DETAIL PROJECT REPORT

VISHWAKARMAYOJNA: VIII
AN APPROACH TOWARDS RURBANISATION
MOTI-KUNKAVAV_Village
AMRELI_District

PREPARED BY

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COLLEGE NAME:-

SMT.SHANTABENHARIBHAI
GAJERA ENGINEERING COLLEGE,
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NODAL OFFICERS NAME:-

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COLLEGE LOGO:-

YEAR:2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY

Chandkheda,Ahmedabad– 382424 Gujarat

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CERTIFICATE

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

DetailProjectReportfor,

VILLAGE: MOTI-KUNKAVAV

DISTRICT: AMRELI

Under

VishwakarmaYojana: Phase-VIII

In partial fulfillment of the project offered by,

GUJARATTECHNOLOGICALUNIVERSITY,CHANDKHEDA

During the academic year 2020-21.

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

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ABSTRACT

Vishwakarma Yojana is providing the benefits of real work knowledge to engineering students. Rurbanisation is to bring peace of mind to the villagers by providing them the essential amenities and still keeping the village spirit. This project gives one idea for progress of rural villages. Also gives procedure how they realize basic requirement of the villages.

Kunkavav Moti is a large village located in Kunkavav Vadia Taluka of Amreli district, Gujarat with total 2245 families residing. The full geographical area of village is 3777.5 hectares. The Kunkavav Moti village has population of 10789. It is situated 30 KM towards west from District headquarters Amreli.

288 KM from State capital Gandhinagar. Bagasara is nearest town to Kunkavav Moti which is just about 18km away. Kunkavav Moti Pin code is 365450 and postal head office is Kunkavav .

There is one overhead water tank in Moti-kunkavav. 60% of the houses are pucca yet as 40% of the houses are kutchha. Village is linked with 24 hour electricity supply. The development of city will lead the people to develop their villages otherwise there will be further migration towards cities, which will arrangement RURBAN planning.

In Moti-Kunkavav village some physical and social amenities are improved like street light, Aanganwadi, cement concrete road, primary school. In the village lack of basic facilities like general market.

For development Moti-kunkavav village we are try to present required facilities like public library as a socio-culture infrastructure, public toilet as a physical infrastructure facility.

Based on survey we tried to give design of basic amenities to fulfill their needs. By providing this basic capability to village for decrease urban city pressure and decrease migration rate, which is vital aim of Vishwakarma Yojana.

Key Words: Smart village, Ideal village, Rurbanisation, SAGY(sansad adarsh gram yojna)Survey

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

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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.

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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 vinyl 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
CSS	Centrally sponsored system
ZWM	Zero waste management
MNREGA	Mahatma Gandhi national rural employment guarantee
EPF	Ecofriendly plastic fuel
DEWATS	Decentralized Wastewater System

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

1.1bBackground & Study Area Location:-

(A) Background:-

(1) Punsari – Gujarat's Urban Village:-

Sometimes just a vision for change can create an ocean of diversity. When Himanshu Patel was chosen Sarpanch of Punsari, an old-world little village in Sabarkanth district Gujarat, in 2006 there was no sewerage connection, no street lights, no pucca roads and, of course, no source of earnings for the gram panchayat except the grants and funding from various state and Union government schemes.

Six years afterward, the urban village flaunts a Wi-Fi and optical fiber broadband system, classrooms with CCTV cameras, its own mini-bus transport system and 25-odd CCTVs situated on significant junctions to spot litterbugs. There is an RO water treatment plant that supplies 20-litre cans to houses for a coupon cost of Rs 4. You also have a school bus to convey your wards, and that too on clean RCC roads.

The gram panchayat also provide services of loud speaker covering entire village, gutter project, clean main health care hub, 8 kinder garden schools, banking facility, toll free complain receiving phone service, among others.

Villagers can buy ticket of Rs1 to use the mini bus service. For female students, bus service is totally free. Women come to put down milk to milk bank couple of times during a day through this bus. Cost of running the service is managed during ticket sales.

Punsri has 120 noisy-speakers covering each corner of the village. Villagers listen in to prabhatiya in the morning and bhajan and bhakti songs in the evening. Also important announcement like telephone bill, power bill, results of 10th and 12th are made through these speakers. Unique aspect is that the village sarpanch can pass on any announcement from his mobile phone. To set up this system Rs 4 lakh were spent from amount.

The total estimation for this development work was ₹140 million (US$2.0 million) and the state and central governments provided support for the same. For his efforts, the Sarpanch Himanshu Narendrabhai Patel was awarded with the best Gram Sabha award at the third nationalized Panchayati Raj Day held at New Delhi. In November 2011, he received the best Gram Panchayat award in Gujarat from the Chief Minister Narendra Modi. The Punsari Gram Panchayat has received the prominent Rajiv Gandhi Best Gram.

(B) Study Area :-

Punsari village is situated on 23.205946 latitude and 73.81248 longitudes. The village is situated at about 80km from the state center, Gandhinagar. Punsari Village is situated Sabarkantha District of Gujarat State, India. (**PIN**: 383307, **District**: Sabarkantha, **State**: Gujarat)

FIG.1 Location Detail of Punsari Village

(2) Devrajiya-Gujarat's Urban Village:-

(A) Back Ground:-

Devrajiya is a village in the Amreli district of India. Devrajiya was under the control of the Amreli state during the Navabshahi.Local business mainly consists of agriculture and diamonds.

(B)Study Area:-

Devrajiya village is situated on 21.30 latitude and 71.09 longitudes.
PIN: 365630, **District**: Amreli, **State**: Gujarat

Fig.2 Location Detail Of Vadali Village

1.2 Concept: Ideal Village, Normal Village:-

1.2.1Objectives 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 analyze all feasibility parameters and development factors for sustainable development of villages.
- The basic objective of rural development program have been alleviation of poverty and development through creation of basic social and economic infrastructure, provision of training to rural unemployed youth and providing employment to marginal farmers to discourage seasonal and permanent migration to urban areas.
- Implement sustainable and integrated rural development programs related to health, education, agriculture, forestry, land, renewal energy technology, water and environment based on resources endowments and comparative advantages of the working area.
- To provide a comparative analysis of the economic, social and environmental context for rural development.
- 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

1.2.2 Example/ Live Case Studies of Ideal Village of India Introduction:-

(A) Definition Of Smart City:

A smart city is a urbanized urban area (by the nagrpalika or mahanagapalika) 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

(B) 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

(C) 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

❖ Facilities:

Smart city	Smart village	Village
▪ Secure electricity supply. ▪ Sufficient water supply. ▪ Sanitation facilities, including Solid Waste Management.	▪ Smart Security with cctv camera.(ex, street camera, enter-exit camera) ▪ Efficient public transportation system.(ex,	▪ Include secure drinking water. ▪ Sanitation. ▪ Housing. ▪ Transportation (like ex. Bus

▪ Sustainable environment. ▪ Good health and education. ▪ Efficient urban mobility and public transport. ▪ Reasonably priced housing, especially for the poor, etc. ▪ Public transportation. (Ex, Brtc, Rmts, etc.)	Bus stand) ▪ Improving sanitation condition.(ex, general toilet) ▪ Solid and liquid waste management.(ex, sewer) ▪ Rain water harvesting system. ▪ Secure drinking water facilities. ▪ Use renewable energy. (Ex, solar energy).	stop, private transportation, etc...) ▪ Doctor house ▪ School. ▪ Playground. ▪ Fresh air ▪ Crimination ground ▪ Primary school

➢ Example of ideal village:

(I) Dharnai (Bihar) First Fully Solar Powered Village:

Dharnai, a village in Bihar, beat 30 years of shadows by developing its own solar- powered system for electricity. With the aid of Greenpeace, Dharnai declared itself an energy-free village in July. Students no long need to limit their studies to the day time; women no longer limit themselves to stepping out in the day in this village of 2400 residents.

(II) Mawlynnong (Meghalaya) Asia's Cleanest Village:

Mawlynnong, a small village in Meghalaya, was awarded the high-status tag of 'Cleanest villag in Asia' in 2003 by Discover India Magazine. Located at about 90 Km from Shillong, the village offers a sky walk for you to take in the beauty as you explore it. According to visitors, you cannot find a single cigarette butt/plastic bag deceitful around there.

1.2.3 The Idea of a model:-

The scheme was implemented in filier (pilot) mode in 1000 villages of Bihar, Assam, Himachal Pradesh,Tamil Nadu and Rajasthan, with an allocation of Rs 10 lakh per village. This limit was soon 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 way. Bihar launched a Climate Smart Village Yojana in year 2011.

1.2.4 Ancient History Civil/ Electrical concept about Indian Village:-

Under the Climate Smart Village Scheme, about 2600 acres of technical expression of various agricultural techniques have to be done between 2100 families of Kharif and selected villages. Agriculture Minister advised to plant saplings under Jal Jeevan Hariyali Yojana. In the adopt village, the work of leveling 100 acres is to be done. Approximately 90 percent of villages in India were estimated to be electrified in 2019. Rural areas and country sides are also known as villages in India. A separate 2018 survey of 360,000 villages by the central rural development ministry found more than 14,700 villages without electricity for domestic use.

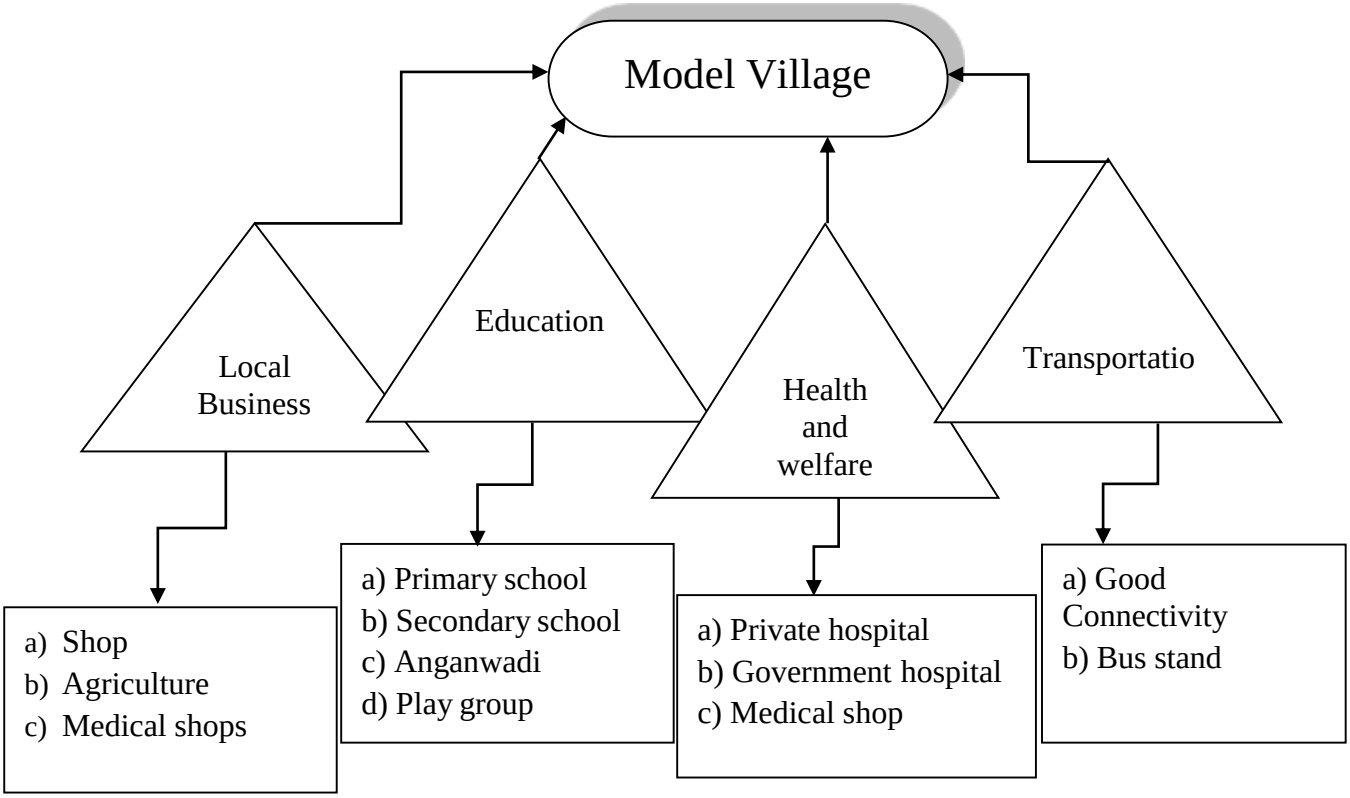
Objectives:-

- To study the evils of Moti-kunkavav village (Allocated village).
- Urbanization of 'Moti-kunkavav' from the survey of ideal & smartvillages.
- Analysis of existing structure at allocated village Moti-kunkavav.
- Provide modified design for existing structure and new structure if require.
- Creating models of local development which can be example of other villages.
- Create and sustain a culture of cooperative living for inclusive and rapid development.

