DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII

AN APPROACH TOWARDS RURBANISATION

VARUDI-Village

AMRELI-District

PREPARED BY

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COLLEGE LOGO

YEAR:2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda. Ahmedabad– 382424 Gujarat

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ON
VishwakarmaYojana: Phase VIII

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Gujarat Technological University,
Chandkheda, Ahmedabad– 382424 Gujarat

CERTIFICATE

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

Detail Project Report for,

VILLAGE:-VARUDI

DISTRICT:-AMRELI

Under

Vishwakarma Yojana: Phase-VIII

In partial fulfilment of the project offered by

GUJARATTECHNOLOGICALUNIVERSITY, CHANDKHEDA

During the academic year 2020-21.

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

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Abstract:

The government of gujarat has launched Vishwa Karma Yojna (scheme) for development of villages by identifying the requirements of villages. Under this scheme, the villages are surveyed and this project was identified and selected for implementation. Gujarat technological university is allotted important project of Vishwakarma yojana by the government of Gujarat. This project is give us a real experience of survey and to interact with the good people of village.

Varudi is a small village located in Amreli Taluka of Amreli district, Gujarat with total around 312 families residing. The total geographical area of village is hectares. The Varudi village has population of 1492.It is located 6 KM towards west from District headquarters Amreli. 271 KM from State capital Gandhinagar. Amreli is nearest town to varudi which is approximately 6 km away. Pin code is 365601 and postal head office is Amreli.

There is one overhead water tank and one circular water tank in varudi. 90% of the houses are pucca while 10%of the houses are kutchha.Village is connected with 24hour electricity supply. The development of city will lead the people to develop their villages otherwise there will be more migration towards cities, which will setup RURBAN planning.

In varudi village some physical and social facilities are better like street light, Aanganwadi, cement concrete road, primary school. In the village lack of basic facilities like public toilet, medical clinic, weak west collection.

For development varudivillage we are try to provide required facilities like public toilet with bath a socio-culture infrastructure, health centre as a physical infrastructure facility.

Based on survey we tried to give design of basic facilities to fulfil their needs. By providing this basic facility to village for reduce urban city pressure and decrease migration rate, which is ultimate aim of Vishwakarma Yojana.

Keywords: Development, Environment, Infrastructure, Urban, Urbanisation, Village, VishwakarmaYojna

ACKNOWLEDGEMENT

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

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

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

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

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

We are also thankful to our **Prof**. **RUTVIJA PANDYA Principal**, faculties of our colleges for their encouragement and support to complete this project work.

An act of gratitude is expressed to our internal guide / Evaluator / Nodal Officer,
PROF. NIRAJ R. BHEDA from college Smt.Shantaben Haribhai Gajera Engineering College, Amreli for their invaluable guidance, constant inspiration and active involvement in our project work.

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

We are also thankful to **Ms. Darshana Chauhan, Vishwakarma Yojana**, for all support during our work. We therefore, take this opportunity for this Project work expressing our deep gratitude and sincere thanks for her cooperation to produce this project work in the present form.

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

CONTENT

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
DDO	District Developer Officer
TDO	Taluka Developer Officer
NGO	Non-Governmental Organization
CHC	Community Health Center
PHC	Primary Health Center
NRUM	National Rurban Mission
BOD	Biochemical Oxygen Demand
COD	Chemical Oxygen Demand
BRTS	Bus rapid transit system
RMTS	Rajkot Mass transport service
EPF	Eco-friendly Plastic Fuel
PMGSY	Pradhan Mantri Gram Sadak Yojana
IAY	Indira Awas Yojana
PPP	Public Private Partnership
BIM	Building Information Modelling
NH	National Highway
IS	Indian Standards
PT	Public Transport
GDP	Gross Domestic Product
R.O.	Reverse Osmosis
HVAC	Heating, Ventilation & Air Conditioning System
ATMS	Advance traffic Management System
SH	State Highway

BIM	Building Information Modeling
CPU	Central Processing unit
PVC	Poly vinyle Chloride
M	Meter
MM	Millimeter
IPC	Inter Personal Communication
In	Inch
VY	Vishwakarma yojana
Gj	Gujarat
PIN	Postal Index Number
RCC	Reinforced cement concrete
S	Strength
W	Weakness
O	Opportunities
T	Threats
Ft	Feet
CAD	Computer aid design
BM	Bench mark
SOR	Schedule of rates
CL	Center line

Chapter-1 Ideal village visit from District of Gujarat State:-

•Project Description:

The government of Gujarat has launched Vishwakarma yojana (scheme) for development of villages by identifying the requirements of villages. Under this scheme, the villages are surveyed and this project was identified and selected for implementation. Gujarat technological university is allotted important project of Vishwakarma yojana by the government of Gujarat.

Urbanization is to bring peace of mind to the villagers by providing them the basic amenities required and still keeping the village soul intact. It is about finding out what the basic facilities are present and what can be provided to betterment of the village.

The present resources are made to such a use that it gives its cent percentage usability with sustainability. From the perception of gap analysis and as per regarding under norms, we are going to design the basic facilities which are not have present in varudi village. These facilities are water tank for domestic purpose, lavatory block, rejuvenation of gram panchayat, rehabilitation of garden place. Domestic bio-gas plant and solar water pump are also designed for sustainable development of varudi village.

- Proper land reforms to make sure land is held, owned, cultivated, irrigated to make the most efficient use and maximum output.
- Rural credit – Banking services need to be popularized and credit should be available for basic services like agriculture.
- Electrification– Many villages still receive only 2 to 6 hours of electricity per day which needs to drastically improve to empower the villages of India. Basically, what we need is to empower the rural people by providing them education and proper health care. They need to have infrastructure like electricity and water, sanitation so that they are free from the cycle of droughts and floods. We need to give them self-employment so that they want to stay in villages instead of migrating in cities. There is a need to empower the villagers.

1.1 Background & Study Area Location

(A) BACKGROUND:-

(1) Rafala–Gujarat's goldenVillage :-

The rafala village is khown as india's first goldan village in few years ago there was no sewerage connection, no street lights, no pucca roads and no source of income for the gram panchayat except the grants and funding from various state and Union government schemes.

A small area with only a 1000 people to account for, the entire village is painted in gold and boasts of several visitors. Credit for the transformation of the village goes to social activist and leader Savjibhai Kurjibhai Vekaria.the goldan village flaunts a Wi-Fi and optical fiber broadband network, classrooms with CCTV cameras, its own mini-bus transport system and CCTVs located on important junctions to spot litterbugs. Big size with the statue of lord shiva garden, children play ground, school and market and the all road of village is made by block and r.c.c.

(B) STUDY AREA:-

• Name of village	Rafala
• Taluko	Bagasra
• District	Amreli
• State	Gujarat
• Pin code	365550
• Total area	314.99 hectuare
• Total Population	1831

TABLLE-1 STUDY AREA

FIG 1.LOCATION DETAIL OF RAFALA VILLAGE

- INFRASTRUCTURE OF RAFALA VILLAGE :-

Panchayat buil.

Primary school

Ladali bhavan

Alert tower

Entrance gate

Garden

FIG.2 INFRASTRUCTURE OF RAFALA

1.2.1Aim & Objective Rural development

Aims- at improving rural people's livelihoods in an equitable and sustainable manner, both socially and environmentally, through better access to assets (natural, physical, human, technological and social capital), and services, and control over productive capital (in its financial or economic and political forms) that enable them to improve their livelihoods on a sustainable and equitable basis. The VishwakarmaYojna is aimed to designing Villages as Rurban communities, Re-imagining the economic structures of the villages and strengthens the community spirit. For achieving this aim detail information of the targeted villages are collected and with consultation of Local revenue authorities, TDO and DDO a projected development plan of the village to be prepared under this project. This development plan is prepared based on 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.

1.2.2Objectives Of The Study :-

- To study the existing growth and development of village.
- To study the exiting infrastructures facilities and its management issues phasing by village.
- To better understand policy design and their influence on future performance.
- To assess expenditure pattern and compare them with priorities.
- To elaborate an enhanced interested methodology for evaluation.
- To validate the methodology and findings through in-depth case studies.
- To provide recommendations for better targeting and better monitoring and evaluation, in policy making.
- To improve living standard of people and education
- To fulfil common requirements like drinking water, drainage facilities, transportation system.
- Manage growth through good planning and appropriate controls.
- Reduce of urbanization migration.
- Physical planning
- Sustainable planning and development
- Physical and social infrastructure facilities
- Better road connectivity
- To proper utilize types of natural energy.
- Getting a good education removes or decrease the migration from village to city.
- If the environment remains good, the health of the people is also maintained.
- An ideal Indian village will be so constructed as to lend itself to perfect sanitation.
- Modern method of farming
- Shops for primary needs
- Well-developed communication

1.1.3 EXAMPLES OR LIVE CASE STUDIES OF IDEAL VILLAGE OF INDIA/ GUJARAT

1) Definition Of Smart City:

A smart city is an urbanized urban area (by the nagrpalika or mahanagarpalika) that creates sustainable economic development and high class of life (or good life style) by excelling in multiple key areas; wealth, mobility, environment, people, living, and government. Village population about 1000 person.

Fig.3 Smart City

2) Definition of Smart Village:

Smart Village is a concept adopt by national, state and local governments of India, as a scheme focused on holistic rural development, the basic concept of smart village is to collect community efforts and potency of people from various streams and integrate with information technology to provide profit to the rural community.

Fig.4 Smart Village

3) Definition of Village:

A village is a small resolution usually found in a rural setting. It is normally larger than a "village" but smaller than a "town". Some geographers specifically define a village as having between 500 and 2,500 population. In most parts of the world, villages are settlements of people clustered around a central point.

Fig.5 Village

1) Pothanikkad (Kerala)

The village with 100% literacy rate: Unsurprisingly in Kerala, Pothanikkad village was the first in the country to achieve a 100%literacy rate. Not only does the village boast of city-standard high-schools, but it also has primaryschools and private schools. Guess the number of people the village has educated? Well, according to the 2001 census there are 17563 residents living in the village.

Fig.6 Pothanikkad

2) Mawlynnong (Meghalaya)

Asia's cleanest village:Mawlynnong, a small village in Meghalaya, was awarded the prestigious tag of 'CleanestVillage in Asia' in 2003 by Discover India Magazine. Located at about 90 kms from Shillong, thevillage offers a sky walk for you to take in the beauty as you explore it. According to visitors, youcannot find a single cigarette butt/plastic bag lying around there.

Fig.7 Mawlynnong

3) Goldan village rafala(Amreli)

A small village in district amreli which is khown as golden village and village have all facelities like playground, public garden, block road, solar street light, and the amazing thing of this village is the whole village is yellow color painted including house of villagers. Rafala is a Village in BagasaraTaluka in Amreli District of Gujarat State, India. It is located 45 KM towards west from District headquarters Amreli.

Fig.8 Goldan village rafala

1.2.4 THE IDEA OF MODEL OR SMART VILLAGE:

The idea of an "Adarsh Gram" or model village has been explored earlier as well, most not a b through the Pradhan mantra Adarsh Gram Yojana, launched by the Central Government in 2009-10. The scheme was implemented in pilot mode in 1000 villages of Assam, Bihar, Himachal Pradesh, Rajasthan and Tamil Nadu, with an allocation of Rs 10 lakh per village. This limit was later raised to Rs 20 lakh per village. The target villages under the scheme were those with more than 50% of the population belonging to Scheduled Castes (SCs). Additionally, State governments have also taken steps in this direction. Himachal Pradesh launched a Mukhya Mantri Adarsh Gram Yojana along similar lines in 2011, with the allocation of Rs 10 lakh per village

OBJECTIVES:

- Prevent distress migration from rural to urban areas, which is a common phenomenon in
- India's villages due to lack of opportunities and facilities that guarantee a decent standard of living.
- Make the model village a "hub" that could attract resources for the development of other villages in its vicinity.
- Provide easier, faster and cheaper access to urban markets for agricultural produce or other marketable commodities produced in such villages
- Contribute towards social empowerment by engaging all sections of the community in the task of village development.
- Create and sustain a culture of cooperative living for inclusive and rapid development

KEY ELEMENTS OF A MODEL VILLAGE:

KEY ELEMENTS OF A MODEL VILLAGE:			
Sustainable Development: 1)Better healt– with special focus on maternal and child health . 2)Practical and smart education. 3)Housing & livelihood. 4)Capacity building of all stakeholders	**Community Involvement:** 1)Planning for Village Development 2)Mobilizing resources for the Plan, with active engagement with elected representative 3)Influencing personal and community behavior	**Technology:** 1)Delivery of government services 2)ICT and space technology in the aid of farmers 3)Land records modernization 4)Remote sensing for resource mapping and better utilization of existing assets	**Connectivity**: 1)Physical connectivity to towns and other places through roads 2)Easy and cheap means of transportation 3)Augmenting power connectivity through off-grid renewable sources

TABLE-2 KEY ELEMENTS OF A MODEL

1.3 DETAIL STUDY (PHYSICAL & DEMOGRAPHICAL GROWTH) OF IDEAL VILLAGE

1.3.1 DEMOGRAPHICGROWTH:-

Census Parameter	Census Data
Total Population	831
Total No of Houses	170
Female Population %	50.4 % (419)
Total Literacy rate %	58.7 % (488)
Female Literacy rate	26.1 % (217)
Scheduled Tribes Population %	0.0 % (0)
Scheduled Caste Population %	15.4 % (128)
Working Population %	53.1 %
Child(0 -6) Population by 2011	107
Girl Child(0 -6) Population % by 2011	43.0 % (46)

TABLE-3 POPULATION DATA OF RAFALA

1.3.2 PHYSICAL GROWTH:-

The village is developed during recent years very efficiently. The village has basic amenities like,Aganwadi, Education facilities, Solar Street lights, Bus Stop, Over Head Tank, Community hall, Block roads. Solar Street lights, Drinking water pond for animals, the village constructed the India Gate, Amar-Jawan Jyoti.the Shaheed smarak Chowk,42 foot tall four-in-one tower equipped with an announcement system, lighting and a clock., The village's entrance gate- Sardar Gate. It is just part of the area's seven entrances which are, Gandhi Gate, Ladali Gate, Mandir Gate, Muktidham Gate, Saraswati Gate and Haathi Gate. Also created is a Kranti Chowk which is dedicated to Subhash chandra Bose, Shahid Bhagat Singh, Swami Vivekanand, and Rani Laxmibai.

➢ OCCUPATION DETAILS:-

- Farmer, Farm labor, Home Industry, Small business

1.3.3 SOCIAL SCENARIO:-

We have that found that all villagers of this village are much connecting with today technology and environment. Here villagers enjoy all the facilities that one living in the city does. And the village is attraction to the tourist who love to explore the different type of culture and many more. The village have one for all name tower which work in emergency situation to alert the villager.Ramji Mandir, Paalanpir, Dadma Dada, Momai Mata, Devi Sheetadai, and other temples of Gods of different beliefs have been justly renovated. A brand new school was built along with the Saraswati temple. Roads, Panchayat Office, sheds for animals on all four corners of the village, and a specially-made dhobi-ghat for people of the village to wash their clothes, all adorn Rafala, setting it apart from other villages. Also available is Wi-Fi, underground gutter, and LED light.

1.3.4 SWOT ANALYSIS OF IDEAL VILLAGE:-

Strength	Weakness	Opportunities	Threats
Transportation facilities	No public library	Improving in waste management	Lack of funds and technical knowledge in agricultural fields
Proper drainage facilities	recreation center	Woman empowerment	Lack of awareness of villagers about educations
Big size garden and play area	Thire are not a single bank	To rise the living standard of people	Lack of increase literacy rate
Good infrastructure	Not a clinic for health checkup	To provide bank atm or bank	Lack of increase sanitation facilities

Table 4.SWOT ANALYSIS

1.4 BENEFITS OF THE VISITS OF IDEAL VILLAGE:-

❖ Benefits to the Students.

- The project improvised skill of student to interact with different section of society. It gave a platform to student to implement what they have learnt in classroom with actual need base study.
- This project has given first and experience to student to utilize technology for benefit of society. It develops analytical and statically skill of student to find type of technology to be utilize.
- This project has opened a new arena of work for students.

❖ Benefits to the Society/Nation.

- If technology does not reach them, they may move to urban centers that is creating a problem. This project gives optimum utilization of technology at doorstep of rural area.
- This in hand will improvise life style of rural people. Best use of technology will make better living in form of environment, health and employability.

1.5 RESOURCES:-

- Funds under existing schemes across different sectors such as health, education, skill development, livelihood etc. could be utilized, and based on the specific demands of the village, resources could be channelized into the development of the village. Some important Centrally
- Sponsored Schemes (CSS) which could be utilized are NRLM, NHM, SSA, NREGA, BRGF, RKVY and Mid-day Meal Scheme.
- MPLAD funds (Rs 5 crore per year) could be utilized for the construction of high quality, sustainable assets such as school buildings, hospitals, Anganwadi Centres and school kitchens for Mid-Day meals. Funds could also be channelized into road construction, and the construction of toilets in schools and homes, particularly for girls.
- CSR funds, of which a much larger corpus is available after the latest amendment to the Companies

Chapter-2 Literature Review:-

2.1 Introduction: Urban & Rural Village Concept:-

• Urban:-

Fig.9 urban village

An urban area, or built-up area, is a human settlement with a 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. Urban areas have municipality, corporation, cantonment board or notified town area committee etc. According to census 2011, there are 7,935 towns, 4,041 statutory town and 3,894 census towns. India, the leading country in South Asia has shown an unprecedented increase in the urban population in the last few decades and its urban population has increased about 14 fold from 1901 to 2011. "Urban area" can refer to towns and cities.

• Rural:-

Fig.10 rural village

Rural has been defined in two different ways, most often in Terms of non-urban status.

1. The Federal Office of Rural Health Policy (ORHP) defines: Rural as located outside a Metropolitan Statistical Area (MSA), or located in a rural census tract of a MSA as determined under the Rural Urban Commuting Area codes.

2. The National Sample Survey Organisation (NSSO) defines 'Rural' as follows:

- An area with a population density of up to 400 per square kilometre,
- Villages with clear surveyed boundaries but no municipal board,

2.1 VARIOUS MEASURES FOR RURAL DEVELOPMENT:

➢ Rural development is the national necessity and it has following measures:

1. To develop rural area as whole in terms of culture, society, economy, technology and health.
2. To develop living slandered of rural mass.
3. To develop rural youths, children and women.
4. To develop and empower human resource of rural area in terms of their psychology, skill, knowledge, attitude and other abilities.
5. To develop infrastructure facility of rural area.
6. To provide minimum facility to rural mass in terms of drinking water, education, transport, electricity and communication.
7. To develop rural institutions like Panchayat, cooperatives, post, banking and credit.

2.2 IMPORTANCE OF THE RURAL DEVELOPMENT:-

- Rural development is the procedure of improving the quality of life and monetary well- being of people living in rural areas, often comparatively isolated and lightly populated areas.
- Rural development is a vibrant process which is mainly worried with the rural areas.
- Agricultural growth, putting up of economic and social infrastructure, fair wages as also housing and house sites for the landless, village planning, public health, education and useful literacy, communication etc.

❖ IMPORTANCE OF AGRICULTURAL SECTOR:-

- Increase in per capita income
- Major source of employment
- Reduction in poverty
- Supply of food
- Source of national income
- Supply of raw material
- Development of industrial sector

2.3 ANCIENT VILLAGES / DIFFERENT DEFINITIONS OF RURAL URBAN AREAS 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.

➢ FULL DEFINITION OF VILLAGE

- ✓ a settlement usually larger than a hamlet and smaller than a town
- ✓ an incorporated minor municipality

"Urban" is a place-based characteristic that incorporates elements of population density,social and economic organization, and the transformation of the natural environment into a built environment. Census of India 2011, defines ‘urban’ as follows:
All places with a municipality, corporation, cantonment board or notified town area committee, which satisfied the following criteria:

i) A minimum population of 5,000;
ii) At least 75 per cent of the male main working population engaged in non-agricultural pursuits;
iii) A density of population of at least 400 persons per sq. km

2.4 SCENARIO: RURAL / URBAN VILLAGE OF INDIA POPULATION GROWTH

Agenda of census of India is to release of provisional population totals-Rural urban distribution. Population of Rural and Urban area (in crore)

	2001	2011	Difference
India	102.9	125.03	**22.13**
Urban	28.6	37.7	**9.1**
Rural	**74.3**	**83.3**	**9.0**

Table 5. Population of Rural and Urban areas as per census 2001 and 2011

For the first in since independence, the absolute increase in population is more in urban areas that in rural areas.

Rural-Urban Distribution: 72.21% & 66.62%

Level of urbanization increased from 27.80% in 2001 census to 30.16% in 2011

Literacy rates (in %)

	2001	2011	Difference
India	65	74	**+9.0**
Urban	59.7	68.9	**+9.2**
Rural	**80.3**	**85**	**+4.7**

Table 6. Literacy Rates in Rural and Urban areas as per Census 2001 and 2011 Literacy Rates (in %)

The improvement in literacy rate in rural area is two times that in urban areas.

