					
	Plinth area in to in	1	90.52	1.75	0.20	31.68
					6.b Total Qty=	**31.68**
					Total Qty of Back Filling of 6a+6b=	**167.42**
7	**L.C. Bed RCC with 1:1.5:3 Ratio**					
		1	90.52	1.70	0.20	31.68
					Total Qty of L.C. Bed=	**31.68**
8	**Brick Masonry with 1:4 Ratio**					
8a	**0.23m thick wall Brick Masonry**	1	70	0.23	3.20	51.52
	Deduction					
	Window W	-4	1.80	0.23	1.20	-1.98
	Window W1	-6	1.52	0.23	1.20	-2.52
	Window W2	-2	1.20	0.23	1.20	-0.66
	Window W3	-4	0.90	0.23	1.20	-1.00
	M.D.	-2	1.20	0.23	2.10	-1.16
	Door D1	-1	0.91	0.23	2.10	-0.44
					Total Qty of 0.23mt. Thick Walls=	**43.76**
8b	**0.1m thick wall Brick Masonry**	1	20.52	0.10	3.20	6.56
	Deduction					

	Door D1	-3	0.91	0.23	2.10	-1.31
	Door D/V	-2	0.75	0.23	2.10	-0.72
	Vent v	-2	0.60	0.23	0.60	-0.17
		Total Qty of 0.1mt. Thick Walls=				**4.36**
		Total Qty of 8a+8b Walls=				**48.12**
9	**Chhajja with 1:1.5:3 RCC Ratio**					
		6	1.820	0.540	0.150	0.87
		2	1.500	0.540	0.150	0.22
		4	2.100	0.540	0.150	1.36
		4	0.900	0.540	0.150	0.30
		2	1.200	0.540	0.150	0.20
		4	2.740	0.540	0.150	0.88
		2	5.700	0.540	0.150	0.92
		2	7.350	1.430	0.150	3.15
		Total Qty of Chajjas=				**7.90**
10	**Slab with 1:1:2 RCC Ratio**					
	0.15m Thick Slab	1	90.52	1.00	0.415	37.56
		Total Qty of Slab=				**37.56**
11	**Parapet Wall**					
		1	90.52	0.230	1.000	20.81
		Total Qty of Parapet Wall=				**20.81**
12	**Internal Plaster with 1:4 Ratio**					
	15mm thick					
		1	90.52	0.015	3.10	4.20
	Deduction					
	Window W	-2	1.800	0.015	1.200	-0.06

	Window W1	-6	1.520	0.015	1.200	-0.16
	Window W2	-1	1.200	0.015	1.200	-0.02
	Window W3	-3	0.900	0.015	1.200	-0.05
	M.D.	-1	1.200	0.015	2.100	-0.04
	Door D1	-15	0.910	0.015	2.100	-0.43
	Door D/V	-8	0.750	0.015	2.100	-0.19
	Vent V	-2	0.600	0.015	0.600	-0.01
		Total Qty of Internal Plaster=				**3.24**
13	**External Plaster with 1:4 Ratio**					
	25MM Thick					
		1	90.52	0.025	4.80	10.86
	Deduction					
	Window W	-2	1.800	0.025	1.200	-0.11
	Window W1	-6	1.520	0.025	1.200	-0.27
	Window W2	-1	1.200	0.025	1.200	-0.04
	Window W3	-3	0.900	0.025	1.200	-0.08
	M.D.	-1	1.200	0.025	2.100	-0.06
	Door D1	-1	0.910	0.025	2.100	-0.05
	Vent V	-2	0.600	0.025	0.600	-0.02
		Total Qty of External Plaster=				**10.23**

Table 8.10 Abstract sheet of community hall

ABSTRACT SHEET COMMUNITY HALL				
Sr No.	**Description of Item**	**Quantity (Cu.m)**	**Rs.**	**Total Cost In Rs.**
1	Excavation	199.44	110	21940.00
2	PCC	8.12	2400	19490.00
3	Footing RCC	54.31	3800	206380.00
4	Column up to Plinth Level RCC	0.27	3800	1025.00
5	Plinth Beam RCC	9.36	3800	35570.00
6	Back filling	167.42	90	15070.00
7	L.C. Bed RCC	31.68	3800	120385.00
8	Brick Masonry	48.12	1200	57745.00
9	Chhajja	7.90	3800	30020.00
10	Slab	37.56	3800	143730.00
11	Parapet Wall	20.81	1200	24970.00
12	Internal Plaster	3.24	150	5000.00
13	External plaster	10.23	300	3050.00
14	Door, window, ventilation	38	1000	38000.00
	Total			717875.00

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8.1.6. PHC Center

This drawing is available on page no 197

Table 8.11 Quantity sheet of Phc Center

PRIMARY HEALTH CLINIC

QUANTITY SHEET

Sr. No.	Item Description	No.	Length (m)	Width/ Breadth (m)	Height/ Depth (m)	Quantity (m^ 3)
1	**Earthwork in Excavation in Foundation:**					
	Footing 1mx1m	1	52.78	2.03	1.20	**128.57**
	Depth From GL = 0.6 +0.83+0.6					
	0.6 =Extra For working space					
		Total Qty of Excavation =				**128.57**
2	**Footing PCC with 1:3:6 Ratio**					
		1	21.58	0.83	0.10	**1.79**
		Total Qty of Footing PCC=				**1.79**
3	**Footing RCC with 1:1.5:3 Ratio**					
	STEP-1	1	18.98	0.73	0.20	**2.77**
	STEP-2	1	16.38	0.63	0.30	**3.10**
	STEP-3	1	11.18	0.43	0.30	**1.44**
		Total Qty of Footing RCC=				**7.31**
4	**Column up to Plinth Level RCC**					
	Column 1:1.5:3 Mix Ratio	1	5.98	0.23	0.30	**0.41**
		Total Qty of Footing Column=				**0.41**
5	**Plinth Beam RCC with 1:1.5:3 Ratio**					
		1	223.74	0.23	0.40	**20.58**
		Total Qty of Plinth Beam=				**20.58**
6	**Back-filling**					
6.a	**Back-filling In Footing**					
	Excavation Area	1	52.78	2.03	1.20	128.57
	Deduction					
	Footing P.C.C	-1	21.58	0.83	0.10	-1.79
	Footing RCC	-1	18.98	0.73	0.20	**-2.77**

		-1	16.38	0.63	0.30	**-3.10**
		-1	11.18	0.43	0.30	**-1.44**
	Footing Column	-1	5.98	0.46	0.33	**-0.91**
					6.a Total Qty=	**118.56**
6.b	**Back Filling from Ground Level to L.C. Bed below Level**					
	Plinth area in to in	1	397.73	1.00	0.40	159.09
					6.b Total Qty=	**159.09**
		Total Qty of Back Filling of 6a+6b=				**277.66**
7	**L.C. Bed RCC with 1:1.5:3 Ratio**					
		1	397.73	1.00	0.20	79.55
					Total Qty of L.C. Bed=	**79.55**
8	**Brick Masonry with 1:4 Ratio**					
		1	220.46	0.25	3.17	174.71
	Deduction					
	window w1	-7	1.50	0.25	1.20	-3.15
	window w2	-1	1.40	0.25	1.20	-0.42
	window w3	-1	1.50	0.25	1.20	-0.44
	window w4	-1	1.50	0.25	1.20	-0.44
	window w5	-4	1.20	0.25	1.20	-1.43
	window w6	-2	1.38	0.25	1.20	-0.82
	Vent V1	-8	0.75	0.25	0.60	-0.90
	Vent V2	-2	0.45	0.25	0.60	-0.13
	Door D4	-8	0.75	0.25	2.60	-3.90
	Door D3	-2	1.95	0.25	2.60	-2.53
	Door D2	-10	1.00	0.25	2.60	-6.50
	Door D1	-1	2.00	0.25	2.60	-1.30
					Total Qty of Walls=	**152.75**
9	**Slab with 1:1:2 RCC Ratio**					
	0.18m Thick Slab	4	2.71	0.46	0.18	0.89
		2	6.49	4.00	0.18	9.34
		3	1.66	0.46	0.18	0.41
		1	7.96	5.73	0.18	8.20

		2	1.61	0.23	0.18	0.13
		1	10.46	2.50	0.18	4.70
		1	6.23	6.00	0.18	6.73
		1	4.23	4.26	0.18	3.24
		1	9.80	9.23	0.18	16.28
		1	11.10	13.38	0.18	26.73
		1	2.37	0.75	0.18	0.32
		1	1.36	0.75	0.18	0.18
		1	4.03	4.26	0.18	3.09
		1	6.26	6.26	0.18	7.05
		1	10.29	2.50	0.18	4.63
		1	8.01	5.76	0.18	8.30
		2	1.96	0.46	0.18	0.32
					Total Qty of Slab=	**100.36**
10	**Parapet Wall**					
		1	103.51	0.23	1.20	28.57
					Total Qty of Parapet Wall=	**28.57**
11	**Internal Plaster with 1:4 Ratio**					
	18mm thick					
		1	5.27	0.018	7.50	0.85
		4	3.77	0.018	2.90	0.78
		1	5.77	0.018	5.54	0.57
		1	4.00	0.018	3.80	0.27
		1	10.23	0.018	2.50	0.45
		1	10.64	0.018	4.00	0.76
		1	9.80	0.018	9.00	1.57
		1	3.80	0.018	3.80	0.26
		1	1.61	0.018	2.50	0.07
		1	5.80	0.018	5.80	0.60
		1	7.55	0.018	2.50	0.33
		1	7.55	0.018	5.30	0.72
		2	5.27	0.018	3.17	0.60
		8	3.77	0.018	3.17	1.71
		2	5.77	0.018	3.17	0.66
		2	4.00	0.018	3.17	0.45
		2	10.23	0.018	3.17	1.21
		2	10.64	0.018	3.17	1.21
		2	9.80	0.018	3.17	1.11

		2	3.80	0.018	3.17	0.43
		2	1.61	0.018	3.17	0.18
		2	5.80	0.018	3.17	0.66
		2	7.55	0.018	3.17	0.86
		2	7.55	0.018	3.17	0.86
		2	7.50	0.018	3.17	0.75
		8	2.90	0.018	3.17	1.32
		2	5.54	0.018	3.17	0.63
		2	3.80	0.018	3.17	0.43
		2	2.50	0.018	3.17	0.28
		2	4.00	0.018	3.17	0.45
		2	9.00	0.018	3.17	1.03
		2	3.80	0.018	3.17	0.43
		2	2.50	0.018	3.17	0.28
		2	5.80	0.018	3.17	0.66
		2	2.50	0.018	3.17	0.28
		2	5.30	0.018	3.17	0.60
					Total=	**24.05**
	Deductions					
	window w1	-7	1.50	0.018	1.20	-0.22
	window w3	-1	1.40	0.018	1.20	-0.03
	window w4	-1	1.50	0.018	1.20	-0.03
	window w5	-1	1.50	0.018	1.20	-0.03
	window w6	-4	1.20	0.018	1.20	-0.10
	Vent V1	-8	0.75	0.018	0.60	-0.06
	Vent V2	-3	0.45	0.018	0.60	-0.01
	Door D1	-1	2.00	0.018	2.60	-0.09
	Door D2	-22	1.00	0.018	2.60	-1.03
	Door D3	-4	1.95	0.018	2.60	-0.36
					Total Qty of Internal Plaster=	**22.09**
12	**External Plaster with 1:4 Ratio**					
	25MM Thick					
		1	103.51	0.025	5.25	13.59
	Deduction					
	window w1	-7	1.50	0.025	1.20	-0.32
	window w3	-1	1.40	0.025	1.20	-0.04

	window w4	-1	1.50	0.025	1.20	-0.05
	window w5	-1	1.50	0.025	1.20	-0.05
	window w6	-4	1.20	0.025	1.20	-0.14
	Vent V1	-8	0.75	0.025	0.60	-0.09
	Vent V2	-3	0.45	0.025	0.60	-0.02
	Door D1	-1	2.00	0.025	2.60	-0.13
		Total Qty of External Plaster=				**12.75**

Table 8.12 Abstract sheet of PHC Center

ABSTRACT SHEET PHC BUILDING

Sr No.	**Description of Item**	**Quantity (Cu.m)**	**Rs.**	**Total Cost In Rs.**
1	Excavation	128.57	110	14145.0
2	PCC	1.79	2400	4300.00
3	Footing RCC	7.31	3800	27775.00
4	Column up to Plinth Level RCC	0.41	3800	1560.00
5	Plinth Beam RCC	20.58	3800	78205.00
6	Back filling	277.66	90	24990.00
7	L.C. Bed RCC	79.55	3800	302290.00
8	Brick Masonry	152.75	1200	183300.00
9	Slab	100.36	3800	381370.00
10	Parapet Wall	28.57	1200	34285.00
11	Internal Plaster	22.09	150	3315.00
12	External plaster	12.75	300	3825.00
13	Door, window, ventilation	52	1000	52000.00
	Total			1111360.00

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8.1.7 Solar Street Light

Solar Street light Installation

The solar street light does not need to set up the transmission line or route the cable, and no any special management and control are required.

It can be installed in the entire public place such as the square, the parking lot, the campus, the street or the highway etc. We are going to design a Solar Street Light Installation for The main Street of our Allocated Village.

Components required for a single Solar Street Light Pole.

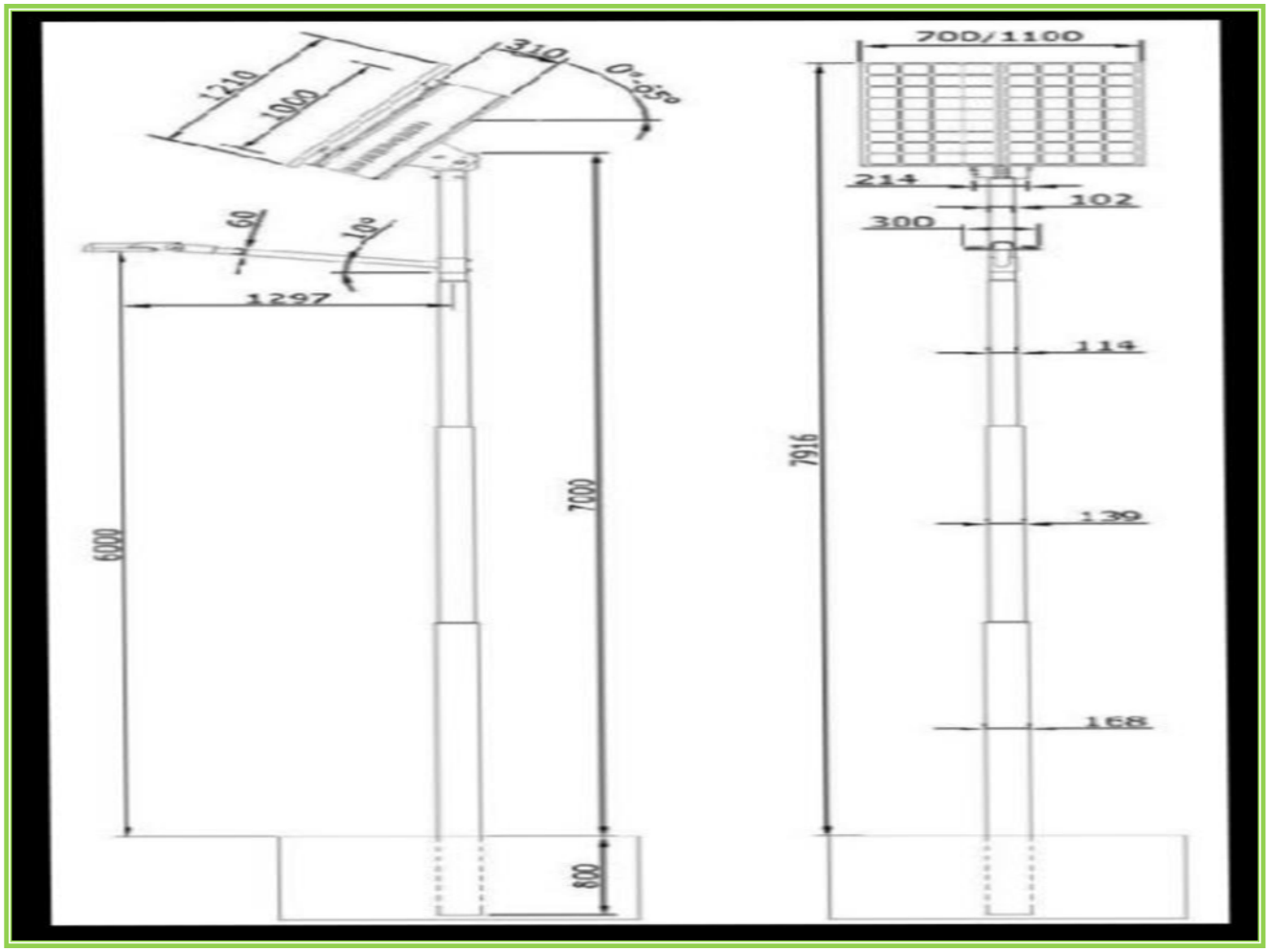

Figure: 8.7 Design of Solar Street Light

Components required for a single Solar Street Light Pole
Control box (charger, controller, batter)
Light poll
LED lamp
Solar cell

Calculation for Solar Street Light Installation

As we seen above our basic components required are Solar Cell, LED Lamp, Light Pole and Control Box (It consists of 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.

Rating & Costing of Street Light

Mathematical parameters are as follows Capacity of solar panel= Rating of LED X no of running hours.

Table 8.13 Abstract sheet of Solar Street Light

Parameters	Cost in INR
LED light	4000.00
Solar panel	3000.00
Charger controller	5000.00
Pole	9500.00
Battery	5500.00
Wire	2000.00
Installation cost	4500.00
Total approximate cost	33500.00

One solar street light approximate cost is 33500.
We installation 15 light then total cost is = 15 * 33500 = 502,500 RS

8 .1.8 SOLAR PUMP SYSTEM

Solar Pump system Installation

Figure: 8.8 Design 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.

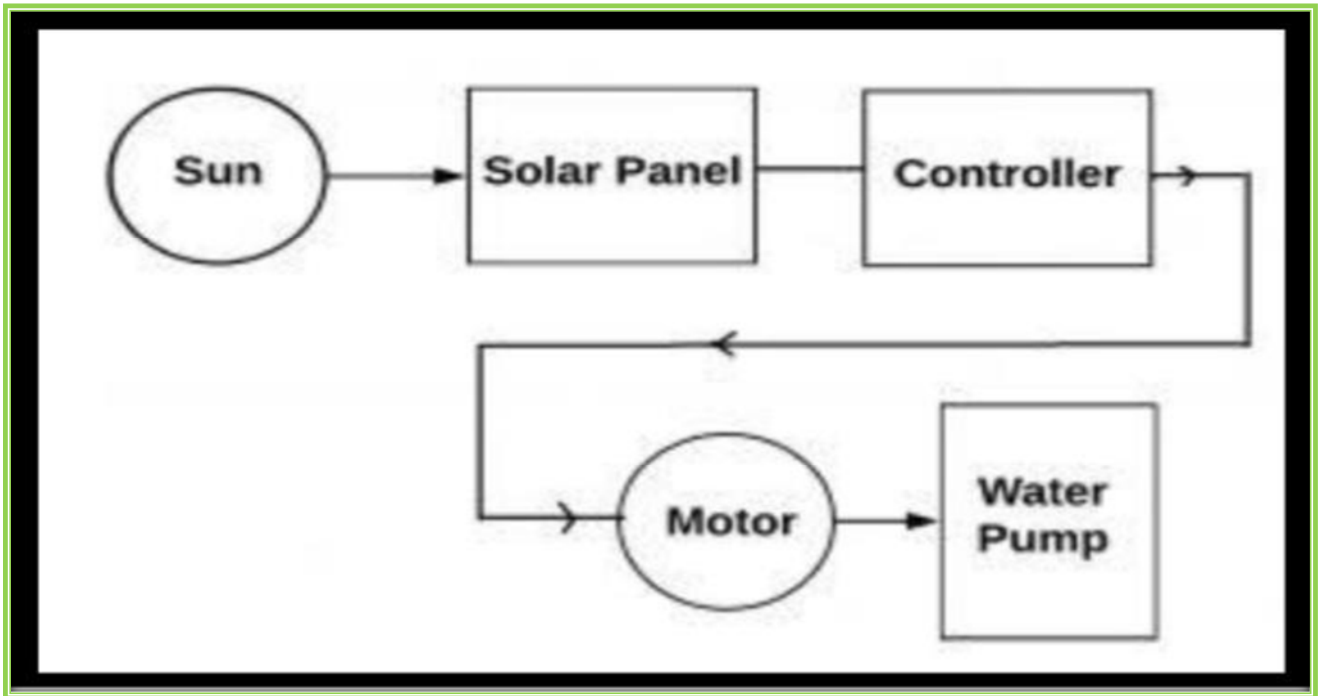

Figure: 8.9 Block Diagram of Solar Pump System

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 arum of the centrifugal type, in which a rapidly rotating impeller adds energy to the water and raises the pressure inside the pump casing.