Key Elements of Model/Ideal Village:-

A 21st century model village in India wants to incorporate certain key themes which would be essential for its success.

✓ Key basics of a model village are given below:



1.3 Detail Study (Physical & Demographical Growth) Of Ideal Village Punsari:-

1.3.1 demographic Growth :-

Sr no.	Census	Population	Male	Female
1.	2011	5500	2853	2647

Table.1 Population data of Punsari

1.3.2 Physical Growth :-

The village is urbanized during recent years very efficiently. The village has basic facilities like,

- Aganwadi, Education facilities, PHC, Government Hospital, Bus Stop, Over Head Tank, Post office, Police station, C.C roads, Street lights, Drainage system.

➢ Occupation Details:-

- Farmer, Farm labor, Home Industry, Local business.

1.3.3 Social Scenario:-

We have that found that all villagers of this village are much linking with today technology, skills and environment. Punsari is 20km from Parvati Hills. Parvati Hills is the biggest table top land of India.Here villagers enjoy all the facilities that one living in the city does.

1.3.4 Infrastructures Facilities:-

-: Entry gate of punsari :- -: Smart security(CCTV):-

-: Primary School: - -: Waste Collection van: - -: Bank Facilities:-

Fig.6 Facilities of Ideal Village (punsari)

1.4 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	No recreation center	Woman empowerment	Lack of awareness of villagers about educations
Bank facilities	No facilities for disposal of solid & liquid waste disposal	To rise the living standard of people	Lack of increase literacy rate
Health facilities	No public latrines(ex, public toilet)	To provide the public toilet	Lack of increase sanitation Facilities

Table.2 SWOT analysis

1.5 Future prospects of Development of the Ideal village:-

The aim is to help villagers to generate income for themselves and to contribute to the further development of their community. In this way, communities become empowered and self-sustained and are able to share their benefit with their neighbor's.

1.6 Benefits of the Visits of Ideal Village:-

- We saw all type of basic and physical facilities available.
- By this visit, it has enhanced our communication skills and we knew how to cooperate with the peoples and saw face to face what smart village is like.
- To understanding allocated village condition.
- We had seen much kind of new technologies and systematic knowledge which can be used in allocated village.

⇨ Resources:-

Village is wealth like, the main non farming activity is dairy in this village. The village has undergone a conversion under the panchayat. There has been use of new and higher technology in education. This village has Wi-Fi connection for all community. Efforts have been made for the empowerment of women and rising security in the village. Some of the facilities provided by the panchayat include local mineral water supply, sewer & drainage project, a healthcare centre, banking facilities and toll-free complaint reaction service.

Chapter-2 Literature Review:-

2.1 Introduction: Urban & Rural Village Concept:-

- Urban :-

An urban area, or build-up area, is a human settlement with a high population density and infrastructure of built environment. Urban areas are shaped through urbanization and are categorize by urban morphology as cities, towns, conurbations or suburbs. Urban areas have municipality, corporation, and cantonment board or notify town area board etc. According to census 2011, there are 7,935 towns, 4,041 constitutional town and 3,894 census towns. India, the leading country in South Asia has shown an extraordinary 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 submit to towns and cities.

- Rural:-

Rural areas are also recognized as the 'countryside' or a 'village' in India. It has a very low population solidity. In rural areas, agriculture is the leader source of income along with fishing, cottage industries, pottery etc. Almost every economic agency today has a meaning of rural India. A minimum of 75% of male working population involved in agriculture and related actions. A rural areas population density is very low. All the areas which are not characterized as urban area is called rural area.

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:-

Rural areas have low population mass and large amount of undeveloped land. Agricultural actions are more in rural areas. Rural areas are the reverse of urban areas. Rural areas, often called "the country", have low population mass and huge amounts of undeveloped land. Urban areas, often called "the country", have a density of human structures such as houses, profitable buildings, roads, bridges, and railways.

- Example of Ancient village :- (Malana, Himachal Pradesh)

Very old Indian village in the status of Himachal Pradesh is malana. This retiring village in the Malana Nala, a side basin of the Parvati Valley to the north-east of Kullu Valley, is inaccessible from the rest of the world.

2.4 Scenario: Rural / Urban Village Of India Population Growth:-

Agenda of survey of India is to release of conditional population totals-Rural urban allocation. Population of Rural and Urban area (in crore)

	2001(crore)	2011(crore)	Difference(crore)
India	102.9	125.03	22.13
Urban	28.6	37.7	9.1
Rural	74.3	83.3	9.0

Table.3 Population of Rural and Urban areas as per census 2001 and 2011

For the first in since freedom, the absolute increase in population is additional 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.4 Literacy Rates in Rural and Urban areas as per Census (survey) 2001 and 2011 Literacy Rates (in %)

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

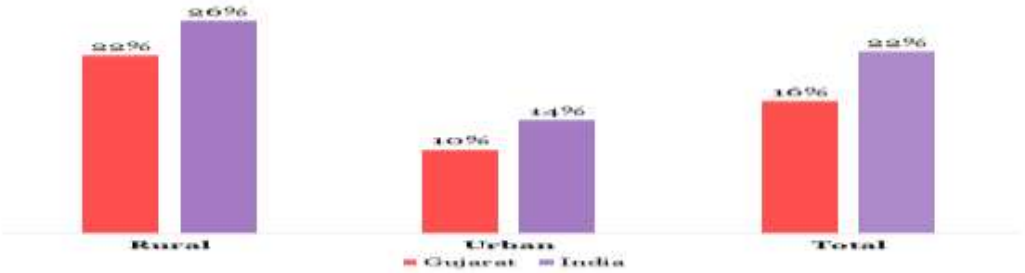
The rural urban literacy space which was 20.6% points in 2001, has approach down to 16.1% points in 2011.

	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.5 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: 2,89,01,34



-: 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 Development Issues – Concerns - Measures:-

RURAL DEVELOPMENT
ISSUES – CONCERN - MEASERES

1. Public Related Problem	2. Agriculture Related Problem	3. Infrastructure Related Problem	4. Economic Related Problem	5. Administration Problem
				
1. Traditional way of thinking. 2. Poor Understanding. 3. Lack of confidence. 4. Poor awareness. 5. Deprived psychology & scientific orient..	1. Unavailable of inputs. 2. Poor Marketing facility. 3. Insufficient extension staff and services. 4. Poor awareness. 5. Small size of landholding.	1. Poor infrastructure facilities like... • Water. • Electricity. • Transportation • Health. • Employment. • Communication • Storage Facility	1. High cost of inputs. 2. under privileged rural industries. 3. Unfavorable economic condition to adopt high cost technology.	1. Political interference. 2. Lack of motivation and interest. 3. Improper utilization of budget. 4. Unwillinmess to work in

2.7 Other Projects / Schemes In Other Projects For The Development Of The Rural Area Is The Public Private Partnership (PPP):-

- 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.

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

Rural electrification is seen as a key mechanism to: improve living standards; increase income through 'income generating activities'; and improve community services such as education and healthcare. However, to date, mechanisms to implement rural electrification projects are far from perfect as problems with dissemination and sustainability in rural areas have not abated. As Lahimer et al. puts it "rural electrification is a complicated issue because of user affordability, rural inaccessibility and remoteness, low population densities and dispersed households, low project profitability, fiscal deficit, scarcity of energy resources, population growth, lack of professionalism, and over-dependence on subsidies".

Challenges:-

- Financial:- High upfront cost requiring savings over time; unavailability of capital; and lack of initiative through dependency on subsidies.
- Infrastructure:- Access to market through lack of local infrastructure and other market-based factors (e.g. competition, and marketing).
- Technical:- Low technical skill levels and access to quality materials/products.
- Social:- Local ownership and acceptance.

Deen Dayal Upadhyaya Gram Jyoti Yojana is a Government of India scheme designed to provide continuous electricity supply to rural India. The government plans to invest ₹756 billion (US$11 billion) for rural electrification under this scheme. The scheme replaced the existing Rajiv Gandhi Grameen Vidyutikaran Yojana.

❖ Rural Electrification in India:-

The need for extension of the electricity system to rural areas was felt quite early, just after the independence of the country. Rural Electrification program in India was launched with two distinct dimensions i.e. (1) Village Electrification. (2) Irrigation Pump set Energization. The former enhances consumer satisfaction and the latter optimizes crop yield. The area of focus was certainly maximizing farm output, which did result in the Green Revolution in the mid-1960s. Accordingly, the indicator of electrification was not based on the percentage of households or population with access to electricity but merely extension of electricity lines to a particular area. By this definition, almost 86% of the villages have access to electricity. In 2004, the program has been refocused to provide electricity access to rural households.

The First Five Year Plan emphasized to support for projects that ensure irrigation potential. During this period, only one in 200 villages was connected to grid supply across the country. The Second Plan named rural electrification as an area of special interest, and proposed to cover all towns with a population of 10,000 or more. Only 350 out of a total of 856 of were eventually electrified. The Third Plan for the first time raised the issue of efficiency in the sector. The REC (Rural Electrification Corporation) was created in 1969 with renewed focus on poverty alleviation. The target based approach of rural electrification was developed in the Fourth and Fifth Plan periods, with focus on pump set energization and guidelines for village grid connectivity for all villages

with a population of at least 5000.

The early 80‟s saw major changes in conjunction with the creation of the Commission for Additional Sources of Energy (CASE) in 1981, which evolved into a full-fledged Ministry for Non-Conventional Energy Sources (MNES) in 1992. The Sixth and Seventh Plan periods witnessed the launch of innovative rural energy programs like the National Program on Improved Chulha (NPIC) in (1983), The National Project on Biogas Development (1981-82), Special Program Agriculture (SPA) and integrated energy programs like IREP (Integrated Rural Energy Planning) and Urjagram. With the institutionalization of the MNES in the early 90s, rural energy provision now largely rests with the RECs and MNES. Covering a wide range of technology and fuel options including renewable sources, national efforts at rural energy provision floated variety of programs to address the range of energy requirements of rural populations. With the change in definition of an electrified village, the mid-term review of India‟s Tenth Five-Year Plan has acknowledged that the year-end figures as of 31st March 2004 of 84.3% village electrification would reduce to less than 70%.

2.9 Other Projects / Schemes of Gujarat / Indian Government:-

- DAY-NRLM-Deendayal Antyodaya Yojana - National Rural Livelihoods Mission

⇨ The DAY-NRLM is essentially a poverty relief program of the Central government. The scheme started with an agenda to cover 7 Crore rural poor households via Self Help Groups (SHGs) and federated institutions and support them for livelihoods collectives in 8-10 years.

- Deen Dayal Upadhyay Grameen Kaushalya Yojana DDU-GKY

⇨ Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) aims to skill rural youth who are poor and provide them with jobs having regular monthly wages or above the minimum wages. It is one of the cluster of initiatives of the Ministry of Rural Development, Government of India that seeks to promote rural livelihoods.

- Mahatma Gandhi National Rural Employment Guarantee Act MGNREGA

⇨ The Government of India passed the Mahatma Gandhi National Rural Employment Guarantee Act, 2005 in September, 2005. The Act gives legal guarantee of a hundred days of wage employment in a financial year to adult members of a rural household who demand employment and are willing to do unskilled manual work.

- Pradhan Mantri Awas Yojana - Gramin PMAY-G

⇨ Pradhan Mantri Gramin Awas Yojana, previously Indira Awas Yojana, is a social welfare programme, created by the Indian Government, to provide housing for the rural poor in India.

- Swachh Bharat Mission Gramin

⇨ And many other such schemes are running for the development of the people of Gujarat.