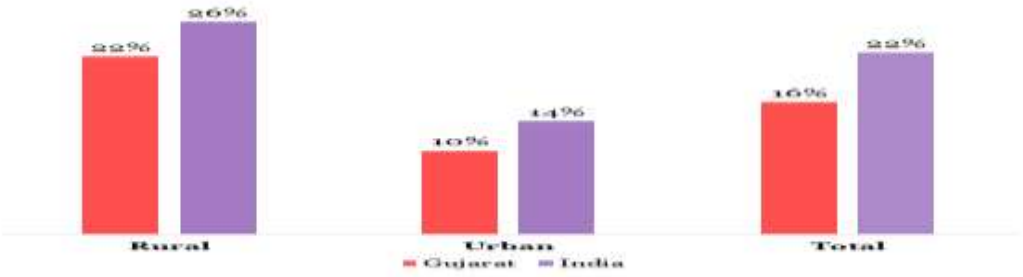
The rural urban literacy gap which was 20.6% points in 2001, has come down to 16.1% points in 2011.

	2001	2011	Difference
Male			
India	75.9	82.1	**+6.2**
Urban	86.2	89.6	**+3.4**
Rural	70.8	78.7	**+7.9**
Female			
India	53.8	65.5	**+11.7**
Urban	73	80	**+7.0**
Rural	**46.2**	**58.9**	**+12.7**

Table 7. Literacy Rates in Rural and Urban area as per the males and females (in %)

2.5 GUJARAT POPULATION 2011:-

- Total population:6,03,83,638
- Total population of male: 3,14,82,283
- Total population of female: 2, 89, 01,345



-: Gujarat population chart (chart by BPL):-

➢ Various Measures for Rural Development:-

a) To build up living standard of rural mass.
b) To build up rural institutions like post-office, bank and PHC.
c) To develop infrastructure capability of rural area.
d) To develop transportation amenities like bus-stop, road connectivity.
e) More job opportunities.
f) To develop agriculture, animal husbandry and areas.
g) Sustainable development.
h) Sanitation facilities.
i) To decrease migration rate.
j) To increase education level of village.
k) Poverty alleviation.

2.6 RURAL ISSUES AND CONCERNS:

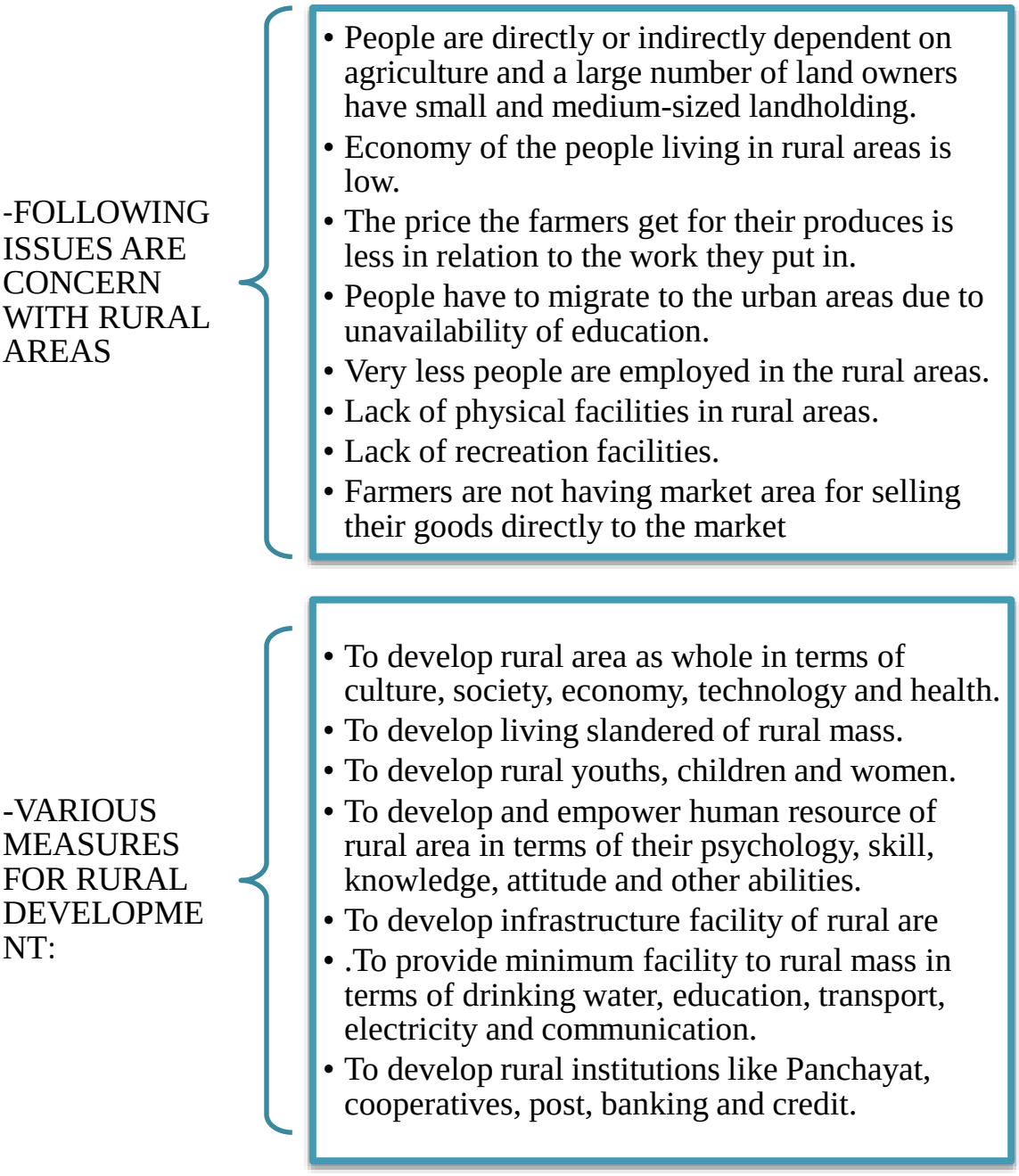


FIG.11 RURAL ISSUES AND CONCERNS

2.7 OTHER PROJECTS /SCHEMESIN OTHER PROJECTS FOR THE DEVELOPMENT OF THE RURAL AREA IS THE PUBLIC PRIVATE PARTNERSHIP (PPP)

i) Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)
ii) Indira AwasYojana (IAY)

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

MGNREGA Launched on 2nd February 2006 as a momentous initiative towards pro-poor growth. For the first time, rural communities have been given not just a development programme but also a regime of rights. The National Rural Employment Guarantee Act, 2005 (NREGA) guarantees 100 days of employment in a financial year to any rural household whose adult members are willing to do unskilled manual work.

ii) Indira Awas Yojana (IAY):

Housing is one of the basic requirements for human survival. For a normal citizen owning a house provides significant economic security and status in society. For a shelter less person, a house brings about a profound social change in his existence, endowing him with an identity, thus integrating him with his immediate social background.

FIG.12AWAS YOGNA

- Public-Private-Partnership

The Concept: - Public–private-partnership (PPP, 3P, or P3) is a cooperative agreement between two or more public and private sectors, characteristically of a long-term nature. In other words, it involves government and business that work mutually to complete a project and/or to provide services to the population. Public–private partnerships have been implemented in multiple countries, are primarily used for infrastructure projects, such as the building and equipping of schools, hospitals, transport systems, and water and sewerage systems.

3. Smart (Cities/ Village) Concept Idea and Its Visit (RafalaVillage):-

3.1INTRODUCTION: CONCEPTS AND DEFINITIONS:-

- CONCEPT:

Creating a "smart village "is necessary to solve the problems of urban population growth and rapid urbanization. The basic concept of smart village is to collect community efforts and strength of people from various streams and integrate it with information technology to provide benefits to the rural community.

- DEFINITION:-

Smart village means all the facilities like; sanitation system, drainage system, electricity, transportation facilities, are available in the village.

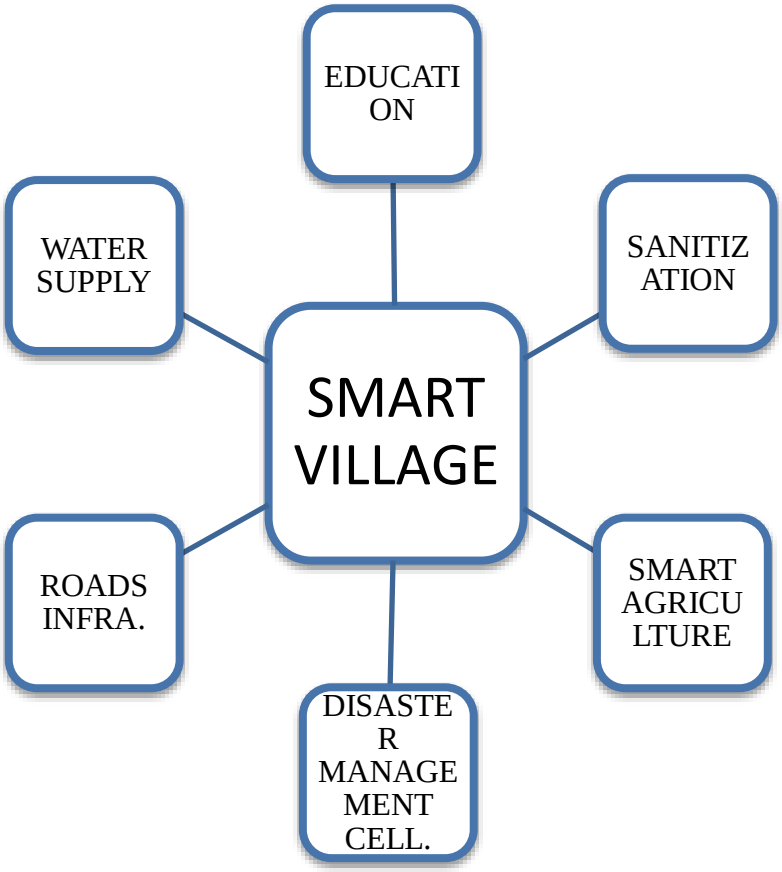


Fig.13 smart village concept

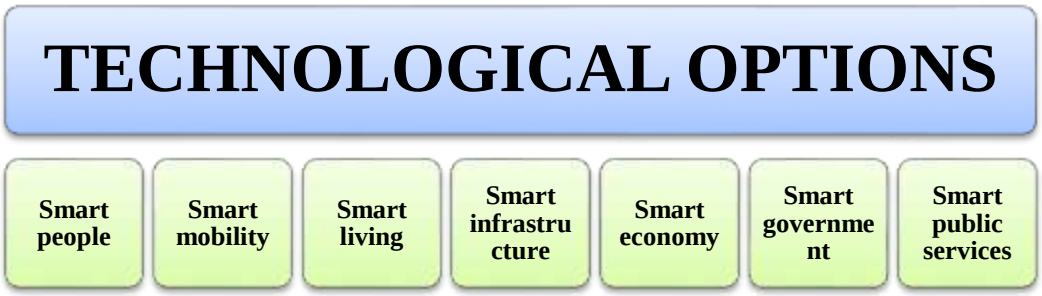
3.2BENCHMARK OF SMARTCITIES:-

Sr. No	Parameter	Benchmark
1.	Transport	• Maximum travel time of 30 minutes in small & medium size cities and 45 minutes in metro polite areas. • Dedicated and physically segregated bicycle tracks with width of 2 m or more, one in each direction, should be provided on all streets with carriage way larger than 10m. • High quality and high frequency mass transport within 800 m (10- 15- minute walking distance) of all residences in areas over 175persons / ha of built area. • Continuous unobstructed footpath for 2 m wide on either side of all street with Row 12 m more.
2.	Spatial Planning	• 175 persons per Ha along transit corridors. • At least 30% residential and 30 commercial/institutional in every TOD Zone within 800m of Transit Stations • 95% of residences should have daily needs retail, parks, primaryschoolsandrecreationalareasaccessiblewithin400m walking distance. • 95% residences should have access to employment and public and institutional transport or bicycle or walk. • At least 20% of all residential units to be occupied by economically weaker sections in each Transit Oriented Development Zone 800m from Transit.
3.	Water Supply	• 24 x 7 supply of water • 135 litres of per capita supply of water • 100% household with direct water supply connections 100% metering of water connections • 100% efficiency in collection of water related charges
4.	Sewerage & Sanitation	• 100% households should have access to toilets 100% schools should have separate toilets for girls • 100% households should be connected to the waste water network 100%efficiencyinthecollectionandtreatmentofwastewater • 100% efficiency in the collection of sewerage network
5.	Solid management	• 100% collection of municipal solid waste 100% collection of municipal solid waste • 100% households are covered by daily door-step Collection system. 100% recycling of solid waste • 100% segregation of waste at source, i.e. bio- degradable and non- degradable waste

6.	Electricity	• 100% households have electricity connection 24x7 supply of electricity 100% metering of electricity supply • 100% recovery of cost • Tariff slabs that work towards minimizing waste
7.	Storm storage	• 100% coverage of road network with storm water drainage network Aggregate number of incidents of water logging reported in a Year =0 100 % rain water harvesting.
8.	Healthcare facilities	• Availability of telemedicine facilities to 100% residents 30 minutes emergency response time. • 1 hospital for every 15,000residents Nursing home, child, welfare and maternity. Center - 25 to 30 beds per lakh population.
9.	Telephone connections	• 100% households have a telephone connection including mobile.

Table 7.Benchmark of smart cities

3.3TECHNOLOGICAL OPTIONS:-



- Smart people: - Although smart is most often used to describe someone who is intelligent, you can also call someone a smart, chic dresser or a smart, sassy wisecracker. Smart often implies something good, but not always.
- Smart mobility: - Smart mobility refers to using modes of transportation alongside or even instead of owning a gas-powered vehicle. This can take on many different forms, including ride-sharing, car-sharing, public transportation, walking, biking, and more.
- Smart living: - Smart Living is a trend encompassing advancements that give people the opportunity to benefit from new ways of living.
- Smart infrastructure: - Smart infrastructure can be defined as an infrastructure that integrates digital technology and (a) delivers the values of self-monitoring and accuracy in decision making,

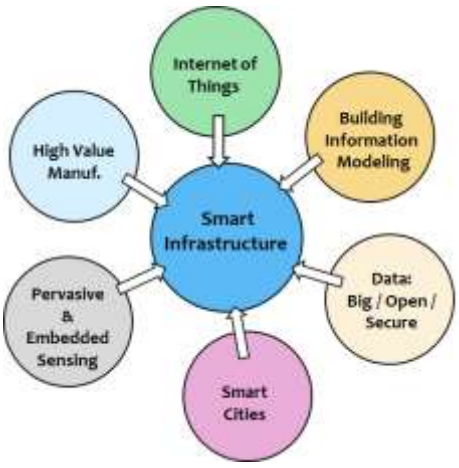
efficiency and cost savings, reliability, security, safety and resilience, user interaction and empowerment, etc.

- Smart economy: - Smart Economy is defined as the main base of urban development in a smart community.
- Smart public services: - Smart services include the use of innovative policies, business models, and technology to address service challenges.

3.4 ISSUES &CHALLENGES:-

- There are certain technologies that are a part of the project and it is expensive to use them. This hinders the success of smart city project. Another challenge is the need fora medium that can bring technology users and creators together to adopt faster platforms.
- For making smart village the biggest challenge is to have money. It was decided that each Smart City will receive 500 Crore over the period of 5 years by Central Government. But this amount won't be sufficient. There are many private firms that are providing funding but it requires to be in proper process.

3.5 SMART INFRASTRUCTURES



- Smart Infrastructures comprise several operators from different domains of activity, such as energy, public transport and public safety.
- Smart infrastructure has many components like Digital management of infrastructure, sensor networks, digital water and waste management, institutional, physical, social, economic infrastructure, smart electricity(like, solar power).
- Economic Infrastructure includes developing proper infrastructure that generates employment opportunities and attract investments.
- Economic infrastructure refers to the facilities, activities and services which support operation and development of other sectors of the economy.
- Smart Information and Communications Technology (smart ICT) has the potential to transform the way we plan and manage infrastructure.

3.6 SYBER SECURITY:-

Cyber security is the one of the key component of smart cities. It is important to remember that cyber security is a citywide issue and not just a technology risk. Cyber security is a prerequisite for all smart cities in existence, development or in plans of development.

Fig 14.cyber security

3.7 RETROFITTING- REDEVELOPMENT-GREEN FIELD DEVELOPMENT DISTRICT COOLING:-

❖ GREEN BUILDING:-

- Green building is the practice of increasing the efficiency with which buildings and their sites use energy, water, and materials, and of reducing impacts on human health and the environment for the entire life-cycle of a 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 sitting to design, construction, operation, maintenance, renovation and deconstruction.

Fig.15 green building

- Pollution's devastating effects on the environment have become more obvious in recent years, sparking a movement to promote energy efficiency, less reliance on fossil fuels, and a reduce in air and water pollution.
- Green building brings together a vast array of practices, techniques, and skills to reduce and ultimately eliminate the impacts of buildings on the environment and human health.
- The United States of America (USA) and Canada have developed demonstration projects on a large scale for DH (district heating) or DC (district cooling).

- GREEN FIELD DEVELOPMENT RAJKOT DISTRICT COOLING

The city of Rajkot, in the state of Gujarat, India, is the first pre-existing city in India to tender a district cooling system and the first city under the Government of India's Smart Cities Mission. Rajkot's district cooling could be a lighthouse project for delivering efficient, sustainable district cooling in India's rapidly growing cities.

India has the largest population facing risks due to lack of access to cooling across all settings. Cooling is a developmental need and by 2050, India is set to be the largest consumer of space cooling in the world. District cooling can help rein in the environmental impacts such growth has typically entailed in other countries. In addition, district cooling can provide much needed flexibility and resilience to a power system that will see massive increases in renewables over the coming decades.

Fig.16 Rajkot district cooling master plan

In April 2015, Rajkot joined the District Energy in Cities Initiative, a public-private partnership led by the United Nations Environment Programme. Since then, UNEP, with the support from key partners such as ICLEI South Asia and Energy Efficiency Services Limited (EESL), have worked

with Rajkot Municipal Corporation to prepare the ground for a district cooling pilot and a long-term plan for district cooling expansion.

District cooling is now locked into the city's Smart City Plan and Area-Based Development plan which has helped to anchor the project. The 2019 Climate Resilient Cities Action Plan also lists district cooling alongside other key measures to address cooling and improve climate resilience such as urban greening. District cooling is also seen as a key technology to reducing power demand – summer months in Rajkot see a 40% higher average monthly power demand, due to cooling.

Like all Indian cities, Rajkot has been grappling with the COVID-19 pandemic which has focused on emergency measures to control the spread of the virus. Now, the situation is improving and Rajkot can look to large, sustainable infrastructure like district cooling, and the local, green jobs it brings, as a key step in Building Back Better.

Today, four years after conception, Rajkot's smart city area has begun excavation for some of the first district cooling pipes and the first commercial cooling demand is expected in 18 months. As it is developed alongside other infrastructure, the city is initially investing and leading development in the network. UNEP and partners are supporting Rajkot to adjust their district cooling plan to the construction timetable and package the expected $49 million, 32,000 refrigeration-ton, and project into an open tender for a PPP model. The project will lead to cheaper more reliable cooling for the new real estate projects, CO_2 and electricity savings of up to 50%, a significant reduction in refrigerant use and reliable power for the local grid – reducing peak demand up to 30MW.

3.8 STRATEGIC OPTIONS FOR FAST SMART CITIES DEVELOPMENT:-

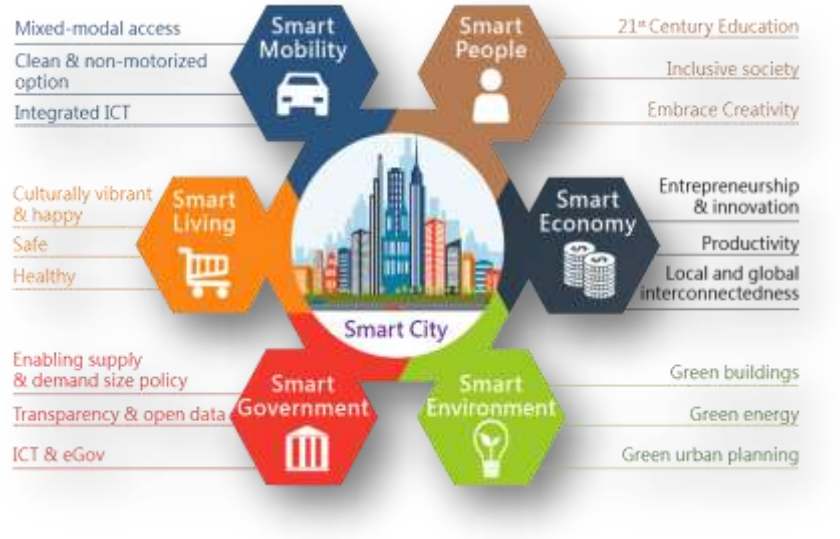


Fig 17.Smart city frame work (solution)

Chapter-4 about (VARUDI VILLAGE):-

4.1 Introduction

Varudi village is located in Amreli taluka of Amreli district in Gujarat,India.It is situated 5m away from district headquarter amreli and The basic facility available in our allocated village like sanitation system,anganvadi, primery school, play garden(balvatika),tap water in all house . Main occupants of the villagers are farming and small business.