Table 8.14 Abstract sheet of Solar Pump System		
Component	No. of comp	Cost
DC pump set (2HP)	1	10000.00
Solar panel(300watt)	4(9000)	36000.00
Charge controller	1	600.00
Battery system(100Ah)	2(5000)	10000.00
Arduino	1	1500.00
Ultrasonic Sensor	1	100.00
L193D motor driver IC	1	100.00
Other miscellaneous charge	1	2000.00
	Total Cost	61000.00

8 .1.9 Solar Rooftop

Solar Rooftop Installation

Solar Roof Top designing can be classified based on Grid Connection:
On-Grid Solar Roof Top
On-Grid Solar Roof Top

Solar Roof Top designing can be classified based on type of buildings:
Design for Residential Building
Design for Commercial Building

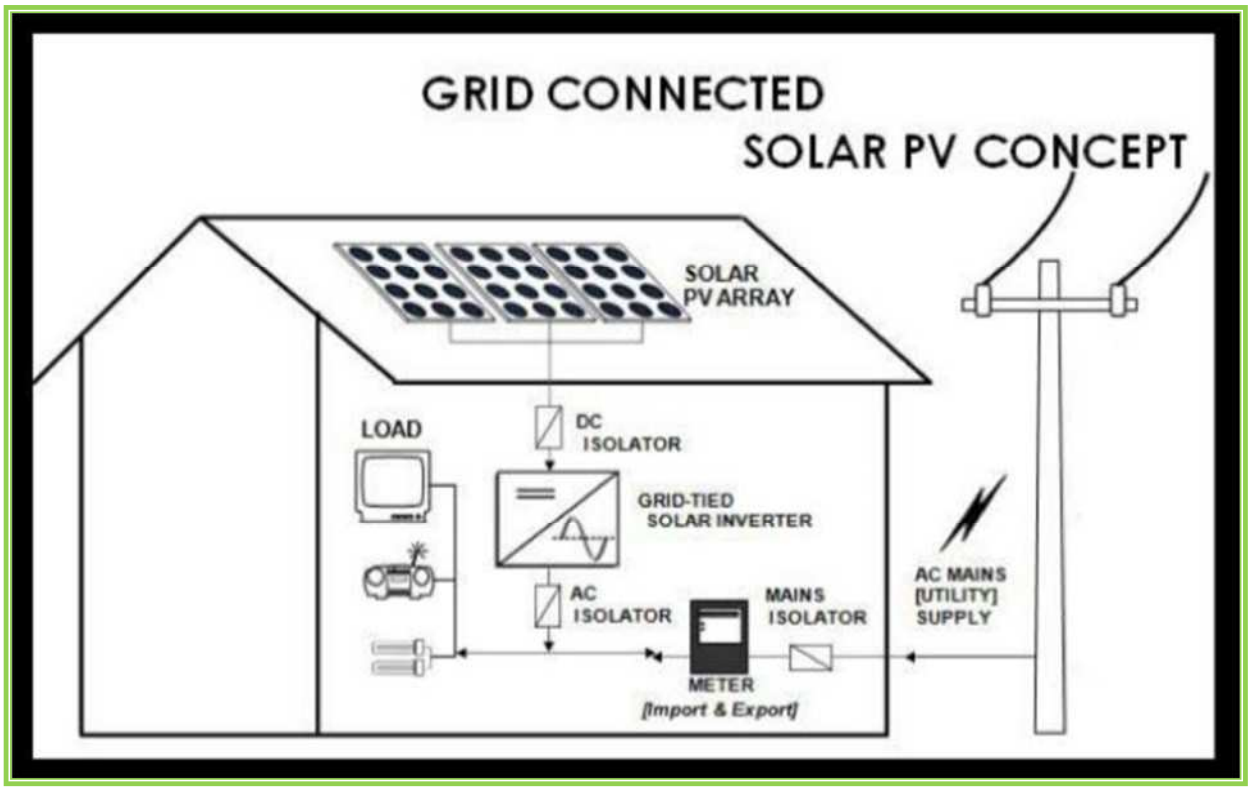

Figure: 8.10 Design of Solar Roof top

Solar Rooftop Design Proposal for Panchayat Building
Considering last 4 energy bills of Panchayat Building with unit consumption of 320 units, 220 units, 110 units and 100 units. If we want to install an On-Grid Solar rooftop system for this building then we must follow below steps,
Calculate the Average load
Average load = (320+220+110+100)/4 = 187.5 units = 200 units
Calculate the Load Demand if Units are consumed for 6 hrs every day Demand = Avg load / time taken 200/(30 days*6 hrs) = 1.111 KW

Calculate No. of Solar Panels to be used
Now if we use 1 panel then for 1.111KW, We use (1111/335-3.32) 4 panels
Inverter to be used is of 3 KW String Inverter (can be used till the demand extension of KW)
Protection Devices to be used:
KW DC MCB; 15 Amp DC Fuse;Surge Protecting Device; Lightning Arrester DC Body Earthing & AC Body Earthing is done in chemical Earthing Method Wiring and structure Installation is in standard manner.

Table 8.15 Abstract sheet of Solar Rooftop

Table 8.15 Abstract sheet of Solar Rooftop				
Sr.No.	Installations	Quantity	Cost/Qty	Total cost(₹)
1	Solar panel	4 nos.	8000	32000.00
2	Inverter	1 no.	15500	15500.00
3	Installation	1111 wast.	3	3333.00
4	ACDB, DCDB	1 no.	5000	5000.00
5	Surge protecting device	1 no	650	650.00
6	Lightening arrester	1 no	1500	1500.00
7	Chemical earthing	1 set.	8000	8000.00
8			Total cost	65983.00

#Chapter: - 9#

Future Development of the Village (for the PART-II Design)

- **Civil design**

- ATM
  ATMs are important to businesses because they bring them so many benefits. ATMs help retail stores, hotels, café's and more to increase their footfall, basket spend, customer loyalty, provides more security and saves them money on banking fees.

- Post Office
  A post office is a public facility that provides **mail services**, including accepting of letters and parcels, providing post office boxes, and selling **postage** stamps, packaging, and stationery. Post offices may also offer additional services, which vary by country.

- Sewage Treatment Plant
  Sewage treatment plant is a basic need of every man. In a village waste water problem is more after design sewage treatment plant problem solved.

- Bank
  A bank is a financial institution which is involved in borrowing and lending money. Banks take customer deposits in return for paying customers an annual interest payment. The bank then uses the majority of these deposits to lend to other customers for a variety of loans.

- Rain water harvesting in all government building
  The main purpose of the rainwater harvesting is to use the locally available rainwater to meet water requirements throughout the year without the need of huge capital expenditure. This would facilitate the availability of uncontaminated water for domestic, industrial, and irrigation needs.

- Perouse paver block
  After visiting Khorana village we identified one big problem and it daring of rain water on road. after the rain some place water cannot run off but 4 to 5 days rain water will be as well as condition due to this problem Rate of mosquito epidemic it gate very highly. After providing Perouse paver block at problematic place rain water infiltration in 30to 60 minute after rain.

- **Electrical design**
  In a Khorana village we providing three design in last design this design useful to less than 5 unite electricity generate in this semester we provide 3 more new design for more electricity generate for all village use and its name is Solar panel, Power generate by river water and we have provided Underground wiring for safety of villagers and 24 hours electricity provide in monsoon session.

#Chapter: - 10#

Conclusion (Entire Village Project)

The application of proposed designs will be a step towards the improvement in the quality of life of villagers and helps in raising the standard of living in rural area. Hence, the concept of Urbanization can play a key role in decreasing the migration rate from rural area to urban area.

From making the procedure of this report, we have found various methods of making smart villages, waste collection methods, and various Maintenance etc in villages by Govt. of Gujarat etc.

After visiting of Ideal Village Guvridad and Smart Village Bedi, we get the idea and scenario of a model village. Up till now in our mind we think the meaning of 'village' as low class people, leaving with ordinary life and with old mindset and old technologies. But now a day scenario is totally changed, Indian villages growing out now. With smart cities, Smart Village concept is also introduced and we are proudly saying that, we are one of its part. Because through Vishwakarma Yojana we connect with the rural development concepts.

As from Ideal village visit, we saw that all the success of village depend on the Sarpanch of village. A sarpanch is the only person who can increase the level of village in all aspects. There are so many Govt. scheme for villages and for villagers, but the Sarpanch is the only a Link between these two phases. With some little awareness and group work can achieve anything, which Guvridad village has proved.

From the study of various components and existing infrastructure facilities in Khorana village, design proposals have been made for the lacking facilities i.e. Public Toilet, Post office, Bill collection center, ATM, and Aanganwadi. The implementation of these proposals can lead towards the development of Khorana village and thus contributes towards the development of the nation.

Students who want to work towards preservation of rural soul of country can do many things for our own good and environment. By implanting given design proposals, we can say that all the missing amenities are provided will stop the migration of rural people towards the urban area. This can cause reduce the load on urban areas as well as pollution in both sector can be minimized gradually.

In the Khorana village, the basic requirements like community hall, any recreational area, bank, etc. did not exist. By implanting given design proposals, all the missing amenities can be provided which will stop the migration of rural people towards the urban area which will in turn reduce pressure on cities.

These amenities designed under this project will be helpful for better development of village as physically as well as socially, which improves the overall lifestyle of people along with nation with preserving nature bit by bit.

#Chapter:- 11#

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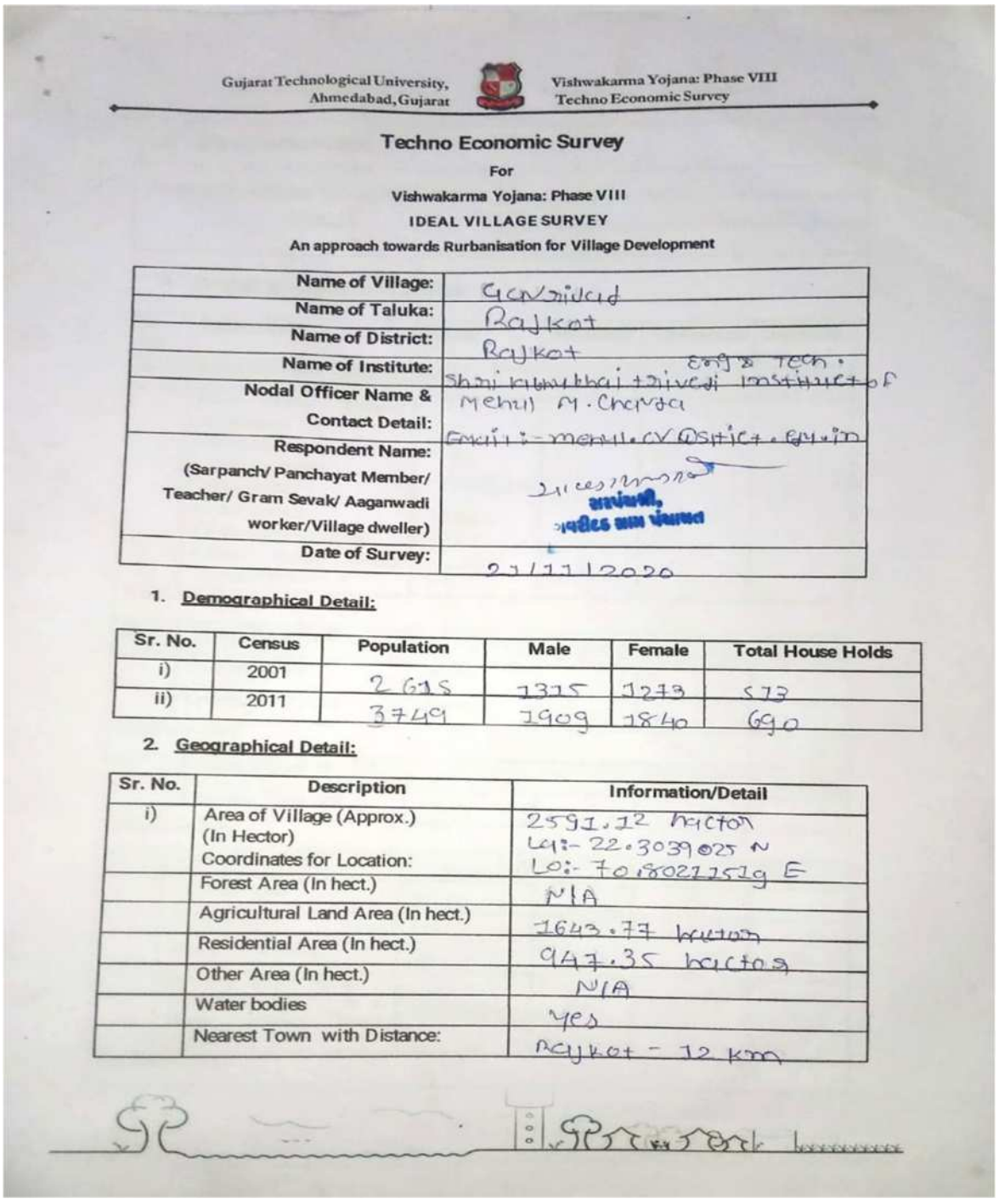
#Chapter: - 12#

Annexure

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



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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	Guvridad
Name of Taluka:	Rajkot
Name of District:	Rajkot
Name of Institute:	Eng & Tech. Shri Khimjibhai Trivedi Institute of
Nodal Officer Name & Contact Detail:	Mehul M. Chavda
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	
Date of Survey:	22/11/2020

1. Demographical Detail:

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	2615	1375	1273	573
ii)	2011	3749	1909	1840	690

2. Geographical Detail:

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	2591.12 hector Lat:- 22.303902 N Lo:- 70.802225 E
	Forest Area (In hect.)	N/A
	Agricultural Land Area (In hect.)	1643.77 hector
	Residential Area (In hect.)	947.35 hector
	Other Area (In hect.)	N/A
	Water bodies	Yes
	Nearest Town with Distance:	Rajkot - 12 km

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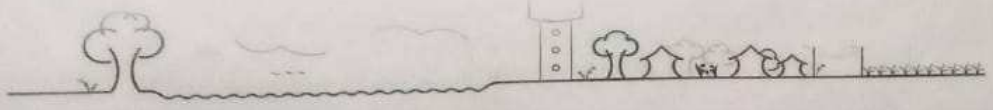
3. Occupational Details:

Name of Three Major Occupation groups in Village	1. Farmers 2. Animal husbandry 3. labours

4. Physical Infrastructure Facilities:

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



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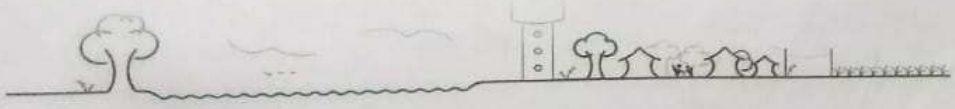
Vishwakarma Yojana: Phase VIII
Techno Economic Survey

E.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road				
	Main road	Cement Road		20ft Road	
	Internal streets	Cement Road		7ft. Road	
	Nearest NH/SH/MDR/ODR Dist. in kms.	ODR Bitumen Road	Rajkot	Morbi Highway	
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NO Rajkot Junction Bileshwar station - 12 km		11 km	
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	Yes Poor			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto City bus Jeep			
Suggestions if any:					
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes More than 6 hrs			
	Power supply for Domestic Use	Yes			
	Power supply for Agricultural Use	Yes			
	Power supply for Commercial Use	Yes			
	Road/ Street Lights	Yes			



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Techno Economic Survey

	Electrification in Government Buildings/ Schools/ Hospitals	Yes			
	Renewable Energy Source Facilities (Y/ N)	Yes	Solar Panel		
	LED Facilities	Yes			
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	N/A			
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	N/A			
	Solid & liquid waste Disposal system available	N/A			
	Any facility for Waste collection from road	Yes	RMC		
Suggestions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	River Canal Well Tube well			
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	30% Kutchha 70% Pucca			

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

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

L.	Education Facilities:				
	Aaganwadi/ Play group	Yes			
	Primary School	Yes			
	Secondary school	Yes			
	Higher sec. School	Yes			
	ITI college/ vocational Training Center	N/A			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	N/A			
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					

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

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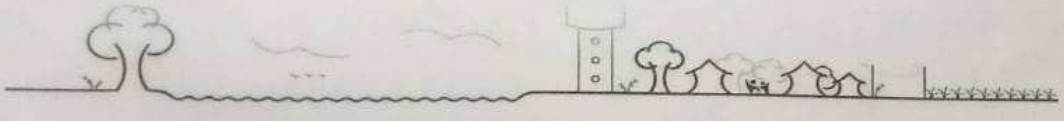
	Condition:				
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	N/A			
	Public Garden Location: Condition:	N/A			
	Village Pond Location: Condition:	Yes on village very good			
	Recreation Center Location: Condition:	N/A			
	Cinema/ Video Hall Location: Condition:	N/A			
	Assembly Polling Station Location: Condition:	N/A			
	Birth & Death Registration Office Location: Condition:	Yes on village bet			
If any of the above Facility is not available in village than approx. distance from village: .....kms.					
Suggestions if any:					
N.	**Other Facilities**				
	Post-office	Yes			
	Telecommunication Network/ STD booth	Yes			



	General Market	NA			
	Shops (Public Distribution System)	yes			
	Panchayat Building	Yes			
	Pharmacy/Medical Shop	yes			
	Bank & ATM Facility	yes			
	Agriculture Co-operative Society	yes			
	Milk Co-operative Soc.	Yes			
	Small Scale Industries	Yes			
	Internet Cafes/ Common Service Center/Wi Fi	NIA			
	Other Facility	City bus			
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	Solar Panel			
P.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	No			
Q.	Any Other	No			

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	

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Vishwakarma Yojana: Phase VI
Techno Economic Survey

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

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)	N/A	
2.	Additional Information/ Requirement	N/A	

9. **Smart Village Proposal Design**

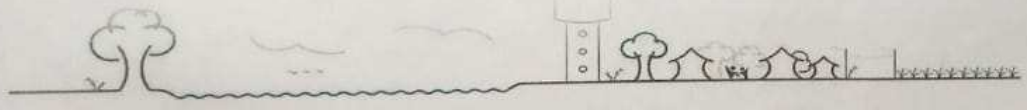
Sr. No.	Descriptions	Information/ Detail	Remarks
1.			

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

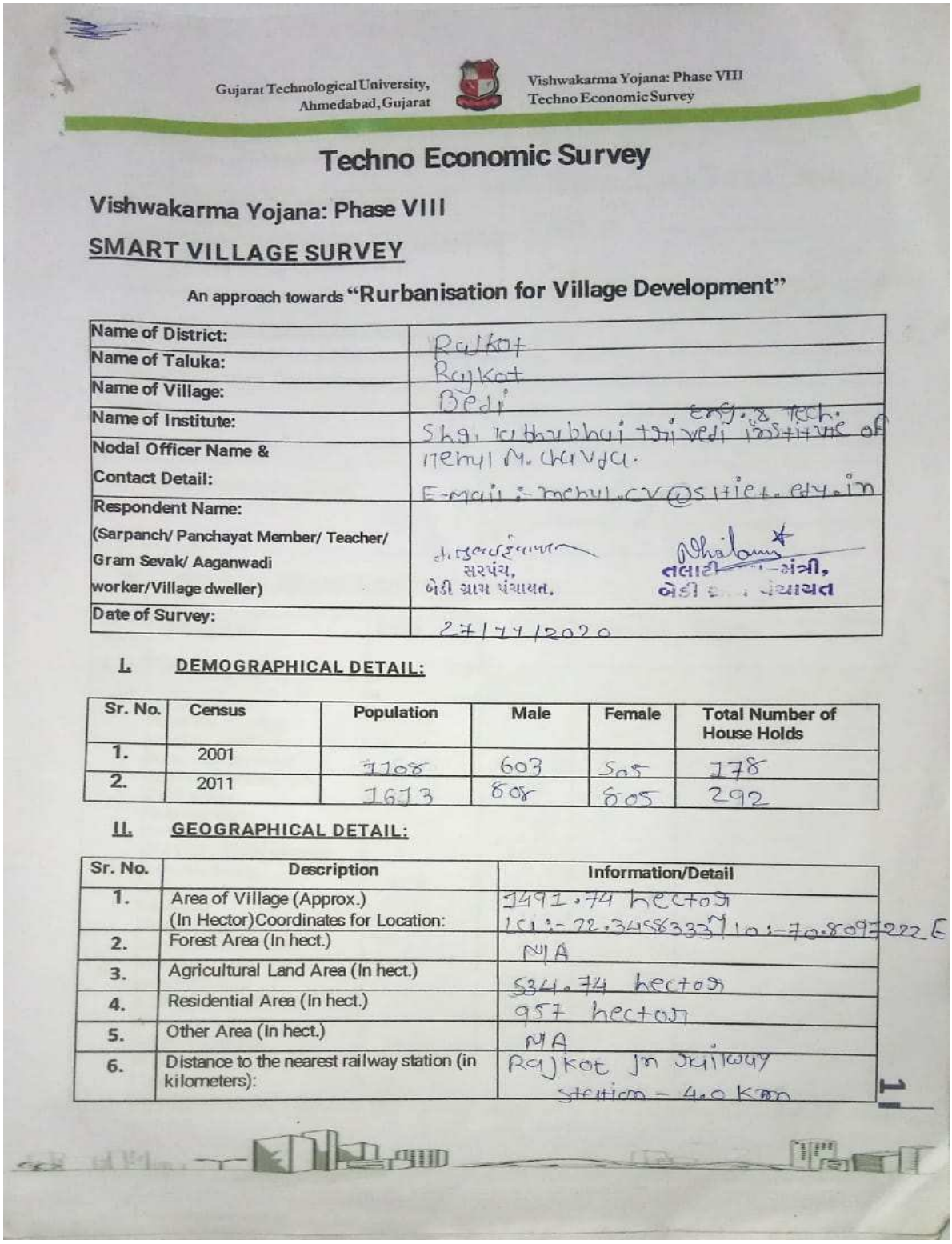
For Any Administration queries/ Difficulties:
GTU VY Section:
Contact No – 079-23267588
Email ID: rurban@gtu.edu.in

Nodal officer

S.T.I.E.T. RAJKOT



12.2 Scanned copy (for Part-I), Original smart Village Bedi (Gujarati) Survey details



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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

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

Name of District:	Rajkot
Name of Taluka:	Rajkot
Name of Village:	Bedi
Name of Institute:	Shri Kathadbhai Trivedi Institute of Engg. & Tech.
Nodal Officer Name & Contact Detail:	Mehul M. Chavda. E-mail :- mehul.cv@silver.edu.in
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	સરપંચ, બેડી ગ્રામ પંચાયત. / તલાટી-મંત્રી, બેડી ગ્રામ પંચાયત
Date of Survey:	27/11/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	1108	603	505	178
2.	2011	1613	808	805	292

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1491.74 hectors Lat :- 22.34586333° Lo :- 70.8097222 E
2.	Forest Area (In hect.)	NIA
3.	Agricultural Land Area (In hect.)	534.74 hectors
4.	Residential Area (In hect.)	957 hectors
5.	Other Area (In hect.)	NIA
6.	Distance to the nearest railway station (in kilometers):	Rajkot jn railway station - 4.0 Kms

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

7.	Name of Nearest Town with Distance:	Rajkot - 45 km
8.	Distance to the nearest bus station (in kilometers):	Bedi
9.	Whether village is connected to all road for the any facility or town or City?	ODR (Rajkot-Morbi highway)

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Farmers
	2.	Animal husbandry
	3.	labours
Major crops grown in the village:	1.	Cotton
	2.	Mugfilies
	3.	wheat & 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	Yes	✓	✓	-
2.	**DUG WELL**				
	Protected Well	NA	-	-	-
	Un Protected Well	Yes	✓		
3.	**WATER FROM SPRING**				
	Protected Spring	NIA			
	Unprotected Spring	NIA			
	Rainwater	NIA			
	Tanker Truck	Yes			
	Cart With Small Tank	Yes			
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/**				
	Irrigation Channel	Yes			
	Bottled Water				
	Hand Pump	Yes			
	Other(Specify)Lake/ Pond	Yes			River (Aji)

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Techno Economic Survey

Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:			
	Underground Sump	Capacity:			
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1 pipe drainge 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	yes yes NA			
Suggestions if any:					
D.	**Road Network : All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road				
	Main road	yes	cement Road	20% of village area Road	
	Internal streets	yes	cement Road	60% of village area Road	
	Nearest NH/SH/MDR/ODR Dist. in kms.	Bitumen ODR	Rajkot - Morbi 0 Km	highway	
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NIA	Nearest - Rajkot Jn. 4 Km		
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	NIA	Nearest - Rajkot central Bus stand - 4.8 Km		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	yes	Auto	City Bus	
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	yes	More then 6 hours		

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Vishwakarma Yojana: Phase VIII Techno Economic Survey

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

Suggestions if any:

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

Suggestions if any:

H.	Main Source of Irrigation Facility:				
	TANK/POND	yes			
	STREAM/RIVER	yes	Aji River		
	CANAL	yes			
	WELL	yes			
	TUBE WELL	yes			
	OTHER (SPECIFY)	yes	Sauni	Saurashtra line	

Suggestions if any:

I.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)	80% Pucca 20% Kutcha			

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

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

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions if any:

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

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

Suggestions if any:

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

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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	N/A			✓
	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)	Best		✓	
	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	good		✓	
	14. Minimum Needs Programme (MNP)				✓
	15. National Rural Employment Programme				✓
	16. Employee Guarantee Scheme (EGS)				✓
	17. Prime Minister Rojgar Yojana (PMRY)	V.good		✓	
	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)	Prime minister AAVas Yojna		✓	

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VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	N/A	
2.	Additional Information/ Requirement	N/A	
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?	Per month N/A yes	

IX. Smart Village / Heritage Details

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

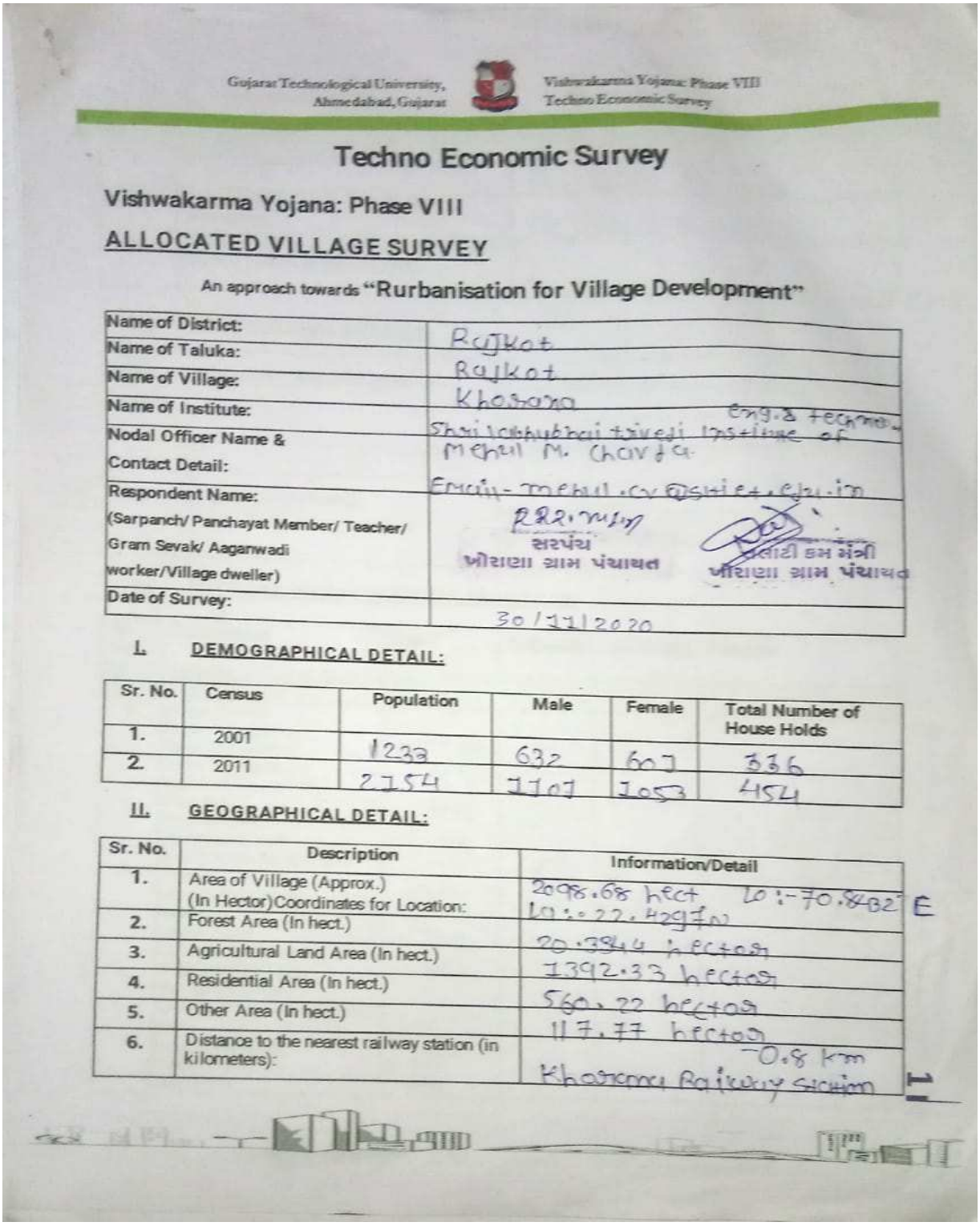
Note: Photographs/ Video/ Drawings of all existing Infrastructure facilities & conditions should be taken by students of respective villages for their record and information.

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

S.L.T.I.E.T. RAJKOT

Nodal officer.

12.3 Scanned copy (for Part-I), Original Khorana village Techno-Economic Survey Form.



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

Name of District:	Rajkot
Name of Taluka:	Rajkot
Name of Village:	Khorana
Name of Institute:	Shri Jaybhaibhai Trivedi Institute of Engg. & Technology
Nodal Officer Name & Contact Detail:	Mehul M. Chavda Email- mehul.cv@silver.ac.in
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	સરપંચ ખીરાણા ગ્રામ પંચાયત ચૂંટાયેલા સભ્ય ખીરાણા ગ્રામ પંચાયત
Date of Survey:	30/12/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	1233	632	601	336
2.	2011	2154	1101	1053	454

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector) Coordinates for Location:	2098.68 hect 20°-70.8432' E 20°-22.4297' N
2.	Forest Area (In hect.)	20.3844 hectors
3.	Agricultural Land Area (In hect.)	1392.33 hectors
4.	Residential Area (In hect.)	560.22 hectors
5.	Other Area (In hect.)	117.77 hectors
6.	Distance to the nearest railway station (in kilometers):	0.8 km Khorana Railway station

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7.	Name of Nearest Town with Distance:	Rajkot - 15 km
8.	Distance to the nearest bus station (in kilometers):	Rajkot - 15 Km
9.	Whether village is connected to all road for the any facility or town or City?	Rajkot - Morbi highway - 11 km

III. OCCUPATIONAL DETAILS:

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

Major crops grown in the village:	1.	Cotton
	2.	Mustard
	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	Yes	✓		
2.	**DUG WELL**				
	Protected Well	No			
	Un Protected Well	Yes	✓		
3.	**WATER FROM SPRING**				
	Protected Spring	No			
	Unprotected Spring	No			
	Rainwater	No			
	Tanker Truck	No			
	Cart With Small Tank	No			
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/**				
	Irrigation Channel	Yes	✓		
	Bottled Water	No			
	Hand Pump	No			

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	Other(Specify) Lake/ Pond	No			

Suggestions if any:

B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	5 lack lit		
	Underground Sump	Capacity:	6 lack lit		

Suggestions if any:

C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1 Pipe drainage	yes			

Suggestions if any:

D.	**Road Network : All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road				
	Main road	yes	Cement Road	25% of all Roads	
	Internal streets	yes	Without surface Cement Road	15% of all Roads 60% of all Road	
	Nearest NH/SH/MDR/ODR Dist. in kms.	ODR - Rajkot Morbi highway 17 KM	Bitumen Road		

Suggestions if any:

E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Yes			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	N/A Rajkot	Central	Bus	Station - 18 Km
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Chhakda	Jeep	Auto	

Suggestions if any:

F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	yes	More then 6 hrs (24 hour)		

3

	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)	N/A			
	LED Facilities	YES			
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	N/A			
	Location Condition				
	Community Toilet (With bath/ without bath facilities)	N/A			
	Solid & liquid waste Disposal system available	N/A			
	Any facility for Waste collection from road	N/A			
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND	N/A			
	STREAM/RIVER	YES			
	CANAL	YES			
	WELL	YES			
	TUBE WELL	YES			
	OTHER (SPECIFY)	N/A			
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	30% Kutchha 70% Pucca			

V. SOCIAL INFRASTRUCTURAL FACILITIES:

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

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If any of the above Facility is not available in village than approx. distance from village 5 ...kms.

Suggestions if any:

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

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

Suggestions if any:

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

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

Suggestions if any:

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

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

VII. DATA COLLECTION FROM VILLAGE

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

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VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

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

IX. Smart Village / Heritage Details

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

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

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

Nodal officer

S.L.T.I.E.T. RAJKOT

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12.4 Gap Analysis of the all allocated village

Table: 12.1 Gap Analysis

VILLAGE GAP Analysis

Village Facilities	Planning Commission/UDPFI Norms	Village Name:	KHORANA		
		Population:		2154	
		Existing	Required as per Norms	Smart Vilage / Cities / Heritage Future Projection Design	Gap
Social Infrastructure Facilities					
Education					
Anganwadi	Each or Per 2500 population	2	1		1
Primary School	Each Per 2500 population	1	1		0
Secondary School	Per 7,500 population	0	0		0
Higher Secondary School	Per 15,000 Population	0	0		0
College	Per 125,000 Population	0	0		0
Tech. Training Institute	Per 100000 Population	0	0		0
Agriculture Research Centre	Per 100000 Population	0	0		0
Skill Development Center	Per 100000 Population	0	0		0
Health Facility					
Govt/Panchyat Dispensary or Sub PHC or Health Centre	Each Village	0	1		1
Primary Health & Child Health Center	Per 20,000 population	0	0		0
Child Welfare and Maternity Home	Per 10,000 population	0	0		0
Multispeciality Hospital	Per 100000 Population	0	0		0

Public Latrines	1 for 50 families (if toilet is not there in home, specially for slum pockets & kutcha house)	0	8		8
Physical Infrastructure Facilities					
Transportation		**Adequate**	1		0
Pucca Village Approach Road	Each village	**Adequate**	1		0
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	**Adequate**	1		0
Drinking Water (Minimum 70 lpcd)		**Adequate**	1		0
Over Head Tank	1/3 of Total Demand	**Inadequate**	0		1
U/G Sump	2/3 of Total Demand	**Adequate**	1		0
Drainage Network - Open		**Inadequate**	0		0
Drainage Network - Cover		**Adequate**	1		0
Waste Management System		**Inadequate**	0		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	0	1		1
Gram Panchayat Building	Each individual/group panchayat	1	1		0
APMC	Per 100000 Population	0	0		0
Fire Station	Per 100000 Population	0	1		1
Public Garden	Per village	0	1		1
Police post	Per 40,000Population	0	0		0
Shopping Mall					
Electrical Design					
Electricity Network		**Adequate**	1		0
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

Table: 12.2 Design summary of village

No	Village name	Branch	Civil /Electrical part-1design	Civil /Electrical part-2 design
1	Khorana	Civil	Bus stand	ATM
			Public garden	Post office
			Public toilet	Floating biogas pant
			Public library	Pharmacy store
			Community hall	Rain water harvesting
			PHC center	Hallow prewar block
		Electrical	Solar street light	Photovoltaic Water Pumping
			Solar pump	Mini tiller or cultivator using
			Solar rooftop	Solar panel system
3	Jaliya	Civil	Chanakya library	Soil testing laboratory
			Phanchayt building	Garden
			Pay and use	Reaction center
			General ,market	Bio-gas plant
			Bus stand	Aganwadi
			Community hall	Solid waste collection
		Electrical	Solar street light	Smart garden
			Solar rooftop	Solar laboratory
			Solar cleaning system	Irrigation by solar
4	Meta khmbhaliya	Civil	Public library	Go down
			Community hall	Rain water harvesting
			Garden	Bank
			Water tank	Play ground
			Solid Waste Collection	Bio-gas plant
			Public Toilet	Chabutro
5	Isra	Civil	Biogas Plant	Community hall
			Garden	Solid waste collction
			Public Toilet	Library
			Post Office	Internal road
			Water Harvesting	Police station
			Waste Water Treatment Plant	Small hydropower station
		Electrical	Solar Panel Fitting	Temperature Control
			Solar Street Light	Fan
			Solar Cleaning System	Water level indicatore
6	Visaman	Civil	Compost pit	Bio-gas plant
			Public garden	PHC

			Solid waste management	Rain water harvesting
			Chabutro	Public libarary
			Community hall	ATM
			Sopping mall	Road
		Electrical	Pizo Electricity genrestion	Solar street light
			Smart energy metar	Central Control Unit For Irrigation Water Pump Construction
			Solar tree	Desin perposnal of electrical wiring
7	Nager pipliya	Civil	Community Hall+ Library	Internal road
			Post Office	Public garden
			Panchayat Building	Biogas plant
			Public Toilet Block	General market
			Skill Development Centre	Canteen for old people
			Animal Shelter	Fire station
		Electrical	ɔmatic On-Off Switch For Water Tank	Community hall wiring
			Photovolic Water pump	Solar cleaning system
			Solar Water Purifier	Street light
8	Derdi khumbhaji	Civil	PHC	Rain Water Harvesting
			Public Library	Cyber Café
			Community Hall	Skill Development center
			Public Garden	Gym
			Police Station	Soil testing laboratory
			Batchat Mandli	Agriculture store
		Electrical	Solar street light	CCTV
			Solar Pump System	Solar rooftop
			Piezoelectric Speed Barker Power Generation Design	Purification Water Plant

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

Table: 12.3 summary of Ideal village Guvridad

Table: 12.4 Summary of smart village Bedi

Table: 12.5 Summary of allocated village Khorana








12.8 Village Interaction with sarpanch Report with the photo graph

MAHATMA GANDHI CHARITABLE TRUST MANAGED
SHRI LABHUBHAI TRIVEDI INSTITUTE OF ENGINEERING & TECHNOLOGY
Approved by AICTE, New Delhi & Affiliated to GTU, Ahmedabad (Degree & Diploma)

VISHWAKARMA YOJANA PHASE-8

Village: Khorana District: Rajkot

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

TO,

Talati Mantri/Sarpanch,
(Khorana,Rajkot)

As per Vishwakarma Yojana guidelines, following students are selected Khorana 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	180893106035	MOGARIYA KHODIDAS	8141717934
2	180893106007	CHUDASMA JIGNA	9638857543
3	180893109049	SANGHANI KEYUR	7878197776

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

CIVIL SLTIET RAJKOT DEPARTMENT

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

Tel. (0281) 2974014-15, 7069360064 TO 67
Kankot, Nr. Government Engineering College, Kalawad Road, Rajkot - 360005.
Tel: (0281) 6564011-16, Mob. : 99045 44407,
Web: www.ltiet.com, Mail: info@ltiet.com

Fig : 12.1 Sarpanch Report With The Photograph

COMPREHENSIVE REPORT

CONCEPT

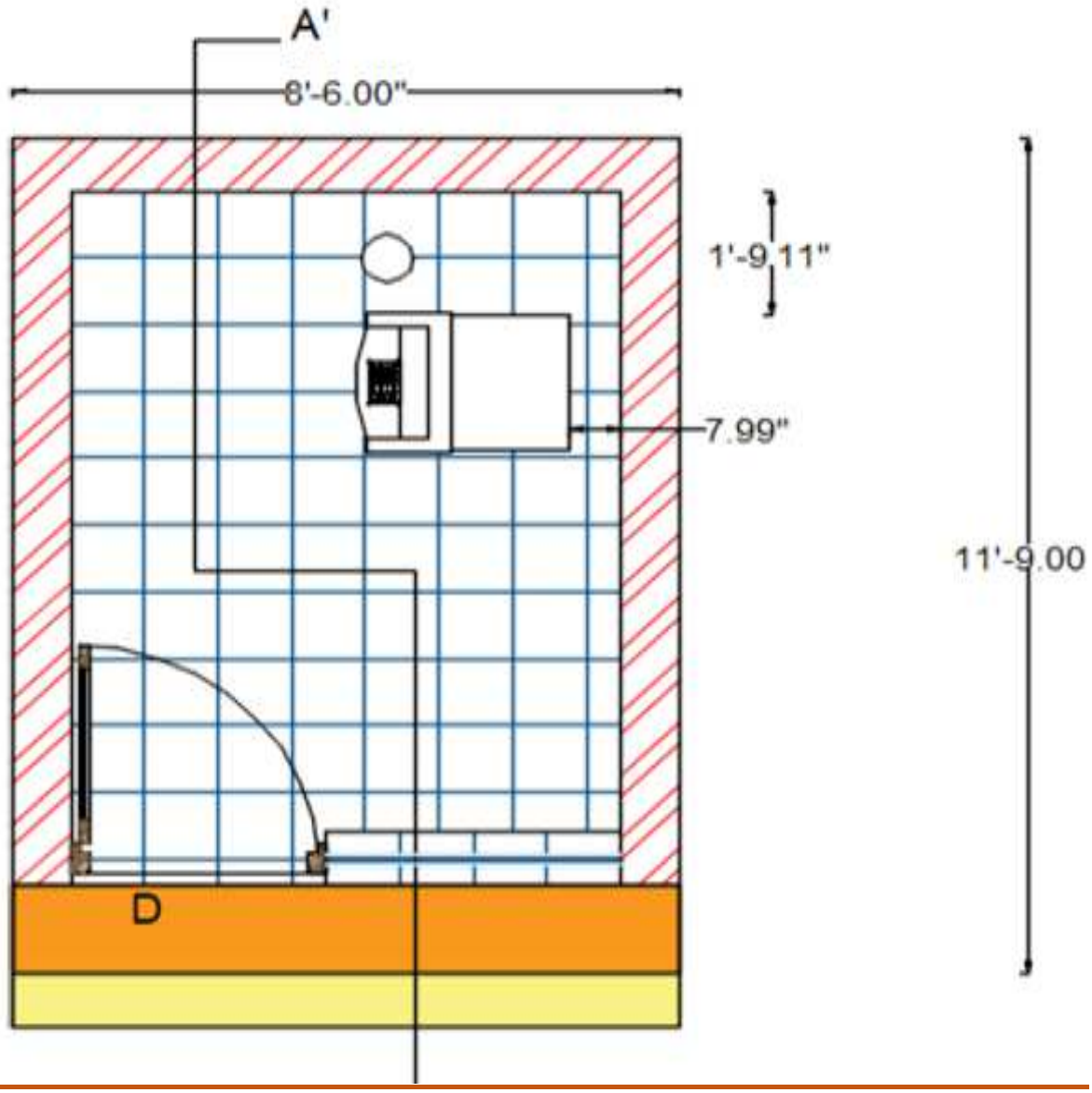
Vishwakarma Yojana is provides special scheme for development of village by GTU and Government of Gujarat in which students work together and collect data and information regards village development with the help of gram Panchyat and stake holders. Village have some basic facilities likes drinking water, drainage system, pucca road, and other facilities like primary school, primary health center, community hall, library, public latrine block, are 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 a real time situation type project provides to GTU.

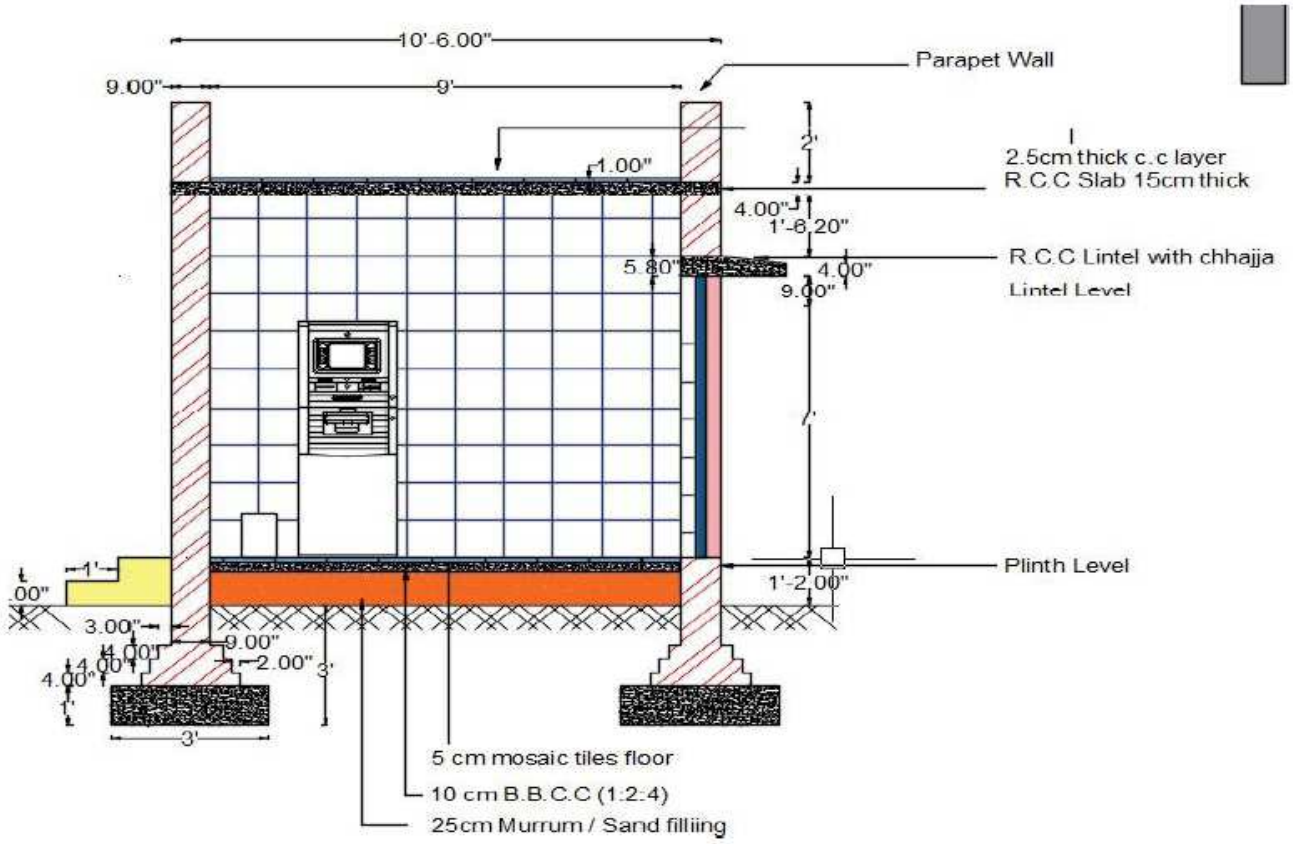
It is one of the strategies to reduce urban city pressure and lower the migration rate by developing village with a “rural soul” but with all urban amenities that a city may have. In this project the students meet the relevant citizens of village and survey the existing facilities. Then design of the 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.