Chapter-3 Smart (Cities/ Village) Concept Idea and Its Visit (Punsari Village):-

3.1 Introduction: Concepts And Definitions:-

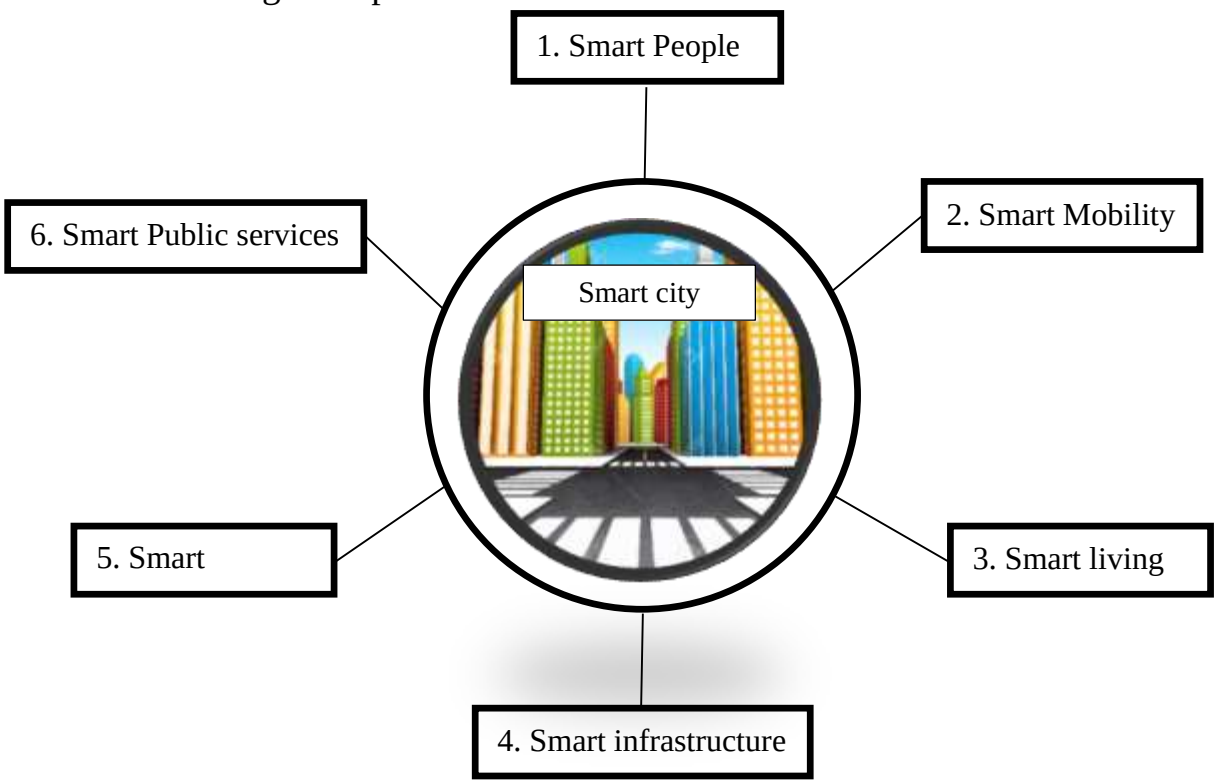
- Concept:-

Creating a "smart village" is essential to solve the problems of urban population increase and rapid urbanization. The basic concept of smart village is to collect society efforts and strength of people from various streams and incorporate it with information technology to provide profit to the rural community.

- Definition:-

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

3.2 Technological Options:-



-: technical 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.

3.3 Issues & Challenges:-

- There are certain technologies that are a part of the project and it is exclusive to use them. This hinders the achievement of smart city project. Another challenge is the need for a standard that can bring skill users and creators together to take on faster platforms.
- For making smart village the major challenge is to have money. It was determined that each Smart City will obtain 500 Crore over the period of 5 years by Central Government. But this amount won't be adequate. There are many private firms that are as long as funding but it requires being in proper procedure.

3.4 Smart Infrastructure:-

- Smart Infrastructures Include Several Operators From Different Domains Of Activity, Such As Energy, Public Transport And Public Safety.
- Smart Infrastructure Has Many Apparatus Like Digital Management Of Infrastructure, Sensor Networks, Digital Water And Waste Management, Institutional, Physical, Social, Economic Infrastructure, and Smart Electricity (Like, Solar Power).
- Economic Infrastructure Includes Developing Proper Infrastructure That Generates Employment Opportunities And Magnetize Investments.
- Economic Infrastructure Refers To The Amenities, Actions And Services Which Support Operation And Development Of Other Sectors Of The Economy.
- Smart Information And Communications Technology (Smart Ict) Has The Probable To Transform The Way We Plan And Handle Infrastructure.
- Smart infrastructure intelligently connects energy systems, buildings and industries to adapt and evolve the way we live and work.
- Intelligent grid control and education to smart storage solutions, from building automation And control systems to switches, valves and sensors.

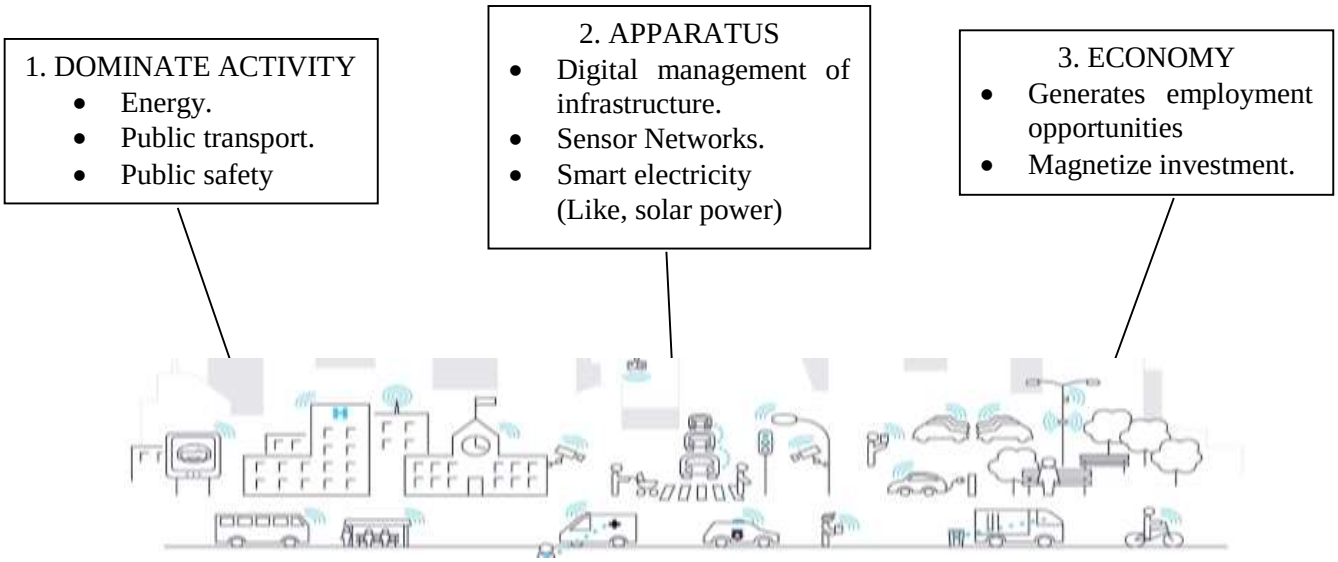


Fig.7 Smart city infrastructure

3.5 Cyber Security:-

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

Fig.8 cyber security

3.6 Retrofitting- Redevelopment- Greenfield Development District Cooling:-

❖ Green Building:-

- Green building is the practice of increasing the effectiveness with which buildings and their sites use energy, water, and materials, and of falling impacts on human health and the environment for the entire life-cycle of a building.

Fig.9 Green Building concept

- Green building is the perform of creating structures and using processes that are environmentally dependable and resource-efficient throughout a building's life-cycle from sitting to design, construction, operation, preservation, renovation and deconstruction.
- Pollution's devastating effects on the environment have become more understandable inrecent years, sparking a movement to encourage energy efficiency, less reliance on fossil fuels, and a decrease in air and water pollution.
- Green building brings mutually a huge collection 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).

3.7 Strategic Options for Fast Development:-

The main objective of the approaches and strategies that are necessary to bring about development of rural communities. In rural communities, there are number of aspects that need to be developed. These include, education, employment opportunities, agriculture and farming practices, administration and management, infrastructure, civic amenities, health care and medical and environmental conditions. When improvements would take place in these areas, then rural individuals would be able to secure better livelihoods opportunities. Furthermore, when approaches and strategies are formulated by the Government, organizations and other agencies, then it is vital to generate awareness among rural individuals and help them in acquiring benefits of these measures and approaches in an appropriate manner. The main areas that have been taken into account in this research paper include, development objectives of rural areas, components of rural development policy, approaches for rural development, strategies of rural development and other strategies promoting rural development.

Improvement of Economic Capabilities:-

In order to bring about improvements in the living conditions and overall quality of lives, it is necessary to generate a source of income. In rural areas, agriculture and farming practices are stated as the major occupations of the individuals. Apart from these, they are engaged in the production and manufacturing of handicrafts, silk weaving, pottery making, and so forth. Therefore, it can be stated that involvement in employment opportunities and occupations are the major objectives of not only individuals residing in urban communities, but also rural individuals. In the agriculture sector, strategies need to focus upon bringing about improvements in agricultural productivity and marketing of agricultural products. It is vital for the farmers and agricultural laborers to put into operation, innovative and scientific methods to augment production. Agricultural income can be increased through the implementation of two comprehensive methods. These are, stabilizing the prices of agricultural products and intermediary exploitation and improving agricultural productivity and infrastructure.

To bring about improvements in agricultural productivity, one gets involved in the production of multiple crops, by making use of advanced agricultural techniques. Introduction of modern irrigation methods is regarded as one of the strategies of improving agricultural infrastructure. The main aspects that need to be taken into consideration to improve agricultural productivity are, development of small-irrigation systems, i.e. construction of irrigation systems and development of water user associations; capacity building for agricultural extension workers, i.e. improvement of cultivation techniques, improvements in the production of crops and vegetables and agroforestry; empowerment of community based activities for farming, i.e. organization of shipping and distributive co-operatives and rice banks and comprehensive rural and agricultural development, i.e. integrated projects with the development of small-scale irrigation, capacity building for the agricultural workers and strengthening of the community-based activities for farming. The improvements made in these areas, would render an effective contribution in Augmenting productivity and profitability through engagement in agriculture and farming practices.

Reconstruction Support:-

The term ‘reconstruction’ is primarily related to the construction of houses, shelters, schools, training centers, hospitals, medical centers, market places and other public places. These areas are vital in not only leading to effective growth and development of the individuals, but also

community as a whole. When there would be establishment of schools, educational institutions and training centers, then individuals would recognize the significance of education and augment their academic skills. The availability of health care and medical centers, would support the individuals in taking care of their health and well-being. Market places will enable individuals to make purchases of various items. Public places are referred to the places, which are visited by public. These include, parks, playground, theatres, religious places and so forth. Apart from the construction of these places, it needs to be ensured that in rural communities, infrastructural facilities and civic amenities need to be developed in an appropriate manner. Policies need to be formulated, so the households should not experience scarcity of water and electricity. Water, electricity and lighting facilities within households are regarded to be of utmost significance, which would enable the individuals to implement their tasks and sustain their living conditions in an efficient manner.

Conclusion:-

The primary objective of acquiring understanding in terms of rural development approaches and strategies is to recognize the effective contributions that they make towards leading to effective growth and progression of rural communities. Generating information in terms of rural development objectives is the first and foremost aspect. These are, improvement of economic capabilities, improvement of human capabilities, improvement of protective capabilities and improvement of political capabilities. The components of rural development policy are, environmental conditions, ecological settings, technology, infrastructure, self-reliance, law and order, education, training programs, distributive justice and medical and health care. When the rural development policies are initiated, then they have the major objective of ensuring that the components are taken into account in an appropriate manner. The main purpose of approaches is to promote development of various areas. These include, education, training programs, employment opportunities, skills development programs, technology, modern and innovative methods, management and administration and housing.

The five year plans included the implementation of programs and schemes that focused upon development of rural communities. The strategies for rural development are, multi-purpose strategy, growth oriented strategy, target group strategy, area development strategy, spatial planning strategy, integrated or holistic strategy and participatory strategy. The other strategies promoting rural development are, anti-poverty measures, food production, conservation of the natural environment, reconstruction support and administrative capabilities. In rural communities, individuals have recognized the significance of education. They have also generated information that making use of modern and scientific methods and technology in the production processes will lead to increase in productivity and profitability. But the conditions of poverty, malnutrition and scarcity of resources are proving to be major impediments within the course of achievement of the desired objectives. Hence, the main purpose of other strategies is to form the overall rural environmental conditions in such a manner that would lead to effective growth and development of individuals and communities.