4.1.1 INTRODUCTION ABOUT VARUDI VILLAGEDETAILS:-

- Village Varudi located in Amreli district.
- Main language spoken in village is pure Gujarati.
- Amreli,Rajkot are the nearby cities.
- Near villages of varudi are mangvapal, pratappara, nanaankadiya, chital, machiyala.

4.1.2 JUSTIFICATION/ NEED OF THE STUDY:-

- To development of village compare to the city area in the basic facility to needed for people and their amenities and to study Full village. For development the basic needed and their requirement. It should development anganvadi, road, drainage, school, hospital, Bank, PHC, Public toilet, overhead tank etc….
- To amelioration the living standard of rural people by providing facilities and better infrastructure.
- To deduct migration from rural to urban areas.
- To provide main and sustainable facilities to rural area to reduction the pressure on urban areas.

4.1.3 STUDY AREA:-

Village name	**Amarpur(Varudi)**
Taluka name	**Amreli**
District	**Amreli**
State	**Gujarat**
Country	**India**
Continent	**Asia**
Language	**Gujarati**
Time zone	**IST (UTC + 05:30)**
PIN	**365535**
Population	**2926**

Table 8.Study Area Location

4.1.4 OBJECTIVES OF THE STUDY:-

- To analyse the current condition.
- To provide basic amenities in the village, like transportation, sanitation, educational (higher education), better health care facilities.
- To collect social-economic data through technical-economic survey.
- To provide public toilet for public use.
- To purpose the comprehensive planning suited for ideal village.
- To reduce migration from rural (village) to urban (city).
- To provide sustainable or durable development.

4.1.5 SCOPE OF THE STUDY:-

- By the analysing the present conditions we can improve the basic amenities and facilities like more road connectivity (transportation), construct public toilet facility, higher education facility.
- To improve life style and living standard.
- From the Gap analysis, development tactics for village development will be proposed and planning suggestions for physical infrastructure, social infrastructure and renewable energy and also provide smart security like CCTV camera.

4.1.6 METHODOLOGY:-

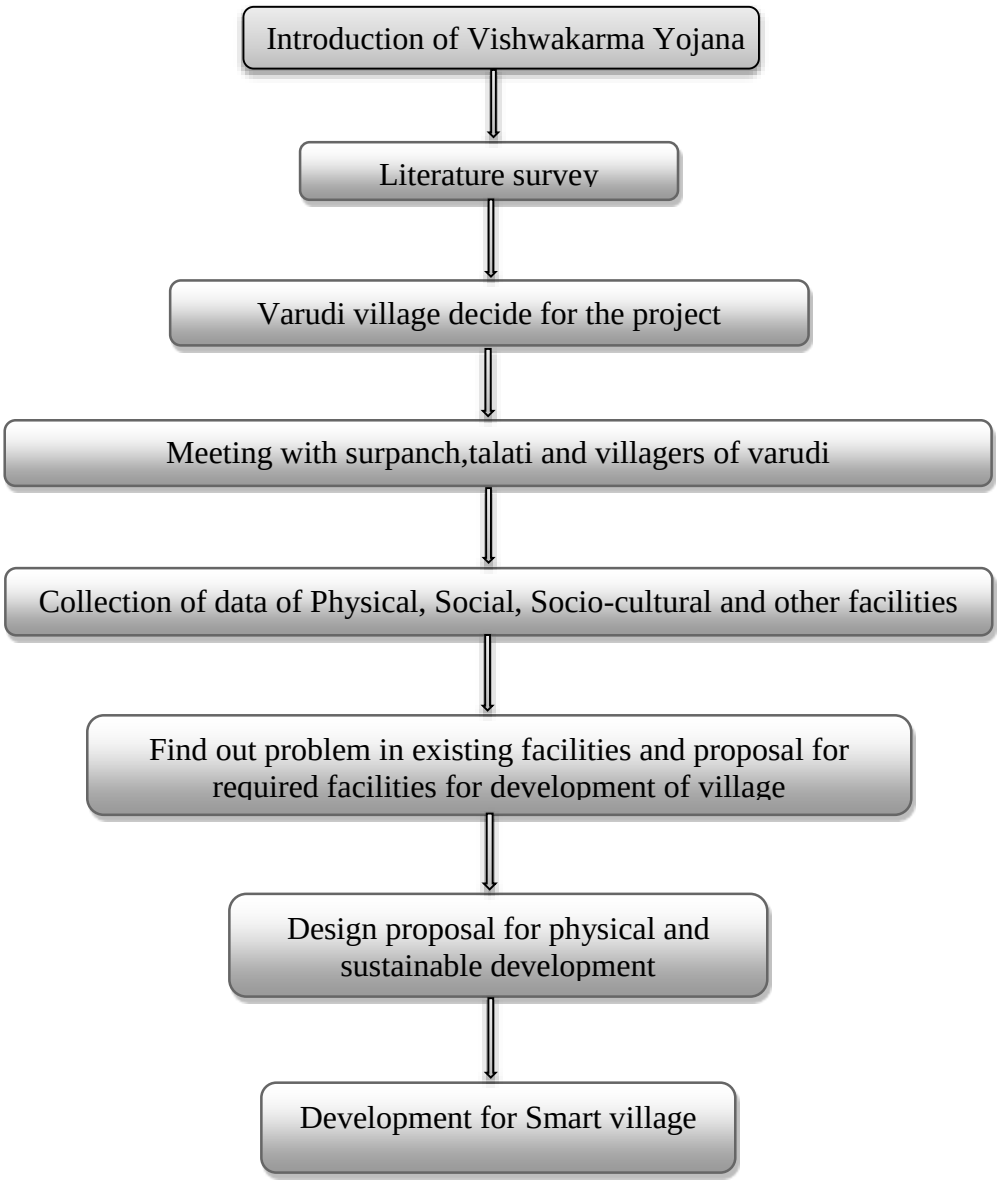


Fig.18 Methodology

4.2 VARUDI STUDY AREA PROFILE:-

4.2.1 STUDY AREA LOCATION:-

Gujarat Technological University allocated one village to us of Gujarat for surveying which is the Varudi near Amreli district.This is our study area to find problem related to structure and general amenities. Varudi is 5km away from district headquarter Amreli.

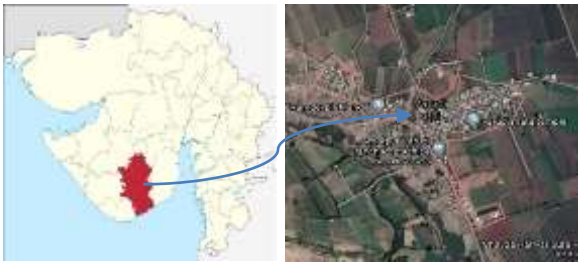


Fig.19 location of varudi

Amarpur (Varudi) Village, with population of 1726 is Amreli sub district's the 26th most populous village, located in Amreli sub district of Amreli district in the state Gujarat in India. Total geographical area of Amarpur (Varudi) village is 7 km^2 and it is the 19th smallest village by area in the sub district. Population density of the village is 250 persons per km^2.

4.2.2 PHYSICAL & DEMOGRAPHICAL GROWTH:-

Sr. No.	Census	Population	Male	Female	Total Number of Families
1.	2011	2926	1463	1465	585

Table 9.Physical & Demographical Growth of varudi

4.2.3 Base Location map, Land Map, Gram Tal Map

Fig.20 Gram Tal Map

Fig.21 road map

The village is home to 1726 people, among them 862 (50%) are male and 864 (50%) are female. 92% of the whole population are from general caste, 8% are from schedule caste. Child (aged under 6 years) population of Amarpur(Varudi) village is 10%, among them 51% are boys and 49% are girls. There are 312 households in the village and an average 6 persons live in every family.

4.2.4 Economic generation profile / Banks

workers	Total	Male	FeMale
Total Workers	876	524	352
Main Workers	531	452	79
Main Workers Cultivators	148	130	18
Agriculture Labourer	133	94	39
House hold Industries	2	2	0
Other Workers	248	22	2
Marginal Workers	345	72	273
Non-Working Persons	850	338	512

TABLE -10 ECONOMIC GENERATION PROFILE

4.2.5 Actual Problem faced by Villagers and smart solution

Actual problem faced by villagers are lake of sanitation facility and public toilet solid west collection and health clinic are main problem.

4.2.6 Social scenario -Preservation of traditions, Festivals, Cuisine

Population of the village has increased by 1.4% in last 10 years. In 2001 census total population here were 1703. Female population growth rate of the village is 3.3% which is 3.9% higher than male population growth rate of -0.6%. General caste population has increased by 1.4%; Schedule caste population has increased by 0.8% and child population has decreased by -34.1% in the village since last census.

4.2.7 Migration Reasons / Trends

The main reason to villager migrate to the town is to health facility and education facility for child and better future of children. The villagers mainly migrate for the economic reason because of the low income in small city and village.

4.3 Data Collection

Under VishwakarmaYojna Project various workshops were arranged to impart technical Knowledge to the students. Workshops like “Sustainable Planning for Villages” which included Themes like rain water harvesting, repair, reimage and redesign and waste management facility was conducted. A work shop on “Energy Economics and Rural Electrification” which included Themes like Energy conservation techniques, Rural Electrification and Energy Economics etc. Was also conducted. We have constantly motivated students to take part in every workshop and take benefit of the same.

Data about the infrastructure facilities in village are collected by the base line survey method. Base line survey is a benchmark for any intervention during and post implementation of any development programmed. A detailed baseline survey was undertaken which involved household census survey, Bio-physical survey and Village level data collection from Sarpanch. Household

census survey includes a detailed questionnaire which was been filled by visiting each and every household in the village.

This gave in the details of the demographic profile of the village, the literacy percentage, SC/ST population, number of BPL household, cattle population and net consumption rate in the village, average milk production of the cattle and various schemes running and their benefits Bio-physical survey was undertaken to identify various natural resources available in the village.

It included the soil typology, well in the area, crop taken in the field, Cropping pattern, fertilizer used and various sources of irrigation in the field. Actual data regarding the existing infrastructure facilities of allotted village is collected by the group of students. These data are collected from local body (Panchayat), interaction with Sarpanch/Talati of the village, members of panchayat and interaction with the villagers.
These data regarding the actual socio-infrastructure facilities available in the village are verified by actual field visit and also present conditions of the amenities are checked

4.3.1Data Analysis/Gap Analysis

In this phase the actual data are compared with the norms of the basic infrastructure facilities required for Indian village base on the population given by Government of India. Gap is found and then required infrastructure facilities are design by considering present need, future aspect by keeping sustainability concept in mind. Appropriate locations are suggested for constructing new infrastructure facilities. Out of all some of the existing infrastructure facilities may require repair/renovation or addition/alteration.
The detail quantity of material required and costing to repair or modification of facilities are calculated in this phase. Students are encouraged to use of innovative and sustainable material in their structure and also guided to design with latest technology to construct cost effective Structures considering the all design parameters and norms.

4.3.2 Primary details of survey details

Primary details we get to survey the village in talk whit the talati mantra,sarpanch of village and villagers that there are lack of sanitation problem and many type of problem and we try to improve that facility by this project.

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

There are 312 households in the village and an average 6 persons live in every family. And there are most of house are pucca and some rare house are kuccha.

4.3.4 No of Human being in One House

Thire are 6 person live in one house.

4.3.5Material available locally in the village and Material out Sourced by the villagers

- Thire are many material Major economic option of the village is farming so there are no more locally material available like standard bricks, aggregates, concrete and reinforcements. So, this material is brought from nearest city for construction of the houses.
- Second major economic option of the village is dairy udhyog.
- For building of houses mainly bricks, wood and cement are used as they are low cost and is easily

4.3.6 Geographical Detail

The Amarpur (Varudi) village is located in the state Gujarat having state code 24 and having the village code 515592. The Amreli is the district of this village with district code 480. The total geographical area in which this village is expanded in 691.47 hectares / 6.9147 Square Kilometers (km^2) / 1708.659581231 acres.

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

The village is home to 1726 people, among them 862 (50%) are male and 864 (50%) are female. 92% of the whole population are from general caste, 8% are from schedule caste. Child (aged under 6 years) population of Amarpur(Varudi) village is 10%, among them 51% are boys and 49% are girls. There are 312 households in the village and an average 6 persons live in every family.

4.3.8 Occupational Detail - Occupation wise Details / Majority business

In varudi village majority business is depended on farming

Stream	total worker	male	female
Main Workers Cultivators	148	130	18
Agriculture Laborers	133	94	39
Marginal Workers	345	72	273

TABLE 10 Occupational Detail

4.3.9Agricultural Details / Organic Farming / Fishery

- In this village 65 to 70% people connected with agriculture activities, it‘s the villages main source of income.
- Other are doing husbandry, local business labor work for money.

Fig.22 water storage for irrigation

4.3.10PHYSICAL INFRASTRUCTURE FACILITIES - MANUFACTURING HUB / WARE HOUSES

No big warehouses or manufacturing hub are available in village. There are near ware houses are in near town Amreli which is amreli 6 KM away.

4.3.11MALE FEMALE DETAILS:-

There are 862 males and 864 females in village as per 2011 census report.

4.4 INFRASTRUCTURE DETAILS

4.4.1DRINKING WATER:-

- For drinking Purpose ground water tank, tube well, tap water available and municipal water connection is also available in village.
- Thire are two overhead tank of water which capacity about 30,000liters.

Fig.23 water storage of varudi

4.4.2DRAINAGE AND SANITATION NETWORK:-

- Underground drainage.

Fig.24 Underground drainage

4.4.3TRANSPORTATION & ROAD NETWORK:-

Main road of village are in good condition and all main roads are of black topped. Road maintenance is required in some areas of village. The internal street road is both pucca and kutchha. Other transport facility.

Fig.25 approch road of varudi

4.4.4HOUSING CONDITION:-

There are houses in the village 10% households are kutcha and 90% are pucca.

4.4.5SOCIAL INFRASTRUCTURE FACILITY:-

- Bus stand

Vary basic bus stand available in the village.
There are not a sanitation facility in bus stand

Fig.26 Bus station

- HEALTH FACILITY

There is not availability of PHC in Varudi village.

- EDUCATION FACILITY:-

For Education Purpose Primary School, Anganwadi are available.
Collage and secondary school is not available. For college education students go to amreli.

Fig.27 Primary school

Fig.28 Anganvadi

4.4.6TECHNOLOGY MOBILE / WIFI/ INTERNET USAGE DETAILS (IN %):-

-Varudi village is not a Wi-Fi village. An approximately only 30-40 % person uses technology or mobile or internet.

4.4.7SPORT ACTIVITY AS GRAM PANCHAYAT:-

-There is no Any Sport Activity as Gram Panchayat.

4.4.8 SOCIO-CULTURAL FACILITIES, PUBLIC GARDEN /PARK/PLAY GROUND/POND/ OTHER RECREATION FACILITIES:-

- COMMUNITY HALL:-

-In Varudi community hall is available for small function capacity of about 100 in very old condition.

- PUBLIC LIBRARY:-

-In Varudi village public library is not available. We design library in next SEM.

- PUBLIC GARDEN/PARK/PLAYGROUND:-

-There is playground, park and public garden in The Varudi village
With good tree plantation

¬ VILLAGE POND/LAKE:-

-There is pond near the Varudi village. And one Stream pass near the Village.

4.4.9OTHER FACILITIES:-

-In the village, none recreational facilities Available like there is no cinema hall or theatre.

- SUSTAINABLE INFRASTRUCTURE FACILITIES:-

-There are no sustainable facilities available in the village like bio – gas plant, solid waste management plant.

-Mahi pariyojana

-Public garden

-Entrance gate

-Panchayat building

Fig.29 photo of varudi

4.5ELECTRICAL CONCEPT:-

4.5.1RENEWABLE ENERGY SOURCE PLANNING PARTICULARLY FOR VILLAGES:

- In village there are many homes use renewable energy like solar energy,

- Solar water heater
- Solar light,
- Some house have roof top solar in varudi

4.5.2IRRIGATION FACILITIES:-

There are many types of irrigation technique use in farming.

- Furrow irrigation system
- some farm Sprinkler irrigation system
- some farm Drip irrigation system

-Irrigation facility

4.5.3ELECTRICITY FACILITIES WITH AREA:-

-In part of living area government provide 24*7 electricity provided and other part of village like farming area in 8 hours a day electricity provided.

4.6 EXISTING INSTITUTION LIKE - VILLAGE ADMINISTRATION – DETAIL PROFILE:-

4.6.1BACHATMANDALI:-

- In Varudi Co-operative Mandali and bank are not available.

-Post office of village

4.6.2DUDHMANDALI:-

- In Varudi private and government both dudh mandali are available. In this village the total milk accumulates rate is 100-110 Ltr/day

4.6.3PLANTATION FOR THE AIR POLLUTION:-

- In Varudi every environment day in village, sarpanch and other villagers plant trees together on the day and protects them throughout the year. There are many tree in different places of village.

4.6.4RAIN WATER HARVESTING - WASTE WATER RECYCLING:-

- In Varudi there are many people in the village who irrigation with rain water use rain water harvesting method.
- There is no any recycling system available for waste water.

4.6.5AGRICULTURAL DEVELOPMENT:-

- Varudi villagers there are uses many technique of irrigation system for farming like, drip irrigation method, furrow method, sprinkler irrigation method.
- In Varudi there 60 to 70% farmers now use tractors instead of plows to plowing the land.

5. Technical Options with Case Studies

5.1 Concept (Civil)

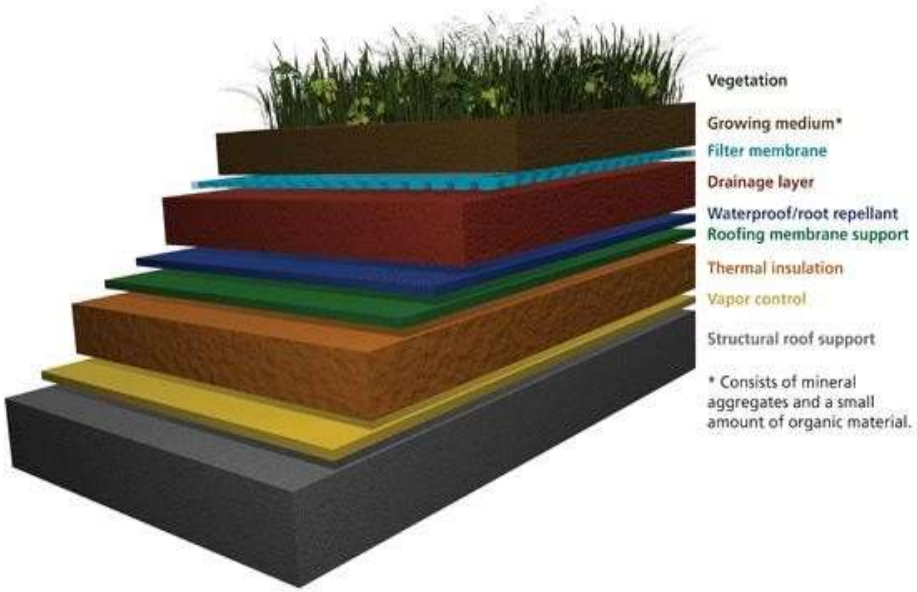
5.1.1 Advance Sustainable construction techniques

✓ What is a Green Roof?

A green roof is a layer of vegetation planted over a waterproofing system that is installed on top of a flat or slightly–sloped roof. Green roofs are also known as vegetative or eco–roofs. They fall into three main categories-extensive, intensive, and semi–intensive. Although there are no precise definitions of them, an extensive green roof has a shallow growing medium-usually less than six inches-with a modest roof load, limited plant diversity, minimal watering requirements, and is often not accessible. Intensive green roofs have more soil and a deeper growing medium- sometimes several feet-that can support a more diverse plant selection, including small trees. Thus, they have more substantial structural loads and need more frequent maintenance and watering. They are usually accessible. Semi–intensive green roofs include features of both types. The appropriate depth of any green roof depends on the roof structure, the plants chosen, annual rainfall, and storm water performance requirements.

Comparison of Extensive and Intensive Roofing Systems		
	Extensive Green Roof	Intensive Green Roof
Brief Description	▪ Thin soil, little or no irrigation, stressful conditions for plants	▪ Deep soil, irrigation system, more favorable conditions for plants
Advantages	▪ Lightweight ▪ Suitable for large areas ▪ Suitable for roofs with 0-30° slope ▪ Low maintenance ▪ Often no need for irrigation and drainage systems ▪ Relatively little technical expertise needed ▪ Often suitable for retrofit projects ▪ Can leave vegetation to develop spontaneously ▪ Relatively inexpensive ▪ Looks more natural ▪ Easier for planning authority to demand green roofs be a condition of planning approvals	▪ Greater diversity of plants and habitats ▪ Good insulation properties ▪ Can simulate a wildlife garden on the ground ▪ Can be made very attractive ▪ Often visually accessible ▪ Diverse utilization of roof (i.e. , for recreation, growing food, as open space."
Disadvantages	▪ More limited choice of plants ▪ Usually no access for recreation or other uses ▪ Unattractive to some, especially in winter	▪ Greater weight loading on roof ▪ Need for irrigation and drainage systems, hence, greater need for energy, water, materials, etc. ▪ Higher cost ▪ More complex systems and expertise required

All three types of roofs require specific layers of roofing materials not found on regular roofs. The basic anatomy of a green roof consists of vegetation, growing medium, filter membrane, drainage layer, and waterproof/root repellent layer, roofing membrane support for plantings above, thermal insulation, vapor control layer, and structural roof support. Each of these layers performs a specific function to keep the plants alive and to protect the structure beneath.