#Chapter: - 13#

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

13.1.1. ATM





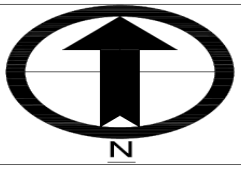
KHODIDAS B. MOGARIYA - 180893106035	
JIGNA B. CHUDASAMA - 18089316007	
SLTIET, RAJKOT.	
ATM	

Figure: 13.1 Design of ATM

Table 13.1 Quantity sheet of ATM Center

AUTOMATIC TELLER MACHINE

QUANTITY SHEET

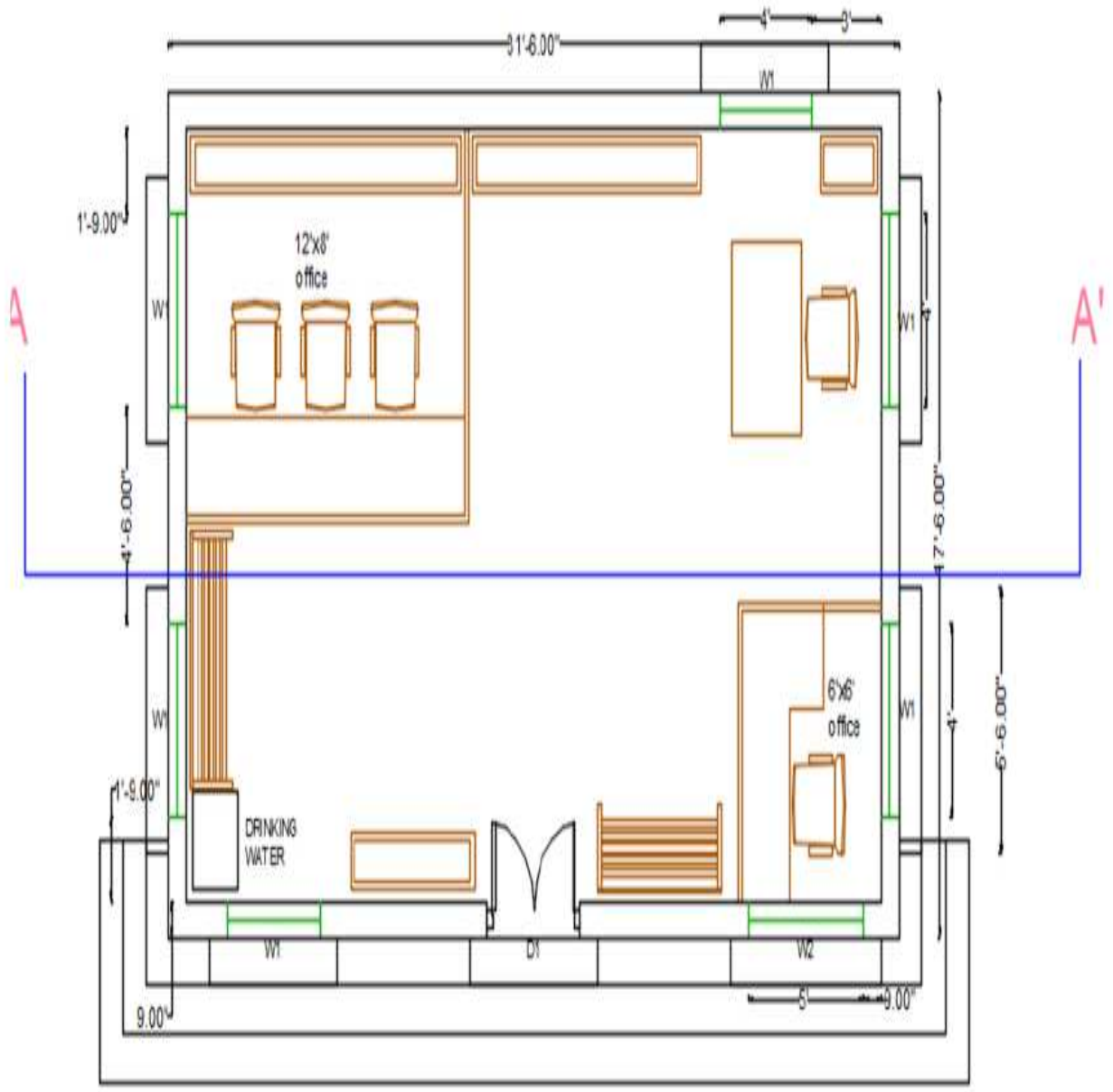
Sr. No.	Item Description	No.	Length (m)	Width/ Breadth (m)	Height/ Depth (m)	Quantity (m^ 3)
1	Excavation in ordinary soil					
	L=(0.5+2+0.15) +					
	(0.15+3+0.15)=5.6					
	L=(5.6-1/2*0.9)	1	5.15	0.9	0.9	4.17
						4.17
2	BBCC (1:2:4)					
		1	5.15	0.9	0.3	1.39
						1.39
3	Brick masonry up to plinth level					
	First	1	5.3	0.6	0.1	0.31
	Second	1	5.35	0.5	0.1	0.26
	Third	1	5.4	0.4	0.1	0.21
	Fourth	1	5.45	0.3	0.8	1.38
	Steps					
	First	1	1	0.6	0.2	0.12
	Second	1	1	0.3	0.2	0.06
						2.36
4	Filling in trench & plinth					
		1				0.42
		1				1.50
						1.92
5	Brick masonry in super structure					
		1	5.45	0.3	3	4.90
	Deduction of door	1	1.4	0.3	2.1	0.88
	Lintel	1	1.7	0.3	0.15	0.07
						3.14
6	Brick masonry in parapet wall					
		1	5.45	0.3	0.5	0.81
						0.81

7	RCC Slab & lintel					
		1	2.6	3.6	0.15	1.40
		1	1.7	0.3	0.15	0.07
						1.47
8	Smooth plaster inside(12 mm)					
		1	2.60		3.50	9.10
		1	3.60		3.50	12.60
	Deduction of door	1	1.40		2.10	1.47
						12.53
9	Plasterwork outside					
		1	2.60		3.50	9.10
		1	3.60		3.50	12.60
	Deduction of door	0.5	1.40		2.10	1.47
						20.13
10	Painting Work Inside					
		1	2.00		3.00	6.00
		1	3.00		3.00	9.00
	Deduction of door	0	1.40		2.10	1.47
						12.53
11	White Washing outside					
	White Washing	1	2.60		3.50	9.10
	Outside	1	3.60		3.50	12.60
	Deduction of door	0.5	1.40		2.10	1.47
						20.23
12	Tiles flooring Area(2*3)					
	Tiles area (0.2*0.2)					150
	Add 10%					165.00
13	No. of doors require					
		1	1.4		2.1	2.94

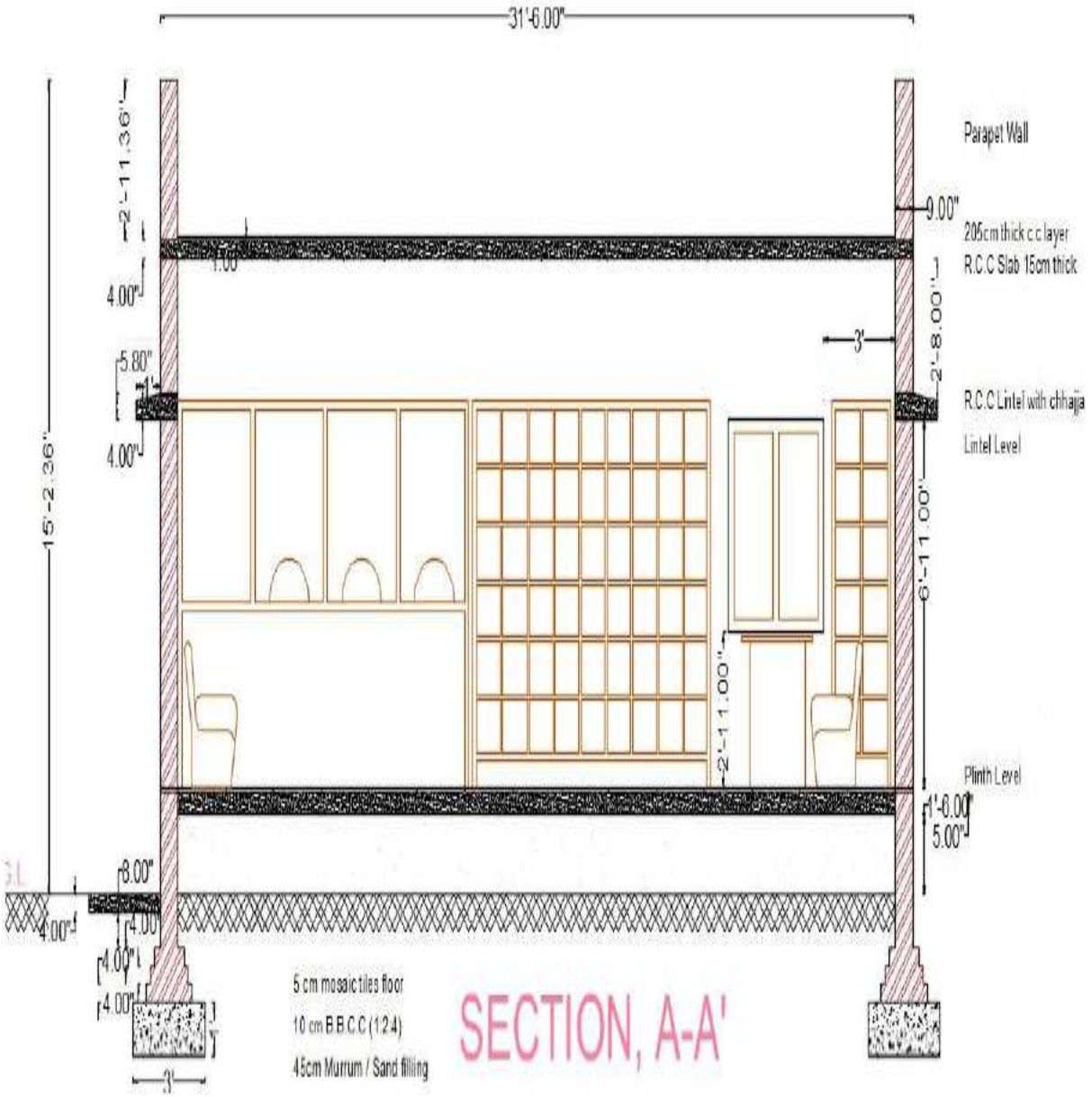
Table 13.2 Abstract sheet of ATM				
ABSTRACT SHEET				
Sr No.	**Description of Item**	**Quantity (Cu.m)**	**Rs.**	**Total Cost In Rs.**
1	Excavation in ordinary soil	4.17	110	458.70
2	BBCC (1:2:4)	1.39	120	466.80
3	Brick masonary	7.11	120	166.80
4	RCC Slab & lintel	1.47	1000	1476.00
5	Plasterwork	20.23	150	3034.50
6	Painting Work	12.53	150	1879.00
7	White Washing	20.23	150	3034.50
8	Tiles flooring	165.00	20	3300.00
9	No. of doors	1	1000	1000.00
	Total			23,245.00

R&B Department SOR 2015-16

13.1.2. Post Office



Plan



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JIGNA B. CHUDASAMA - 180693106007

SLTIET, RAJKOT.

POST OFFICE

N

Figure: 13.2 Design of Post Office

Table 13.3 Quantity sheet of Post office Center

POST OFFICE

QUANTITY SHEET

Sr. No.	Item Description	No.	Length (m)	Width/ Breadth (m)	Height/ Depth (m)	Quantity (m^ 3)
1	Excavation in ordinary soil					
		1	28.75	0.90	0.90	23.28
						23.38
2	BBCC(1:2:4)					
		1	28.75	0.90	0.30	7.76
						7.76
3	Brick masonry up to plinth					
	First	1	28.90	0.60	0.10	1.73
	Second	1	28.95	0.50	0.10	1.44
	Third	1	29.00	0.40	0.10	1.16
	Fourth	1	29.05	0.30	0.80	6.97
	Steps					
	First	1	1.40	0.90	0.20	0.25
	Second	1	1.40	0.60	0.20	0.10
	Third	1	1.40	0.30	0.20	0.88
						11.75
4	Filling in trench					
	(23.28-7.76-11.75)					3.77
	Filling in plinth	1	9.00	5.00	0.45	20.25
						20.25
5	Brick masonry in super structure					
	H=3.0 m	1	29.20	0.30	3.00	26.28
	Deduction					
	Door	1	1.20	0.30	2.10	0.75
	Window-1	6	1.20	0.30	1.20	2.59
	Window-2	1	1.20	0.30	1.50	0.54
	Lintel					
	D	1	1.50	0.30	0.15	0.06
	W1	6	1.50	0.30	0.15	0.40
	W2	1	1.50	0.30	0.15	0.06
						21.88

6	RCC Slab					
		1	9.60	5.60	0.15	8.06
	Lintel					
	D	1	1.50	0.30	0.15	0.06
	W1	6	1.50	0.30	0.15	0.40
	W2	1	1.50	0.30	0.15	0.06
	Chajja					
	D	1	1.50	0.60	0.10	0.09
	W1	6	1.50	0.60	0.10	0.54
	W2	1	1.50	0.60	0.10	0.09
						9.32
7	Brick masonry on parapet wall					
	Inside Plaster	1	29.20	0.30	0.80	1.00
	12 mm thick	2	9.00		3.00	54.00
		2	5.00		3.00	30.00
	Celling	1	9.00	5.00		45.00
	Deduction of					
	D	0.5	1.20		2.10	1.26
	W1	3	1.20		1.20	4.32
	W2	0.5	1.00		1.50	0.90
						122.52
8	Plaster on parapet					
		2	9.00		0.80	14.40
		2	5.00		0.80	8.00
						22.40
9	Outside plaster					
		2	9.60		4.00	76.80
		2	5.60			44.80
	Deduction of door	0.5	1.20		2.10	1.26
	W1	3	1.20		1.20	1.32
	W2	0.5	1.20		1.50	0.90
						118.12
10	Painting Work Inside					
		2	9.00		3.00	54.00
		2	5.00		3.00	30.00
	Celling	1	9.00	5.00		45.00
	Deduction					
	D	0.5	1.20		2.10	1.26

	W1	3	1.20		1.20	4.32
	W2	0.5	1.20		1.50	0.90
						122.52
11	White Washing outside					
		2	9.60		4.00	76.80
		2	5.60		4.00	44.80
	Deduction					
	D	0.5	1.20		2.10	1.26
	W1	3	1.20		1.20	4.32
	W2	0.5	1.20		1.50	0.90
						115.12
12	Moisac tiles Flooring Area (9*5)					
	Tiles area(0.6*0.6)					125.00
	Add 10%					13.00
						138.00
13	Skirting					
	Tiles area (0.2*0.2)	2	9.00			18.00
		2	6.00			10.00
	Add 10%					28.00
14	Wooden door & window					
	D	1	1.20		2.10	2.52
	W1	6	1.20		1.20	8.64
	W2	1	1.20		1.50	1.80
						12.96
15	Painting of door					
	W1	2	1.20		2.10	5.04
	W2	12	1.20		1.20	17.28
		2	1.20		1.50	3.60
						25.92
16	Office room-1					
	Office room-1	1	3.60	0.10	2.10	0.75
	(Wooden partition)	1	2.50	0.10	2.10	0.52
	Deduction of door (Opening)	1	1.20	0.10	2.10	0.25
						1.02
17	Office room-2					
		1	2.00	0.10	2.10	0.21
		1	2.00	0.10	0.60	0.04
	Deduction of door &	1	1.00	0.10	2.10	0.20
	Opening	1	0.80	0.10	0.60	0.04
						0.01

Table 13.4 Abstract sheet of Post Office				
ABSTRACT SHEET				
Sr No.	**Description of Item**	**Quantity (Cu.m)**	**Rs.**	**Total Cost In Rs.**
1	Excavation in ordinary soil & filling	23.28	110	52,035.00
2	BBCC (1:2:4)	7.76	7.76	120.00
3	Brick masonry	47.30	110	52,035.00
4	Skearting	28.84	15	432.60
5	RCC Slab & lintel	9.32	10000	9324.00
6	Inside & outside plaster(12 mm)	237.64	150	65,646.00
7	Painting Work Inside	122.52	150	18,378.00
8	White Washing outside	115.12	150	17,268.00
9	Wooden Doors	1.00	1000	1000.00
10	Window	7.00	750	5250.00
	Total			1,77,042.00

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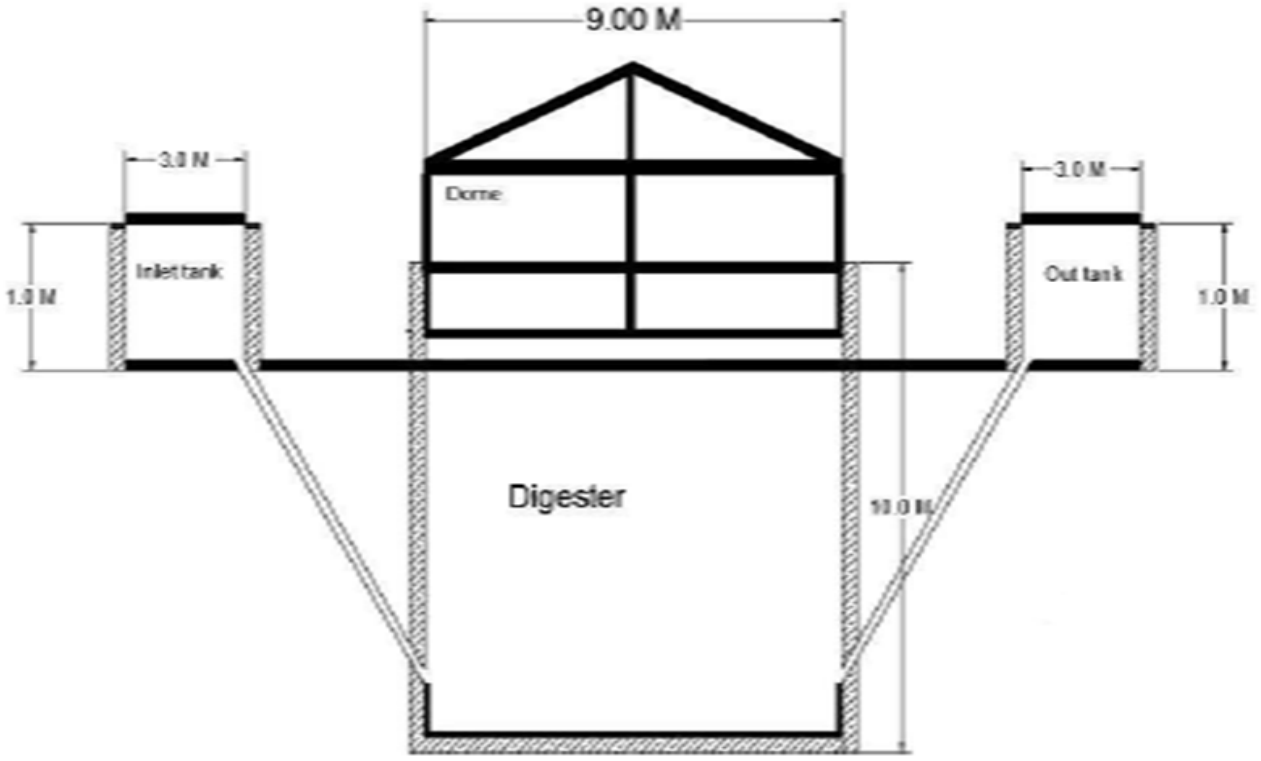
13.1.3. Floating Drum type biogas Plants



KHODIDAS B. MOGARIYA - 180893106035 JIGNA B. CHUDASAMA - 180893106037	
SLTIET, RAJKOT.	N
FLOTING BIOGAS PLANT	

Figure: 13.3 Design Of Floating Drum Type Biogas Plant

Table 13.5 Quantity Sheet Of Floating Drum Type Biogas Plant

FLOATING TYPE BIOGAS PLANT

QUANTITY SHEET

Sr. No.	Item Description	No.	Length (m)	Width/ Breadth (m)	Height/ Depth (m)	Quantity (m^ 3)
1	Excavation for Foundation for depth more than 3.3m including sorting out and stacking of useful material and disposing off the excavated stuff up to 50 m lead					
		1	17.50	17.50	3.50	1071.80
						1071.8
2	Providing and laying Cement Concrete 1:3:6 (1 cement: 3coarse sand: 6 stone aggregate 40 mm nominal size) and curing complete excluding cost of formwork in foundation					
		1	17.50	17.50	0.10	30.62
						30.62
3	Providing and laying controlled cement concrete M15 for curing complete excluding the cost of formwork & reinforcement including curing Wall slab					
		4	17.50	3.50	0.10	24.50
		2	17.50	17.50	0.10	61.25
						85.75
4	Deduction of Manholes from the top Slab					
						61.25
		2	0.6	0.60	0.10	-0.07
						61.17
5	Providing H.Y.S.D bar reinforcement for R.C.C work including bending binding and placing in position					
		85.67 m^3	@	70 kg/m^3		6000 kg
						6000 kg

Table 13.6 Abstract Sheet Of Floating Drum Type Biogas Plant				
ABSTRACT SHEET				
Sr No.	**Description of Item**	**Quantity (Cu.m)**	**Rs.**	**Total Cost In Rs.**
1	For Excavation of Foundation	1071.8	124.00	1,32,903.20
2	Providing and laying P.C.C (1:3:6) excluding cost of Formwork	30.625	2932.00	89,792.50
3	Providing and laying controlled cement concrete M15 for the walls excluding cost of reinforcement	24.50	4077.00	99,886.50
4	Providing and laying concrete and finishing smooth curing including the cost of formwork but excluding the cost of reinforcement in R.C.C slab	61.25	5927.00	3,63,028.75
5	Reinforcement	6000 kg	40.00 / kg	24,000.00
6	Water charges		(15%)	1,06,442.00
7	Contractor's Profit		(1.5%)	10,645.00
	Total			8,26,701.00

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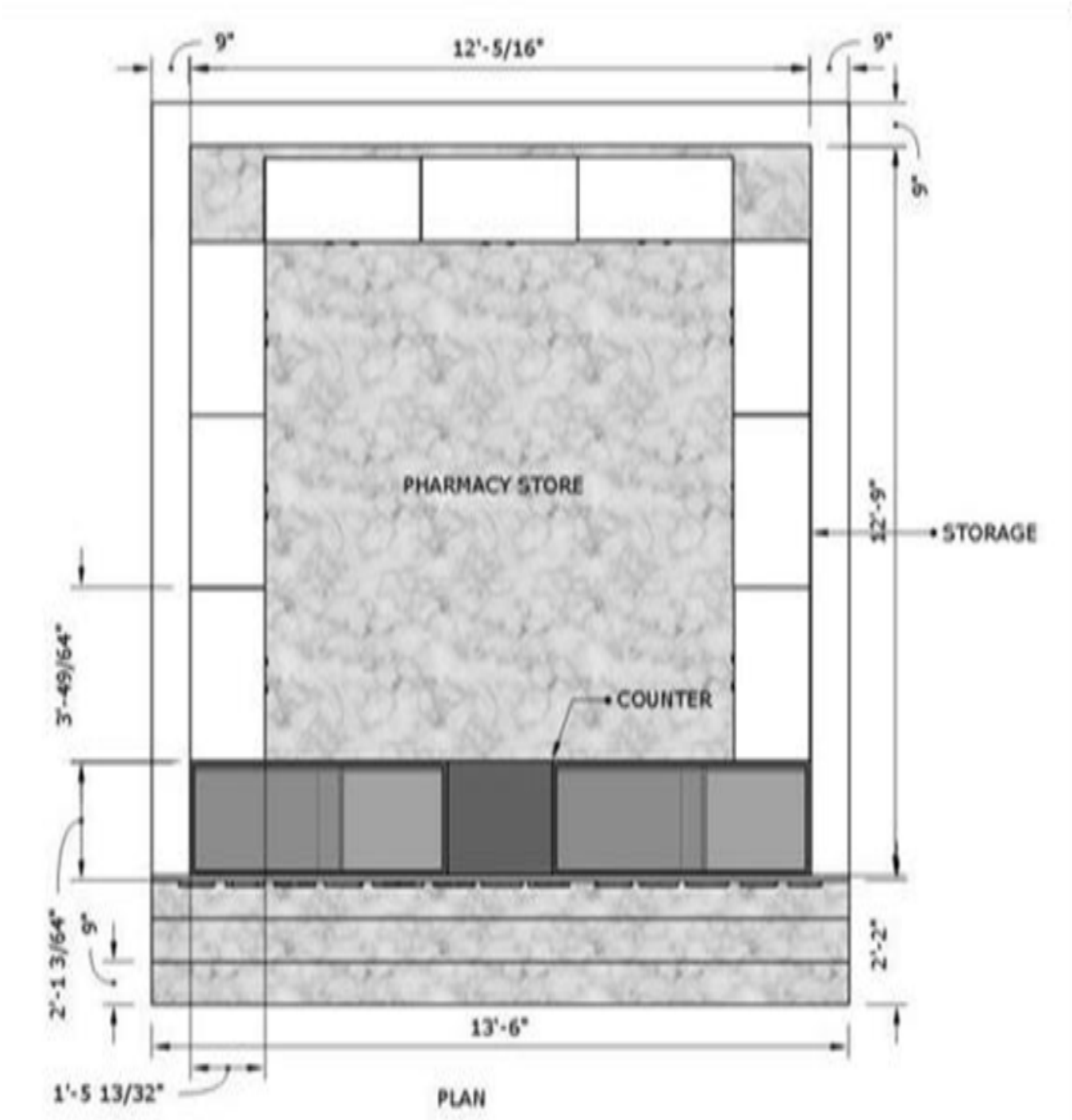
13.1.4. Pharmacy Store



ELEVATION

KHODIDAS B. MOGARIYA - 180893106035

JIGNA B. CHUDASAMA - 180893116007

SLTIET, RAJKOT.