3.8 India's Urban Water and Sanitation Challenges and Role of Indigenous Technologies:-

The global urban population is expected to nearly double to 6.4 billion by 2050, with about 90% of the growth in low-income countries. The predicted increase in the number of urban slum dwellers is to 2 billion in the next 30 years (Global Water Partnership, 2013). In India, the number of people living in urban areas is expected to more than double and grow to around 800 million by 2050. This

will pose unprecedented challenges for water management in urban India. The Indian economy and society already face daunting challenges in the water sector, as we move into the second decade of the 21st century. The demands of a rapidly industrializing economy and urbanizing society come at a time when the potential for augmenting supply is limited, water tables are falling and water quality issues have increasingly come to the fore. As we drill deeper for water, our groundwater gets contaminated with fluoride and arsenic. Both our rivers and our groundwater are polluted by untreated effluents and sewage, continuing to be dumped into them. Many urban stretches of rivers and lakes are overstrained and overburdened by industrial waste, sewage and agricultural runoff. These wastewaters are overloading rivers and lakes with toxic chemicals and wastes, consequently poisoning water resources and supplies. These toxins are finding their way into plants and animals, causing severe ecological toxicity at various trophic levels. In the developing cities, it is estimated that more than 90 percent of sewage is discharged directly into rivers, lakes, and coastal waters, without treatment of any kind. In India, cities produce nearly 40,000 million liters of sewage every day and barely 20 percent of it is treated. Central Pollution Control Board's 2011 survey states that only 2% towns have both sewerage systems and sewage treatment plants. Climate change poses fresh challenges with its impacts on the hydrologic cycle. More extreme rates of precipitation and evapo-transpiration will exacerbate impacts of floods and droughts. More intense, extreme and variable rainfall, combined with lack of proper drainage, will mean that every spell of rain becomes an urban nightmare as roads flood and dirty water enters homes and adds to filth and disease. Conflicts across competing uses and users of water – agriculture and industry, town and country - are growing by the day. The water shares across agriculture, industry and households in rich, industrialized countries are significantly different from those in India. Rich, industrialized nations use some 86% of water resources for industry and domestic uses, whereas 82% of water resources are used in agriculture in India (Narain, 2012). And water use efficiency in agriculture, which consumes around 80% of our water resources, continues to be among the lowest in the world. At 25-35 percent, this compares poorly with 40-45 percent in Malaysia and Morocco, 50-60 percent in Israel, Japan, China and Taiwan. Thus, even as this paper addresses the issues surrounding urban water, it is useful to keep in mind, that we face very real challenges in managing water in the economy as a whole and especially in the farm sector. The 12th Plan has proposed a paradigm shift in water management to enable a movement forward in this direction (Shah, 2013). Such reforms are crucial so that more water is released for rapidly growing urban India. In the next three sections, this paper outlines the problems facing urban India in the water sector. After which, the paper will shift focus to possible solutions and conclude by providing a framework for possible work in the cities of Indore and Nagpur.

The water supply and sanitation in India has improved greatly from 1980 to present. However, many people lack access to clean water, toilets, and sewage infrastructure. Various government programs at national, state, and community level have brought rapid improvements in sanitation and the drinking water supply. Some of these programs are ongoing.

In 1980 rural sanitation coverage was estimated at 1% and it reached 95% in 2018. The share of Indians with access to improved sources of water has increased significantly from 72% in 1990 to 88% in 2008.

At the same time, local government institutions mandated to provide drinking water and sanitation services are seen as weak and lack the financial resources to carry out their functions. In addition, only two Indian cities have continuous water supply and according to an estimate from 2018 about 8% of Indians still lack access to improved sanitation facilities.

3.9 Initiatives in village development by local self-government:-

Local government in India refers to governmental jurisdictions below the level of the state. India is a federal republic with three spheres of government: central, state and local. The 73rd and 74th constitutional amendments give recognition and protection to local governments and in addition each state has its own local government legislation. Since 1992, local government in India takes place in two very distinct forms. Urban localities, covered in the 74th amendment to the Constitution, have Nagar Palika but derive their powers from the individual state governments, while the powers of rural localities have been formalized under the panchayati raj system, under the 73rd amendment to the Constitution.

Within the Administrative setup of India, the democratically elected Local self-governance bodies are called the "municipalities" in urban areas and the "Panchayati Raj Institutes (PRI)" in rural areas. There are 3 types of municipalities based on the population, Municipal Corporation (Nagar Nigam) with more than 1 million population, Municipal Councils (Nagar Palika) with more than 25,000 and less than 1 million population, and Municipal Committee (Nagar Panchayat) with more than 10,000 and less than 25,000 population. PRIs in rural areas have 3 hierarchies of panchayats, Gram panchayats at village level, Mandal or block panchayats at block level, and Zilla panchayats at distrioct level.

Panchayats cover about 96% of India's more than 5.8 lakh (580,000) villages and nearly 99.6% of the rural population. As of 2020, there were about 3 million elected representatives at all levels of the panchayat, nearly 1.3 million are women. These members represent more than 2.4 lakh (240,000) gram panchayats, about over 6,672 were intermediate level panchayat samitis at the block level and more than 500 zila parishads at district level. Following the 2013 local election, 37.1% of councilors were women, and in 2015/16 local government expenditure was 16.3% of total government expenditure.

3.10 Smart Initiatives by District Municipal Corporation:-

Smart city Mission was launched by Prime Minister Shri Narendra Modi on 25 June, 2015. Surat city was selected among 100 cities to be developed as smart city in India due to various achievements, initiatives and all inclusive approach. Accordingly Surat city had submitted “Smart City Proposal” (SCP) for Surat City in the given format on 15 December, 2015 to Ministry of Urban Development, Government of India with required consent of Government of Gujarat and statutory authority of Surat Municipal Corporation. Till deadline for submission total 97 cities had submitted their smart city proposal to Government of India. As per the already given plan, 20 cities were to be selected in round-1 (current year) on merit of their submitted proposal. Government of India had constituted 3 teams with expert members of World Bank, ADB and other independent members for evaluation and marking of all the submitted smart city proposals from 97 smart cities and to select final list of top 20 cities based on marking.

On 28 January, Shri M.Venkaiah Naidu, Minister of Urban Development Government of India announced the much awaited 20 winners of the Smart City Challenge competition for round-1 in current financial year at a press conference. It is a matter of pride for citizens of Surat that our city is selected among 20 winning cities at Rank No.4. Shri M.Venkaiah Naidu said that the winners were from 11 States and the Union Territory of Delhi and the selection was totally objective and transparent based on standardized processes. Shri Naidu further said that Smart City Mission marks a paradigm shift towards urban development in the country since it is based on ‘bottom up’ approach with the involvement of citizens in formulation of city vision and smart city plans and the

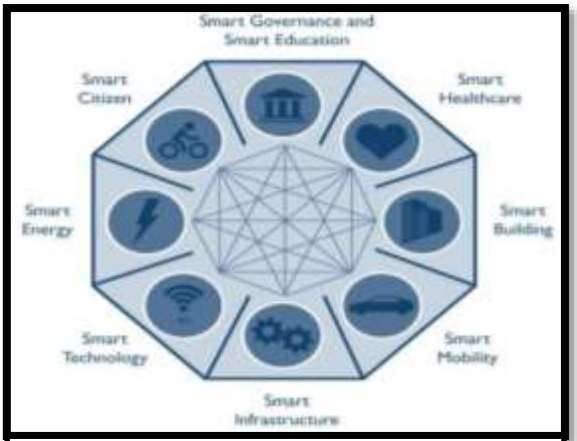
Urban Local Bodies and State Governments piloting the mission with little say for the Ministry of Urban Development. He also observed that it was for the first time in the country and even in the world that investments in urban sector are being made based on competition based selection of cities. Informing that 1.52 crore citizens participated in shaping smart city plans of 97 cities and towns in the first round of competition, Shri Naidu said that this enthusiastic participation of people is a major positive outcome.

Cities accommodate nearly 31% of India's current population and contribute 63% of GDP (Census 2011). Urban areas are expected to house 40% of India's population and contribute 75% of India's GDP by 2030. This requires comprehensive development of physical, institutional, social and economic infrastructure. All are important in improving the quality of life and attracting people and investment, setting in motion a virtuous cycle of growth and development. Development of Smart Cities is a step in that direction.

The Smart Cities Mission is an innovative and new initiative by the Government of India to drive economic growth and improve the quality of life of people by enabling local development and harnessing technology as a means to create smart outcomes for citizens.

3.11 Any Projects contributed working by Government:-

The Smart Cities Mission is an innovative and new initiative by the Government of India to drive economic growth and improve the quality of life of people by enabling local development and harnessing technology as a means to create smart outcomes for citizens.



-: Smart city Concept:-

Features:-

Smart parking, intelligent transport system, Tele-care, Traffic management, Smart grids, Smart urban lighting, Waste management, Smart city maintenance, Smart taxi, Digital-signage.

Smart City Budget :-

In the 2014-15 Budget Session, the Finance Minister of India Mr. Arun Jaitely is allotted the 7,060 Crores of Rupees for the 100 Smart Cities. The Indian Prime Minister Mr. Narendra Modi is going to develop the 100 Smart Cities as Satellite Towns of Larger Cities by modernizing the present Cities.

Top 10 Smart Cities In World:-

- Vienna
- Toronto
- Paris
- New York
- London
- Tokyo
- Berlin
- Copenhagen
- Hong Kong
- Barcelona

-: Vienna top smart city in the world:-

-: India's upcoming 100 smart cities:-

3.12 Smart Cities Development Vision-Goals:-

- Identify The Transportation Challenges And Needs Of The Citizen And Business Community And Demonstrate How Advanced Technologies Can Be Used To Address Issues In Safety, Mobility, And Climate Change, Now And Into The Future.
- Determine Which Technologies, Strategies, Applications, And Institutional Arrangements Demonstrate The Most Potential To Address And Mitigate, If Not Solve, Transportation Challenges Identified Within A City.
- Support And Encourage Cities To Take The Evolutionary And Revolutionary Steps To Integrate.
- Advanced Technologies – Including Connected And Automated Vehicle Technologies – Into The Management And Operations Of The City, Consistent With The USDOT Vision Elements.
- Demonstrate, Quantify, And Evaluate The Impact Of These Advanced Technologies, Strategies, And Applications Towards Improved Safety, Efficiency, And Sustainable Movement Of People And Goods.
- Examine The Technical, Policy, And Institutional Mechanisms Needed for Realizing the Potential of These Strategies and Applications – Including Identifying Technical and Policy Gaps and Issues – And Work with Partners to address them.
- Assess Reproducibility And Qualify Successful Smart City Systems And Services For Technology And Knowledge Transfer To Other Cities Facing Similar Challenges.

3.13 Electrical concept:-

I. Introduction:-

It is an elementary case of „power economics", electric load demand versus generation supply. As we know , when a power system is stable at normal frequency the total mechanical power input from the prime movers to the generators is equal to the sum of all running load and all real power losses in the power system.

The frequency conditions of the overall power system will directly depend on the amount of active power that the generator could deliver to the system. Also, the prime mover's stored energy plays an important role on the system behavior. This stored energy varies drastically from thermal, to hydro units.

For gradual increases in electric load, or sudden but mild overloads, unit governors will sense speed change and therefore increase power input to the generator. Extra load is handled by the unused capacity of all accessible generators functioning and synchronized to the system. If all generators are operating at their maximum capacities and the spinning reserve is zero, then the governors may be powerless to relieve overloads.

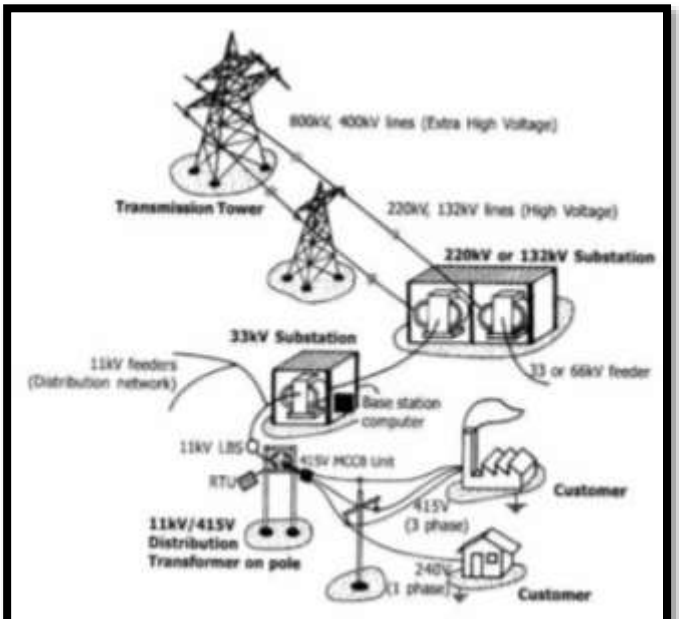
So it is necessary to shed the load of a particular geographical region. Load shedding is an intentionally- engineered electrical power outage where electricity supply is stopped for non-overlapping periods of time over a particular zone. For manually maintaining Load shedding times, some man power may be employed or by using computer it can be controlled efficiently. Detaching of power is done to minimize the consumer load provided through several substations, which are connected to the main power station. And the main station instructs the sub-stations to cut some of the feeders for a certain period of time & thus the shedding procedure continues.