Growing medium is not the same material used for a house plant or a garden. Traditional soil is heavy and packs tight after repeated rains, reducing water retention and aeration for plant roots. Green roof growing medium is composed of mineral aggregates and only a small amount of organic material. It should have good consistent drainage and aeration with a structure that enables it to hold water. It should also be light weight, resistant to decomposition and compression, and physically and chemically stable.

Some green roofs are installed in one large integrated section, while modular green roofs use small portable planting beds placed together to create a larger green roof. The modular units are often plastic or metal trays filled with growing medium. Modular green roofs can be installed incrementally and are easily removed for maintenance and inspection of the roof layers underneath. Additionally, the modular sections can often be cultivated in a greenhouse and be 'ready to plant' on the green roof. Since the plants are already established, there are fewer issues with replacement plants that do not take root or thrive. One drawback however, is that moisture cannot flow between units, increasing the impacts of wet and dry spells on the plants.

5.1.2 Soil Liquefaction

Fig.30 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.
- The phenomenon is most often observed in saturated, loose sandy soils. This is because a loose sand has a tendency to compress when a load is applied.
- Soil liquefaction occurs when the effective stress (shear strength) of soil is reduced to essentially zero.
- Poorly drained fine-grained soils such as sandy, silly, and gravelly soils are the most susceptible to liquefaction.

❖ Popular mitigation methods to reduce effects of soil liquefaction are:

1. Mitigation by deep **soil** mixing method.
2. Compaction, Permeation, and Jet Grouting.
3. Drain Pile technique.
4. Dynamic compaction and construction of stone columns.

5.1.3 Sustainable Sanitation

- Sustainable sanitation is a sanitation system designed to meet certain criteria and to work well over the long-term.
- 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:-

1. methods of collecting
2. transporting
3. treating
4. disposal (or reuse) of waste

❖ How do you sanitize a village?

1. You Should Grow Trees Must and Should.
2. In Your Village Waste Thing Not See In You're Village on Soil.
3. You Should Clean A Gutter Where Water
4. You Should Say People Daily Clean Your
5. Home and Other Side of Home.
6. You Should Help Together.
7. You Should Use One Society For Clean.

Fig.31 Sanitation step

5.1.4Transport Infrastructure

- Roads

other waterways forms a smaller although still important aspect of the system. A road is a paved surface to facilitate the movement of people or goods with means, such as as automobiles, bicycles, buses, vans or trucks.

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

- Rails

Rails are the infrastructure for rail transport. A rail road which connects two locations is also called a rail line.

As for roads, rails on itself are not an interesting security target, but blocking a railroad will cause large problems with the rail transport.

- Pedestrian / Bicycle paths

Pedestrian paths or sidewalks, curbs, pavements, footpaths or platforms are paths alongside a road designated for pedestrians. Bicycle paths comprises of several different forms of cycling infrastructure, from non-segregated pathways aligned next to the road to segregated cycle facilities.

Segregated cycle facilities are a form of cycling infrastructure consisting of marked lanes, tracks, shoulders and paths designated for use by cyclists and from which motorised traffic is generally excluded. The term includes bike lanes, cycle tracks, separated bike lanes, road shoulders and side paths located within a road right-of-way.

- Urban waterways

Inter and intra urban transport over waterways such as canals, rivers or dam.

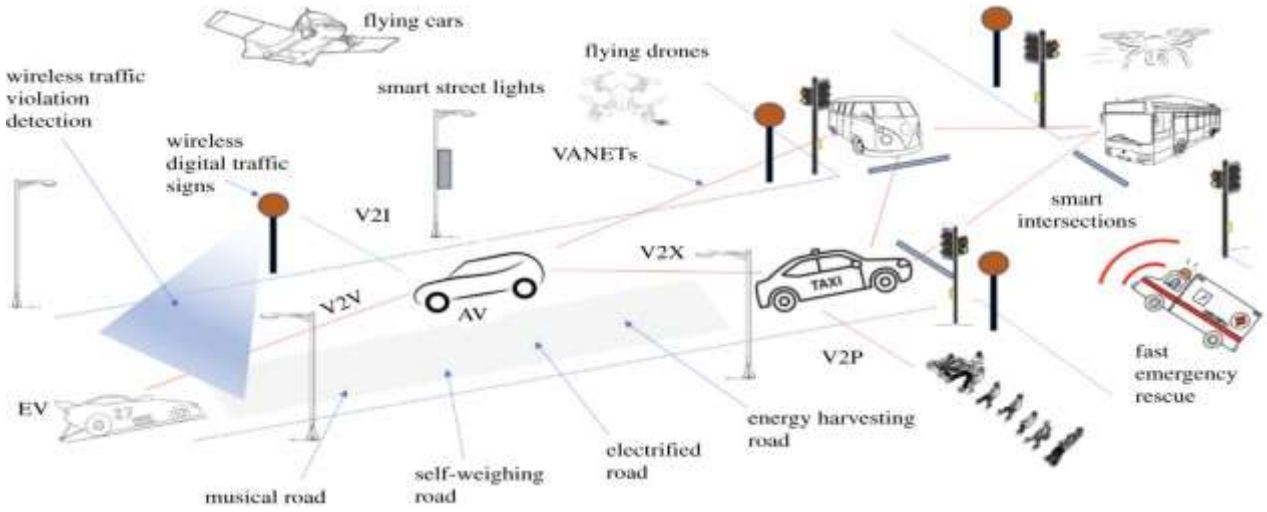


Fig.32 TRANSPORT Infrastructure

Terminals

- Subway system

A rapid transit, underground, subway, elevated railway, metro or metropolitan railway system is an electric passenger railway in an urban area with a high capacity and frequency, and grade separation

from other traffic. Rapid transit systems are typically located either in underground tunnels or on elevated rails above street level.

- Airports

An airport is a location where aircraft such as fixed-wing aircraft, helicopters, and blimps take off and land. Aircraft may be stored or maintained at an airport. An airport consists of at least one surface such as a runway for a plane to take off and land, a helipad, or water for take-offs and landings, and often includes buildings such as control towers, hangars and terminal buildings.

- Train station

A train station, also called a railroad station (mainly in the United States) or railway station (mainly in the British Commonwealth) and often shortened to just station, is a railway facility where trains regularly stop to load or unload passengers or freight. It generally consists of a platform next to the track and a station building (depot) providing related services such as ticket sales and waiting rooms.

- Metro station

A metro station or subway station is a railway station for a rapid transit system, often known by names such as "metro", "underground" and "subway".
Metro stations are very vulnerable for terrorist attacks, as can be seen from this list with underground attacks attacks on the London underground.

- Bus terminal

A bus terminus is a designated place where a bus or coach starts or ends its scheduled route.

- Freight terminal

A freight terminal is a processing node for freight. Most freight terminals are located at ports. They may include airports, seaports, railroad terminals, and trucking terminals. Freight is usually loaded onto and off the transport.

- Sea port

A sea port (or shortly port) is a location on a coast or shore containing one or more harbours where ships can dock and transfer people or cargo to or from land.

5.1.5 Vertical Farming

What Is Vertical Farming?

Vertical farming is the practice of producing food on vertically inclined surfaces. Instead of farming vegetables and other foods on a single level, such as in a field or a greenhouse, this method produces foods in vertically stacked layers commonly integrated into other structures like a skyscraper, shipping container or repurposed warehouse.
Using Controlled Environment Agriculture (CEA) technology, this modern idea uses indoor farming techniques. The artificial control of temperature, light, humidity, and gases makes producing foods and medicine indoor possible. In many ways, vertical farming is similar to greenhouses where metal reflectors and artificial lighting augment natural sunlight. The primary goal of vertical farming is maximizing crops output in a limited space.

✓ How Vertical Farming Works

There are four critical areas in understanding how vertical farming works:

1. Physical layout,
2. Lighting,
3. Growing medium,
4. Sustainability features.

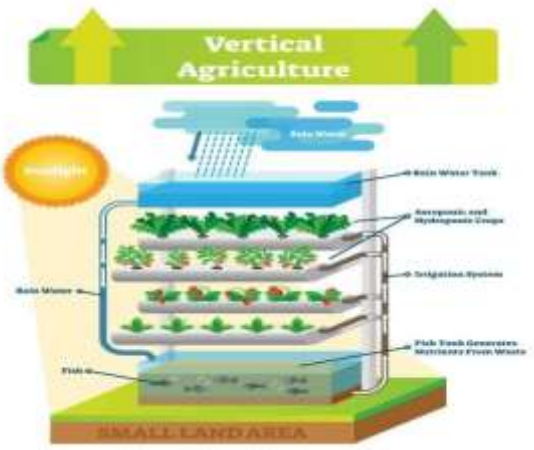


Fig.33 vertical farming

Firstly, the primary goal of vertical farming is producing more foods per square meter. To accomplish this goal, crops are cultivated in stacked layers in a tower life structure. Secondly, a perfect combination of natural and artificial lights is used to maintain the perfect light level in the room. Technologies such as rotating beds are used to improve lighting efficiency.

Thirdly, instead of soil, aeroponic, aquaponic or hydroponic growing mediums are used. Peat moss or coconut husks and similar non-soil mediums are very common in vertical farming. Finally, the vertical farming method uses various sustainability features to offset the energy cost of farming. In fact, vertical farming uses 95 percent less water.

✓ Advantages

- It offers a plan to handle future food demands
- It allows crops to grow year-round
- It uses significantly less water
- Weather doesn't affect the crops
- More organic crops can be grown
- There is less exposure to chemicals and disease

✓ Disadvantages

- It could be very costly to build and economic feasibility studies haven't yet been completed
- Pollination would be very difficult and costly
- It would involve higher labor costs
- It relies too much on technology and one day of power loss would be devastating

5.1.6 Corrosion Mechanism, Prevention

Corrosion is a natural process that converts a refined metal into a more chemically stable form such as oxide, hydroxide, or sulphide. It is the gradual destruction of materials (usually a metal) by chemical and/or electrochemical reaction with their environment.

Fig.34 corrosion on concrete

✓ What are the methods to prevent corrosion?

- Metal Type. One simple way to prevent corrosion is to use a corrosion resistant metal such as aluminum or stainless steel. ...
- Protective Coatings. The application of a paint coating is a cost-effective way of preventing corrosion. ...
- Environmental Measures.
- Sacrificial Coatings

Rohtang Pass Tunnel Case Study – Geotechnical Monitoring & Instrumentation

Rohtang Pass, now known as Atal Tunnel, is a very famous and popular mountain pass, almost 13,058 ft, situated on the eastern Pir Panjal Range of the Himalayas around 51 km from Manali. Especially known for its mesmerizing landscape, the pass connects the Kullu Valley with the Lahaul and Spiti Valleys of Himachal Pradesh, India.

Known for its scenic beauty, Rohtang Pass holds strategic importance for India. Every year, during July to September, the road becomes a passage to the people of Lahul valley transporting their cash crop, potatoes and peas to the markets across Atal Tunnel to Kullu and earning money for the unstable weather period of 9 months.

The construction of the tunnel was very much awaited and was finally inaugurated on Oct 3rd 2020 by India´s Prime Minister Narendra Modi.
Now that we have introduced the Rohtang Atal Tunnel, let's see Encardio-rite's project overview, the instrument used, and the services provided.

- Project Overview:

Recognized as one of the highest trafficable passes in the world, the Rohtang pass is designed to create an all-weather route to Leh and Lahaul and Spiti valleys in Himachal Pradesh. The Rohtang Pass Highway Tunnel is situated in the Western Himalaya region of Northern India with its altitude of 3,980 m. With a length of 9.02km, it is also the longest tunnel in the world at an altitude of over 3,000 metres or 10,000 feet above mean sea level.
For about four months, the pass is covered with white sheets of heaviest snowfall and blizzards, making the route inaccessible for anyone.

- Renamed after the former Prime Minister of India, Mr. Atal Bihari Vajpayee, the tunnel reduces the travel distance from 4 to 6 hours to only 30 minutes. It also reduces the distance between Manali and Keylong by about 46 km (28.6 mi).

- The Rohtang Atal Highway Tunnel with its 8.8km of length is the longest road tunnel in India situated at a high altitude. Apart from high altitude and uncooperative climate, the geological condition in the Himalaya was a big challenge faced by the Encardio Team. Braving the freezing weather, snowfall, frequent floods and thin air, the team soldiered forward, providing with the most accurate sensors and instrumentations.

- The rocks found within the tunnel area are mainly schist and migmatite with expected disturbed zones and in some individual areas, high squeezing rock was also found.

➢ Rohtang Pass Tunnel Details:

- SHAPE (CROSS-SECTION) OF THE TUNNEL- Horse shoe
- FINISHED WIDTH- 10.00 m (32.8 ft) at road level.
- CONSTRUCTION TECHNIQUE- Drill & Blast with NATM.
- OVERBURDEN- Maximum 1,900 m, average more than 600 m.
- EMERGENCY TUNNEL- a 2.25 m high and 3.6 m wide emergency tunnel is integrated into the tunnel cross-section beneath the main carriageway. There are 18 egress tunnels, with an opening after every 500 metres in case of any hazard or emergency.
- Other safety measures include telephone connections at every 150 metres for emergency communication, fire hydrant mechanisms at every 60 metres, auto incident detection system with CCTV cameras at every 250 metres, air quality monitoring at every one Km, evacuation lighting/exit signs and broadcasting system throughout the tunnel among others.
- The Atal Rohtang Tunnel will be able to take a traffic of 3000 cars or 1,500 trucks per day, capping the speed limit at 80 km/hr. It also has the state of the art electromechanical system including a semi-transverse ventilation system.
- There are pollution sensors in the tunnel that monitor the air quality in the tunnel. If the quality is below the recommended level, fresh air is injected into the tunnel with the help of two heavy duty fans on each side of the tunnel.

➢ Monitoring Services for Rohtang Pass Tunnel

Encardio-rite was awarded the subcontract for the complete monitoring solutions for the tunnelling work. Let's have a look at its monitoring solutions.
Being an expert and experienced in geotechnical monitoring, Encardio-rite provided world-class monitoring services during tunnelling.
Apart from that, their team also made sure that they were one step ahead of any mishap by continuously conducting geophysical prediction by Tunnel.
Seismic Prediction System (TSP) before tunnelling which recognizes any early signs of fault or fracture zones, or zones where the rock mass characteristic changed. A geological prognosis could

be given that enabled the tunnel site management to determine necessary forthcoming tunnelling measures.
Apart from that, a number of turnkey services were provided which are listed below.

- Turnkey Services for Rohtang Pass Tunnel

- Supply and installation of geotechnical instruments
- Tunnel seismic prediction by TSP
- Weekly and monthly reporting with evaluation & interpretations
- Encardio-rite uses a list of instruments during the monitoring phase of the Rohtang Pass Tunnel.

- Instrument Used in Rohtang Pass Tunnel:

- Multi-point extensometer:

This particular instrument was used for monitoring of rock settlement. 3-4 points MPBX were installed at the north portal site at different chainage of the Rohtang Pass tunnel. The reading of the extensometer presented and helpful information about rock behaviour and its monitoring.

- Load Cell:

This instrument helps to convert force into measurable electrical output. Load celles were installed at a few locations near the 3-point extensometer to correlate the data.

Fig.35 MPBX.

- Bi-reflective target:

Installed to measure convergence, these were placed throughout the tunnel at different arrays.

- Tunnel Seismic Prediction System (TSP):

-TSP measurements were applied at both the North and South portals at an interval of 80-100 m. In most of the survey predictions, the range was able to reach 50 to 100m ahead of the tunnel face in order to fulfil a sufficient coverage of pre-information. The conclusion was that TSP was an invaluable tool that helped to obtain additional important information on the condition of the rocks which had to be excavated. TSP made is successful to achieve sufficient quality data with a prediction range of 50 to 100 m ahead of the tunnel face.

Fig.36 (TSP)

-Apart from the monitoring services, turnkey services, and supply and installation of geotechnical instruments an experienced and proficient I&M Encardio team was placed on the site to rapidly deliver reliable data and information, thereby ensuring the safety of people, structures, and construction.
-Monitoring reports included interpretation of variations observed in instrument data and the factors likely to affect their behaviour e.g. construction, rock movement, etc. Such crucial information was provided to the contractor regularly.
-The Rohtang Pass Tunnel is expected to be open for public later this year. It will definitely lead to a boost in tourism in the region. Apart from that, it will also connect the natives of Lahaul and Spiti valleys to the rest of the country as the tunnel will be functional even during the harsh weather conditions.

6. Swatchh Bharat Abhiyan (Clean India)

Swachh Bharat Mission (SBM), Swachh Bharat Abhiyan (SBA), or Clean India Mission is a country-wide campaign initiated by the Government of India in 2014 to eliminate open defecation and improve solid waste management (SWM).
Phase 1 of the mission lasted till October 2019. Phase 2 will be implemented between 2020-21 and 2024-25.
The objectives of the first phase of the mission also included eradication of manual scavenging, generating awareness and bringing about a behaviour change regarding sanitation practices, and augmentation of capacity at the local level.
The mission was split into two: rural and urban. In rural areas "SBM - Gramin" was financed and monitored through the Ministry of Drinking Water and Sanitation; whereas "SBM - urban" was overseen by the Ministry of Housing and Urban Affairs.

Fig.37 Swatch bharat abhiyan

- Phase I

The Nirmal Bharat Abhiyan has been restructured into the Swachh Bharat Mission (Gramin). The SBM (G) was launched on 2nd October 2014 to ensure cleanliness in India and make it Open Defecation Free (ODF) in Five Years. It seeks to improve the levels of cleanliness in rural areas through Solid and Liquid Waste Management activities and making Gram Panchayat Open Defecation Free (ODF), clean and sanitized.

Incentive as provided under the Mission for the construction of Individual Household Latrines (IHHL) was available for all Below Poverty Line (BPL) Households and Above Poverty Line (APL) households restricted to SCs/STs, small and marginal farmers, landless labourers withHomestead, physically handicapped and women headed households. The Incentive amount provided under SBM (G) to Below Poverty Line (BPL) /identified APLs households was up to Rs.12, 000 for construction of one unit of IHHL and provide for water availability, including for storing for hand-washing and cleaning of the toilet. Central Share of this Incentive for IHHLs was Rs.9, 000/-(75%) from Swachh Bharat Mission (Gramin). The State share was Rs.3, 000/-(25%). For North Eastern State, and Special category States, the Central share was Rs. 10,800/- and the State share Rs.1, 200/- (90%: 10%). The beneficiary was encouraged to additionally contribute in the construction of his/her IHHL to promote ownership.

- Phase II

Having achieved the milestone of an ODF India in a time bound manner in the last five years from 2014 to 2019, the work on sanitation and the behavior change campaign has to continue to sustain the gains made under the programmed and also to ensure no one is left behind and the overall cleanliness (Sampoorn Swachhata) in villages as well.

In February 2020, the Phase-II of the SBM (G) with a total outlay of Rs. 1, 40,881crores was approved with a focus on the sustainability of ODF status and Solid and Liquid Waste Management (SLWM). SBM (G) Phase-II is planned to be a novel model of convergence between different verticals of financing and various schemes of Central and State Governments. The programme will be implemented in mission mode from 2020-21 to 2024-25.

- Vision

The aim of Swachh Bharat Mission (Gramin) phase II is to ensure the open defecation free behaviors are sustained

- Objectives

• Open defecation free behaviours are sustained and no one is left behind.
• Solid and liquid waste management facilities are accessible and reinforcing ODF behaviours and focus on providing interventions for safe management of solid and liquid waste in village
• To encourage cost effective and appropriate technologies for ecologically safe and sustainable sanitation.
• To develop, wherever required, community managed sanitation systems focusing on scientific Solid & Liquid Waste Management systems for overall cleanliness in the rural areas.
• To create significant positive impact on gender and promote social inclusion by improving sanitation especially in marginalized communities Open Defecation Free (ODF) is the termination of faecal-oral transmission, defined by:
• No visible faeces found in the environment/village; and
• Every household as well as public/community institutions using safe technology option for disposal of feces.

✓ Other scheme related to swatch bharat mission

➢ Swachh Vidyalaya Abhiyan

The Ministry of Human Resource Development has launched SwachhVidyalaya Programme under Swachh Bharat Mission with an objective to provide separate toilets for boys and girls in all government schools within one year. The programme aims at ensuring that every school in the country must have a set of essential interventions that relate to both technical and human development aspects of a good Water, Sanitation and Hygiene Programme.