PHARMACY STORE

N

Figure: 13.4 Design Of Pharmacy Store

Table 13.7 Quantity sheet of Pharmacy Store

PHARMACY STORE

QUANTITY SHEET

Sr. No.	Item Description	No.	Length (m)	Width/ Breadth (m)	Height/ Depth (m)	Quantity (m^ 3)
1	Top Roof					
		1	4.11	4.11	0.15	2.58
						2.58
2	Wall (9”)					
		4	4.11	0.22	3.00	8.28
						8.28
3	Plinth Wall With Stairs					
		4	4.11	0.22	0.76	3.57
						3.57
4	Floor					
		1	4.11	4.11	0.15	2.58
						2.58
5	PCC					
		1	4.11	0.90	0.40	5.02
						5.02
6	Basic Wall (0.30)					
		1	18.30	1.20	0.40	2.20
						2.20
7	Basic Wall (0.40)					
		1	18.30	1.20	0.40	2.94
						2.94
8	Basic Wall (0.50)					
		1	18.30	2.00	0.40	3.66
						3.66
9	Excavation					
		1	22.00	1.20	1.50	3.60
						3.60

Table 13.8 Abstract sheet of Pharmacy Store				
ABSTRACT SHEET				
Sr No.	**Description of Item**	**Quantity (Cu.m)**	**Rs.**	**Total Cost In Rs.**
1	Top Roof	2.58	3500	9035.00
2	Wall (9")	8.28	5500	45,540.00
3	Plinth Wall With Stairs	3.57	2500	8925.00
4	Floor	2.58	3500	9030.00
5	Pcc	5.02	3500	17,570.00
6	Basic Wall (0.30)	2.20	3300	7260.00
7	Basic Wall (0.40)	2.94	3300	9700.00
8	Basic Wall (0.50)	3.66	3300	12,080.00
9	Excavation	3.66	350	12,80.00
	Total			1,20,420.00

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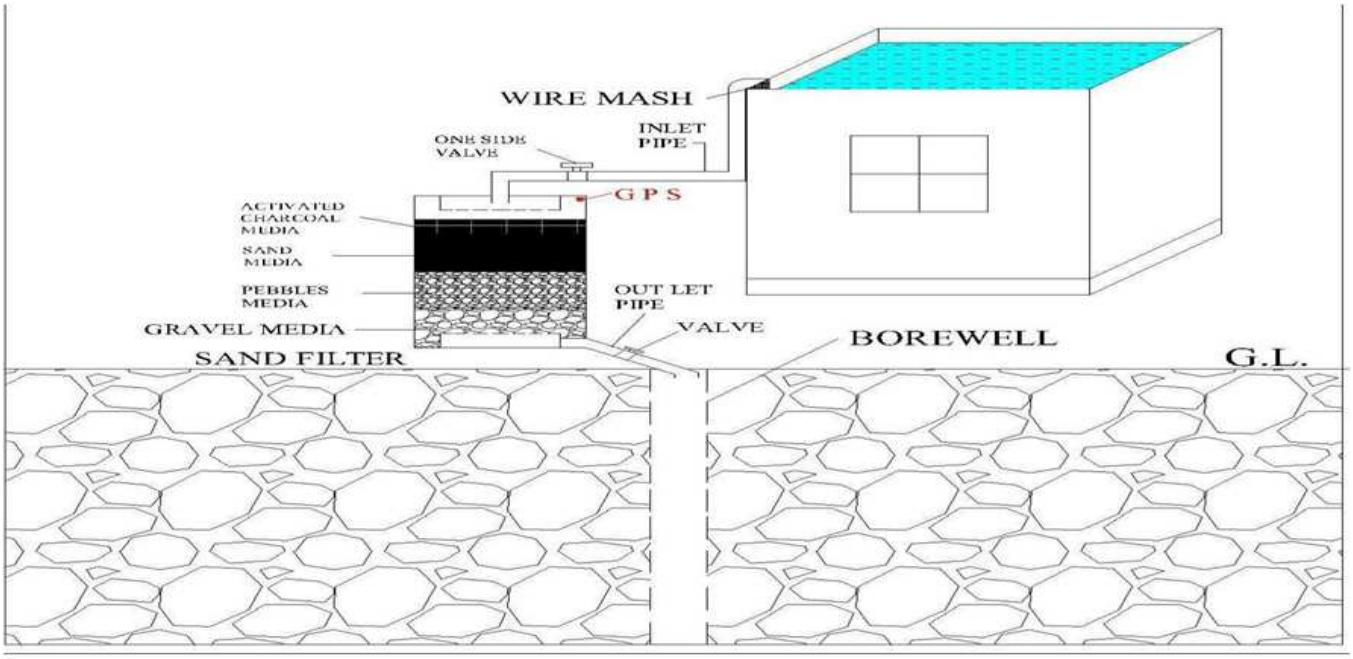
13.1.5. Rain water harvesting



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JIGNA B. CHUDASAMA - 18089316007	
SLTIET, RAJKOT.	N
RAIN WATER HARVESTING	

Figure: 13.5 Design Of Rain Water Harvesting

PART	LENGTH(m)	WIDTH(m)	AREA(m2)
1	10.3	8.5	87.55

Average rainfall 590 mm. Density of water 1000 lit/m^3

Collection of water volume = area ×rainfall

=87.55x0.590

=51.65 m^3

Collection of water = volume of water × density of water

= 51.65 × 1000

= 51,650 liters

Table 13.9 Quantity sheet of Rain Water harvesting

RAIN WARET HARVESTING

QUANTITY SHEET

Sr. No.	Item Description		No.	Length (m)	Width/ Breadth (m)	Height/ Depth (m)	Quantity (m^ 3)
1	Excavation						
1.a	Water tank		1	3.00	1.20	3.00	10.80
1.b	Over flow tank		1	1.00	1.00	1.00	1.00
							11.80
2	R.C.C WORK (1:2:4)						
2.a	Filter tank	-Bottom slab	1	1.00	1.00	0.15	0.15
		-Side wall	4	1.00	1.00	o.15	0.60
		-Top slab	1	1.00	1.00	0.10	0.10
2.b	Water tank	-Bottom slab	1	3.00	1.20	0.20	0.72
		-Side wall	2	3.00	3.00	0.20	3.60
		-Side wall	2	3.00	1.20	0.20	1.44
		-Top slab	1	3.00	1.20	0.10	0.36
2.c	Deduction	-Opening cover	1	0.50	0.50	0.10	-0.025
2.d	Deduction	-Bottom slab	1	1.00	1.00	0.15	0.15
		-Side wall	4	1.00	1.00	0.15	0.60
		-Top slab	1	1.00	1.00	0.10	0.10
							7.79

Table 13.10 Abstract sheet of Rain Water Harvesting

ABSTRACT SHEET

Sr No.	Description of Item	Quantity (Cu.m)	Rs.	Total Cost In Rs.
1	Excavation	11.80	120/Cu.m	1420.00
2	R.C.C. work(1:2:4)	7.79	5500/ Cu.m	42,485.00
3	115 mm (4.50”) dia pipe	3 M	180/ M	540.00
4	200 mm (8”) dia pipe	8 M	300/ M	2400.00
			Total	46,845.00

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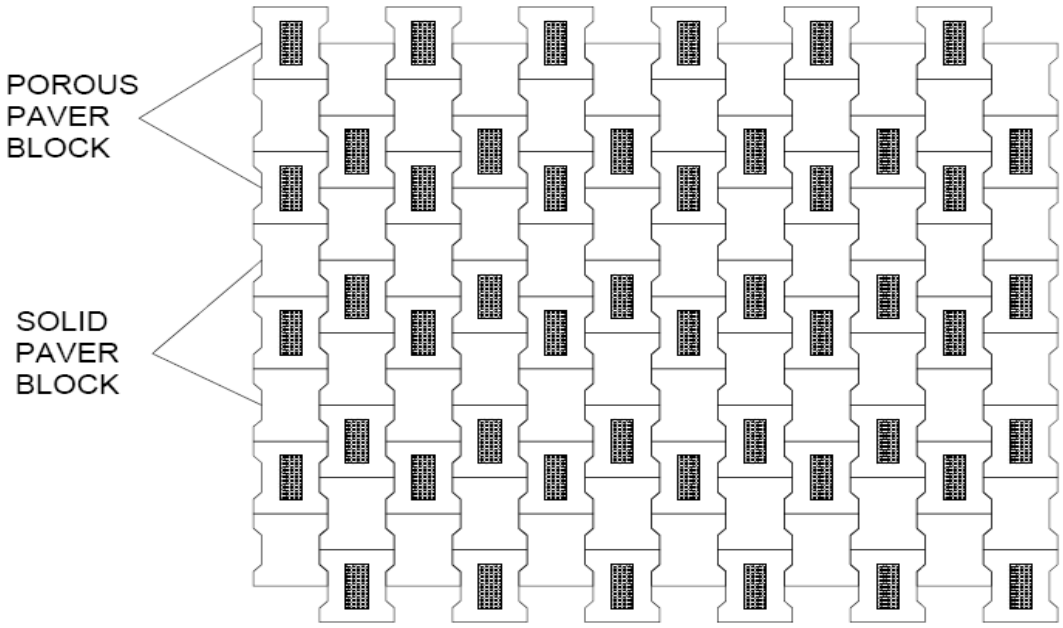
13.1.6. Porous Paver Block Road



KHODIDAS B. MOGARIYA - 180893106035	
JIGNA B. CHUDASAMA - 18089316007	
SLTIET, RAJKOT.	N
POROUS PAVER BLOCK ROAD	

Figure: 13.6 Design & Section Of Pours Paver Block Road

Table 13.11 Quantity sheet of Porous Paver Block Road

POROUS PAVER BLOCK ROAD

QUANTITY SHEET

Sr. No.	Item Description	No.	Length (m)	Width/ Breadth (m)	Height/ Depth (m)	Quantity (m^ 3)
1	Excavation					
		1	100.00	8.00	0.80	640.00
						640.00
2	Sub grade (18 P – 16 R)					
		1	100.00	8.00	0.30	240.00
						240.00
3	Sub base					
		1	100.00	8.00	0.175	140.00
						140.00
4	Base					
		1	100.00	8.00	0.225	180.00
						180.00
5	Paver block					
		1	0.250	0.125	567820	0.031m^2
						0.031m^2

One paver block quantity = 0.031 m^2
We design for 800 m^2
∴ Total block = 800/0.031 = 25806.45 Nos.
Then round figure = 25810 Nos.
In a paver block road we have provide two type paver blocks. One is porous paver block with steel mesh & PVC pipe and second paver block is solid regular paver block.
We provide paver block in zigzag pattern that half paver block is porous paver block & half is solid paver block.
Quantity of porous paver block = total paver block / 2
= 25810 / 2 = 12905 Nos.
Quantity of solid paver block = total paver block / 2
= 25810 / 2 = 12905 Nos.
Price of porous paver block = 24 Rs / Nos.
Price of solid paver block = 20 Rs / Nos.

Table 13.12 Abstract sheet of Rain Water Harvesting				
ABSTRACT SHEET				
Sr No.	**Description of Item**	**Quantity (Cu.m)**	**Rs.**	**Total Cost In Rs.**
1	Excavation	640.00	120	76,800.00
2	Sub Grade (18 P – 16 R)	240.00	800	1,92,000.00
3	Sub Base	140.00	1300	1,82,000.00
4	Base	180.00	1000	1,80,000.00
5	Porous Paver Block	12905 Nos.	24 Rs./Nos.	3,097,20.00
6	Solid Paver Block	12905 Nos.	20 Rs./ Nos.	2,581,00.00
			Total	11,98,620.00

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13.1.7 Photovoltaic Water Pumping System

Introduction

Solar energy such as photovoltaic is the most important energy of the non-conventional energy sources which is capable to satisfy the energy needs of the isolated rural areas. This source of energy is kind a free. The water from the source is kept and pumped then it is stored in the tanks until its next use by dwellers. These water tanks can be bought directly from the market. Photovoltaic pumping system is a standard system. Here the whole systemis equipped with pump and an electric motor. This motor will be providing electrical energy by photovoltaic panels installed on the site. The main function of pump is to make water available to the reach of the dwellers. *So* pump water from the basement is accessible to users. There are mainly two types of photovoltaic water pumping systems are being used: the photovoltaic water pumping with

1.) Batteries

2.) Without batteries.

Photovoltaic System

To draw the water surface there are two types of pumps can be used Pumps

1.) Volumetric pumps and 2.) Centrifugal pumps.

According to the physical location of the pump, there are two other characteristics *at The* pumps in relation to the pumped water: the suction system and stuffer one. They discharge pumps are submerged in water. Their motor is immersed in water with the pump and the discharge pipe placed after the pump can lift water to tons of meters to the storage tank depending to the engine's power. Afterward, the system is connected to a distributionnetwork that delivers water to dwellers.

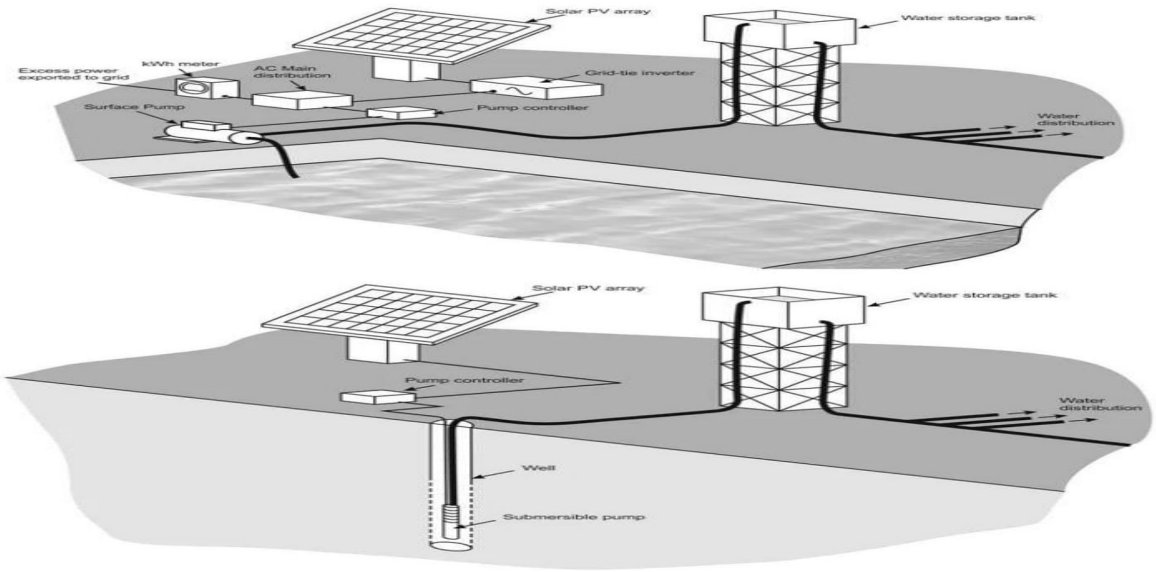


Figure: 13.6 Design of Photovoltaic water pumping with a tank to store water

Solar photovoltaic panels are placed for converting solar energy into electrical energy so that we can generate the necessary energy to the motor of the pump, Panels will generate a direct current (DC), and therefore DC/AC converter to will be used to convert this direct current produced by the solar panels into alternative current (AC),so that AC motor can usethis AC Power we generated.

On the other side, if we have the DC motor, *than* we do not need this DC to AC conversion. The amount of energy will be generated can be used directly, also we can store that energyas well. If we want to use, In the case of an application for water pumping, it is more interesting to use the energy to raise the water in a castle that serves as hydraulic energy storage.

When pump is live on photovoltaic due to under sizing or over sizing there are chances that Pump get damaged or loosen the support, to prevent a dysfunction of the pump, the PV generator, an inverter is used to ensure the proper operation of the PV/pump system.

Solar Radiation at Gujarat

Solar energy can be used effectively if we have regulatory data and we can quantify that *available* solar energy to design a photovoltaic water pumping *system. Therefore*, it is very important to know the solar radiation of the locality. Solar radiation (kWh/m2) is the energy from the sun that reaches the *earth. The* earth receives a nearly constant of solar radiation atits outer atmosphere. The intensity of solar radiation varies along with the *weather* and geographic location as well.

Sizing a Photovoltaic Water Pumping System

We need to have an assumption of desired amount for the use and in that case Sizing is really important. Photovoltaic water pump sizing is the determination of the power of the solar generator that will provide the desired amount of water.

The photovoltaic water pump sizing consists of:

- Assessment of daily water needs of the population to know the rate flow required;
- calculation of hydropower helpful;
- determining of the available solar energy;
- determining of the inclination of the photovoltaic generator which can be placed;
- determination of the month sizing (the month in which the ratio between solar radiation and hydropower is minimum);
- sizing of the PV generator (determination of the required electrical energy);

Determination of Hydropower Helpful

The average daily load i.e. hydropower helpful (kWh/day) required is expressed by: EH=g* a*Qa*TH P*3600 = CH*Qa*TH P E1

Where,

- g is acceleration of gravity (9.81 m.s-2);
- a is water density (1000 kg/m3);
- Qa is daily water needs (m3/day);
- TH is the total head (m);
- P is pump system efficiency

The tank capacity is determined by the daily water needs and the autonomy of the system. Taking an example of daily the water needs: (50 liters/day/person), the water needs rises to25 m3/day. With photovoltaic panels which have 3.5 A, we will have 3 modules in parallel.The average daily load i.e. hydropower helpful (kWh/day) required is given by thisexpression:

EH=g* a*Qa*TH P*3 600 = CH*Qa*TH PWith g= 9.81 m.s-2
a= 1000 kg/m3
Qa= 25 m3/dayTH = 52 m
P= 50 %
It provides: EH=7085

The available solar energy:

- Daily average radiation of sunlight varies from 5.7 to5.8 kWh/m2/day.
- To make sure to do a good sizing, we choose the minimum value of average radiance:
- 5.7 kWh/m2/day.
- The inclination to the horizontal plane of the photovoltaic panels is: =15°N.
- The sizing month is: December, 4.7 hours/day.

Sizing of the PV generator
Assuming a 25% loss due to the temperature and dust, the required electrical energy is given by this expression:
WPV=EHRadiance*(1−loss)WPV=1260 Wc
The operating point of photovoltaic field is set around 120 volts due to the characteristics of the inverter. The photovoltaic field will be composed of 10 multiple modules in series.
Generator power is 1260 Wc.
Prediction of requirement
Suppose we have to run 2HP motor for irrigation. For that the energy required is:2HP=1.5 Kw.
:. 1.5Kw = 1500 watt, Power = volt*current, V=240 v.
So,Current (I) =1500/240 = 6.25 A.
Requirement for rechargeable batteries of 120V:Power = volt*current
1500 = N*volt*current
1500=N*240*6.25 (N=number of require batteries) 1500=N*240*6.25, N=2,
(2 batteries are required)

Requirement for solar panels:
1 solar panel of 72 cells generates 200watts*required* power is 1500 watts.
: .1500/200=7.5
Nearly 8 solar panels are required

Cost Calculation of Solar based irrigation system

Table 13.13 Abstract sheet of Photovoltaic Water Pumping System

Component	Quantity	Cost per units	Cost
Solar Panel	8	24,000	192,000.00
Water pumps	1	16,000	16,000.00
Battery (120 V)	2	20,000	40,000.00
Converter circuit	1	12,000	12,000.00
		Total Cost	260,000.00

13.1.8 Photovoltaic Water Pumping System

Introduction:

Agriculture is the backbone of Indian economy. India being nation agriculture and industries based on agriculture product has prime importance in the national economy. Majority of the Indian population depends on the agriculture and ago-based industries and businesses. The soil tiller and weed is one of the much farm mechanization. Unlike tractors, soil tiller and weeds are nonconventional so far as the displacement of labours is concerned. In promoting soil tiller and weeds especially considering the fact that the majority of farmers are having small land. So they can hardly afford costlier tractors. Therefore, the soil tiller and weed should become internal cleaning of crops and digging of soil which having small distance between them like groundnuts, sugarcane, soya bin crops, cultivation of paddy, in particularly, and other crops in general for the smaller farmers.

Energy is one of the most important needs for human survival on earth. We are dependent on form of energy or the other for fulfilling our needs. One such form of energy is the energy from fossil fuels. We use energy from these sources for generating electricity, running automobiles etc. But the main disadvantages of these fossil fuels are that they are not environmental friendly and they are harmful.

To solve these problems of fossil fuels, we need to look at the non-conventional source of energy. With regard to this idea we have designed an Electrical tiller that runs on solar energy. The vehicle designed is a two wheel drive and can be used for shuttle and also for short distances. Today's era is marching towards the rapid growth of all sectors including the agricultural sector. To meet the future food demands, the farmers have to implement thenew techniques which will not affect the soil texture but will increase the overall crop production.

Its main objective is to reduce the manpower as in today's scenario labours are very hard to find as well as it reduces the working time. As it could be far better than the conventional using of labors or bull for cultivation purpose.