II. Methodology:-

The main purpose of electric power system is to accord the power structure to consumer's loads. An electric power system consists three parts:

1. Power generation
2 .Transmission system
3. Distribution system

Electric power is generated at 11kv, 50Hz in a power generating station. For transmitting over long distances, it is stepped-up to 400kv, 220 kv as it is necessary to reduce power losses while transmitting power. Power is carried through a high voltage lines of transmission network. Usually, these voltage lines run into hundreds of kilometers and it deliver to grid.

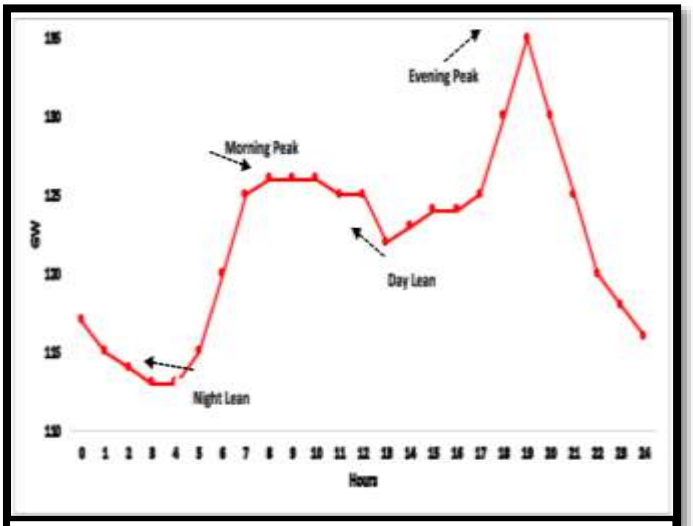


-: Power System Network:-

- This section depicts a review of a number of effective load shedding techniques which are:-

1. Manual load shedding technique:-

In manual load shedding technique the power supply is cut by electrician engaged at substation for certain period of time to control shortage of electrical energy used by locality .In this way the load shedding done by manually at substation to cut of the power.



-: All India Load Curve:-

2. Programmable load shedding:-

According to the data from the different chronological demand curves (fig 5.2) the demand of electricity is regularly varies throughout a day. It is very difficult to match generating capacity to such a peaky demand. So when demand exceeds the supply we need an effective load shedding technique for power system. "The Programmable load shedding time management system" is a reliable technique that takes over the manual task of switch ON/OFF the electrical supply with respect to time. It practices real time clock (RTC) interfaced to a 8051 microcontroller .When the set time equals to the real time, then microcontroller gives command to the corresponding relay to turn ON the electric load and then another command to switch OFF the load as per the program. Multiple ON/OFF time entries is the biggest advantage of this project. A matrix keypad helps entering the time. A LCD display time which is interfaced to the microcontroller.

III. Advancement& Future Scope:-

This project can be advanced in which the distribution point monitored by one central location. The relays are used to cut off supply of concerned geographical region through circuit breaker. In this system user can send commands to concerned DP to read the remote electrical parameters. This system can repeatedly send the real time electrical parameter data like active power, reactive power, voltage, current, frequency etc.

Periodically in the form of SMS to the user. It can be designed to send SMS alerts when relay trips. In this power system micro- controller are being used to effectively communicate with the sensors. The microcontroller has internal memory to hold the assembly code. .This internal memory is used to dump some set of assembly instructions into the controller. The operation of the micro-controller is completely dependent on these assembly instructions.

The proposed system will overcome manual efforts for controlling the load shedding time break in a systematic way by sending SMS. Central unit can cut off power supply of specific zone by just sending an SMS to the concerned Distribution Point. These relay gets activated whenever the electrical parameters overdo the predefined values. The proposed system is designed to Load Monitoring.

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

- Steps to become an 'Adarsh Gram':-

1. Identify people's needs and priorities.
2. Define activities that can mobilize the complete community.
3. Use resources from running government schemes.
4. Repair and renovate existing infrastructure.
5. Strengthen the Gram Panchayat.
6. Promote transparency and accountability.

Smart cities use IoT (internet of things) devices such as connected sensors, lights, and meters to collect and analyze data. The cities then use this data to improve infrastructure, public utilities and services, and more.

⇨ Smart utility meters:-

A top IoT device among utility companies is the smart meter. These devices attach to buildings and connect to a smart energy grid, allowing the utility companies to manage energy flow more effectively.

Smart meters also allow users to track their energy consumption—leaving a significant financial impact. Insider Intelligence expects utility companies to save $157 billion by 2035 due to smart meter adoption and implementation.

⇨ Smart transportation:-

Connected vehicles have made their way to the forefront of public transit—and the efforts have already started to bear fruit. Insider Intelligence projects US connected cars will make up 97% of the total number of registered vehicles by 2035.

3.15 Road Map and Safe Guards:-

✓ The route network is as per topic 4.4.3

❖ Safeguard Definition-

- A Measure Taken To Protect Someone or Something or To Prevent Something Which Is Undesirable.
- Something That Provides Protection against Possible Loss, Damage, Etc.

❖ Safeguards Requirement-

- Environmental Safeguards, Social Safeguards, Gender Participants, Road Safety Safeguards.

-: Road Model:-

Chapter-4 About (MOTI-KUNKAVAV VILLAGE):-

4.1 Introduction:-

Moti-kunkavav village is located in kunkavav-vadia taluka of Amreli district in Gujarat,India.It is located 5m away from sub-district headquarter vadia and 25km away from district headquarter Amreli. The basic facility obtainable in our allocated village like sanitation system, milk cooperative society. Main occupants of the villagers are farming and animal husbandry.

4.1.1 Introduction about Moti-Kunkavav Village Details:-

- Village Moti-kunkavav situated in Amreli district.
- Main language spoken in village is pure Gujarati.
- Rajkot, Gondal are the nearby cities.
- Near villages of Kunkavav Moti are Jungar,Ishvariya,Lunidhar,Kolda,Kunkavav nani,Najapur,Tori,Rampur,Amrapur,Barvala Bavishi.

4.1.2 Justification/ Need of the Study:-

- To progress of village compare to the city area in the basic facility to wanted for people and their amenities and to study Full village. For growth the basic needed and their requirement. It should development Anganwadi, road, drainage, school, hospital, Bank, PHC, Public toilet, overhead tank etc….
- To amelioration the living standard of rural people by providing amenities and better infrastructure.
- To subtract migration from rural to urban areas.

4.1.3 Study Area:-

Moti-kunkavav village is located on 21.6351 latitude and 70.9814 longitudes. The village is situated at about 25km from district headquarter Amreli. Moti-kunkavav Village is situated Amreli region of Gujarat State, India.

PIN: 365450, **District**: Amreli, **State**:Gujarat

Fig.11 Location of moti-kunkavav

Fig.12study area of moti-kunkavav

4.1.4 Objectives of the Study:-

- To consider the current condition.
- To afford basic amenities in the village, like transportation, sanitation, educational (higher education), better health care facilities.
- To gather social-economic data through technical-economic survey.
- To provide public toilet for public utilize.
- To purpose the inclusive planning suited for ideal village.
- To decrease migration from rural (village) to urban (city).

4.1.5 Scope of the Study:-

- By the analyzing the current conditions we can improve the basic services and facilities like more road connectivity (transportation), rebuild overhead tank, public toilet facility, higher education facility.
- From the Gap investigation, 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:-

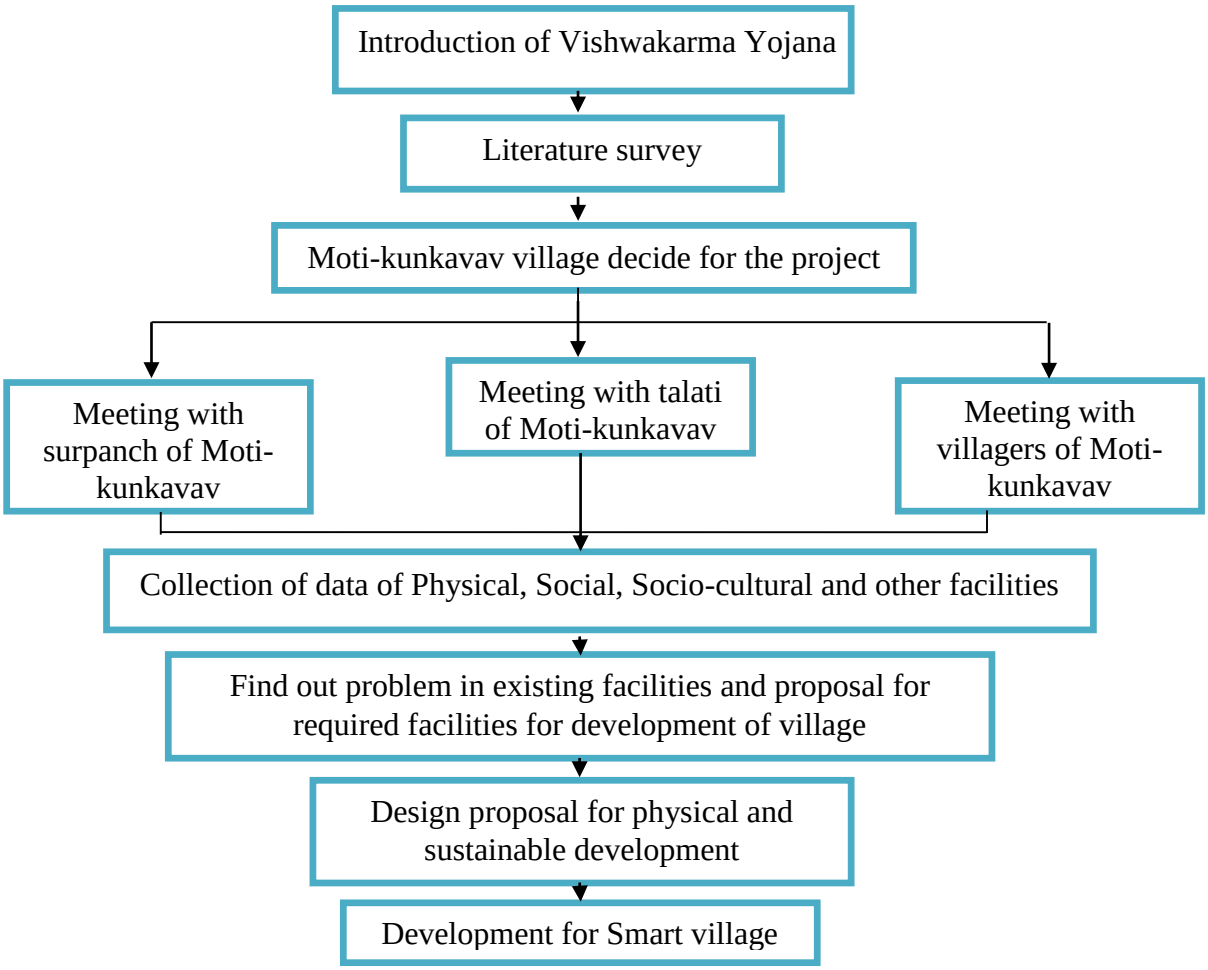


Fig.13Methodology

4.1.7 Methodology for development of related to Civil:-

Construction methodology or project execution methodology refers to the planned method of construction, taking into account all contractual and legal requirements, construction constraints, risks, and opportunities.Civil engineers conceive, design, build, supervise, operate, construct and maintain infrastructure projects and systems in the public and private sector, including roads, buildings, airports, tunnels, dams, bridges, and systems for water supply and sewage treatment.

4.2 Moti-Kunkavav Study Area Profile:-

4.2.1 Study Area Location:-

Gujarat Technological University allocated one village to us of Gujarat for surveying which is the Moti-kunkavav near Amreli district. This is our study area to find problem related to structure and general facilities. Moti-kunkavav is 25km away from district headquarter Amreli.