The Ministry financially supports States/Union Territories inter alia to provide toilets for girls and boys in schools under Sarva Shiksha Abhiyan (SSA) and Rashtriya Madhyamik Shiksha Abhiyan (RMSA).

➢ Rashtriya Swachhata Kosh

The Swachh Bharat Kosh (SBK) has been set up to facilitate and channelize individual philanthropic contributions and Corporate Social Responsibility (CSR) funds to achieve the objective of Clean India (Swachh Bharat) by the year 2019. The Kosh will be used to achieve the objective of improving cleanliness levels in rural and urban areas, including in schools. The allocation from the Kosh will be used to supplement and complement departmental resources for such activities. To incentivise contributions from individuals and corporate, modalities are being considered to provide tax rebates where it is possible.

➢ Swachhta in Varudi village- (Existing, Implementation, Activity):-

Fig.38 Existing photos of varudi nearest area of Small lake:-

Fig.39 Implementation and Activity by student:-

7. Village condition due to Covid-19

✓ Socio-economic conditions in villages

The nation-wide lockdown imposed in India from March 25 to May 31, 2020 following the breakout of the Covid-19 pandemic affected rural India in diverse ways. This was only to be expected given the great variation in production systems and socio-economic conditions in villages across agro-ecological zones.

✓ Lockdown and Agricultural Production

The lockdown coincided with beginning of the summer season of the agricultural year in India. As we shall see, the impact of the lockdown on agricultural operations was distinctly different between irrigated and rained villages.
Irrigated Villages
In the irrigated villages the following crops were either under harvest or scheduled to be harvested at the time of the survey: wheat, cotton, sesame, and vegetables.

✓ Wheat

The wheat harvest was generally not disrupted by the lockdown owing to the mechanization of harvest and availability of machinery in most of the wheat-growing villages surveyed.

Wheat is the most important rabbi crop in the villages of gujrat, Madhya Pradesh, Punjab, and Uttar Pradesh. At the time of the Survey, harvesting of wheat was either just over or underway in these states with the exception of Punjab where it was scheduled to begin within a few days.

✓ Dairy

Milk sales declined during the lockdown and the limited functioning of milk procurement centres affected a large number of rural households who were engaged in rearing cattle and sale of milk.

✓ Non-Agricultural Work Collapses under the Lockdown

Non-agricultural economic activities such as construction, petty business, and brick-making that usually absorb labor in the pre-monsoon lean agricultural period have all stopped. The impact of this collapse was most severely felt in non-irrigated villages.

7.1 TAKEN STEPS IN ALLOCATED VILLAGE RELATED TO EXISTING SITUATION:-

➢ <u>WHAT IS COVID-19?</u>

¬ Corona disease came in the year 2019, so it is known as covid-19.

¬ COVID-19 is a disease caused by the “novel corona virus”.

➢ Common symptoms are:

- Fever, Dry cough, Breathing Difficulty, Some patients also have aches and pains, nasal congestion, runny nose.

- STEPS TAKEN TO SPREAD FOR PREVENTION/AVOID OF COVID-19.

(A)Practice Social Distancing:-

- Avoid gatherings
- Maintain a safe distance
- Stay at home
- Avoid physical contact
- Avoid touching surfaces

(B)Practice good hygiene:-

- Wash your hands frequently using soap and water
- Do not spit or shout in public places to avoid the spread of droplets.
- Do not touch your eyes, nose and mouth with unclean hands.

7.2 ANY OTHER STEPS TAKEN BY THE VILLAGERS:-

- When corona was at its peak, the villagers followed a strict lock-down as per the government's guidelines and rules.
- Indigenous medicines such as ayurvedik kadha were sold in the village which could be useful for health.
- Maintain social distancing in vegetable market.
- The villagers have been wearing masks since the first case of corona virus.
- The villagers used to come together to check the health of the people coming from the village outside before entering the village and to quarantine those who looked suspicious.

7.3 CASES OVER VIEW:-

SR NO.	NAME OF VILLAGE /DISTRICT/ STATE	TOTAL CASE	RECOVERED	DEATH
1.	VARUDI	2	1	1
2.	AMRELI	3659	3392	38
3.	GUJRAT	234K	217K	4220
4.	INDIA	10M	9.55M	145K
5.	WORLD-WIDE	75.5M	42.6M	1.67M

Table.12 CASES OF ALLOCATED VILLAGE TO WORLD WIDE (SINCE 22/3/2019 TO 18/12/2020)

➢ Activity by Students:-

Fig.40 Students distributing necessities (food packets) and mask:-

8.1Design Proposals

8.1.1 Public toilet Design

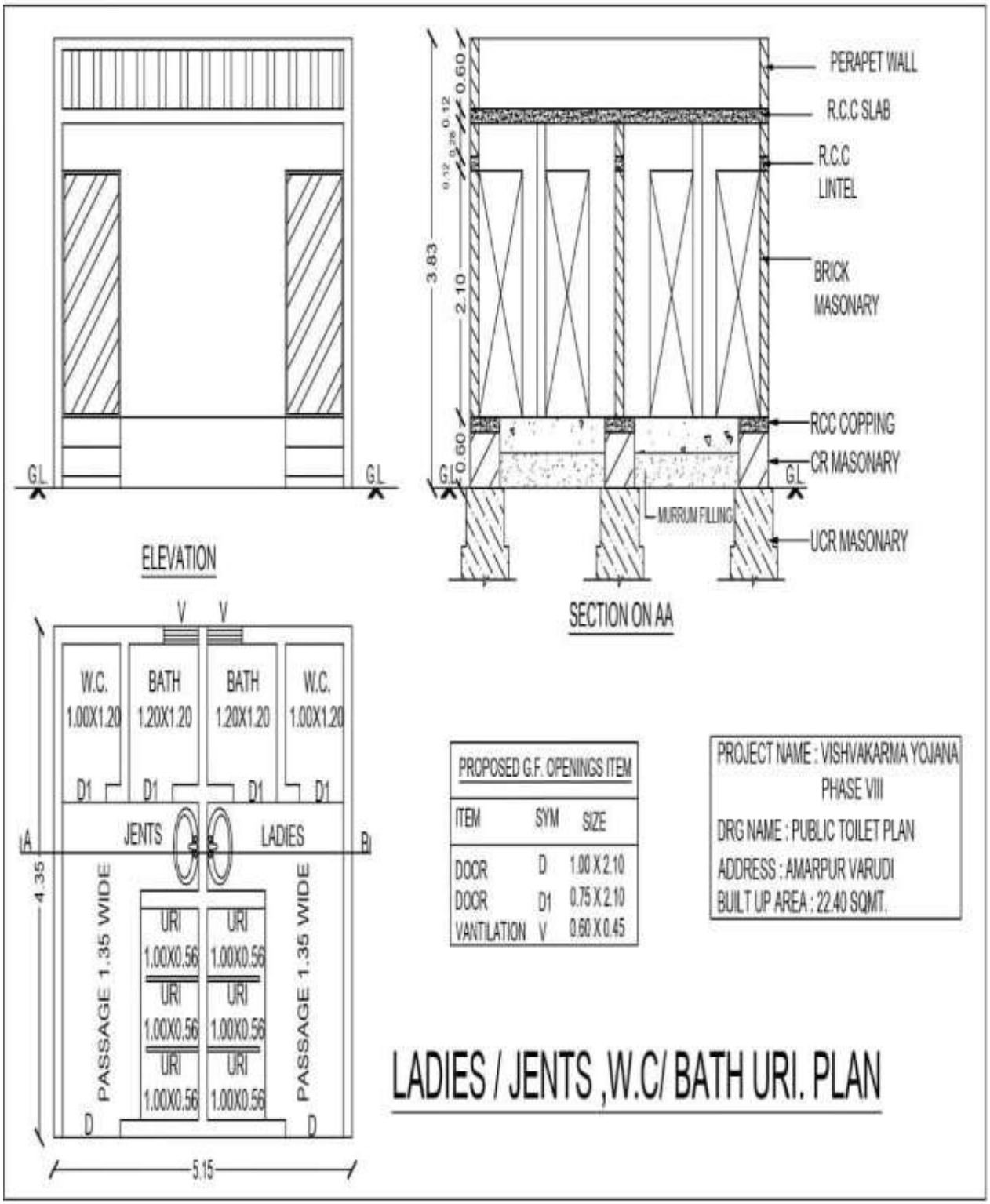


Fig.41 Public toilet Design

MEASUREMENT SHEET

SR NO	DESCRIPTION	NOS	LENTH	WIDTH	HEIGHT	QTY	UNIT
1	**EXCAVATION IN FOUNDATION**						
	LONG WALL L = 5.15+0.61	2	5.76	0.61	0.90	6.33	
	SHORT WALL L = 3.89-0.61	3	3.28	0.61	0.90	5.40	
2	**PCC IN FOUNDATION**					**11.73**	**CU.M**
	LONG WALL L = 5.15+0.61	2	5.76	0.61	0.31	2.17	
	SHORT WALL L = 3.89-0.61	3	3.28	0.61	0.31	1.86	
3	**BRICK MAOSNARY IN FOUNDATION UPTO GROUND LEVEL**					**4.03**	**CU.M**
	LONG WALL L = 5.15+0.61	2	5.76	0.61	0.60	4.21	
	SHORT WALL L = 3.89+-0.61	3	4.50	0.61	0.60	4.94	
4	**BRICK MAOSNARY IN FOUNDATION UPTO PLINTH**					**9.15**	**CU.M**
	LONG WALL L = 5.15	2	5.15	0.31	0.45	1.43	
	SHORT WALL L = 3.89-0.31	3	3.58	0.31	0.45	1.49	

						2.92	**CU.M**
5	**BRICK MAOSNARY ABOVE PLINTH UPTO LINTEL LEVEL**						
	LONG WALL L = 5.15	2	5.15	0.23	2.10	4.97	
	SHORT WALL L = 3.89	3	3.89	0.23	2.10	5.63	
	DEDUCTION FOR DOORS	2	1.00	0.23	2.10	0.96	
						11.56	**CU.M**
6	**RCC LINTEL**						
	LONG WALL L = 5.15	2	5.15	0.23	0.12	0.28	
	SHORT WALL L = 3.89	3	3.89	0.23	0.12	0.32	
7	**BRICK MASONARY ABOVE LINTEL UPTO SLAB**					**0.60**	**CU.M**
	LONG WALL L = 5.15	2	5.15	0.23	0.28	0.66	
	SHORT WALL L = 3.89	3	3.89	0.23	0.28	0.75	
						1.41	**CU.M**
8	**RCC SLAB**	1	5.15	4.35	0.12	**2.68**	**CU.M**
9	**Partition wall(marble)**	4	0.77		1.50	**4.62**	**SQ. M**
10	**BRICK MASONARY ABOVE SLAB IN PARAPET WALL**						

	LONG WALL L = 5.15+2*0.12	2	5.39	0.23	0.60	1.48	
	SHORT WALL L = 4.35+2*0.12	2	4.59	0.23	0.60	1.26	
						2.74	**SQ.M**
11	**EARTH FILLING UPTO PLINTH**						
	GENTS TOILET	1	1.52	3.89	0.45	2.66	
	LADIES TOILET	1	1.52	3.89	0.45	2.66	
12	**CC FLOORING**					**5.32**	**CU.M**
	GENTS TOILET	1	2.33	3.89	0.15	1.35	
	LADIES TOILET	1	2.64	3.89	0.15	1.54	
13	**TILE FLOORING**					**2.89**	**CU.M**
	GENTS TOILET	1	2.43	3.89		9.45	
	LADIES TOILET	1	2.43	3.89		9.45	
						18.90	**SQ.M**
14	**PLASTER** **INTERNAL WALL**						
	LONG WALL	2	5.15		2.50	25.75	
	SHORT WALL	3	3.89		2.50	29.17	
	DEDUCTION FOR DOORS	2	1.00		2.50	5.00	
	CEILING PLASTER					**59.92**	**SQ.M**
	GENTS TOILET	1	1.52	4.35		6.61	
	LADIES TOILET	1	1.52	4.35		6.61	

	EXTERNAL WALL					**13.22**	**SQ.M**
	LONG WALL	2	5.15		3.83	39.44	
	SHORT WALL	2	4.35		3.83	33.32	
	DEDUCTION FOR DOORS	2	1.00		2.22	4.44	
						77.2	**SQ.M**
	TOTAL PLASTER					**150.34**	**SQ.M**
15	**PAINT INTERNAL WALL**						
	LONG WALL	2	5.15		2.50	25.75	
	SHORT WALL	2	3.89		2.50	19.45	
	DEDUCTION FOR DOORS	2	1.00		2.22	4.44	
	CEILING PAINT					**49.64**	**SQ.M**
	GENTS TOILET	1	2.43	3.89		9.45	
	LADIES TOILET	1	2.43	3.89		9.95	
						18.90	**SQ.M**
	EXTERNAL WALL						
	LONG WALL	2	5.15		3.83	39.44	
	SHORT WALL	2	4.35		3.83	33.32	
	DEDUCTION FOR DOORS	2	1.00		2.22	4.44	
						77.2	**SQ.M**
	TOTAL PAINT					**145.74**	**SQ.M**

ABSTRACT SHEET

SR NO	DESCRIPTION	QTY	UNIT	RATE	PER UNIT	AMOUNT
1	**EXCAVATION IN FOUNDATION**	11.73	CU.M	85.90	CU.M	**1008.60**
2	**PCC IN FOUNDATION**	4.03	CU.M	2137.44	CU.M	**8613.88**
3	**BRICK MAOSNARY IN FOUNDATION UPTO GROUND LEVEL**	9.15	CU.M	3259.75	CU.M	**29826.71**
4	**BRICK MAOSNARY IN FOUNDATION UPTO PLINTH**	2.92	CU.M	3259.75	CU.M	**9518.47**
5	**BRICK MAOSNARY ABOVE PLINTH UPTO LINTEL LEVEL**					
	MAIN WALL	11.56	CU.M	3259.75	CU.M	**37682.71**
6	**RCC LINTEL**	0.60	CU.M	2137.44	CU.M	**1282.20**
7	**BRICK MASONARY ABOVE LINTEL UPTO SLAB**	1.41	CU.M	3259.75	CU.M	**4596.24**
8	**RCC SLAB**	2.68	CU.M	3818.93	CU.M	**10234.73**
9	**MARBLE FOR TOILET**	4.62	SQ.M	770	SQ.M	**3557.4**
9	**BRICK MASONARY ABOVE SLAB IN PARAPET WALL**	2.74	SQ.M	387.00	SQ.M	**1060.38**
10	**EARTH FILLING UPTO PLINTH**	5.32	CU.M	250.00	CU.M	**1330.00**
11	**CC FLOORING**	2.89	CU.M	2137.44	CU.M	**6177.20**
12	**TILE FLOORING**	18.90	SQ.M	453.00	SQ.M	**8561.70**
13	**PLASTER**	150.34	SQ.M	68.50	SQ.M	**10298.29**
14	**PAINT**	145.74	SQ .M	7.60	SQ. M	**1107.62**

	TOTAL AMOUNT					**131298.73**
10% WATER PLUMBING AND DRAINAGE						**13129.73**
5% ELECTRIC FITTING						**6564.865**
5% COUNTIGENCIES						**6564.865**
NET AMOUNT						**$157558.19**

8.1.2 Sub PHC Design

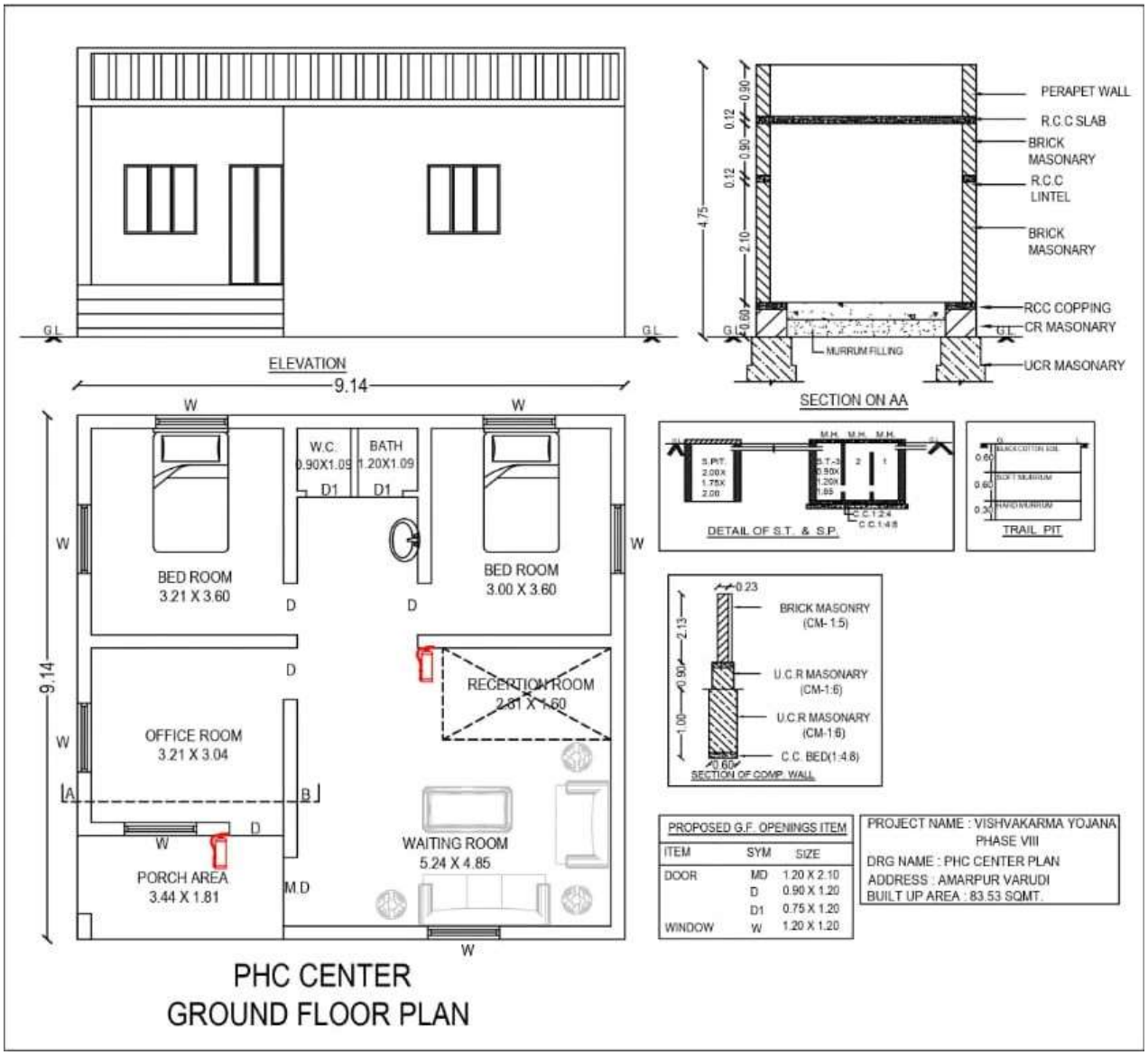


FIG.42 PHC CENTER PLAN

MEASUREMENT SHEET

SR. NO.	DESCRIPTION	NOS	LENGTH	WIDTH	HEIGHT	QTY	UNIT
1	EXCAVATION IN FOUNDATION	3	9.14	0.6	1	16.45	
		4	9.14	0.6	1	21.93	
						38.38	**CUM.**
2	PCC IN FOUNDATION	3	9.14	0.6	0.1	1.64	
		4	9.14	0.6	0.1	2.19	
						3.83	**CUM.**
3	BRICK MAOSNARY IN FOUNDATION UPTO GROUND LEVEL	3	9.14	0.6	0.9	14.80	
		4	9.14	0.6	0.9	19.74	
						34.54	**CUM.**
4	BRICK MAOSNARY IN FOUNDATION UPTO PLINTH	3	9.14	0.6	0.45	7.40	
		4	9.14	0.6	0.45	9.87	
						17.27	**CUM.**
5	BRICK MAOSNARY ABOVE PLINTH UPTO LINTEL LEVEL	3	9.14	0.23	2.1	13.24	
		2	9.14	0.23	2.1	8.82	
		1	7.33	0.23	2.1	3.54	
		2	3.6	0.23	2.1	3.47	
						29.09	**CUM.**
6	RCC LINTEL	3	9.14	0.23	0.12	0.75	
		2	9.14	0.23	0.12	0.50	
		1	7.33	0.23	0.12	0.20	