Lack of mechanization or automation is one of the major road blocks to improving the productivity of agriculture. Cultivation of soil is one of the most labour intensive jobs in the garden but also one of the most beneficial. Cultivation of the soil will improve the structure ofthe soil as it reduces soil compaction and improves soil aeration.

The effect of this is that there is more oxygen available to the plant roots and the water drainage is improved. It also makes it easier for plant roots to operate and reach our further into soil.

Need for Machine:

- Reducing the manpower.
- 2. Rescuing the risk.
- To reduce the cost.
- Improve the soil Properties.
- To reducing the use of fossil fuel.
- To improving the productivity of agriculture.

Type of Motor:

- Permanent magnet DC Motor

Types of Gear

- Spur Gear
- Bevel Gear

Objectives:

- To reduce the use of nonrenewable energy source and to utilize more renewable energy source.
- This may reduce the investment on the fuel, reduce fuel cost.

By using solar energy or renewable energy source this also reduce the maintenance cost.
These makes agriculture or irrigation more effective and easier.

Methodology:

- As mentioned there is a use of solar energy as a source of energy to run the tiller, to absorb the solar energy use of solar panel which is the series and parallel combination of solar cell.
- After generating electrical energy store that, here use DC storage battery the generating power is DC power and then Buck boost converter is used to convert DC to DC of high voltage range.
- Then achieving the required range of voltage, this because to run the machine at its rated value of voltage.

Components used

- Solar panel (12V, 64W)
- DC motor (2560rpm)
- Battery (7.5V, 2)
- Boost converter (12V)
- Gear (Spur and Bevel)
- Rotary tool

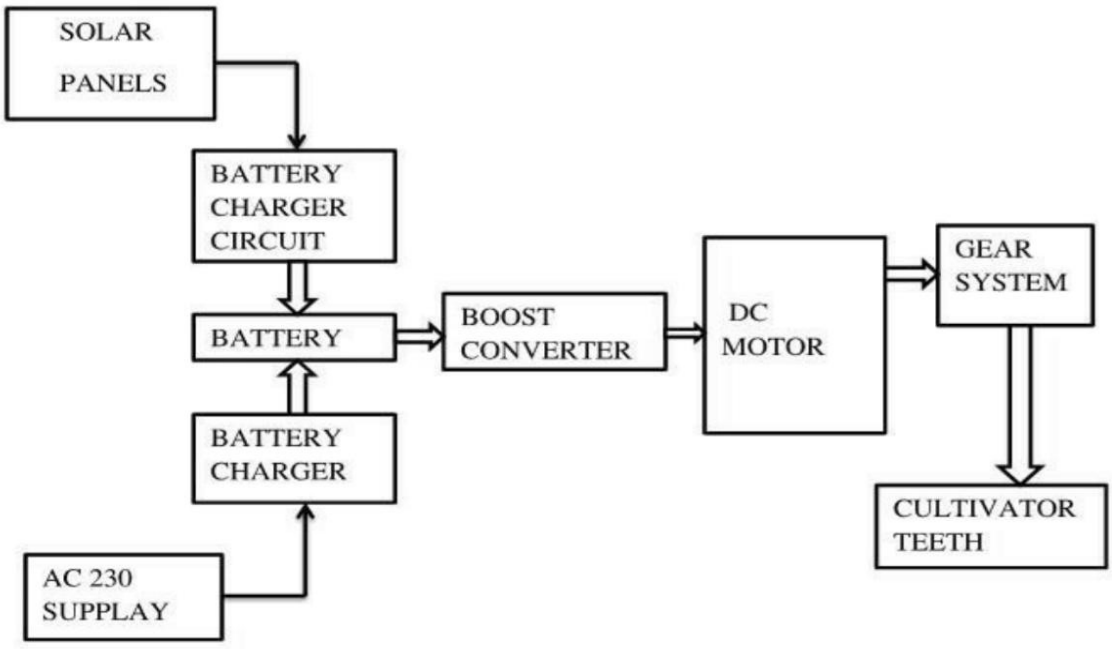


Figure: 13.6 Block diagram of Mini tiller or cultivator using

Result and Conclusion

Today in the world fuel prices rises day by and the pollution may also. To control this pollution and to save the petroleum product and bio product this project is design and developed.

This system requires heavy initial investment but it gives the energy output for life time with low maintenance etc

Our project is successfully implemented for emphasizes on minimization of harmful efforts of using the manual rotator. The new developed battery powered rotator is operated.

Renewable energy utilization is the best option to reduce the use of various non-renewable energy sources. From the various reference we comes to conclusion that solar energy utilization is more advantageous than other energy sources. Solar energy absorbed by solar panel and stored in the battery and then this solar energy is use to run various equipment.

Hence we decide to developed the solar powered blade harrow equipment which isbeneficial for farmer in there agricultural work.

Here in our project we conclude that by using this machine we reduces the manpower, risk, and cost. Our main intention is to help the farmers.

Scope for future work

- By making modification same machine with able to changing the different rotary tool for different purpose example rotary tool for cutting purpose, digging purpose etc.
- By making further modification using large power generated solar panel.
- By making modification in increasing the speed of the motor.

Table 13.14 Abstract sheet of Mini tiller or cultivator using

Component	Quantity	Cost per units	Cost
Solar Panel	1	14,500	14,500.00
Motor	1	5,000	5,000.00
Battery	1	4,500	4,500.00
Boost Converter	1	750	750.00
		Total Cost	24,750.00

13.1.9 Solar panel system

Introduction

Solar energy begins with the sun. Solar panels (also known as "PV panels") are used to convert light from the sun, which is composed of particles of energy called "photons", into electricity that can be used to power electrical loads.

Solar panels can be used for a wide variety of applications including remote power systems for cabins, telecommunications equipment, remote sensing, and of course for the production of electricity by residential and commercial solar electric systems.

On this page, we will discuss the history, technology, and benefits of solar panels. We will learn how solar panels work, how they are made, how they create electricity, and where you can buy solar panels.

Type of solar panel system

- Photovoltaic systems.
- Solar water heating systems
- Solar power plants
- Passive solar heating

The 7 Components of Your Solar Power System

- Solar Photovoltaic Panels. In most home DIY installations these panels will be built by you from individual parts
- Solar Array Disconnect
- Battery Charge Controller
- Deep Cycle Battery Storage
- System Power Meter
- Solar Power Inverter
- Backup Power

Advantages of solar panel system

- Renewable Energy Source
- Reduces Electricity Bills
- Diverse Applications
- Low Maintenance Costs

Disadvantages of solar panel system

- Cost is high
- Weather Dependent
- Solar Energy Storage is Expensive
- Uses a Lot of Space

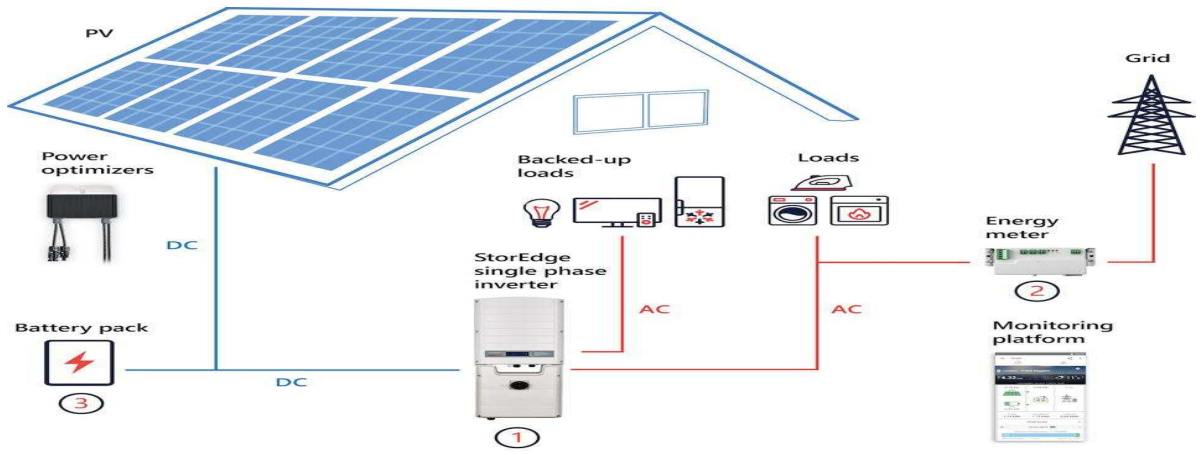


Figure: 13.6 Design Solar system for Khorana primary school

Table 13.15 Abstract sheet of Solar Panel System

Component	Cost
Loom Solar Panel - Shark 440 - Mono Perc, 144 Cells, Half Cut (2)	32,000.00
Lithium Battery - 2000 watt hour (1)	25,000.00
Microtek 2335 VA Solar Inverter	10,000.00
Loom solar 2 panel stand (Shark 440W)	4000.00
Solar DC Wire, 6 sq mm, 15 Meters Pair	2,500.00
2 Panel MC4 Connectors pair, 2 Wire In, 1 Wire Out	500.00
Transportation, Installation & Service	24,000.00
Total cost	98,000.00

1 kW solar systems is capable of generating 5 kilo watts during the day using the sun's power.
We design 4 kW solar panel = (4 × 5) = 20
4 kW solar panel generating 20 kW per day & 600 kW per month
∴ Total cost =98,000 ×4 = 3, 92,000.00 Rs.

#Chapter 14#
Technical Options with Case Studies

14.1 Civil Engineering

14.1.1 Advance Earthquake Resistance

Technical case study on Advanced Earthquake Resistant hospital bhuj,gujrat.

➢ **Some information about earthquake**

The science of structural and **Earthquake Engineering** helps enhance the seismic flexibility of civil structures and critical infrastructure through advanced engineering and management tools. While natural forces are extremely useful to mankind, natural disasters can wreak with hurricanes, earthquakes, tsunamis posing threat to life and infrastructure worth billions of dollars.

➢ **Different types of earthquakes**

Earthquakes generally fall under one of a few distinct categories. These are:

- Tectonic earthquakes.
- Volcanic earthquakes.
- Collapse earthquakes.
- Explosion earthquakes.

➢ **Earthquakes effects per year in world**

Magnitude	Earthquake Effects	Estimated Number Each Year
2.5 or less	Usually not felt, but can be recorded by a seismograph.	9,00,000
2.5 to 4.5	Often felt, but only cause minor damage.	30,000
5.5 to 6.0	Slight damage to building and other structure.	500
6.1 to 6.9	May cause a lot of damage in very populated areas.	100
7.0 to 7.9	Major earthquake serious damage.	20
8.0 or greater	Great earthquake. Can totally destroy communities near the epicenter	One every 5 to 10 year

➢ **Advantages of earthquake resistant buildings**

• The earthquake resistant buildings can easily tolerate the shocks of earthquake by taking the minimum amount of structural damages.

• Due to the strong structure the earthquake resistant buildings are also resistant to other natural disasters also and the longevity of such buildings is also great.

• The structural degradation over time is very minimum for these buildings so there are minimum costs for maintenance such buildings.

➢ **Disadvantages of earthquake resistant buildings**

- Earthquakes can be very dangerous, if you are in the wrong place. They can make buildings fall down and set off landslides, as well as having many other deadly effects.

- An earthquake that occurs at the bottom of the sea can push water upwards and create massive waves called tsunamis

➢ Techniques for Earthquake Resistant Design of Structures

There are many known and practiced measures to protect against seismic threats. Let's take a look at some of the earthquake resistant techniques used by the engineer's world over to minimize the damage to structures due to earthquakes

➢ Floating Foundation

The levitating or floating foundation separates the substructure of a building from its superstructure. One way of doing this is by floating a building above its foundation on lead-rubber bearings that comprise a solid lead core covered in alternating layers of rubber and steel. The bearings are attached to the building and its foundation with the help of steel plates. So, when an earthquake occurs, the floating foundation can move without moving the structure above it.In Japan this base isolation system works at a whole new level. Their design allows buildings to float mid-air. The system levitates, keeping the building on a cushion of air. The system has in-built sensors for detection of seismic activity and these sensors communicate with the air compressor that creates the layer of air between the building and its base.

➢ Shock Absorption

Similar to the shock absorbers used in vehicles, buildings also makes use of this technology. This earthquake resistant technology helps buildings slow down and reduces the magnitude of vibratory motions. Ideally shock absorbers should be placed at each level of the building – one end attached to the beam and the other end to the column. Each comprises a piston head that moves inside a cylinder full of silicone oil. During earthquakes, the horizontal motion of building will make the piston push against the oil, transforming mechanical energy from the quake to heat.

➢ Rocking Core-Wall

Modern high-rise buildings use this technique to improve seismic resistance at a low cost. To make this work, a reinforced concrete core is set through the heart of the structure, surrounded by elevator banks. Many modern high-rise buildings use this technique to increase seismic resistance in an affordable way. It works most effectively when used together with base isolation. For base isolation, elastomeric bearings are built with alternating layers of steel and natural rubber/neoprene. The bearing thus created has low horizontal stiffness and vertical rigidity. The combination is highly effective, cost-friendly and simple to implement.

➢ Pendulum Power

The pendulum power technique works by suspending a huge mass near the top of the structure. This mass is supported by steel cables and viscous fluid dampers are placed between the mass and the building that it protects. In case of any seismic activity, the pendulum moves in the opposite direction to balance the energy. Each of the pendulums is tuned to sync with the natural frequency of the structure and these systems are called tuned mass dampers. Their goal is to counter resonance and reduce the structure's dynamic response.

➢ Symmetry, Diaphragms and Cross-Bracing:

Generally one common criterion for seismic designs is symmetry. Seismic risks of asymmetrical designs are higher. L-Shaped, T-Shaped and split-level structures may be more visually appealing but they are also prone to torsion. Thus engineers design symmetrical structures to

keep the forces equally distributed through the structure and limit ornamental elements like cornices, cantilever projections etc.

An earthquake has a significant lateral force. Seismic designing counteracts these forces in both horizontal and vertical structural systems. Diaphragms are integral to horizontal structures – such as floors of a building or roof. Engineers design each diaphragm on its own deck and strengthen it horizontally so it can distribute sideways forces with vertical structure parts.

With vertical structures, engineers have several approaches. Braced frames are often used in building walls. Braced frames rely on trusses for resisting sideways motion. Cross-bracing is a technique that uses two diagonal members in an X-shape to build wall trusses and it is a popular technique to build earthquake resistant structures**.**

➢ Finally

Seismic Engineering is a very complex and constantly evolving. Seismic structural assessment is a powerful tool in Earthquake Engineering that uses detailed modeling of the structure in conjunction with structural analysis to get a better understanding of the building's resistance. Retrofitting older structures with enhanced designs or materials is as important as rebuilding new structures from scratch. The ultimate goal of Earthquake Civil Engineering is to save lives so that the buildings don't collapse and allow inhabitants to escape in a timely manner.

➢ Earthquake in Bhuj, Gujarat

After the January 26, 2001, earthquake razed most of Bhuj, what emerged from the rubble was a model city with new buildings no more than a storey tall, a network of wide roads, and a mesh of seismographs spread across the district. As Nepal faces its biggest challenge -rebuilding after the April 25 quake - it could look at Bhuj for solutions.

The earthquake, measuring 6.9 on the Richter scale, destroyed over 12 lakh houses across Gujarat, but the worst hit was Bhuj, 60 km from the epicenter at Bhachau. Some of its landmark buildings, like some of its landmark buildings, like the nine-storey Sahajanand Towers, came crashing down. Over 38,000 homes collapsed in the city, killing 2,370 people.

But Bhuj - which sits on one of four major active faults in the district - has learnt its lesson, albeit the hard way.

We are now very strict. We do not permit any new commercial or residential structure taller than 7.5 m (1 storey) and not earthquake-resistant as per the Development Control Regulations," said D C Joshi, CEO of the Bhuj Area Development Authority (BHADA) that was formed to help reconstruct the city, and is the nodal agency for clearing new construction.

"Over 70,000 new buildings — both residential and commercial — have come up in Kutch since the 2001 quake. All of them have been built keeping future earthquakes in mind," said Prashant Anjaria, a senior BHADA official.

Despite the structured and planned development though, Kutch and Bhuj - remained vulnerable, said B K Rastogi, director of the state-run Institute of Seismological Research in Gandhinagar.

"Earthquakes in Kutch can be very big… Every year, Kutch sees over 1,500 tremors that measure between 0.5 and 5 on the Richter scale. Four major faults in the district have become active since 2006. They are located in populated regions. We need buildings that can withstand a 7.0 quake," said Rastogi, who has laid a network of over 25 seismographs in the district to study seismic activity.

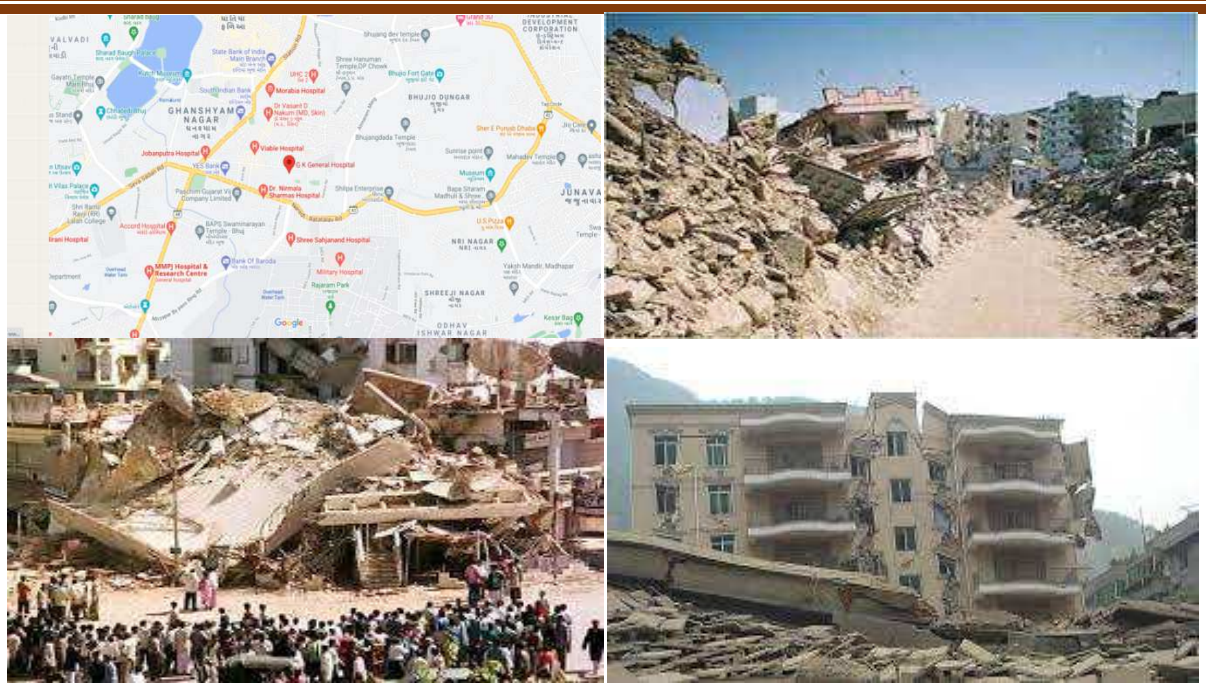


Figure 14.1 Photographs Of Earthquake Epicenter & Destroy Building In Bhuj

- **Earthquake resisting hospital in Bhuj, Gujarat (G K General Hospital)**

Figure 14.2 G K General Hospital Bhuj

Bhuj has continued to grow after the quake. The town is spread over 56 sq km today, almost four times its size in 2001. The 7.5-metre norm has ensured it has spread horizontally. The only multi-storey structures in the city are the 70-odd buildings that survived the quake. Plus, one exception: the three-storey G K General Hospital.

The Rs 100-crore hospital, which was completely rebuilt with help from the PMO, is a model earthquake-resistant structure. “We used base-isolation technology, where lead-rubber bearings are used to isolate and protect structures during earthquakes. These bearings act as shock absorbers. Such structures are built to withstand a quake of 8.5-9 magnitude,” said seismology and palaeo seismology expert M G Thakkar of KSKV Kutch University.

The technology used for the hospital was, however, difficult to replicate in residential and commercial structures because that would have pushed up building costs at least four times, said experts.

Bhuj also has a network of wide, accessible roads today. “In 2001, city roads were hardly 2.5 m wide, which made rescue and relief a nightmare,” said Anjaria. “Today, any new locality needs to have main roads that are at least 9 m wide and internal roads that are 7-7.5 m wide.”

- Funding

Rs 1, 00,000 crore in the district, but they are now lobbying to get the height restriction removed. “We held a meeting with Chief Minister Anandiben Patel in February this year, asking her to relax the norms, while ensuring that all taller construction is earthquake-resistant,” said Nimish Phadke, MD of FOKIA (Federation of Kutch Industries Association), an umbrella organization of large, medium and small industries in the district.

➢ 5 Earthquake resistance building in world

1. Sabiha Gökçen International Airport is one of the world most earthquake-proof buildings

One of the major airports to serve the historical city of Istanbul, it also happens to be one of the world's most earthquake-proof buildings. Called Sabiha Gökçen, it is one of the two international airports in Istanbul, Turkey, which is located near the North Anatolian fault.
It was designed by the engineering firm Ova to have 300 base isolator systems that can withstand an earthquake of up to a maximum of 8.0 Mw (moment magnitude). The base isolators can reduce lateral seismic loadings by 80%**,** which makes it one of the largest seismically isolated structures in the world.
One of the major features of the airport that makes it so earthquake-resistant is its so-called "triple friction pendulum device".

2. The Transamerica Pyramid can really take a pounding and keep standing

The Transamerica Pyramid is an iconic 1970s structure located in the Californian city of San Francisco, which sits closely beside the San Andreas and Hayward faults. In 1989, the Loma Prieta earthquake struck the area at a magnitude of 6.9 Mw which caused the top story of the structure to sway by almost one foot (30 cm) from side to side for more than a minute, but the building stood tall and undamaged.
This earthquake resistance feat can be attributed to the 52-foot-deep steel and concrete foundation that is designed to move with seismic loadings. Vertical and horizontal loadings are supported by a unique truss system above the first level, with interior frames extending up to the 45th level. The complex combination of these structural systems makes the building resistant to torsional movements and allows the absorption of large horizontal base shear forces.

3. The Burj Khalifa is also specially designed to resist earthquakes

This skyscraper doesn't really require any introduction. The Burj Khalifa is simply one of the most iconic supertall structures in the world. It also happens to be an earthquake-proof building!

The structure is composed of mechanical floors where outrigger walls connect the perimeter columns to the interior walling. By doing this, the perimeter columns are able to support the lateral resistance of the structure. The verticality of the columns also helps with carrying the gravitational loads.

As a result, the Burj Khalifa is exceptionally stiff in both lateral and torsional directions. A complex system of base and foundation design was derived by conducting extensive seismic and geotechnical studies.

4. Taipei 101 is another of the world's best earthquake-proof buildings

Taipei 101 is perhaps one of the most mesmerizing supertall skyscrapers in the world. The exterior design (by C.Y. Lee) was inspired by the phrase, "we climb in order to see further".