Village name	Moti-kunkavav
Taluka name	Kunkavav-Vadiya
District	Amreli
State	Gujarat
Country	India
Continent	Asia
Language	Gujarati,Hindi
Time zone	IST (UTC + 05:30)

Table.6 Study Area Location

- Physical & Demographical Growth:-

Sr. no	Census	Population	Male	Female	Total Number of Families
1	2011	10789	5497	5292	2245

Table.7 Physical & Demographical Growth of Moti-Kunkavav

4.2.2 Economic Generation Profile/Bank:-

The major economic action of this area is farming and husbandry. The village does have normal good facilities and good electrification system which distributed 24*7 hours for domestic use and 6 hours for agricultural use. There are two sub branch bank available in village,(1) SBI, (2) ANSB(Amreli nagarik sahakari bank)

4.2.3 Social Scenario:-

We have that found that all villagers of this village are not connected with today technology and environment. Major occupation in this village is farming and husbandry and local business. There are no other job opportunities. The major population is get income through the farming.

4.2.4 Study Area Land Use Description:-

As per Survey the remaining study area must be utilized for amendment of our Designs.

We have given designs of,

- Public Toilet, Cyber café, Public Library, Medical Store, Police Station, Avedo.

4.2.5 Actual Problem Faced By Villagers and Smart Solution:-

One most burning problem like no public toilet in village so we plan and provide community public toilet in village at all main near main road.

4.2.6 Base Location Map:-

Gram Panchavat :	Kunkavav Moti
Block / Tehsil :	Kunkavav Vadia
District :	Amreli
State :	Gujarat
Pincode :	365640
Area :	3777.5 hectares
Population :	10,789
Households :	2,245
Assembly	Amreli
Parliament	Amreli
Nearest Town :	Bagasara (18 km)

-: Base Location Map (Moti-Kunkavav):-

4.2.7 Migration Reasons:-

Largest component of internal migration in India is rural-urban migration, which means migration from rural areas to urban cities. Villagers move to cities to earn money to support their living.

- Better job market: Where there are more people, there are more jobs. This is the main reason so many people leave country towns to live in big cities.
- Educational opportunities: All major and affluent colleges/universities are located in or near a big city.

People migrate for many reasons, ranging from security, demography and human rights to poverty and climate change.

Major Causes of Migration in India:-

- Marriage: Marriage is a very important social factor of migration.
- Employment: ADVERTISEMENTS.
- Education.
- Lack of Security.

4.3 Data Collection of Moti-Kunkavav:-

4.3.1 Methods For Data Collection:-

Data compilation of village is the most main important for growth of any village. Without data we cannot recognize or any idea to development of village in prospect. A complete baseline survey was undertaken which involved household census survey, Bio- physical survey and Village level data collection from Sarpanch. This gave in the details of the demographic profile and physical profile of the village, the literacy percentage, current population, cattle population, average milk production of the cattle and various schemes running in current time and their profit. Technical & Bio-physical survey was undertaken to recognize various natural resources available in the village.

4.3.2 Primary Details of Survey Details:-

Moti-kunkavav village is in Kunkavav-vadiya taluka in Amreli district of Gujarat state. It village consisting inhabitants of 10789 only. Moti-kunkavav sarpanch name is Subhashbhai.

4.3.3 Average Size of the House- Geo-Tagging Of House:-

In Moti-kunkavav average 4 persons in each household. The approx ratio of houses is 45% pucca houses and 55% kuccha houses.

4.3.4 No of Human Being in One House:-

In Moti-kunkavav village each house approximately 6 person in one house as it is not exact but it is an average number taken from the survey.

4.3.5 Material Available Locally In the Village and Material Out Sourced By the Villagers:-

- For building of houses mainly bricks, wood and cement are used as they are low cost and are without difficulty available.
- Major money-making 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.

4.3.6 Geographical Detail:-

The Kunkavav Moti village is located in the state Gujarat having state code 24 and having the village pin code 365450. Amreli is the district of this village with district pin code 365601. The total geological area in which this village is expanded in 3777.5 hectares / 37.775 Square Kilometers (km^2) / 9334.4057849223 acres.

4.3.7 Occupational Detail – Occupation Wise Details / Majority Business:-

- In this village 65 to 70% people linked with agriculture actions, it‘s the villages major source of income.

- Other are doing husbandry, local business labor work for wealth.

4.3.8 Manufacturing Hub/ Warehouses:-

No big warehouses or manufacturing hub are available in village.

4.3.9 Male Female Details:-

There are 5497 males and 5292 females in village.

4.3.10 Physical Infrastructure Details:-

- Underground Drainage
- Underground Sump
- Pakka village approach road
- Pakka main Road(bitumen road)
- Gov. Electricity Distribute
- Municipal water supply

4.3.11 Tourism development available in the village for attracting the tourist:-

The birth place of Krishna vallabhacharyaji is moti-kunkavav. There was a temple in the village but a huge temple was established in a big place which is named after the brahma palace.

4.4 Infrastructure Details:-

4.4.1 Drinking Water:-

For drinking Purpose ground water tank, tube well, tap water available and municipal water connection is also accessible in village.

4.4.2 Drainage and Sanitation Network:-

- Underground drainage.

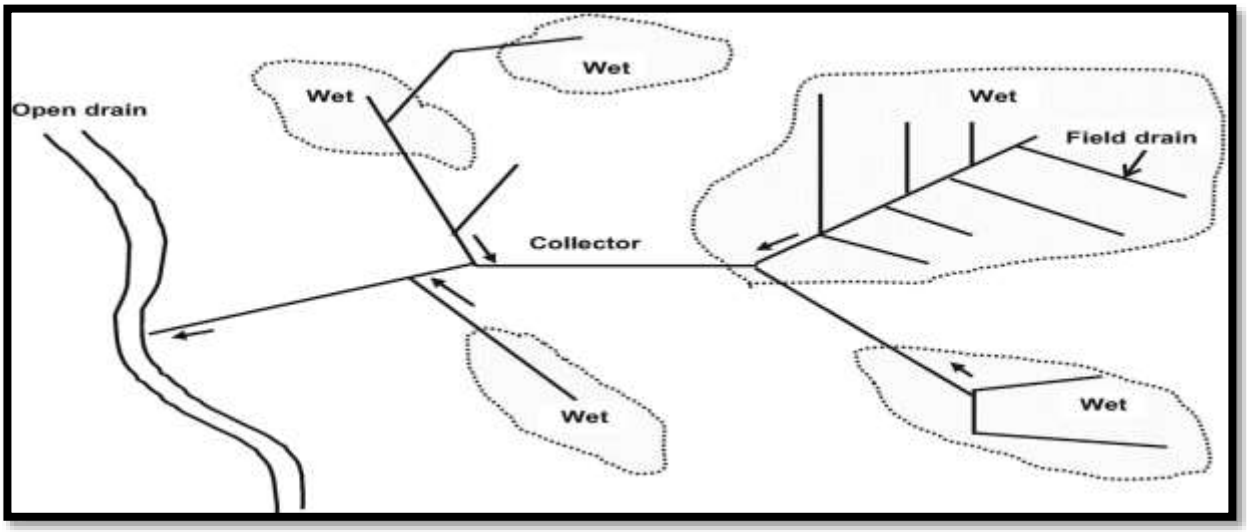


Fig.16 Sub-surface Drainage System

4.4.3 TRANSPORTATION & ROAD NETWORK:-

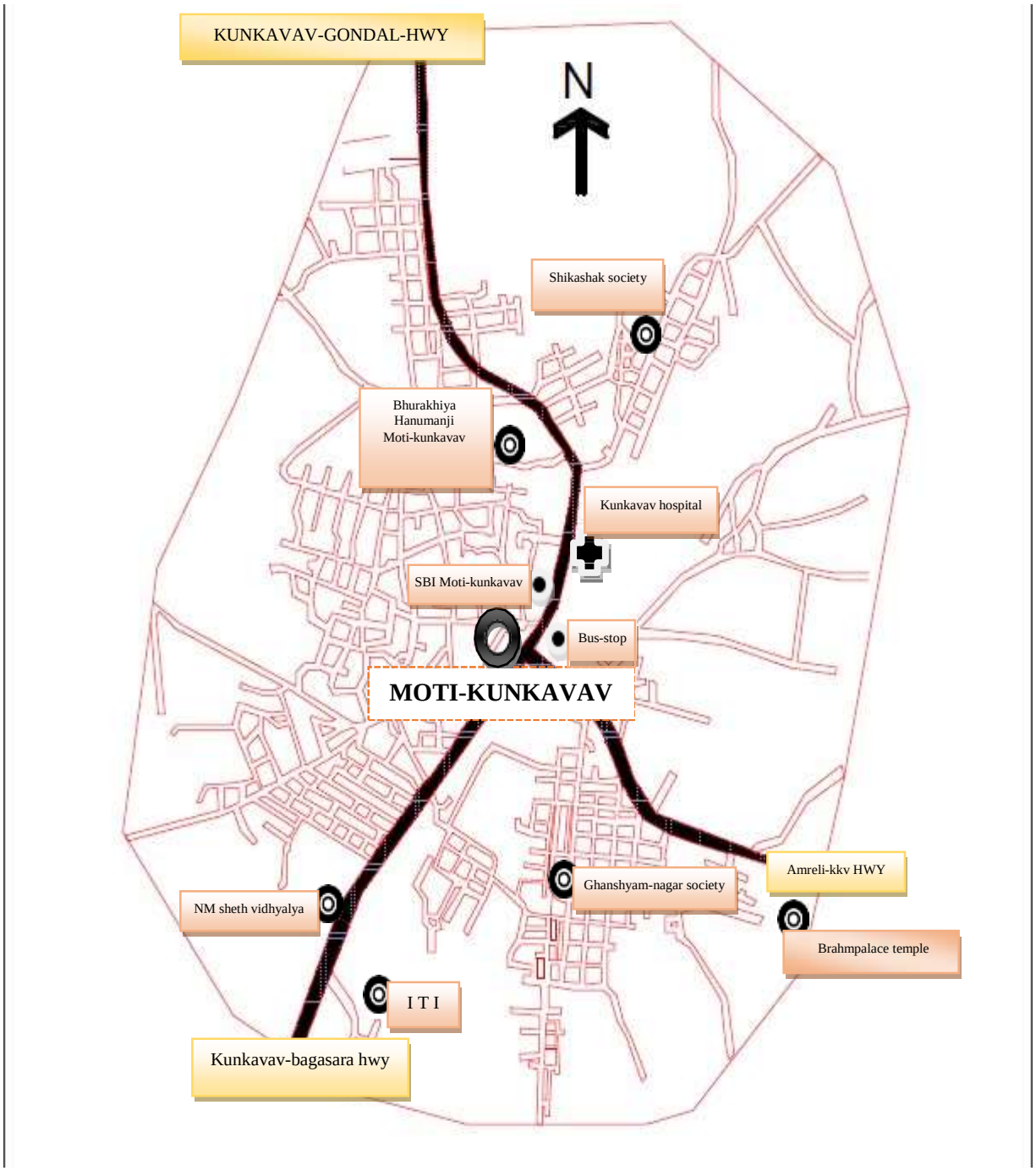


Fig.14 Road-network of Moti-kunkavav

Main road of village are in good quality 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.

4.4.4 Housing Condition:-

There are houses in the village 60% households are kutcha and 40% are pucca.

4.4.5 Social Infrastructure Facility:-

- Bus stand
- Primary School
- High school
- Post-office
- Panchayat
- PHC
- Private clinic
- Over headed Water tank

➢ Health Facility:-

There is availability of PHC in Moti-kunkavav village, two privet clinic available for health facility. There is no availability of CHC in Moti-kunkavav.

➢ Education Facility:-

For Education Purpose Primary School, high school, Anganwadi and secondary school is not available. For college education students go to Ahmedabad and surat type metro city.

4.4.6 Technology Mobile / Wi-Fi /Internet Usage Details (In %):-

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

4.4.7 Sport Activity as Gram Panchayat:-

There is no Any Sport Activity as Gram Panchayat.

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

There is no availability of any socio-cultural facility like public library, public garden, cinema hall etc. inside the village so Socio-cultural Facility is required. There is only few temples available in moti-kunkavav.

➢ Community Hall:-

In Moti-kunkavav community hall is not available.

➢ Public Library:-

In Moti-kunkavav village public library is not available.

➢ Public Garden/Park/Playground:-

There is no playground, park and public garden in the Moti-kunkavav village.

➢ Village Pond/Lake:-

There is pond near the Moti-kunkavav village.

4.4.9 Other Facilities:-

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

❖ Sustainable Infrastructure Facilities:-

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

4.4.10 Any Other Details:-

In the village, the road facility needs maintenance. Water logging problem occurs every monsoon. Also water logging problem in farm occurs every heavy monsoon.