		2	3.6	0.23	0.12	0.19	
						1.66	**CUM.**
7	**BRICK MASONARY ABOVE LINTEL UPTO SLAB**	3	9.14	0.23	0.9	5.67	
		2	9.14	0.23	0.9	3.78	
		1	7.33	0.23	0.9	1.51	
		2	3.6	0.23	0.9	1.49	
						12.46	**CUM.**
8	**RCC SLAB**	1	9.14	9.14	0.12	**10.02**	**CUM.**
9	**BRICK MASONARY ABOVE SLAB IN PARAPET WALL**	4	9.14	0.23	0.9	**7.56**	**CUM.**
10	**EARTH FILLING UPTO PLINTH**	1	9.14	9.14	0.6	**50.12**	**CUM.**
11	**CC FLOORING**	1	5.24	4.85	0.15	3.81	
		1	3.21	3.04	0.15	1.46	
		1	3.21	3.6	0.15	1.73	
		1	0.9	1.09	0.15	0.14	
		1	1.2	1.09	0.15	0.19	
		1	3.44	1.81	0.15	0.93	
		1	3	3.6	0.15	1.62	
						9.90	**CUM.**
12	**TILE FLOORING**	1	5.24	4.85	-	25.41	
		1	3.21	3.04	-	9.75	
		1	3.21	3.6	-	11.55	
		1	0.9	1.09	-	0.98	
		1	1.2	1.09	-	1.30	
		1	3.44	1.81	-	6.22	
		1	3	3.6	-	10.80	
						40.62	**SQM.**
13	**PLASTER**	2	3.21	-	3	19.6	
		2	3.6	-	3	21.6	

		2	0.9	-	3	5.4	
		2	1.09	-	3	6.54	
		2	1.2	-	3	7.2	
		2	1.09	-	3	6.54	
		2	3	-	3	18	
		2	3.6	-	3	21.6	
		2	5.24	-	3	31.44	
		2	4.85	-	3	29.1	
		2	3.21	-	3	19.26	
		2	3.04	-	3	18.24	
		1	3.44	-	3	10.32	
		1	1.81	-	3	5.43	
		1	3.21	3.6	-	11.556	
		1	3	3.6	-	10.8	
		1	0.9	1.09	-	0.981	
		1	1.2	1.09	-	1.308	
		1	3.21	3.04	-	9.75	
		1	5.24	4.85	-	25.4	
		1	3.44	1.81	-	6.22	
		4	9.14	-	4.75	173.66	
	Deduction **Main Door**	-1	1.2	-	2.1	-2.52	
	Room Door	-3	0.9	-	2.1	-5.67	
	Toilet Door	-2	0.75	-	2.1	-3.15	
	Window	-7	1.2	-	1.2	-10.08	
						438.21	**SQM.**
14	**PAINT**	2	3.21	-	3	19.26	
		2	3.6	-	3	21.60	
		2	0.9	-	3	5.40	
		2	1.09	-	3	6.54	
		2	1.2	-	3	7.20	
		2	1.09	-	3	6.54	
		2	3	-	3	18.00	
		2	3.6	-	3	21.60	

		2	5.24	-	3	31.44	
		2	4.85	-	3	29.10	
		2	3.21	-	3	19.26	
		2	3.04	-	3	18.24	
		1	3.44	-	3	10.32	
		1	1.81	-	3	5.43	
		1	3.21	3.6	-	11.55	
		1	3	3.6	-	10.80	
		1	0.9	1.09	-	0.98	
		1	1.2	1.09	-	1.30	
		1	3.21	3.04	-	9.75	
		1	5.24	4.85	-	25.41	
		1	3.44	1.81	-	6.22	
		4	9.14	-	4.75	173.66	
	Deduction main door	-1	1.2	-	2.1	-2.52	
	room door	-3	0.9	-	2.1	-5.67	
	Toilet door	-2	0.75	-	2.1	-3.15	
	window	-7	1.2	-	1.2	-10.08	
						438.2138	**SQM.**

ABSTRACT SHEET

SR NO	DESCRIPTION	QTY	UNIT	RATE	PER UNIT	AMOUNT
1	**EXCAVATION IN FOUNDATION**	**38.38**	CU.M	85.90	CU.M	**3,296.84**
2	**PCC IN FOUNDATION**	**3.83**	CU.M	2137.44	CU.M	**8,186.39**
3	**BRICK MAOSNARY IN FOUNDATION UPTO GROUND LEVEL**	**34.54**	CU.M	3259.75	CU.M	**112,591.76**
4	**BRICK MAOSNARY IN FOUNDATION UPTO PLINTH**	**17.27**	CU.M	3259.75	CU.M	**56,295.88**
5	**BRICK MAOSNARY ABOVE PLINTH UPTO LINTEL LEVEL**					
	MAIN WALL	**29.09**	CU.M	3259.75	CU.M	**94,826.12**
6	**RCC LINTEL**	**1.66**	CU.M	2137.44	CU.M	**3,548.15**
7	**BRICK MASONARY ABOVE LINTEL UPTO SLAB**	**12.46**	CU.M	3259.75	CU.M	**40,616**
8	**RCC SLAB**	**10.02**	CU.M	3818.93	CU.M	**38,265.67**
9	**BRICK MASONARY ABOVE SLAB IN PARAPET WALL**	**7.56**	SQ.M	387.00	SQ.M	**2,925.72**
10	**EARTH FILLING UPTO PLINTH**	**50.12**	CU.M	250.00	CU.M	**12,530.00**
11	**CC FLOORING**	**9.90**	CU.M	2137.44	CU.M	**21,160.65**
12	**TILE FLOORING**	**40.62**	SQ.M	453.00	SQ.M	**18,400.86**
13	**PLASTER**	**438.21**	SQ.M	68.50	SQ.M	**30,017.38**
14	**PAINT**	**438.21**	SQ.M	7.60	SQ.M	**3,330.39**
	TOTAL AMOUNT					**445,990.78**
	10% WATER PLUMBING AND DRAINAGE					**44,590.78**

	5% ELECTRIC FITTING					**22,295.39**
	5% COUNTIGENCIES					**22,295.39**
	NET AMOUNT					**535,172.34**
	SAY					**5,36,600.00**

8.1.3 Cyber café plan

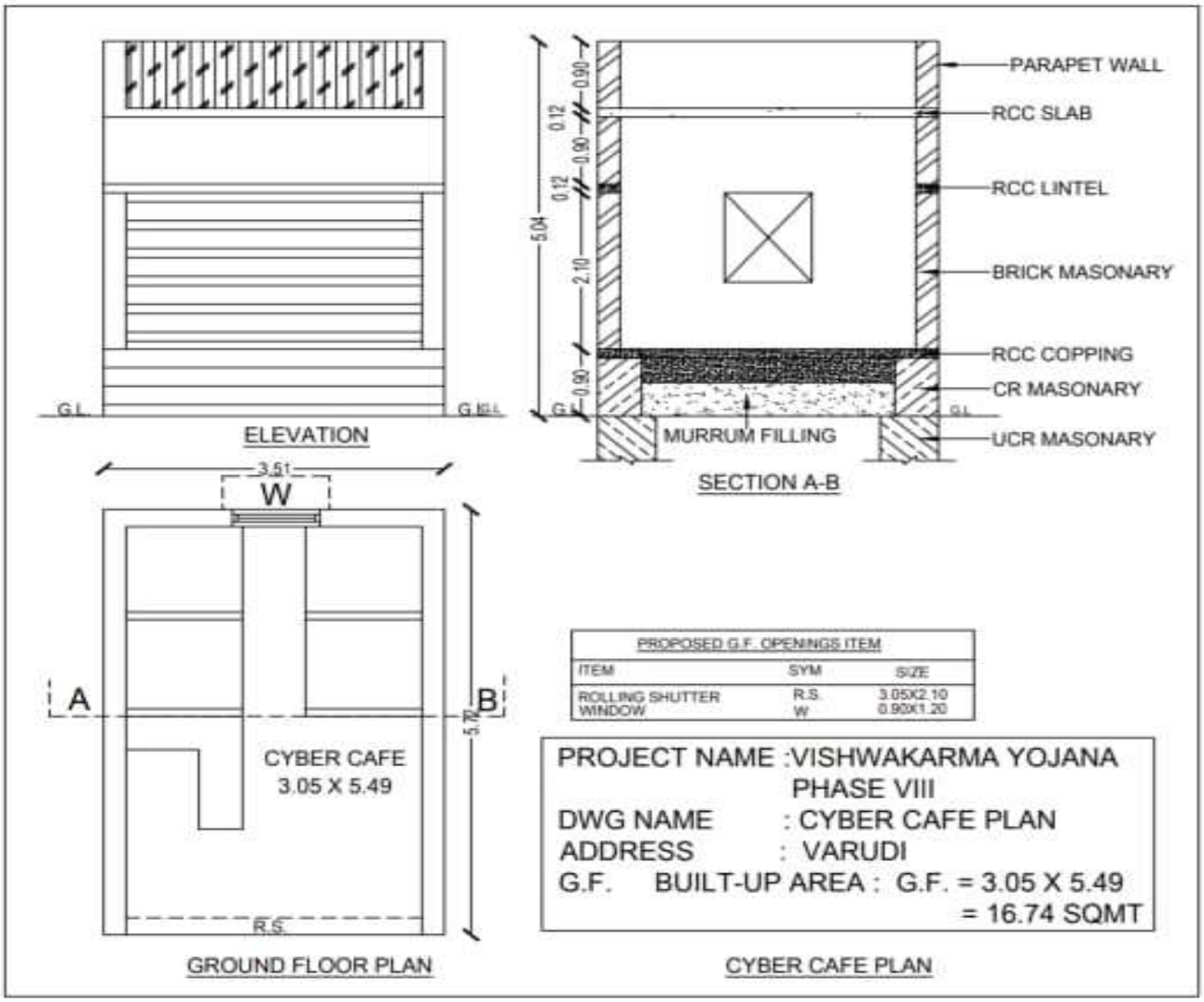


Fig 43.cyber café plan

MEASUREMENT SHEET

Item No.	Item	Nos.	L	B	H	Total	Unit
1	**Exacavation in foundation**	2	3.51	0.6	0.6	2.5272	
		2	5.72	0.6	0.6	4.1184	
						6.6456	**Cu.M.**
2	**PCC in Foundation**	2	3.51	0.6	0.1	0.4212	
		2	5.72	0.6	0.1	0.6864	
						1.1076	**Cu.M.**
3	**UCR Masonry up to GL**	2	3.51	0.6	0.5	2.106	
		2	5.72	0.6	0.5	3.432	
						5.538	**Cu.M.**
4	**CR Masonry up to Plinth**	2	3.51	0.45	0.78	2.46402	
		2	5.72	0.45	0.78	4.01544	
						6.47946	**Cu.M.**
5	**Rcc Coping**	2	3.51	0.45	0.12	0.37908	
		2	5.72	0.45	0.12	0.61776	
						0.99684	**Cu.M.**
6	**Brick Mashonry**	2	3.51	0.23	3	4.8438	
		2	5.72	0.23	3	7.8936	
	Deduction	-1	3.05	0.23	2.1	-1.47315	
		-1	0.9	0.23	1.2	-0.2484	
						11.01585	**Cu.M.**
7	**Parapet**	2	3.51	0.23	0.9	1.45314	
		2	5.72	0.23	0.9	2.36808	
						3.82122	**Cu.M.**
8	**RCC Lintel**	4	3.51	0.23	0.12	0.387504	
		4	5.72	0.23	0.12	0.631488	
		1	1.3	0.6	0.12	0.0936	
						1.112592	**Cu.M.**
9	**RCC Slab**	1	3.51	5.72	0.125	**2.50965**	**Cu.M.**

10	**Earth Filling**	1	3.07	5.28	0.9	**14.58864**	**Cu.M.**
11	**CC Flooring**	1	3.51	5.72	0.15	**3.01158**	**Cu.M.**
12	**Tiles Flooring**	1	3.51	5.72	-	**20.0772**	**Sq. M.**
13	**Outer Plaster**	2	3.51	-	5.04	35.3808	
		2	5.72	-	5.04	57.6576	
		1	1.3		1.2	1.56	
	Deduction	-0.5	3.05		2.1	-3.2025	
		-0.5	0.9		1.2	-0.54	
						90.8559	**Sq. M.**
14	**Inside Plaster**	2	3.51	-	3.12	21.9024	
		2	5.72	-	3.12	35.6928	
		1	3.51	5.72	-	20.0772	
	Deduction	-0.5	3.05		2.1	-3.2025	
		-0.5	0.9		1.2	-0.54	
						73.9299	**Sq. M.**
15	**Paint**					90.8559	
	As Per Plaster					73.9299	
						164.7858	**Sq. M.**

ABSTRACT SHEET

SR NO	DESCRIPTION	QTY	UNIT	RATE	PER UNIT	AMOUNT
1	**EXCAVATION IN FOUNDATION**	6.645	CU.M	85.90	CU.M	**564.16**
2	**PCC IN FOUNDATION**	1.107	CU.M	2137.44	CU.M	**2366.14**
3	**BRICK MAOSNARY IN FOUNDATION UPTO GROUND LEVEL**	5.538	CU.M	3259.75	CU.M	**18052.49**
4	**BRICK MAOSNARY IN FOUNDATION**	6.479	CU.M	3259.75	CU.M	**21119.92**

	UPTO PLINTH					
5	**BRICK MAOSNARY ABOVE PLINTH UPTO LINTEL LEVEL**	11.01	CU.M	3259.75	CU.M	**35889.84**
6	**RCC LINTEL**	1.112	CU.M	2137.44	CU.M	**2376.83**
7	**BRICK MASONARY ABOVE LINTEL UPTO SLAB**	2.67	CU.M	3259.75	CU.M	**8703.53**
8	**RCC SLAB**	2.509	CU.M	3818.93	CU.M	**9581.69**
9	**BRICK MASONARY ABOVE SLAB IN PARAPET WALL**	3.821	SQ.M	387.00	SQ.M	**1478.72**
10	**EARTH FILLING UPTO PLINTH**	14.58	CU.M	250.00	CU.M	**3645.00**
11	**CC FLOORING**	3.011	CU.M	2137.44	CU.M	**6435.83**
12	**TILE FLOORING**	16.74	SQ.M	453.00	SQ.M	**7583.22**
13	**PLASTER**	164.77	SQ.M	68.50	SQ.M	**11286.74**
14	**PAINT**	164.785	SQ.M	7.60	SQ.M	**1252.36**
	TOTAL AMOUNT					**1,30,336.47**
	2% WATER CHARGES					**2606.72**
	5% COUNTIGENCIES					**6516.82**
	NET AMOUNT					**139460.01**
	SAY					**140000.00**

8.1.4 General store

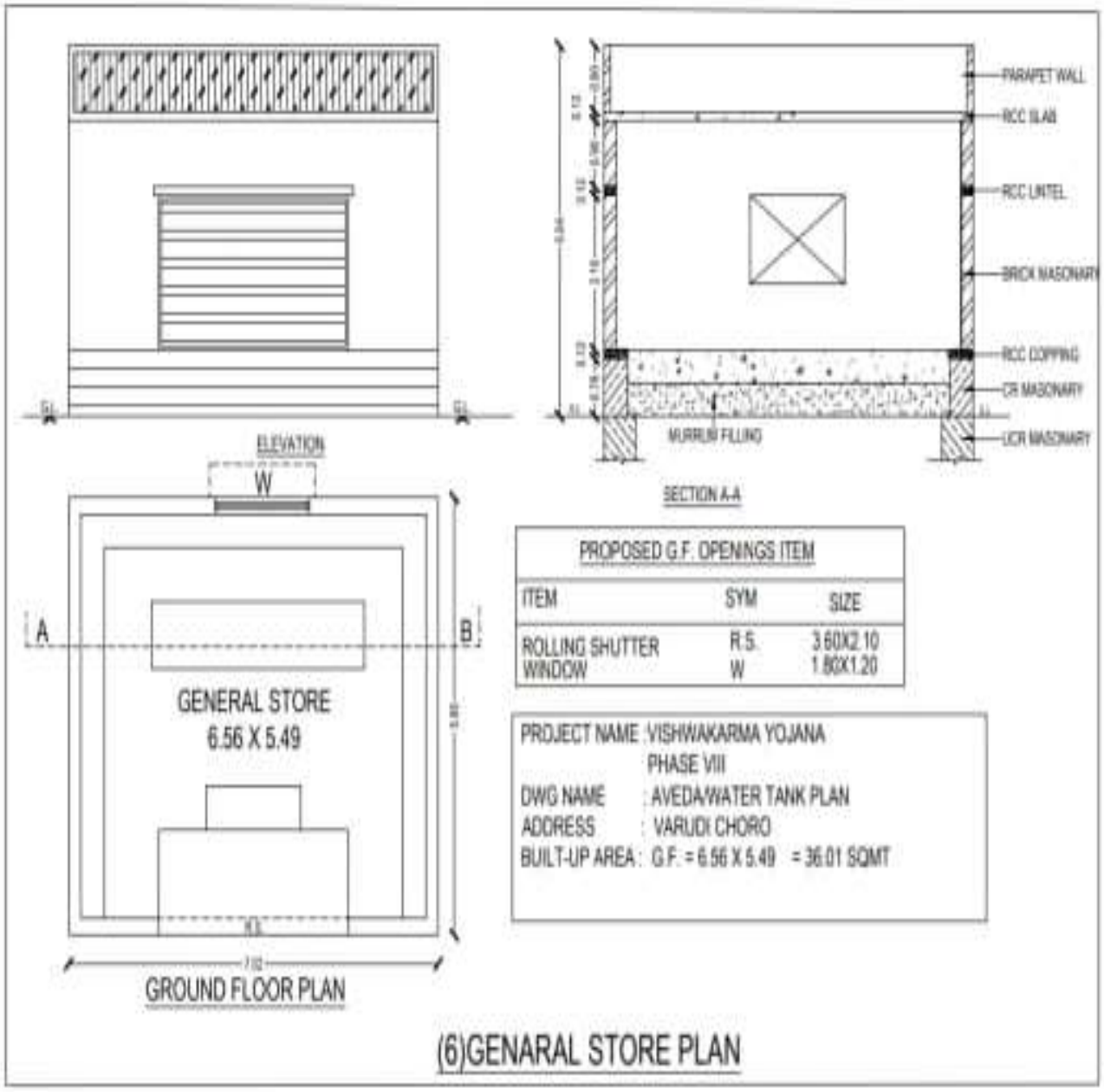


Fig 44.general store plan

MEASUREMENT SHEET

SR NO	DESCRIPTION	NOS	LENTH	WIDTH	HEIGHT	QTY	UNIT
1	**EXCAVATION IN FOUNDATION**						
	LONG WALL	2	6.33	0.61	0.91	7.03	
	L = 5.72+0.61						
	SHORT WALL	2	2.44	0.61	0.91	2.71	
	L = 3.05-0.61						
						9.74	**CU.M**
2	**PCC IN FOUNDATION**						
	LONG WALL	2	6.33	0.61	0.31	2.39	
	L = 5.72+0.61						
	SHORT WALL	2	1.83	0.61	0.31	0.69	
	L = 3.05-0.61						
						3.09	**CU.M**
3	**BRICK MAOSNARY IN FOUNDATION UPTO GROUND LEVEL**						
	LONG WALL	2	6.33	0.61	0.6	4.63	
	L = 5.72+0.61						
	SHORT WALL	2	2.44	0.61	0.6	1.79	
	L = 3.05-0.61						
						6.42	**CU.M**
4	**BRICK MAOSNARY IN FOUNDATION UPTO PLINTH**						
	LONG WALL	2	5.72	0.31	0.45	1.60	
	L = 5.72						
	SHORT WALL	2	2.74	0.31	0.45	0.76	
	L = 3.05-.31						
						2.36	**CU.M**
5	**BRICK MAOSNARY ABOVE PLINTH UPTO LINTEL LEVEL**						
	LONG WALL	2	5.72	0.23	2.32	6.10	
	L = 5.72						
	SHORT WALL	1	3.05	0.23	2.32	1.63	
	L = 3.05						

						7.73	**CU.M**
6	**RCC LINTEL**						
	LONG WALL	2	5.72	0.23	0.12	0.32	
	L = 5.72						
	SHORT WALL	1	3.05	0.23	0.12	0.08	
	L = 3.05						
						0.40	**CU.M**
7	**BRICK MASONARY ABOVE LINTEL UPTO SLAB**						
	LONG WALL	2	5.72	0.23	0.80	2.10	
	L = 5.72						
	SHORT WALL	1	3.05	0.23	0.80	0.56	
	L = 3.05						
						2.67	**CU.M**
8	**RCC SLAB**	1	5.92	3.71	0.15	**3.29**	**CU.M**
9	**BRICK MASONARY ABOVE SLAB IN PARAPET WALL**						
	LONG WALL	2	5.92		0.30	3.55	
	L = 5.72+2*0.1						
	SHORT WALL	2	3.71		0.30	2.23	
	L = 3.51+2*0.1						
						5.78	**SQ.M**
10	**EARTH FILLING UPTO PLINTH**	1	4.89	2.45	0.45	**5.39**	**CU.M**
11	**CC FLOORING**	1	4.89	2.45	0.15	**1.80**	**CU.M**
12	**TILE FLOORING**	1	5.49	3.05		**16.74**	**SQ.M**
13	**PLASTER**						
	INTERNAL WALL						
	LONG WALL	2	5.72		2.14	24.48	
	SHORT WALL	1	3.05		2.14	6.53	
						31.01	**SQ.M**
	CEILING PLASTER	1	5.49	3.05		**16.74**	**SQ.M**