Putting aside the architecture, the mind-blowing fact about Taipei 101 is that it houses the biggest tuned mass damper (TMD) in the world! It's basically a giant metal ball that counteracts big transient loadings like wind and earthquakes to reduce the sway of the supertall tower

5. Philippine Arena also happens to be an earthquake-resistant building

The Philippine Arena is the world's largest domed arena and is an amazing earthquake-proof structure. It is owned by the Christian group Iglesia Ni Cristo (INC) which commissioned this 55,000 seating capacity arena for their 100th anniversary on July 27, 2014.

It is also the centerpiece of the tourism enterprise zone called Ciudad De Victoria in Bulacan, Philippines. The arena was designed by Australian architecture firm Populous and the elite engineering firm Buro Happold.

The Philippine plate sits along the so-called Pacific Ring of Fire, home of the world's most notorious and active chain of earthquake fault lines. Previous earthquakes in the country have reached as much as 8.2 Mw, and have claimed thousands of lives. Seismic activities have also been responsible for volcanic eruptions and tsunamis in the region

14.1.2 Seismic Retrofitting of Buildings

The seismic retrofitting of reinforced concrete buildings not designed to withstand seismic action is considered. After briefly introducing how seismic action is described for design purposes, methods for assessing the seismic vulnerability of existing buildings are presented. The traditional methods of seismic retrofitting are reviewed and their weak points are identified.

Modern methods and philosophies of seismic retrofitting, including base isolation and energy dissipation devices, are reviewed. The presentation is illustrated by case studies of actual buildings where traditional and innovative retrofitting methods have been applied.

Seismic retrofitting of constructions vulnerable to earthquakes is a current problem of great political and social relevance. Most of the Italian building stock is vulnerable to seismic action even if located in areas that have long been considered of high seismic hazard. During the past thirty years moderate to severe earthquakes have occurred in Italy at intervals of 5 to 10 years. Such events have clearly shown the vulnerability of the building stock in particular and of the built environment in general. The seismic hazard in the areas, where those earthquakes have occurred, has been known for a long time because of similar events that occurred in the past.

It is therefore legitimate to ask why constructions vulnerable to earthquakes exist if people and institutions knew of the seismic hazard. Several causes may have contributed to the creation of such a situation. These are associated to historical events, fading memory, greed, avarice, poverty and ignorance.

Among historical events particularly relevant are wars, epidemics, and natural disasters which may limit, in a significant way, the available resources of a country. In such circumstances there is a tendency to build with poor materials and without too much attention to good construction techniques and safety margins. A situation of this kind occurred in Italy and in Japan after the Second World War and similar situations have occurred in Italy many times in the past. In such a situation it is possible that the phenomenon of fading memory occurs and past memories are easily erased.

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

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

The term 'advanced construction technology' covers a wide range of modern techniques and practices that encompass the developments in materials technology, design procedures, quantity, surveying, facilities management, services, structure analysis and design, and management studies.

Incorporating advance construction technology into practice can increase levels of quality, efficiency, safety, sustainability and value for money. However, there is often a conflict between traditional industry methods and innovative new practices, and this is often blamed for the relatively slow rate of technology transfer within the industry.

- Advanced construction technologies
- 3D printing.
- Materials.
- Building information modeling (BIM).
- Cladding systems.
- Computer aided design and computer aided manufacturing (CAD/CAM).
- Computer numerical control.

- Construction Innovation Hub.
- Construction plant.
- Modern methods of construction.
- Modular construction.
- Offsite manufacturing.
- Prefabrication and preassembly.
- Research and development.
- Site investigations and surveying.
- Substructure works.
- Water engineering.
- Temporary works.
- Smart technology.
- Robotics.
- GPS controlled equipment

14.1.4 Engineering Aspects of Soil mechanics - Environmental Impact Assessment

- Environmental Impact Assessment

The program serves a diverse student population, a majority of who elect to specialize in structural engineering. For example, in Fall of 2004 and Fall of 2005, 52% of the undergraduate students taking the environmental course specialized in structural engineering, and 30% specialized in transportation engineering. Only 18% of the undergraduate students actually specialized in environmental engineering. Since a majority of the students taking the course did not specialize in environmental engineering, the required environmental engineering course was considered to be irrelevant by many of the students.

In response to these factors, a required course called Environmental Impact Assessment (EIA) has been introduced into the curriculum, just before the required Environmental Engineering (EnvE) course. The EIA course introduces environmental concepts as a means to perform environmental assessment, a practice employed by engineers of all specializations to develop more sustainable engineering designs. As such, the EIA course focuses on the environmental media of greatest relevance to EIA, namely air, water, soil, and sound; the physical and chemical descriptions of these media; and the transport and transformation of pollutants in and across these media. Environmental engineering practices to reduce these pollutant concentrations at the source or in the environment are only introduced, and only to make students aware of conventional means to mitigate environmental impact. Conventional methods of drinking water, waste water, and air pollution treatment are now the focus of attention in the revised EnvE course. The primary goals of the EIA course are to engage all CE students regardless of their specialization, and create an interdisciplinary forum to discuss and evaluate some of the social, economic, and environmental issues associated with CE projects. The secondary goals of the course are to prepare students for two higher level required courses, and promote the utility and importance of environmental engineering and thus recruit more students into the field of study.

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

The most basic concepts in planning and design of water supply systems are already well shaped and currently widely used. The unique system provides the drinking quality water; regardless that many users of high quantity water would tolerate water of lesser quality. Sometimes users of large quantities of non-drinking water quality may construct a separate system, as an economical solution. Regardless of the availability of advanced technology,

research and development in many areas promise the planning and design of better water supply systems in the future.

Sewerage is the infrastructure that conveys sewerage, surface runoff using Sewer. It encompasses components such as receiving drains, manholes, pumping stations, stored overflows and screening chambers of the combined sewer or sanitary sewer.

Type of Sewerage system

- Combined system
- Separate system
- Partiality separate system

Wastewater is any water that has been contaminated by human use. Wastewater is "used water from any combination of domestic, industrial, commercial or agricultural activities, surface runoff or storm water, and any sewer inflow or sewer infiltration".[1] Therefore, wastewater is a byproduct of domestic, industrial, commercial or agricultural activities. The characteristics of wastewater vary depending on the source. Types of wastewater include: domestic wastewater from households, municipal wastewater from communities (also called sewage) and industrial wastewater. Wastewater can contain physical, chemical and biological pollutants.

Sustainable development can be defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs."Sustainable development also focuses on finding better ways of doing things without affecting the quality of our life.

Type of Sustainable development

- Human sustainability.
- Human sustainability aims to maintain and improve the human capital in society.
- Social sustainability.
- Economic sustainability.
- Environmental sustainability.

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

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

A motor soft starter is a device used with AC electrical motors to temporarily reduce the load and torque in the power train and electric current surge of the motor during start-up. It can consist of mechanical or electrical devices, or a combination of both.

14.2.3 Advanced Wireless Power Transfer System

The project is a device to transfer power wirelessly instead of using conventional copper cables and current carrying wires. The concept of wireless power transfer was introduced by Nikolas Tesla. This power is made to be transferred within a small range only for example charging rechargeable batteries etc.

14.2.4 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 set point. It will then provide an output to a control element.

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.

Type of Industrial Temperature Controller

1. 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 set point. For heating control, the output is on when the temperature is below the set point, and off above set point Since the temperature crosses the set point to change the output state, the process temperature will be cycling continually, going from below set point 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 set point 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 set point 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.

2. Proportional Controller

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 set point 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 set point. At the set point (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 set point, the on- and off-times vary in proportion to the temperature difference. If the temperature is below set point, the output will be on longer; if the temperature is too high, the output will be off longer.

3. PDI Controller

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 components for change 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.

Autotuen PID controllers

PID controllers provide very tight control but the PID algorithm requires tuning. Autotuen controllers provide that faction.

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.

3. 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

4. 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.

5. 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.

Advantages of Industrial Temperature Controller

- Easy to Implement
- Easy to stabilize faster response than just P controller
- No steady state error

Disadvantages of Industrial Temperature Controller

- Long settling time Steady state error
- Can amplify high frequency noise
- Narrower range of stability

Estimated rate of Industrial Temperature Controller

Type	Cost
Digital temperature controller	1095.00
Omron E5CB PID Temperature Controller	17453.00
Omron E5CC Panel Mount PID Temperature Controller	22915.00
OMRON E5ENHAA2HBM500AC100240	41707.00
Omron E5CN-HR2M-500 AC100-240	21552.00
Omron Temperature Controller E5CC-QX2A SM-800	3296.00

14.2.5 Accident Alerts in Modern Traffic Signal Control System -Camera Surveillance System

If the speed exceeds the particular value, it sends signal to the other side vehicle to be alert. It also alerts the other side vehicle when someone crosses one side. Thus the high speed vehicle can be traced easily. This project is very much used in traffic controller. It is very accurate and cost effective.

The microcontroller unit calculates the speed=displacement/time taken. If the speed exceeds the particular value, it sends signal to the other side vehicle to be alert. It also alerts the other side vehicle when someone crosses one side. Also it captures the high speed vehicle.

#Chapter 15#
Smart and/or Sustainable features of Chapter 8 & 13 designs, Impact on society.

Table 15.1 Design Impact On Society

Design name	Estimated construction time	Estimated cost in RS.	Time will benefit	Funding sources
PART I DESIGN				
CIVIL ENGINEERING DESIGN				
Bus Stand	1 to 1.5 month	41620.00	The advantage of all designs is that they are available immediately after completion	District panchayat
Public Toilet	2 to 3 month	295700.00		Loc Sabah government
Public Garden	1 to 2 month	245365.00		Local government
Public Library	3 to 3.5 month	877280.00		District panchayat
Community Hall	6 to 7 month	717875.00		Local government
PHC Center	Approx 1 year	1111360.00		State government
ELECTRICAL ENGINEERING DESIGN				
Solar Street Light	Half month	33500.00	Same as above	Local government
Solar Pump System	5 to 7 days	61000.00		Local government
Solar Rooftop	2 to 3 days	65983.00		Local government
PART II DESIGN				
CIVIL ENGINEERING DESIGN				
ATM	Approx 1 month	23245.00	The advantage of all designs is that they are available immediately after completion	Through the bank
Post Office	2 to 3 month	177042.00		State government
Floating drum Type Biogas Plant	Approx 25 days	1,06,442.00		Local people &local government
Pharmacy Store	Approx 2 month	1,20,420.00		Local government
Rain Water Harvesting	2 to 5 days	46845.00		Local government
Perouse Paver Block	Half month	1,198,620.00		Taluka panchayat
ELECTRICAL ENGINEERING DESIGN				
Photovoltaic Water Pumping System	1 to 2 days	260000.00	Same as above	Local government
Mini Tiller Or Cultivator Using	5 to 7 days	24750.00		Local government
Solar Panel System	Half month	98,000.00		State government schemes

#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	tex collection
2	What are the chances of employment in village?	yes	30 %.
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	80 %.
6	Is women health awareness Program organized in village?	No	
7	Are women having opportunity to work and income?	yes	15%.
8	Child girl education is appreciated in village?	yes	80%.
9	Facility of vaccination to child is available in village?	yes	-
10	Are village people aware about child vaccination and done to each and every child as per norms?	Yes	100%.
11	Women help line number information is provided to village people?	No	-
12	Is water scarcity in village? How many days per year?	No	-
13	Is village under any debt?	No	-
14	Is any serious issue due to debt from bank or any person happened in village?	No	-
15	Is any suicide like incident observed in village due to government policy, debt or threatening?	NO	-
16	Is any death of patient occurred due to unavailability of medical facility in village?	NO	-
17	How many disabled (physically challenged) is observed in village? Provide list with Male/female/girl/boy with age and type of disability and reason of disability.	Yes	12 person
18	Is village improvement is observed in comparative scenario from past to present?	yes	10 %.
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

R.R. રામાણી
9/5/2021

#Chapter 17#

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

Irrigation system

a system of supplying (land) with water by means of artificial canals, ditches, etc, esp. to promote the growth of food crops. a sophisticated irrigation system. 2. a system used to clean the stool out of the colon.

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. Running or impounding water over the surface and allowing it to saturate the soil to some depth.
- Sprinkle irrigation. Spraying water into the air and allowing it to fall on to plants and soil as simulated rainfall.
- Drip irrigation.
- Subsurface eluders.
- Sub irrigation.

Major problem in irrigation activates

Two of the most common problems with farm irrigation systems have to do with irrigation scheduling. Likewise, starting an irrigation cycle too late or not running the system for a long enough period of time is considered under watering and can cause reduced yields and poor crop quality which can affect price

Solution of irrigation activates problem

Water run-off and pooling. You can also adjust the valves and nozzles to deliver water at slower rates to allow adequate time for the water to soak into the soil. In some instances, a drip irrigation system may be the best solution

Agro Industry

An agro-industry is an enterprise that processes bio-mass, i.e. agricultural raw materials, which include ground and tree crops as well as livestock and fisheries, to create edible or usable forms, improve storage and shelf life, create easily transportable forms, enhance nutritive value, and extract chemicals.

Type of agro farming

Alternative farming techniques	Bio dynamic farming
Eco farming	HOMA
India	LEISA
Natural farming	Organic farming
Permaculture	Polyculture
Sustainability Urban and Peri-Urban farming	Zero budget natural farming
Integrated farming systems	No tillage farming

#Chapter 18#
Social Activities

We have planned many activities in Khorana village but all activities postponed due to covid pandemic.

Our planned activities list given below with description

1 Tree plantation:-

We planned for around 200 tree pant in Khorana village. For this activity we see the place outside of Khorana village. In this plantation we use neem, mango, Banyan, Ficus religiosa , low water need tree, long life tree, etc. in this activity we have get planed for help by some NGO of Rajkot.

2 Awareness camp:-

We also planned for small 100 to 200 people awareness camp for villager.tin this camp we give information about, agriculture, unbelief , government schema, and many more .

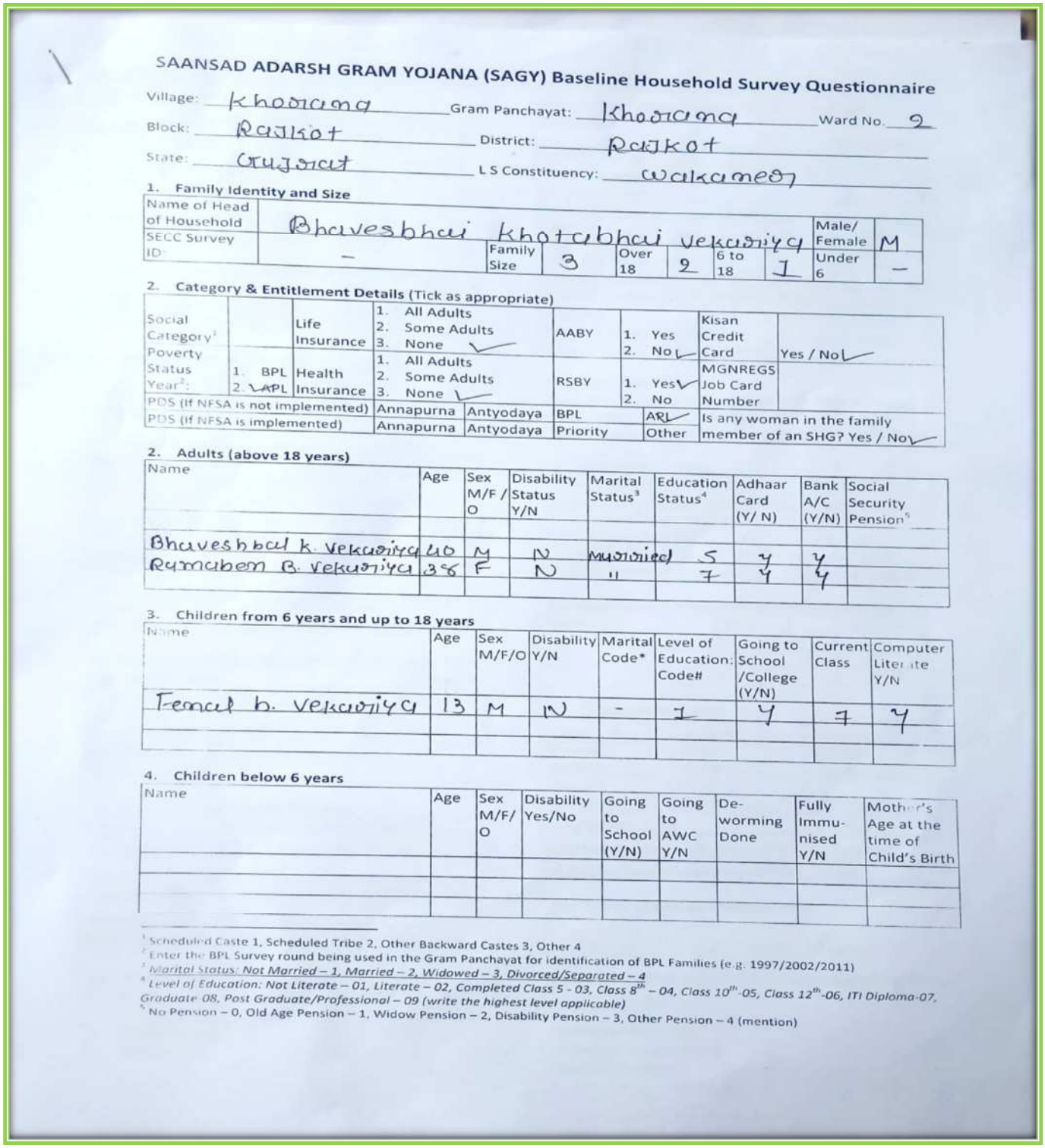
3 children camp:-

We planned small camp for children this camp we planed give basic knowledge of computer, how to write proper exam, information about E- learning platform, etc.

We planned all activity during the project but due to this pandemic not possible any one.

#Chapter 19#

SAGY Questionnaire Survey form with the Sarpanch Signature



SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: Khorana Gram Panchayat: Khorana Ward No. 9

Block: Rajkot District: Rajkot

State: Gujarat L S Constituency: Rajkot

1. Family Identity and Size

Name of Head of Household	Bhaveshbhai khatabhai vekariya						Male/ Female	M
SECC Survey ID	–	Family Size	3	Over 18	2	6 to 18	1	Under 6	–

2. Category & Entitlement Details (Tick as appropriate)

Social Category[1]		Life Insurance	1. All Adults 2. Some Adults 3. None ✓	AABY	1. Yes 2. No ✓	Kisan Credit Card	Yes / No ✓
Poverty Status Year[2]:	1. BPL 2. ~~APL~~	Health Insurance	1. All Adults 2. Some Adults 3. None ✓	RSBY	1. Yes ✓ 2. No	MGNREGS Job Card Number	
PDS (If NFSA is not implemented)		Annapurna	Antyodaya	BPL		ARL ✓	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]
Bhaveshbhai k. vekariya	40	M	N	Married	5	Y	Y	
Rumaben B. vekariya	36	F	N	"	7	Y	Y	

3. Children from 6 years and up to 18 years

Name	Age	Sex M/F/O	Disability Y/N	Marital Code*	Level of Education: Code#	Going to School /College (Y/N)	Current Class	Computer Literate Y/N
Fenal b. vekariya	13	M	N	-	1	Y	7	Y

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: 9
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	0.14
Community Water Tap	Yes / ~~No~~	
Hand Pump (Public / Private)	Yes / ~~No~~	
Open Well(Public / Private)	Yes / ~~No~~	
Other (mention):		

11. Source of Lighting and Power

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

12. Landholding (Acres)

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

13. Principal Occupations in the Household

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

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

15. Agriculture Inputs

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

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

Name	Unit	Quantity

17. Livestock Numbers

Cows: 9	Bullocks: 0	Calves: 3
Female Buffalo: 0	Male Buffalo: 0	Buffalo Calves: 0
Goats/ Sheep: 0	Poultry/ Ducks: 0	Pigs: 6
Any other: Type _____		No. _____
Shelter for Livestock: Pucca / Kutcha / None		
Average Daily Production of Milk(Litres): _____		

18. What games do Children Play

coricket, cycling

19. Do children play musical instrument (mention)

NO

Schedule Filled By:
Principal Respondent:
Date of Survey: 9/5/2021

R.R. 21/11/21
9/5/2021

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: Khorana

b. Block: 2

c. District: Rajkot

d. State: Gujrat

e. Lok Sabha Constituency: Vakaner

f. Number of Wards in the Gram Panchayat: 8

g. Number of Villages in the Gram Panchayat: 1

h. Names of Villages: Khorana

Demographic Information

Number of Households 454 Total Population 2184 Male 639 Female 601

SC HHs 646 ST HHs _____ OBC HHs 505 Other HHs 1003

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	5 km
c.	Nearest Community Health Centre (CHC)	N	-
d.	Nearest Post Office	Y	in village
e.	Nearest Bank Branch (Any)	Y	5 km
f.	Nearest Bank with CBS Facility	N	-
g.	Nearest ATM	Y	
h.	Nearest Primary School	Y	.5 km
i.	Nearest Middle School	Y	in village
j.	Nearest Secondary School	Y	5 km
k.	Nearest Higher Secondary School / +2 College	Y	5 km
l.	Nearest Graduate College	Y	5 km
m	Nearest ITI / Polytechnic Centre	Y	15 km
n	Kisan Seva Kendra	Y	in village

1

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

	Infrastructure Facilities / Services	Located within the GP Yes (Y)/No (N)	If located elsewhere (N), distance from the GP office
o	Agriculture Credit Cooperative Society	N	N
p	Nearest Agro Service Centre	N	N
p	MSP based Government Procurement Centre	N	N
q	Milk Cooperative /Collection Centre	Y	in village
r	Veterinary Care Centre	N	N
s	Ayurveda Centre	N	N
t	E – Seva Kendra	Y	in village
u	Bus Stop	N	N
v	Railway Station	Y	1km
w	Library	N	N
x	Common Service Centre	N	N

IV. Sports Facilities in the Gram Panchayat

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

b. Mini Stadium : N 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.: 0

Secondary Private: 0 Secondary Govt.: 0

Higher Secondary Private: 0 Higher Secondary Govt: 0

VI. Public Distribution System

	Item	Private Contractor	Women's SHG	Gram Panchayat	Cooperative	Other (Mention)	Location in GP (mention Location)	If outside GP, Location & distance from GP HQrs)
a.	Cereal (Rice/ Wheat/ Millets)	-	-	-	-	Government	Yes	-
b.	Kerosene	0	-	-	-	Government	Yes	-
c.	Other (mention)	-	-	-	-	-	-	-

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

VII. Coverage of Villages under different Facilities & Services

	Parameter	Villages Status[1]	Names of Villages Covered	Names of Villages not Covered
a.	Piped Water Supply Coverage to Villages	Covered Not Covered	- Khorana	- -
b.	Hand Pump Coverage in Villages:	Covered Not Covered	- -	Khorana
c.	Coverage under Covered Drains:	Covered Not Covered	Khorana -	- -
d.	Coverage under Open Drains:	Covered Not Covered	- -	- -
e.	Villages with Household Electricity Connection (Numbers)	Connected Not Connected	Khorana (420)	