4.4.11 Photo View of All Facilities:-

-: Main Road (Bitumen Road):- -: Street Road (Rcc road):-

-: Over Headed Water Tank: -

-: Bank:-

-: Anganwadi :-

-: Gram Panchayat :-

-: Bus Stop: -

-: ITI Collage:-

-: Kumar School: -

-: High School:-

-: Kanya School: -

-: Railway Station:-

Fig.15 facilities of Moti-kunkavav village

4.5 Electrical Concept:-

4.5.1 Renewable Energy Source Planning Particularly For Villages:-

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

- Solar water heater
- Solar light, etc…

4.5.2 Irrigation Facilities:-

There are many types of irrigation technique utilize in farming.

- Furrow irrigation system
- Sprinkler irrigation system
- Drip irrigation system

4.5.3 Electricity Facilities with Area:-

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

4.6 Existing Institution Like – Village Administration – Detail Profile:-

4.6.1 Bachatmandali:-

In Moti-kunkavav Nagarik-sahakari co-operative mandali and bank are available.

4.6.2 Dudhmandali:-

In Moti-kunkavav private and government both dudhmandalis are available. In this village the total milk accumulates rate is 950-1000 Ltr/day.

4.6.3 Plantation for the Air Pollution:-

In Moti-Kunkavav every environment day in village, sarpanch and other villagers plant trees together on the day and protects them throughout the year.

4.6.4 Rain Water Harvesting - Waste Water Recycling:-

- In Moti-kunkavav 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.

4.6.5 Agricultural Development:-

- Moti-kunkavav villagers there are uses many technique of irrigation system for farming like, drip irrigation method, furrow method, sprinkler irrigation method.
- In Moti-Kunkavav there 60 to 70% farmers now use tractors instead of plows to plowing the land.
- There are many agro-agency available in Moti-kunkavav.

4.6.6 Agricultural Development:-

⇨ Management through energy harvesting concept:-

Energy harvesting (also known as power harvesting or energy scavenging) is the process in which energy is captured from a system's environment and converted into usable electric power. Energy harvesting allows electronics to operate where there's no conventional power source, eliminating the need to run wires or make frequent visits to replace batteries.

An energy harvesting system generally includes circuitry to charge an energy storage cell, and manage the power, providing regulation and protection.

Energy source examples include light (captured by photovoltaic cells), vibration or pressure (captured by a piezoelectric element), temperature differentials (captured by a thermo-electric generator) radio energy (captured by an antenna); and even biochemically produced energy (such as cells that extract energy from blood sugar).

⇨ Agriculture:-

In regards to urban agriculture, rainwater harvesting in urban areas reduces the impact of runoff and flooding. The combination of urban 'green' rooftops with rainwater catchments has been found to reduce building temperatures by more than 1.3 degrees Celsius. Rainwater harvesting in conjunction with urban agriculture would be a viable way to help meet the United Nations Sustainable Development Goals for cleaner and sustainable cities, health and wellbeing, and food and water security. The technology is available, however, it needs to be remodeled in order to use water more efficiently, especially in an urban setting.

Kenya has already been successfully harvesting rainwater for toilets, laundry, and irrigation and areas in Australia use harvested rainwater for cooking and drinking. Studies done by Stout et al researching the feasibility in India found RWH was most beneficial used for small-scale irrigation, which provides income with the sales of produce, and overflow used for groundwater recharge.

Missions to five Caribbean countries have shown that the capture and storage of rainwater runoff for later use is able to significantly reduce the risk of losing some or all of the year's harvest because of soil or water scarcity. In addition, the risks associated with flooding and soil erosion during high rainfall seasons would decrease. Small farmers, especially those farming on hillsides, could benefit the most from rainwater.

4.6.7 Any other:-

There is a limited institute which works for the development of the village.

Chapter-5 Technical Options with Case Studies:-

5.1 Concept (Civil):-

5.1.1 Advance Sustainable construction techniques / Practices and Quantity Surveying:-

Sustainable construction isn't just about using the latest materials; it's also about using building methods that improve renewable and sustainable efforts. Some of these methods include: Cutting materials exactly in order to reduce waste. Controlling waste management, such as sorting out and recycling waste.

- Green Construction:-

Green construction can be used interchangeably with green structure or sustainable construction. Therefore, green construction means the use of resource-efficient and environmentally dependable processes in construction to ensure the lifetime sustainability of the building.

Fig.17 Green construction

Primarily, the sustainability background of the building implies building operations, site design, maintenance, repair, and demolition with the least damage on the environment. The process requires close teamwork of the construction engineers, the client, and the architects in the whole construction project.

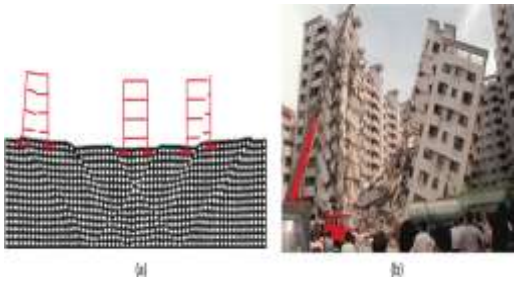
The aim is to make sure the building and construction methods are cost-effective, strong, and decrease the overall effects on the environment and human health with a central focus on proficient and human health with a central focus on well-organized use of energy and resources, water conservation improved occupational health, and falling pollution and wastage.

Fig.18 Eco friendly house

Green building include proficient use of energy purposely renewable energy, such as solar energy, water, and other resources, pollution and waste reduction measures, enabling of re-use and recycling, good green air quality indoor, use of non- toxic and sustainable resources, the environmental-friendly design, construction and operation design, construction and operation design that allows adaptation to a changing surroundings and most important consideration of the quality of life of occupants.

5.1.2 Soil Liquefaction:-

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



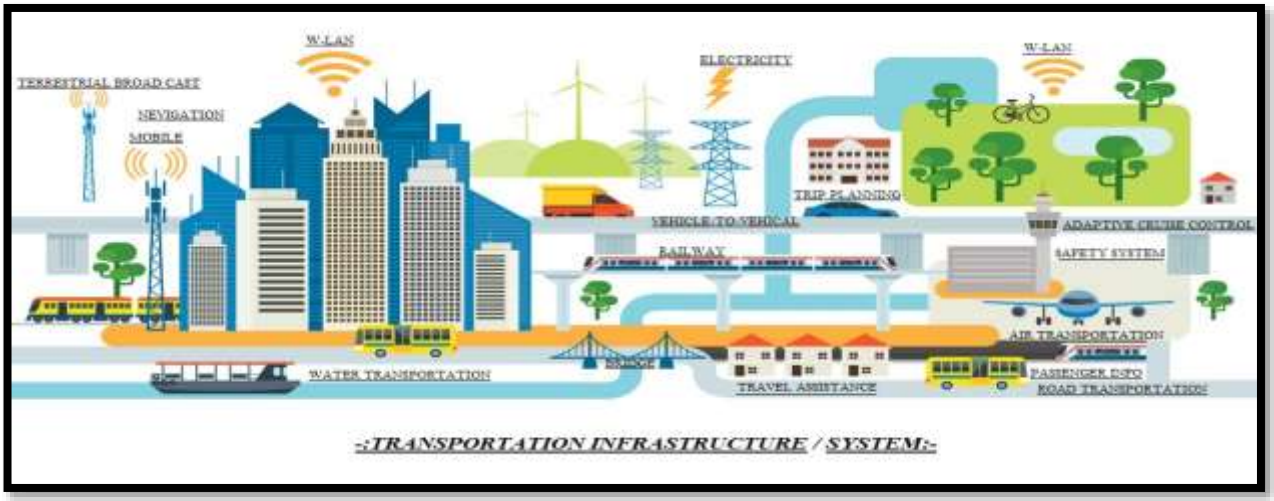
-: Soil Liquefaction:-

❖ Soil Liquefied Term History:-

In soil mechanics, the term "liquefied" was first used by Allen Hazen in orientation to the year 1918 failure of the Calaveras Dam in California.

5.1.3 Transport Infrastructure / System:-

- Transport infrastructure is an integral part of the transport system of any city or state.
- Mode of transport is an expression used to differentiate between different ways of transportation or transporting people or goods. The different modes of transportation are air, water, and land transport, which includes Rails or railways, road and off-road transport.
- In general, transportation is used for moving of people, animals, and additional goods from one place to another.
- The means of transport, on the other hand, refers to the (motorized) vehicles needed for transport according to the selected mode (car, airplane, ship, truck and rail).



- Infrastructure is the general term for the basic physical systems of a business, region, or nation. Examples of infrastructure include transportation systems, communication networks, sewage, water, and electric systems.
- The hard infrastructure includes bridges, roads, railway tracks, etc.
- Trains cover the distance in less time and comparatively, the fare is also less to other modes of transportation. Therefore, Railways is the cheapest mode of transportation.

5.1.4 Vertical Farming:-

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

➢ Hydroponics:-

- Hydroponics is a type of horticulture and a division of hydroculture, which is a method of rising plants, usually crops, not including soil, by using mineral nutrient solutions in an aqueous solvent.
- Hydroponics offers many advantages, one of them being a reduce in water usage for agriculture.

Fig.19 Hydroponics

➢ Aquaponics:-

- Aquaponics refers to any coordination that combines straight aquaculture (raising aquatic animals such as snails, fish, crayfish or prawns in tanks) with hydroponics (cultivating plants in water) in a symbiotic surroundings environment. In normal aquaculture, excretions from the animals being raised can build up in the water, mounting toxicity.

Fig.20 Aquaponics

➢ Aeroponics:-

- The creation of aeroponics was provoked by the initiative of NASA (the National Aeronautical and Space Administration) to find a capable way to grow plants in space in the 1990s.
- Different conventional hydroponics and aquaponics, aeroponics does not require any liquid or solid medium to grow up plants in. Instead, a liquid solution with
  Nutrients is misted in air chambers where the plants are balanced.

Fig.21 Aeroponics

5.1.5 Corrosion Mechanism, Prevention & Repair Measures Of Rcc Structure:-

- Concrete is fairly strong mechanically, it is extremely susceptible to chemical attack and thus structure gets broken and even fail unless some preventive measures are adopted to counteract this and thereby raising the durability of structure.
- In the case of reinforced concrete structure (RCC) the ingress of wetness or air may lead to corrosion of steel, cracking and sapling of concrete cover thereby falling durability of concrete structure. Repair has been recommended as the

Fig.22 effect of corrosion in reinforcement

protective solution for damaged structure due to corrosion.

- The adoption of corrosion refuge measures in new structure, such as the use of high-quality design and construction practices, sufficient concrete cover depth, low-permeability concrete, corrosion inhibitors, and coated reinforcing steel, is significantly falling the occurrence of reinforcing steel corrosion in new construction.

5.1.6 Sewage Treatment Plant:-

- Sewage treatment is the procedure of remove contaminants from municipal wastewater, containing frequently household sewage in adding some industrial wastewater.
- Physical, chemical, and biological processes are used to reduce contaminants and generate treated wastewater (or treated effluent) that is secure enough for release into the surroundings.
- Sewage Treatment is a semi-solid waste or slurry, called sewage sludge.
- Sewage sludge is the residual, semi-solid material that is created as a by-product during sewage treatment of industrial or municipal wastewater.

❖ Origins of Sewage:-

- Sewage is generated by inhabited, institutional, commercial and industrial establishments. It includes household waste liquid from toilets, baths, showers, kitchens, and sinks demanding into sewers.
- In many areas, sewage as well includes liquid waste from industry and commerce.

❖ Process Steps:-

Sewage treatment normally involves three stages, called primary, secondary and tertiary treatment.

- Primary treatment consists of temporarily holding the sewage in a quiescent basin where heavy solids can resolve to the bottom while oil, grease and lighter solids float to the surface. The settled and floating materials are uninvolved and the remaining liquid may be discharged or subjected to secondary treatment.
- Secondary treatment removes dissolved and balanced biological matter. Secondary treatment may require a division process to remove the micro-organisms from the treated water prior to release or tertiary treatment.