	EXTERNAL WALL						
	LONG WALL	2	5.72		4.11	47.02	
	SHORT WALL	1	3.51		4.11	14.43	
						61.44	**SQ.M**
	PLASTER INSIDE PARAPET WALL						
	LONG WALL	2	5.92		0.30	3.55	
	SHORT WALL	2	3.25		0.30	1.95	
						5.50	**SQ.M**
	TOTAL PLASTER					**114.70**	**SQ.M**
14	**PAINT**						
	INTERNAL WALL						
	LONG WALL	2	5.72		2.14	24.48	
	SHORT WALL	1	3.05		2.14	6.53	
						31.01	**SQ.M**
	CEILING PAINT	1	5.49	3.05		**16.74**	**SQ.M**
	EXTERNAL WALL						
	LONG WALL	2	5.72		4.11	47.02	
	SHORT WALL	1	3.51		4.11	14.43	
						61.44	**SQ.M**
	PAINT INSIDE PARAPET WALL						
	LONG WALL	2	5.92		0.30	3.55	
	SHORT WALL	2	3.25		0.30	1.95	
						5.50	**SQ.M**
	TOTAL PAINT					**114.70**	**SQ.M**

ABSTRACT SHEET

SR NO	DESCRIPTION	QTY	UNIT	RATE	PER UNIT	AMOUNT
1	**EXCAVATION IN FOUNDATION**	9.74	CU.M	85.90	CU.M	**836.67**

2	**PCC IN FOUNDATION**	3.09	CU.M	2137.44	CU.M	**6604.69**
3	**BRICK MAOSNARY IN FOUNDATION UPTO GROUND LEVEL**	6.42	CU.M	3259.75	CU.M	**20927.60**
4	**BRICK MAOSNARY IN FOUNDATION UPTO PLINTH**	2.36	CU.M	3259.75	CU.M	**7693.01**
5	**BRICK MAOSNARY ABOVE PLINTH UPTO LINTEL LEVEL**	7.73	CU.M	3259.75	CU.M	**25197.87**
6	**RCC LINTEL**	0.40	CU.M	2137.44	CU.M	**854.98**
7	**BRICK MASONARY ABOVE LINTEL UPTO SLAB**	2.67	CU.M	3259.75	CU.M	**8703.53**
8	**RCC SLAB**	3.29	CU.M	3818.93	CU.M	**12564.28**
9	**BRICK MASONARY ABOVE SLAB IN PARAPET WALL**	5.78	SQ.M	387.00	SQ.M	**2236.86**
10	**EARTH FILLING UPTO PLINTH**	5.39	CU.M	250.00	CU.M	**1347.50**
11	**CC FLOORING**	1.80	CU.M	2137.44	CU.M	**3847.39**
12	**TILE FLOORING**	16.74	SQ.M	453.00	SQ.M	**7583.22**
13	**PLASTER**	114.70	SQ.M	68.50	SQ.M	**7856.95**
14	**PAINT**	114.70	SQ.M	7.60	SQ.M	**871.72**
	TOTAL AMOUNT					**107126.26**
	2% WATER CHARGES					**2142.53**
	5% COUNTIGENCIES					**5356.31**
	NET AMOUNT					**114625.10**
	SAY					**115000.00**

8.1.5 Community hall

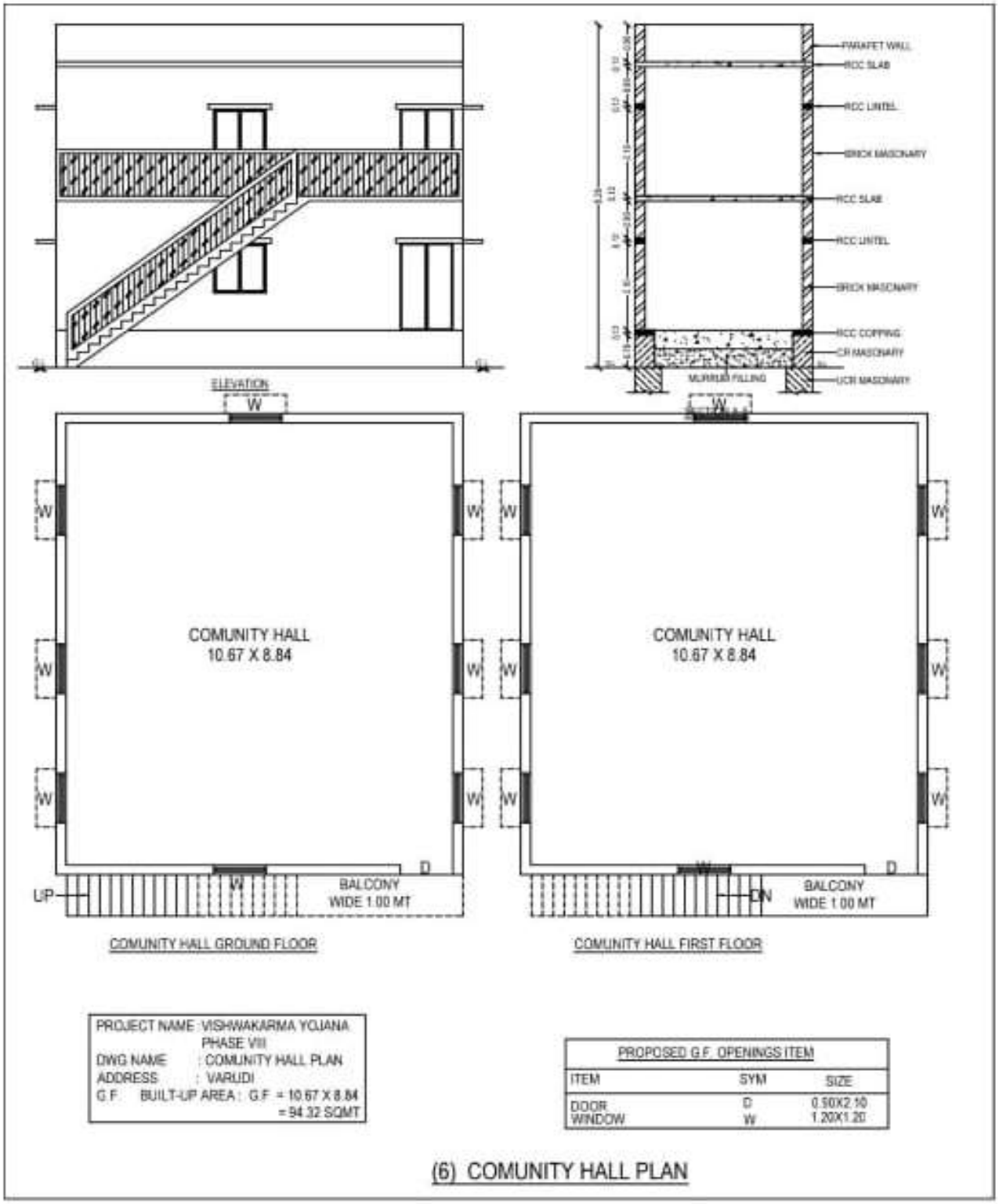


FIG.45 COMMUNITY HALL PLAN

MEASUREMENT SHEET

Item No.	Item	Nos.	L	B	H	Total	Unit
1	**Exacavation**	2	10.67	0.6	0.6	7.6824	
		2	9.07	0.6	0.6	6.5304	
						14.2128	**Cu.M.**
2	**PCC in Foundation**	2	10.67	0.6	0.1	1.2804	
		2	9.07	0.6	0.1	1.0884	
						2.3688	**Cu.M.**
3	**UCR Mashonry up to GL**	2	10.67	0.6	0.5	6.402	
		2	9.07	0.6	0.5	5.442	
						11.844	**Cu.M.**
4	**CR Mashonry up to Plinth**	2	10.67	0.45	0.78	7.49034	
		2	9.07	0.45	0.78	6.36714	
						13.85748	**Cu.M.**
5	**Rcc Coping**	2	10.67	0.45	0.12	1.15236	
		2	9.07	0.45	0.12	0.97956	
						2.13192	**Cu.M.**
6	**Brick Mashonry up to 1st Floor**	2	10.9	0.23	3	15.042	
		2	9.07	0.23	3	12.5166	
	Deduction	-1	0.9	0.23	2.1	-0.4347	
		-8	1.2	0.23	1.2	-2.6496	
						24.4743	**Cu.M.**
7	**Brick Mashonry up to 2st Floor**	2	10.9	0.23	3	15.042	
		2	9.07	0.23	3	12.5166	
	Deduction	-1	0.9	0.23	2.1	-0.4347	
		-8	1.2	0.23	1.2	-2.6496	
						24.4743	**Cu.M.**
8	**Parapet**	2	10.9	0.23	0.9	4.5126	

		2	9.07	0.23	0.9	3.75498	
						8.26758	**Cu.M.**
9	**RCC Lintel**	4	10.9	0.23	0.12	1.20336	
		4	9.07	0.23	0.12	1.001328	
		14	1.3	0.6	0.12	1.3104	
						3.515088	**Cu.M.**
11	**RCC Stair**	21	0.15	0.125	1	0.39375	**.**
		1	6	1	0.125	0.75	
						1.14375	**Cu.M.**
10	**RCC Slab**	1	11.13	9.3	0.125	12.93863	
		1	3	1	0.125	0.375	
		1	11.13	9.3	0.125	12.93863	
						26.25225	**Cu.M.**
11	**Earth Filling**	1	10.23	8.4	0.9	**77.3388**	**Cu.M.**
12	**CC Flooring**	1	10.67	8.84	0.15	**14.14842**	**Cu.M.**
13	**Tiles Flooring**	1	10.67	8.84	-	94.3228	
		1	10.67	8.84	-	94.3228	
		1	3	1	-	3	
						191.6456	**Sq. M.**
14	**Outer Plaster**	2	11.13	-	8.28	184.3128	
		2	9.07	-	8.28	150.1992	
		14	1.3		1.2	21.84	
	Deduction	-1	0.9		2.1	-1.89	
		-8	1.2		1.2	-11.52	
						342.942	**Sq. M.**
15	**Inside Plaster**	4	10.67	-	3.12	133.1616	
		4	8.84	-	3.12	110.3232	
		2	10.67	8.84	-	188.6456	
	Deduction	-1	0.9		2.1	-1.89	
		-8	1.2		1.2	-11.52	
						418.7204	**Sq. M.**
16	**Paint**					342.942	
	As Per Plaster					418.7204	

						761.6624	**Sq. M.**

ABSTRACT SHEET

SR NO	DESCRIPTION	QTY	UNIT	RATE	PER UNIT	AMOUNT
1	**EXCAVATION IN FOUNDATION**	14.21	CU.M	85.90	CU.M	**1220.69**
2	**PCC IN FOUNDATION**	2.368	CU.M	2137.44	CU.M	**5061.45**
3	**BRICK MAOSNARY IN FOUNDATION UPTO GROUND LEVEL**	11.84	CU.M	3259.75	CU.M	**38595.44**
4	**BRICK MAOSNARY IN FOUNDATION UPTO PLINTH**	13.85	CU.M	3259.75	CU.M	**45147.53**
5	**Brick Mashonry up to 1st Floor**	24.47	CU.M	3259.75	CU.M	**76766.08**
6	**Brick Mashonry up to 2st Floor**	24.47	CU.M	3259.75	CU.M	**76766.08**
7	**RCC LINTEL**	3.515	CU.M	2137.44	CU.M	**7513.10**
8	**BRICK MASONARY ABOVE LINTEL UPTO SLAB**	10.67	CU.M	3259.75	CU.M	**34781.53**
9	**RCC SLAB**	26.25	CU.M	3818.93	CU.M	**100246.92**
10	RCC Stair	1.143	CU.M	3818.93	CU.M	**4365.03**
11	**BRICK MASONARY ABOVE SLAB IN PARAPET WALL**	8.267	SQ.M	387.00	SQ.M	**3199.32**
12	**EARTH FILLING UPTO PLINTH**	77.33	CU.M	250.00	CU.M	**14332.50**
13	**CC FLOORING**	14.14	CU.M	2137.44	CU.M	**30223.40**
14	**TILE FLOORING**	191.64	SQ.M	453.00	SQ.M	**86812.92**
15	**PLASTER**	761.66	SQ.M	68.50	SQ.M	**52173.71**

16	**PAINT**	761.66	SQ.M	7.60	SQ.M	**5788.616**
	TOTAL AMOUNT					**511228.16**
	2% WATER CHARGES					**10224.56**
	5% COUNTIGENCIES					**25561.40**
	NET AMOUNT					**547014.13**
	SAY					**550000.00**

8.1.6 Avedo\water tank

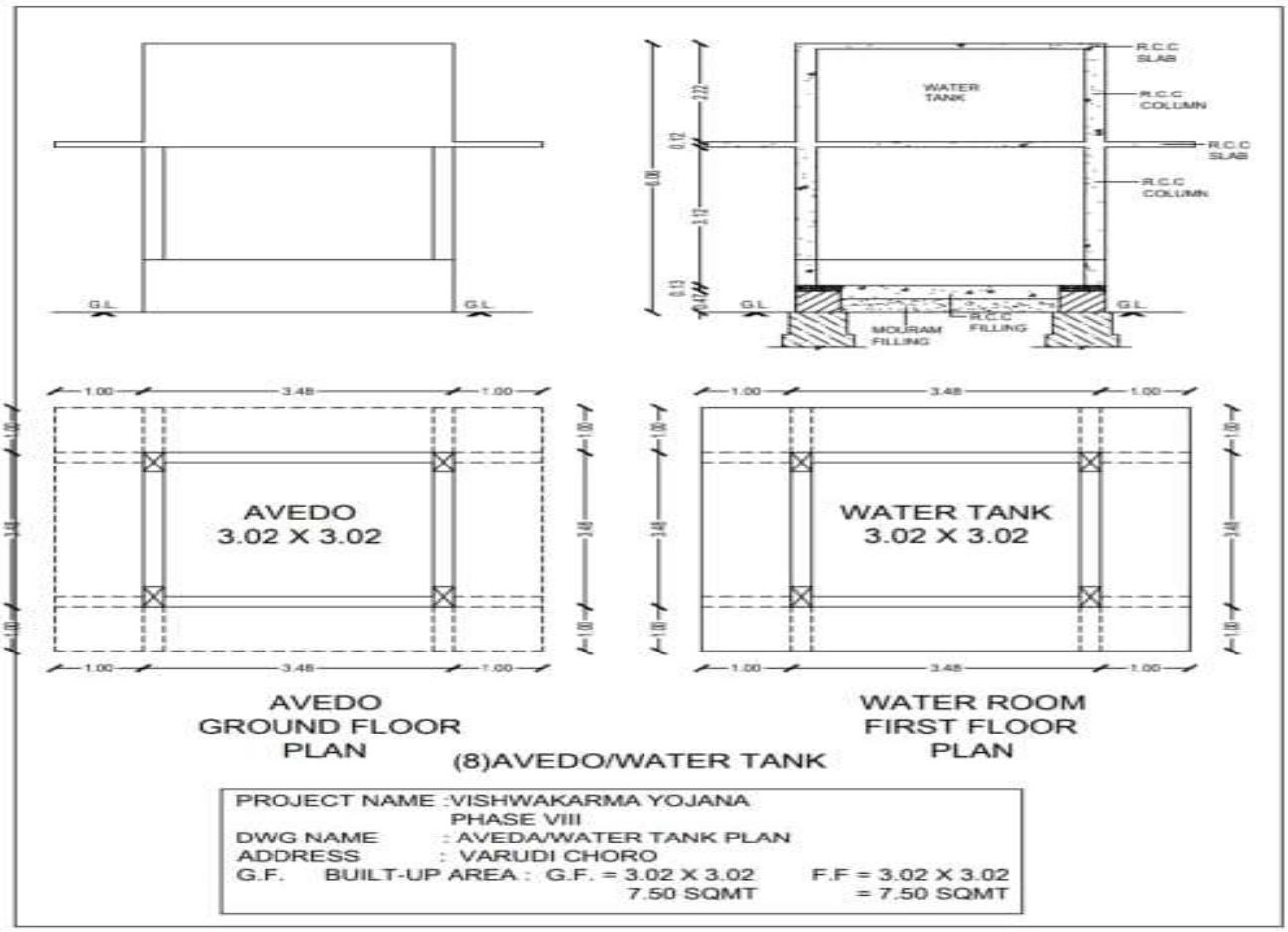


FIG 46.AVEDO PLAN

MEASUREMENT SHEET

Item No.	Item	Nos.	L	B	H	Total	Unit
1	**Exacavation**	4	3.25	0.75	0.6	**5.85**	**Cu.M.**
2	**PCC in Foundation**	4	3.25	0.75	0.1	**0.975**	**Cu.M.**
3	**UCR Mashonry up to GL**	4	3.25	0.75	0.15	1.4625	
		4	3.25	0.6	0.45	3.51	
						4.9725	**Cu.M.**
4	**CR Mashonry up to Plinth**	4	3.25	0.45	0.47	**2.7495**	**Cu.M.**
5	**Rcc Coping**	4	3.25	0.45	0.12	**0.702**	**Cu.M.**
6	**Rcc Column**	4	0.6	0.23	3.12	**1.72224**	**Cu.M.**
7	**RCC Slab**	1	5.48	5.48	0.125	**3.7538**	**Cu.M.**
8	**RCC Wall AND Slab**	4	3.25	0.23	2.22	6.6378	
		1	3.48	3.48	0.125	1.5138	
						8.1516	**Cu.M.**
9	**Earth Filling**	1	3.04	3.04	0.9	**8.31744**	**Cu.M.**
10	**CC Flooring**	1	3.02	3.02	0.15	**1.36806**	**Cu.M.**
11	**Outer Plaster**	4	3.48	-	0.9	12.528	
		4	3.48	-	2.22	30.9024	
		1	3.48	1	-	3.48	
		1	5.48	1	-	5.48	
		1	3.02	3.02	-	9.1204	
						61.5108	**Sq. M.**
12	**Paint**					**61.5108**	**Sq. M.**
	As Per Plaster						

ABSTRACT SHEET

SR NO	DESCRIPTION	QTY	UNIT	RATE	PER UNIT	AMOUNT
1	**EXCAVATION IN FOUNDATION**	5.85	CU.M	85.90	CU.M	**502.51**
2	**PCC IN FOUNDATION**	0.975	CU.M	2137.44	CU.M	**2084.00**
3	**BRICK MAOSNARY IN FOUNDATION UPTO GROUND LEVEL**	4.972	CU.M	3259.75	CU.M	**16207.47**
4	**BRICK MAOSNARY IN FOUNDATION UPTO PLINTH**	2.749	CU.M	3259.75	CU.M	**8967.05**
5	**Rcc Coping**	0.702	CU.M	2137.44	CU.M	**1500.48**
6	**Rcc Column**	1.722	CU.M	2137.44	CU.M	**3680.67**
7	**RCC Wall AND Slab**	8.151	CU.M	2137.44	CU.M	**17422.27**
8	**RCC SLAB**	5.48	CU.M	3818.93	CU.M	**20927.73**
9	**EARTH FILLING UPTO PLINTH**	3.04	CU.M	250.00	CU.M	**760.00**
10	**CC FLOORING**	1.368	CU.M	2137.44	CU.M	**2924.01**
11	**PLASTER**	61.510	SQ.M	68.50	SQ.M	**4213.43**
12	**PAINT**	61.510	SQ.M	7.60	SQ.M	**467.47**
	TOTAL AMOUNT					**79469.10**
	2% WATER CHARGES					**1589.38**
	5% COUNTIGENCIES					**3973.45**
	NET AMOUNT					**85031.931**
	SAY					**86000.00**

8.2Reason for Students Recommending this Design

We recommending this six design

(1) Public toilet
(2) Sub-PHC center
(3) Cyber café plan
(4) Aveda\water tank
(5) Community hall
(6) General store

(1)Public toilet

Reason for we recommending this two design public toilet is that there are not a single toilet for public use near bus stand.

In varudi village there are school, bus stand and public garden are in only 200m distance respectively so we design public toilet for basic facility of all villagers and travellers also.

(2)sub-phc centre

Reason behind we recommending sub phc centre that the villagers do not travel for hospital and small diseases to the amreli that can treat in sub phc centre for better treatment in village for good and healthy life of villager.

(3)Cyber Cafe :-

In varudi village, there is not enough cyber cafe capacity for the students and villagers. So cyber café may increase villager's knowledge and increase their literacy rate.

(4)Avedo:-

As the main occupation of the people of varudi is farming and animal husbandry, there is a need of avedo for the drinking and eating of animals. So, we have designed an avedo in the village so that villagers does not need to take their animals to other village or town for their grazing.