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	3440.52	d.	Pasture / Grazing Land	0	g.	Check Dam	5
b.	Irrigated Land	3440.52	e.	Forests/ Plantations	60.33	h.	Wells/Bore Wells	1
c.	Un-irrigated Land	0	f.	Other Common Land	274.70	i	Tanks /Ponds	2

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

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

IX. Parameters relating to Households & Institutions

		Number
a)	Number of eligible Households for pension (old age, widow, disability)	48
b)	Number of Households receiving pension (old age, widow, disability)	48
c)	Number of eligible Households who are not receiving pension	406
d)	Number of Households eligible for Ration Card	454
e)	Number of eligible HHs having ration cards	0
f)	Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	358
g)	Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	0
h)	Number of active Job Card holders under MGNREGA	70
i)	Number of Job Card holders who completed 100 days of work during 2013-14	30
j)	Number of shops selling alcohol	0
k)	Number of BPL families	130
l)	Number of landless households	0
m)	Number of IAY beneficiaries	58
n)	Number of FRA[2] beneficiaries	0
o)	Number of Community Sanitary Complexes	0
p)	Number of Households headed by single women	180
q)	Number of Households headed by physically handicapped persons	2
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'

Khodidas b. Mogariya (signature) Surveyor	રમેશભાઈ R. R. રામાણી 9/5/2021 PRI Respondent (Preferably Gram Panchayat Chairperson)	રમેશભાઈ R. R. રામાણી 9/5/2021 Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	9/5/2021 Date of Survey

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

4

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: Khorana
b. Ward Number: 2
c. Gram Panchayat: Khorana
d. Block: Rajkot
e. District: Rajkot
f. State: Gujrat
g. Lok Sabha Constituency: Rajkot
h. Number of Habitations / Hamlets in the Gram Panchayat: _____
i. Names of Habitations / Hamlets:

Demographic Information

Number of Households 454 Total Population 2154 Male 632 Female 601

SC HHs 646 ST HHs — OBC HHs 505 Other HHs 1003

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	N	
c.	Nearest Secondary School	N	
d.	Kisan Seva Kendra	N Y	in village
e.	Milk Cooperative /Collection Centre	Y	"
g.	Health Sub Centre	Y	"
h.	Bank	Y N	-
i.	ATM	N	-
j.	Bus Stop	N	-
k.	Railway Station	Y	1 km

[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	
m	Common Service Centre	N	
n	Veterinary Care Centre	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: 1 - All

iii. Drinking Water Facilities

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

If 3 mention the name of the habitations not covered:

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

If 3 mention the name of the habitations not covered:

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

v. Coverage of Habitations under Electrification

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

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

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

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

vi. Sports Facilities in the Village

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

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

vii. Education, ICDS

a. Number of Anganwadi Centres: 2

c. Schools (Number)

Primary Private: N Primary Govt.: 1

Middle Private: N Middle Govt.: N

Secondary Private: N Secondary Govt.: N

Higher Secondary Private: N Higher Secondary Govt: N

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	3440.52	d.	Pasture / Grazing Land	0	g.	Check Dam	5
b.	Irrigated Land	3440.52	e.	Forests/ Plnatations	50.33	h.	Wells/Bore Wells	I
c.	Un-irrigated Land	0	f.	Other Common Land	274.70	I	Tanks /Ponds	2

ix. Entitlement Related Parameters		70
1	Number of active Job Card holders under MGNREGA	30
2	Number of active Job Card holders who have completed 100 days of work	0
3	Number of shops selling alcohol	0
4	Number of BPL families	130
5	Number of landless households	58
6	Number of IAY beneficiaries	6
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

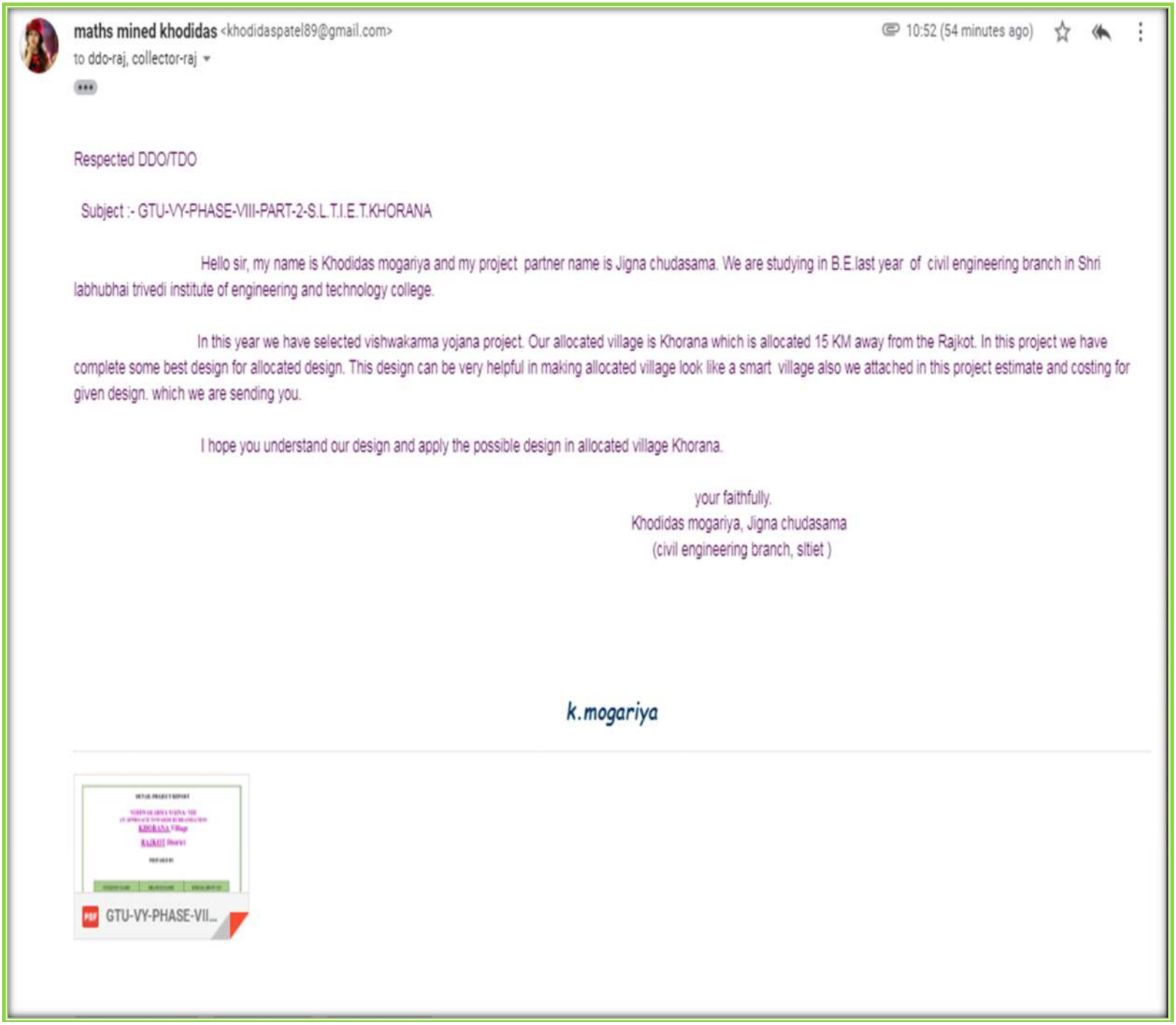
Name and Signature of Surveyor and Respondent'

Khodidas G. Mogariya. Mogariya. Surveyor	ભાવેશભાઈ બા. વેકરીયા PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	[redacted] રમેશભાઈ R. R. રામાણી 9/5/2021 Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	9/5/2021 Date of Survey

3

#Chapter 20#

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



maths mined khodidas <khodidaspatel89@gmail.com> 10:52 (54 minutes ago)

to ddo-raj, collector-raj

Respected DDO/TDO

Subject :- GTU-VY-PHASE-VIII-PART-2-S.L.T.I.E.T.KHORANA

Hello sir, my name is Khodidas mogariya and my project partner name is Jigna chudasama. We are studying in B.E.last year of civil engineering branch in Shri labhubhai trivedi institute of engineering and technology college.

In this year we have selected vishwakarma yojana project. Our allocated village is Khorana which is allocated 15 KM away from the Rajkot. In this project we have complete some best design for allocated design. This design can be very helpful in making allocated 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 allocated village Khorana.

your faithfully.
Khodidas mogariya, Jigna chudasama
(civil engineering branch, sltiet)

k.mogariya

GTU-VY-PHASE-VII...

Fig 20.1 : TDO- DDO Report With The Photograph

]

#Chapter 21#

Comprehensive report for the entire village

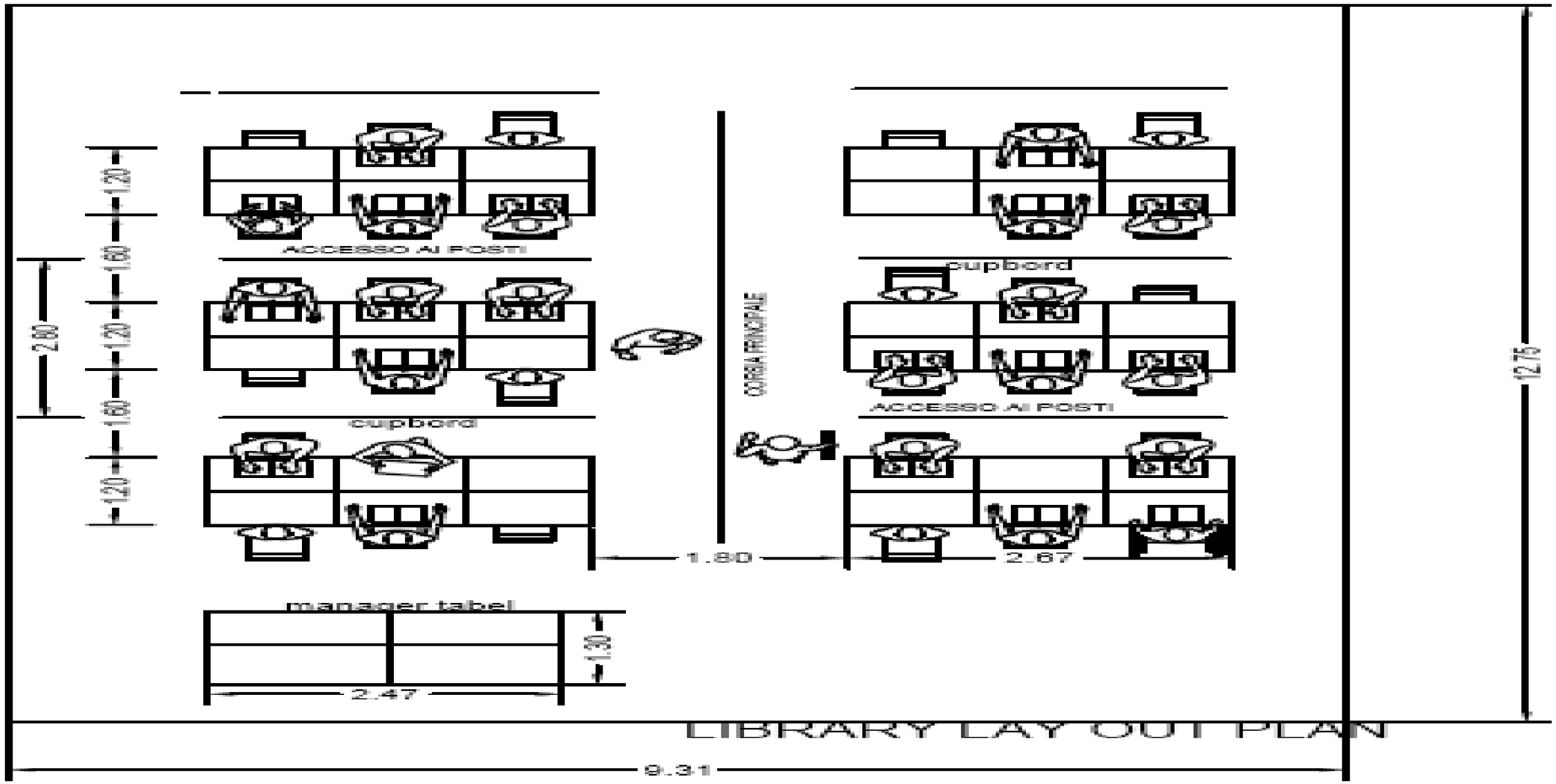
Vishwakarma Yojana is provides special scheme for development of village by GTU and Government of Gujarat in which students work together and collect data and information regards village development with the help of gram Panchyat and stake holders. Village have some basic facilities likes drinking water, drainage system, pucca road, and other facilities like primary school, primary health center, community hall, library, public latrine block, are 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 a real 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.

Name of civil engineering design is, 1.Bus stand, 2.Public toilet, 3.Public garden, 4.Public library, 5.community hall, 6.PHC center, 7.ATM, 8.post office, 9.Floating Drum type Biogas plant, 10.Pharmacy store, 11.Rain water harvesting and 12.Perouse paver block road.

Name of electrical engineering design is 1.solar Street light, 2.sollar pump system, 3.Solar rooftop, 4.Photovoltaic Water Pumping System, 5.Mini tiller or cultivator using and 6.Solar panel system.



KHODIDAS B. MOGARIYA - 180893106035	
JIGNA B. CHUDASAMA - 18089316007	
SLTIET, RAJKOT.	N
PUBLIC LIBRARY	

Figure 8.4 Design of Public Library

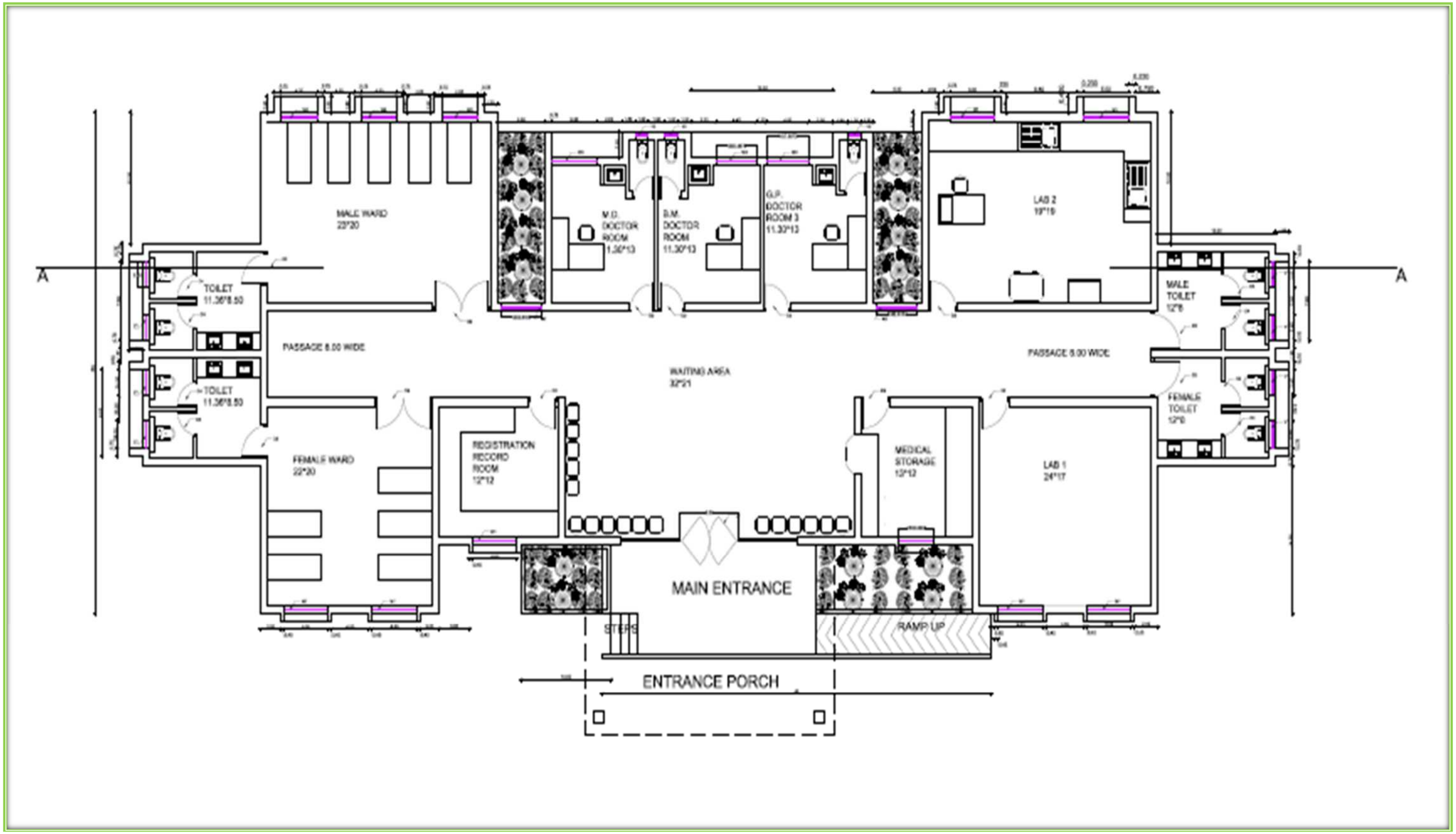
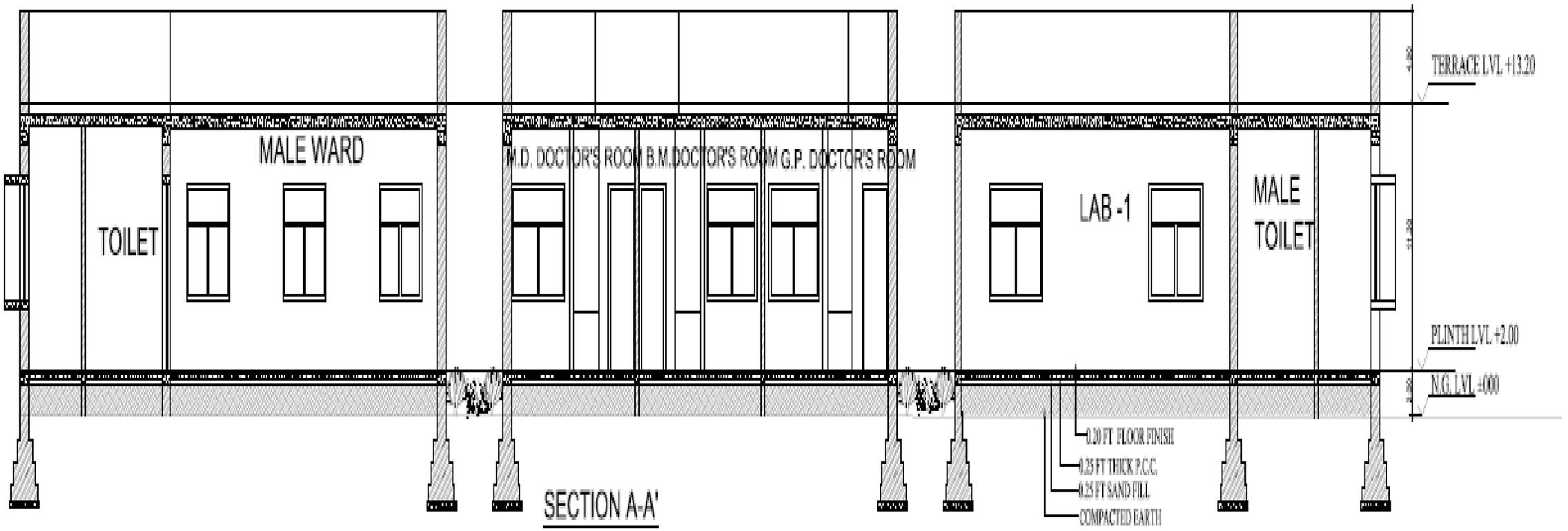
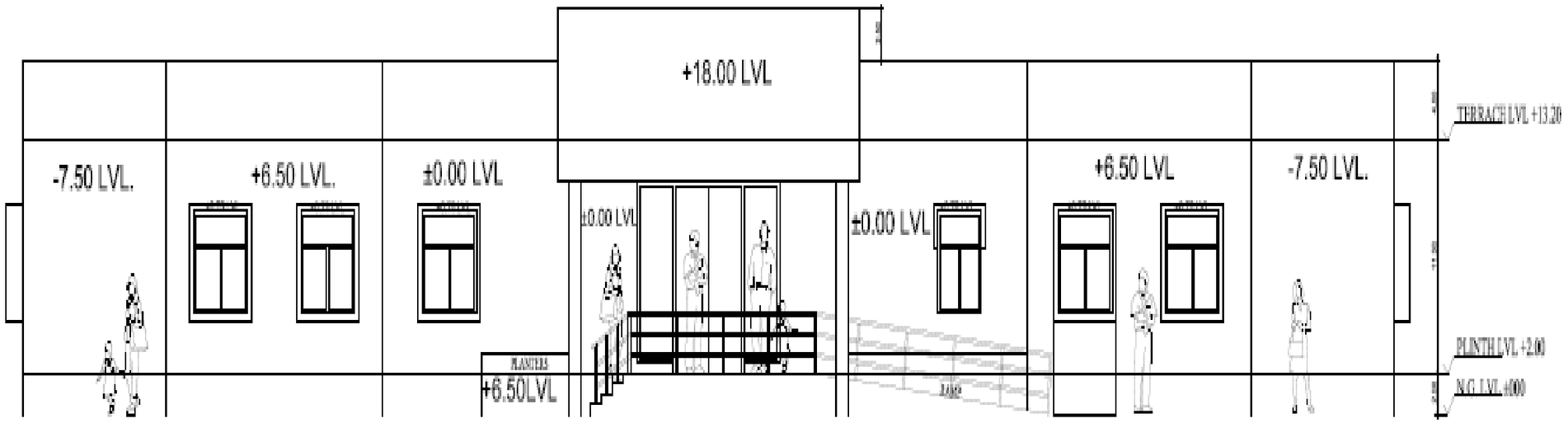


Figure: 8.6 (A) Design of PHC Center



KHODIDAS B. MOGARIYA - 180893106035	
JIGNA B. CHUDASAMA - 18089316007	
SLTIET, RAJKOT.	N
P.H.C. CENETR	

Figure: 8.6(B) A-A Section of PHC Center



FRONT ELEVATION

SCHEDULE:-
W1- 5.00*4.00
W2- 4.50*4.00
W3- 4.80*4.00
W4- 5.30*4.00
W5- 5.00*4.00
W6- 4.00*4.00
W7- 4.40*4.00
V1- 2.40*2.00
V2- 1.47*2.00
D1- 6.50*8.50
D2- 3.30*8.50
D3- 6.50*8.50
D4- 2.50*8.50
ALL DIMENSIONS ARE IN FEET

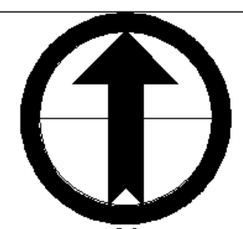
KHODIDAS B. MOGARIYA - 180893106035	
JIGNA B. CHUDASAMA - 18089316007	
SLTIET, RAJKOT.	
P.H.C. CENETR	

Figure: 8.6(C) Front elevation of PHC Center