(5)Community hall

Community hall is helping the villagers to celebrate small function like marriage and many other festival in one place

(6)General store

The genral store help villager to buy the essential product in village

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

Following Are the Future Plan for the Next Semester

- In Next Semester We Will Provide Social Infrastructure Design For The Village. It Will Include The Design Of Child Welfare Maternity Homes
- Then We Will Also Design Social-Culture Infrastructure For The village. It Will Include Recreational Facilities Like Public Library And Public Garden
- We Will Also Design Physical Infrastructure In The Village. It Will Include the Maintains of Punchayat Building and rain water harvesting in public building.
- The Main Intention of Technical Economic Survey and Is For Study of All Villages' Basic Scenario and Gap Analysis.
- In Our Project Work Our First Target To Survey Basic Facilities And If There Is Not Available Any Basic Facilities Than Provide And After That We May Plan To Improve The Existing Facilities Of Village.
- Our Main Aim Is to Work according To the New Upcoming Town Planning Scheme in varudi Village.
- Based On These Plans, Our Next Target Will Be To Provide Regular Maintenance Program, Which Helps In Sustaining The Structure For Longer Duration.
- Obtaining Information Related To The Ongoing Schemes In The Village And The Government Work That Has Been Completed And The Work That Is Still Going On.
- Also, Due To Lack In Maintenance, Villagers Avoid Consuming It And Which Make The Structures Obsolete.

10. Conclusion of the Entire Village Activities of the Project

As per our actual visit of varudi village we found the current scenario and condition of village. As Village is located far from urban area (city) the few facilities in village is not very much available. Cotton, Wheat and sesame is major crops grown in village. Village is connected with local public transport of Amrel. There is underground drainage system in main localities. Village is lacking for the proper solid waste management and Public toilet and other many facilities are needed to be provided.

Based on gap analysis and techno economic-survey done in current semester we developed and designed the public toilet and bath and sub-phc centre for health facilities. So we can say if all the missing amenities are provided then it may stop the migration of rural people towards the urban area. This can cause reduce the load on urban areas. And this amenities designed by us is helpful for better development of village as physically as well as socially, which improves the overall lifestyle of people.

11. References refereed for this project

❖ BOOKS:-

1. Design of Reinforced Concrete Structures by S.Ramamrutham.
2. Guidelines of Smart village by Gujarat government.
3. Professional practice and valuation by Dr. R. P. Rethaliya.
4. Building construction by A. s. kotadiya.
5. UDPFI Norms

❖ WEBSITES:-

- https://villagemap.in/gujarat/amreli/bagasara/929900.html
- https://www.wikivillage.in/village/gujarat/amreli/amreli/amarpur(varudi)
- https://en.wikipedia.org/wiki/Smart_Village_India
- https://censusindia.gov.in/2011-common/censusdata2011.htm
- https://rural.nic.in/scheme-websites

❖ CODE:-

- System of record(SOR) (Year 2015-16)

- IS 456 : 2000 Indian Standard PLAIN AND REINFORCED CONCRETE - CODE OFPRACTICE

12. Annexure attachment

12.1 Gap Analysis of the Allocated Village

Facilities	Planning Commission/UDPFI Norms	VARUDI		
		Population 1726		
		Existing	Required as per Norms	Gap
Education				
Anganwadi	Each Village(per cluster)	3	1	0
Primary School	Each Village(per cluster)	1	1	0
Secondary School	Per 7,500 population	0	3	0
Higher Secondary School	Per 15,000 Population	0	2	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
MEDICAL FACILITY				
Gov./Panchayat Dispensary.sub PHC	Each Village(per cluster)	0	1	-1
PHC&CHC	Per 20,000 Population	0	1	0
Child Welfare and Maternity Home	Per 10,000 Population	0	1	0
Hospital	Per 1,00000 Population	0	0	0
TRANSPORTATION				
Internal And Approach Road	Each Village Must Have Good Quality Roads.	Internal Roads Are Adequate. Approach Road Is Adequate.		
Bus/Auto Stand	All villages connected by PT (ST bus or auto)	1	1	0

Drinking water		adequate		
Water facilities over head tank	Total demand	adequate	30000 litre capacity	0
Public latrines	Per 20,000 Population	0	0	we -design
Cremation ground	Per 20,000 Population	1	0	1
Post office	Per 10,000 Population	1	0	1
Gram panchayat building	Each individual/group panchayat	1	1	1
APMC	Per 1,00000 Population	0	0	0
Fire station	Per 1,00000 Population	0	0	0
Police station	Per 15,000 Population	0	0	0
Community hall	Per 10,000 Population	1	1	1

Table.14 Gap Analysis

12. ANNEXURE ATTACHMENT:-

12.1. SURVEY FORM OF ALLOCATED VILLAGE SCANNED COPY ATTACHMENT IN THE REPORT:-

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:	Amreli
Name of Taluka:	Amreli
Name of Village:	AMARPUR (VARUDI)
Name of Institute:	Smt. Shantaben Haribhai Gajera Engineering
Nodal Officer Name & Contact Detail:	Prof. Nirmal Bhedi 8780193488 / 9558713503
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Shantilal Ramva
Date of Survey:	9/11/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	1726	862	864	312

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	691.47 Hectors
2.	Forest Area (In hect.)	-
3.	Agricultural Land Area (In hect.)	103 Hectors
4.	Residential Area (In hect.)	1 km around
5.	Other Area (In hect.)	3.71 Hectors
6.	Distance to the nearest railway station (in kilometers):	5-10 km

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7.	Name of Nearest Town with Distance:	Amreli (5 km)
8.	Distance to the nearest bus station (in kilometers):	Centre in Village
9.	Whether village is connected to all road for the any facility or town or City?	District Road passes through this village

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1. Agriculture
	2. Animal Husbandry
	3. Local business

Major crops grown in the village:	1. Wheat
	2. Cotton
	3. Vegetables and sesame

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		yes		
	Un Protected Well				
3.	**WATER FROM SPRING**				
	Protected Spring				
	Unprotected Spring				
	Rainwater		yes		
	Tanker Truck				
	Cart With Small Tank				
4.	**SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/**				
	Irrigation Channel				
	Bottled Water				
	Hand Pump		yes		

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	Other(Specify)Lake/ Pond		Adequate		

Suggestions if any:

B.	Water Tank Facility				
	Overhead Tank	Capacity:	Adequate		30,000 lit
	Underground Sump	Capacity:		Inadequate	

Suggestions if any:

C.	The Type of Drainage Facility				
	A. UNDERGROUND DRAINAGE 1		Adequate		

Suggestions if any:

D.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	All Weather	Adequate		
	Main road	Black Toped Pucca	Adequate		
	Internal streets	R.C.C	Adequate		
	Nearest NH/SH/MDR/ODR Dist. in kms.	NH 2 SH 5-10 Km			

Suggestions if any:

E.	Transport Facility				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Nearest Rly stn. Amreli 5 Km		Inadequate	
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	center of village	Adequate		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto, Chhakda Am			

Suggestions if any:

F.	Electricity Distribution				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	24 hr. electricity	Adequate		No power cut

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	Power supply for Domestic Use				
	Power supply for Agricultural Use	8 hr	Adequate		Alternative day and Night
	Power supply for Commercial Use	24 hr.	✓		
	Road/ Street Lights		✓		
	Electrification in Government Buildings/ Schools/ Hospitals	24 hr.	Adequate		
	Renewable Energy Source Facilities (Y/ N)	No			
	LED Facilities		Adequate		Street light

Suggestions if any:

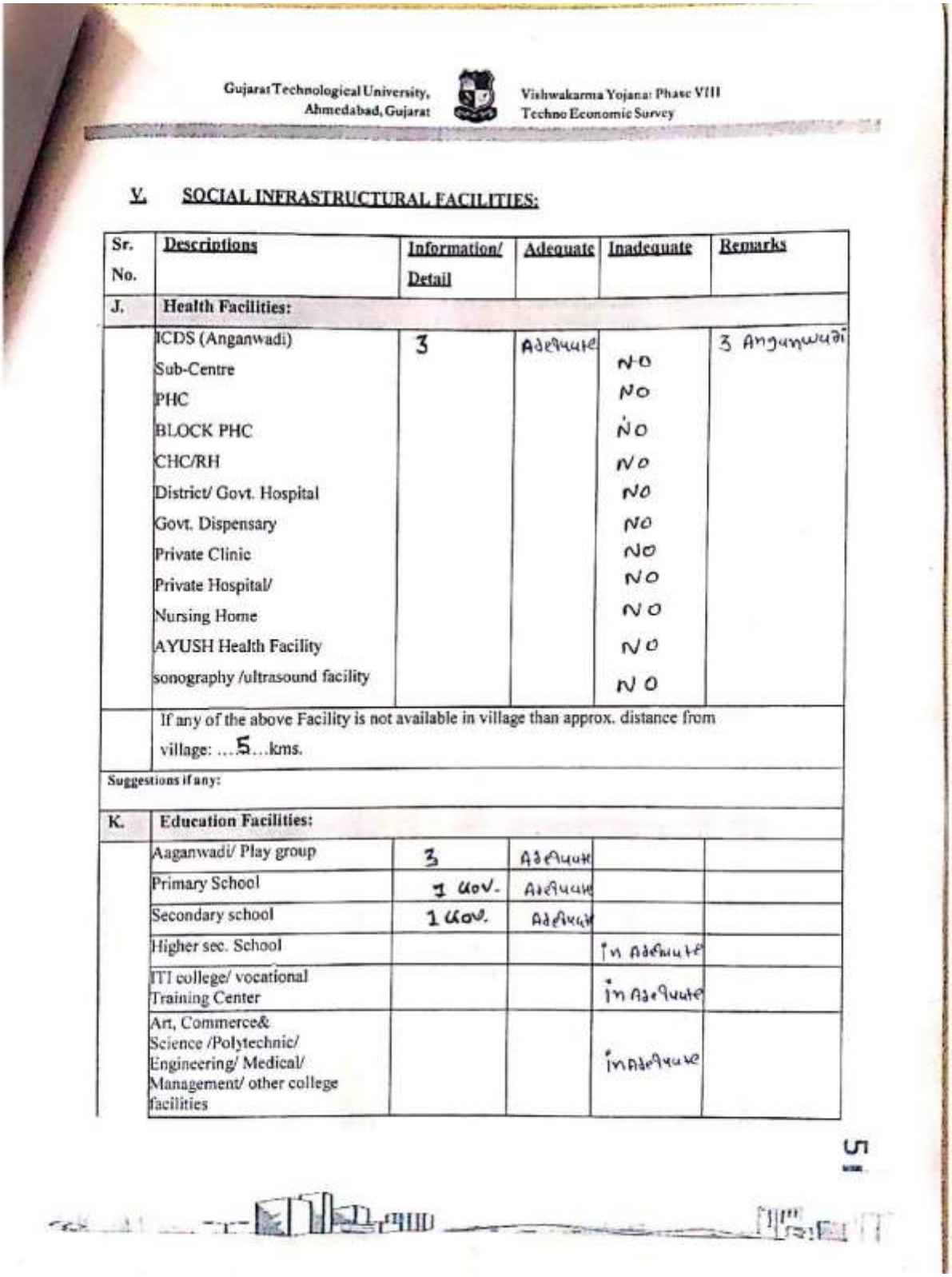
G.	Sanitation Facility				
	Public Latrine Blocks If available than Nos.			In Adequate	
	Location Condition			In Adequate	
	Community Toilet (With bath/ without bath facilities)			In Adequate	
	Solid & liquid waste Disposal system available			In Adequate	
	Any facility for Waste collection from road			In Adequate	there are some facility like Dustbin

Suggestions if any:

H.	Main Source of Irrigation Facility:				
	TANK/POND STREAM/RIVER CANAL WELL ✓ TUBE WELL ✓ OTHER (SPECIFY)	70% Tube well 30% well	Adequate Adequate		

Suggestions if any:

I.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)	95% Pucca	Adequate		5% Kutchha



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V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	3	Adequate		3 Anganwadi
	Sub-Centre			NO	
	PHC			NO	
	BLOCK PHC			NO	
	CHC/RH			NO	
	District/ Govt. Hospital			NO	
	Govt. Dispensary			NO	
	Private Clinic			NO	
	Private Hospital/			NO	
	Nursing Home			NO	
	AYUSH Health Facility			NO	
	sonography /ultrasound facility			NO	
	If any of the above Facility is not available in village than approx. distance from village: ...5...kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	3	Adequate		
	Primary School	1 Gov.	Adequate		
	Secondary school	1 Gov.	Adequate		
	Higher sec. School			In Adequate	
	ITI college/ vocational Training Center			In Adequate	
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities			In Adequate	

5

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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)	Good		YES	
	Public Library (With daily newspaper supply: Y/N)	Newspaper supply Daily		yes	NO
	Public Garden	Good		yes	
	Village Pond	Good	Near Village	yes	
	Recreation Center	Good	Near Village	yes	
	Cinema/ Video Hall				NO
	Assembly Polling Station	Good	Gov. school.	yes	
	Birth & Death Registration Office	Good	centre	yes	

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

Suggestions if any:

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

9

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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

Suggestions if any:

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

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	Solar pannel For electricity			only few People use Solar Pannel for electricity generation
2.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	-		NO	-
3.	Any Other			NO	

VII. DATA COLLECTION FROM VILLAGE

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

8

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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	Good Good - old condition.	No Public toilet & Retain facility
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING ..... ✓ ..... In regular times FOGGING..... ✓ ..... Period..... Drive was undertaken in the village?		

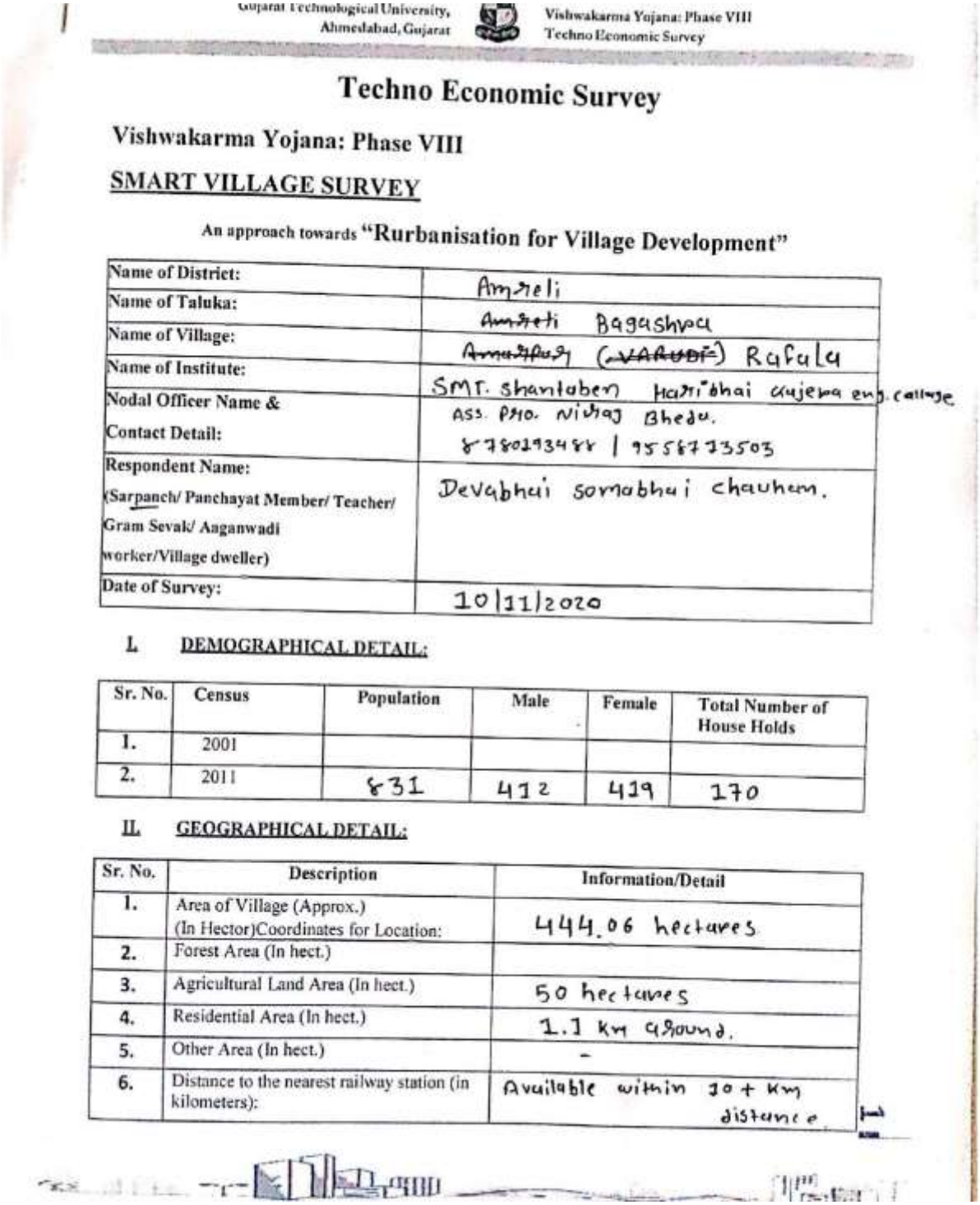
IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	Public Toilet Health centre Solar street light	

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

12.2 SURVEY FORM OF SMART VILLAGE SCANNED COPY ATTACHMENT IN THE REPORT:-



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Techno Economic Survey

Vishwakarma Yojana: Phase VIII

SMART VILLAGE SURVEY

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

Name of District:	Amreli
Name of Taluka:	~~Amreli~~ Bagasara
Name of Village:	~~Amreli~~ (~~VARUDI~~) Rafala
Name of Institute:	SMT. Shantaben Harjibhai Ujeja eng. college
Nodal Officer Name & Contact Detail:	Ass. Pro. Nirag Bhedu. 8780193488 / 9558723503
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Devabhai Somabhai Chauhan.
Date of Survey:	10/11/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	831	412	419	170

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	444.06 hectares
2.	Forest Area (In hect.)	
3.	Agricultural Land Area (In hect.)	50 hectares
4.	Residential Area (In hect.)	1.1 km ground.
5.	Other Area (In hect.)	-
6.	Distance to the nearest railway station (in kilometers):	Available within 10+ km distance

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Agriculture.
	2.	Small business
	3.	

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

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

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

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	20,000ltr		
	Underground Sump	Capacity:	-		
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET		✓ ✓		
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	R.C.C	✓		
	Main road	All weather	✓		
	Internal streets	Block Road	✓		
	Nearest NH/SH/MDR/ODR Dist. in kms.	S.H 5 km			
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	Nearest Rail. stn. 10km		✓	
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	within the Village.	✓		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Jeep. Private Vehicles	✓		
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	24 hr electricity	✓		No power cut

Gujarat Technological University, Ahmedabad, Gujarat — Vishwakarma Yojana: Phase VIII, Techno Economic Survey

	Power supply for Domestic Use				
	Power supply for Agricultural Use	8 hr	✓		
	Power supply for Commercial Use	24 hr	✓		
	Road/ Street Lights	night time	✓		
	Electrification in Government Buildings/ Schools/ Hospitals	24 hr.	✓		
	Renewable Energy Source Facilities (Y/ N)	✓			
	LED Facilities		✓		solar street light
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.		✓		
	Location Condition		✓		
	Community Toilet (With bath/ without bath facilities)		✓		
	Solid & liquid waste Disposal system available		✓		
	Any facility for Waste collection from road		✓		DustBin in side of road.
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL ✓ OTHER (SPECIFY)	100% tubewell	✓		
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	100% Pucca	✓		there are not a single kutchha House.

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	1	✓		Anganwadi
	Sub-Centre			✓	
	PHC			✓	
	BLOCK PHC			✓	all Near. around 10km.
	CHC/RH			✓	
	District/ Govt. Hospital			✓	
	Govt. Dispensary			✓	
	Private Clinic			✓	
	Private Hospital/ Nursing Home			✓	
	AYUSH Health Facility			✓	
	sonography /ultrasound facility			✓	
	If any of the above Facility is not available in village than approx. distance from village: ...10...kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	1	✓		
	Primary School	1 Gov.	✓		
	Secondary school	1 Gov.	✓		
	Higher sec. School			✓	Near village
	ITI college/ vocational Training Center			✓	Near village
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities			✓	Near village
	If any of the above Facility is not available in village than approx. distance from village: ...10...kms.				

5

Gujarat Technological University, Ahmedabad, Gujarat

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)	very good.		✓	
	Public Library (With daily newspaper supply: Y/N)	Newspaper supply.		✓	
	Public Garden	very good.		✓	
	Village Pond				✓
	Recreation Center	Good.		✓	
	Cinema/ Video Hall				✓
	Assembly Polling Station	Good.	Gov. School	yes.	
	Birth & Death Registration	Good.		yes.	

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

Suggestions if any:

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

19

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

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

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)				✓

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 and street light	✓		
2.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	in few house Rain water storage available	✓		
3.	Any Other			✓	

VII. DATA COLLECTION FROM VILLAGE

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

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

8

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

IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	its a perfect village.	some gov. scheme. provided fast.

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:
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Contact No – 079-23267588
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GRAM PANCHYAT KACHERI-AMRAPUR (VARUDI)

So I gave this latter to the student of Smt. Shantaben haribhai Gajera Engineering Collage that the student of Sem 7 in Civil engineering visited the village.

The student take survey of village facilities and the information which we gave is absolute true as per village condition.

So we gave this letter as conformation about visit of village and information

SHRI TALATI MANTRI

STAMP\SIGNATURE

SHARPANCH OF VARUDI

STAMP\SIGNATURE