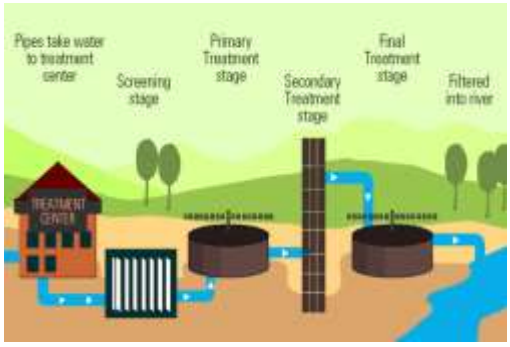
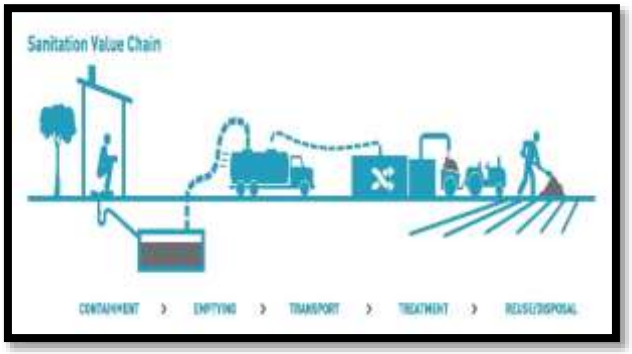


Fig.23 Large-scale sewage Treatment plant

- Tertiary treatment is infrequently defined as anything more than primary and secondary treatment in order to permit ejection into an extremely susceptible or fragile ecosystem. Treated water is sometimes disinfected chemically or physically (for example, by microfiltration) proceeding to discharge into a stream, river. If it is satisfactorily clean, it can also be used for groundwater recharge or agricultural purposes.

5.1.7 Sustainable Sanitation:-



Sustainable sanitation is a sanitation system designed to meet certain criteria and to work well over the long-term. However, "sustainable sanitation" attends to all processes of the system: This includes methods of collecting, transporting, treating and the disposal (or reuse) of waste.

❖ Case Study (SARDAR VALLABHBHAI PATEL STADIUM):-

- Profile of stadium:-

  Full Name: - Narendra modi stadium

  Former name: - Sardar patel Stadium

  Location: - Motera, Ahmedabad, Gujarat, India.

  Filed size:- 180 Yards X 150 Yards

Sardar Patel Stadium was renamed as Narendra Modi Stadium on 24th February 2021, also known as Motera Stadium. The cricket stadium is located in the state of Gujarat in India. It is situated on the banks of the Sabarmati River in Motera, Ahmedabad. The stadium is spread across 63 acres of land with a seating capacity of 110,000. The stadium can accommodate 10,000 more people than Australia's iconic Melbourne Cricket Ground, making it the largest cricket stadium in the world.

The Motera stadium is the home ground of the Gujarat Cricket Association. Despite the immensity of the project, the stadium was constructed within a period of three years. The stadium consists of four team dressing rooms and facilities, 76 corporate boxes, state-of-the-art club facilities with three practice grounds, an indoor cricket academy, and an Olympic-size swimming pool.

The stadium was planned and designed by POPULOUS— a sports-architecture firm based in Australia and was constructed in collaboration with India's top contractor Larsen & Toubro.

Just like any other stadium, Sardar Patel Stadium follows the exposed-concrete design. While stadiums are generally built with repetitive structural elements, the Sardar Patel Stadium was constructed with precast concrete segments to ensure faster and high-quality construction.

The planning and designing groups discretized the precast components, and a strong emphasis was put on limiting the quantity of components and their joints. This resulted in huge and hefty components with complex and unbalanced geometries.

These attributes complicated the transportation, casting, lifting, and erection of the precast components in the portal frames. Thus, there was a need for the development of innovative structural components during different phases of erection. For each stage, the precast components were precisely planned and designed.

Architectural References:-

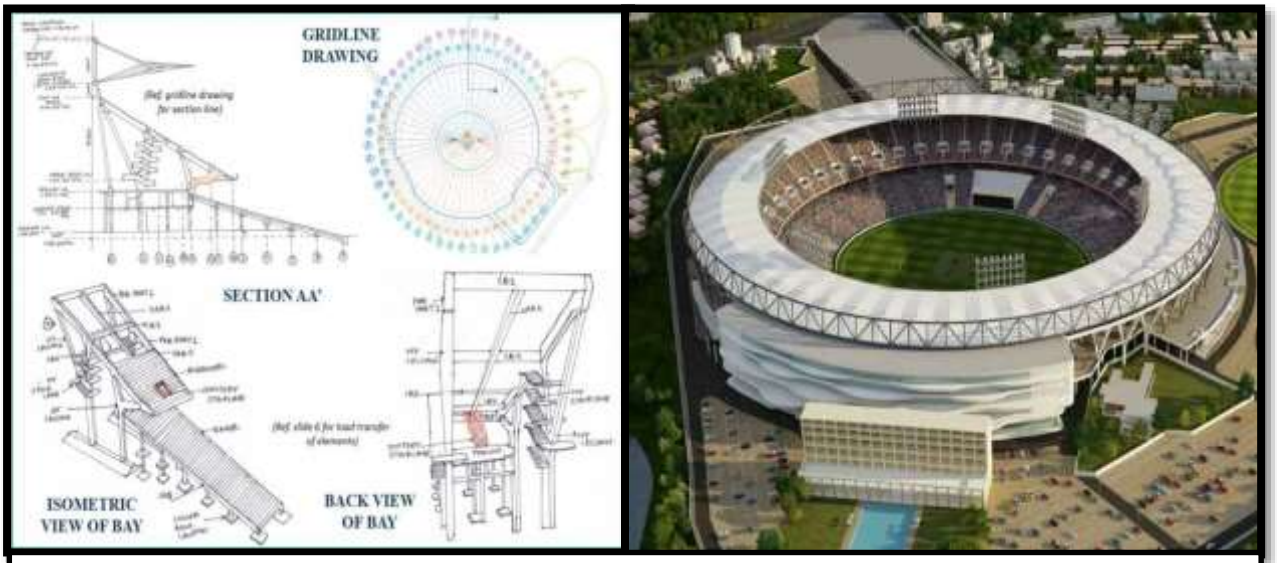
The benchmark was the Melbourne Cricket Ground in terms of size, features and facilities; also, some other cricket stadiums around the world. Cricket being a spectator sport, it was imperative to construct a stadium that enhanced viewing experience by offering the audience a 360-degree unobstructed view of the field of play from any given location on the podium. It required much detailing and precision in our space planning and engineering.

Credit also goes to our appointed architects, Populous, who came out with such an innovative design that made it look extremely simple. As one climbs to the upper seating bowl, one experiences the panoramic view of the field of play, gradually offering a vista experience.

❖ What are the construction of this stadium?

Apart from being the world's largest cricket stadium, this is the first Indian stadium to have as many as 11 different pitches that have been curated by a well-known cricketer chosen by the client, the Gujarat Cricket Association, with the same soil used for both the playing and practice pitches. There are four sets of dressing rooms for the players, each with an in-built gymnasium and other facilities.

It is the first stadium in India to have LED lights that are uniquely designed and placed in clusters that will eliminate shadows of the players on the ground. The stadium is the only cricket stadium in India to be awarded the Gold Green Building rating by the Indian Green Building Council (IGBC).



-:Sardar Vallabhbhai patel Stadium / Narendra Modi Stadium (Plan & Top view):-

The redesigned stadium occupies 63 acres of land, with three entry points compared to one in the old stadium, with a metro line at one of the entry points. It contains 76 corporate boxes that can hold 25 persons each,a 55-room clubhouse, an Olympic sized swimming pool, and four dressing rooms. A unique feature of the stadium is the LED lights on the roof instead of the usual floodlights at cricket grounds. The LED lights are installed on an anti-bacterial, fireproof canopy with PTFE

membrane that covers 30 out of 55 metres width of sitting area. The roof was done by the company Walter P Moore and was specifically designed to be lightweight and separate from the seating bowls in order to make it fairly earthquake resistant.The structure eliminates the need for pillars and gives spectators an unobstructed view of the entire field from any place in the Stadium.

Outside of the main ground, the stadium is able to accommodate several other features, including an Olympic-sized swimming pool, an indoor cricket academy, badminton and tennis courts, a squash arena, a table tennis area, a 3D projector theater, and a clubhouse with three practice grounds and 50 rooms.The parking lot can accommodate 3,000 cars and 10,000 two-wheelers. Sardar Patel Stadium also has a huge ramp designed to facilitate the movement of around 60,000 people simultaneously. The stadium has been designed such that patrons fill the lower levels of the ground for smaller events to maintain the crowd atmosphere when not at capacity.

It has also been planned that the stadium will be connected to the metro station by a skywalk to decrease road congestion. The skywalk is planned to be completed after September 2020, and is a part of the Motera Metro Station project rather than the stadium's.

The total area of the stadium is equivalent to 32 olympic-size football fields put together. It is currently the only cricket stadium in the world to have four dressing rooms for the players, which makes it possible to play back to back games in the same day.It is also the only stadium in the world with 11 centre pitches on the main ground.

-: Indoor Practice Facility:-

- Reference :-

(1) https://en.wikipedia.org/wiki/Narendra_Modi_Stadium

(2) https://gujaratcricketassociation.com/narendra-modi-stadium/

(3) https://timesofindia.indiatimes.com/india/narendra-modi-stadium-when-bjp-did-a-congress/articleshow/81213035.cms

(4) https://www.walterpmoore.com/projects/narendra-modi-stadium-roof-design

Chapter-6 SWATCHH BHARAT ABHIYAN (CLEAN INDIA):-

Swachh bharat mission (SBM), Swachh Bharat abhiyan (SBA), or clean India Mission is a country-wide movement initiated by the Government of India in 2014 to eliminated open defection and get better solid waste management(SWM). Phase 1 of the task last till October 2019. Phase 2 will be implemented among 2020-21 and 2024-25.

Fig.24 Logo of Swatchh Bharat Mission

Initiated by the Government of India, the mission intended to achieve an "open-defection free" (ODF) India by 2 October 2019, the 150th centenary of birth of Mahatma Gandhi. The objectives of the first phase of the mission contain eradication of manual scavenging, generating consciousness and bringing about a behavior change regarding cleanliness practices, an Increase of capacity at the local level. The second phase of task aims to maintain the open defection free status and improve the management of solid and liquid waste.

The campaign is officially launched on 2 October 2014 at Rajghat, New Delhi by Prime Minister Narendra modi. It is India's largest cleanliness drive to date with three million government employees and students from all parts of India participating in 4043 cities, towns, and rural community.

❖ Components of SBM (Village):

1) Construction & Usage of Individual Household Latrines (IHHL)
2) Solid and Liquid Waste Management (SLWM)
3) Community Sanitary Complexes (CSCs)

(1) Construction & Usage of Individual Household Latrines (IHHL):-

Construction and convention of Individual Household Latrines (IHHLs) is one of the primary components of SBM (G). A duly completed household hygienic latrine shall include of a Toilet Unit including a substructure which is sanitary (that safely confines human faces and eliminates the require of human handling before it is fully decomposing), a super structure, with water ability and hand wash unit for cleaning and hand washing.

It is an inherent principle that the toilet has to be constructed by individual households after insist creation so that use of toilet is ensured with a sense of ownership of the beneficiary.

There are various models of toilets available based on secure sanitation technologies like the Twin Pit, Septic tank, Bio toilets, amongst others. The MDWS encourages development of other safe technologies and States shall disseminate information about available technologies and their costs to the receiver to make an informed choice.

(2) Solid and Liquid Waste Management (SLWM):-

With the objective of achieving "ODF Plus" status and to improve sanitation, hygiene and the general superiority of life in rural areas, the feature of Solid and Liquid Waste Management (SLWM) assumes greater significance. All Gram Panchayats (GPs) are to be targeted for treatment with a SLWM project. The objective is to start SLWM projects in all GPs without delay.

Communities/Gram Panchayats have to be aggravated to come forward and insist for such a system, which they have to afterward operate and maintain. Once the demand is produced, to ensure that the resources are used proficiently, SLWM is to be in use up in project mode for each GP with financial assistance capped for a GP on number of household basis to allow all GPs to implement sustainable SLWM projects.

Major Activities under SLWM Are As Follows:-

❖ For Solid Waste Management:-

- Collection, segregation and safe disposal of household garbage, decentralized systems like household droppings and biogas plants shall be allowable.
- Activities related to most reuse of organic solid wastes as droppings should be adopted. Such technologies may include vermi-composting or any other composting method, individual and community biogas plants.
- Funds allocated for SLWM may be used to implement safe disposal solutions for menstrual waste (used sanitary cloths and pads) and setting up incinerators in Schools, Women's Community Sanitary Complexes, Primary Health Centre, or in any other suitable place in village and collection mechanisms etc. can be in use up.

❖ For Liquid Waste Management:-

- Methods adopted for management of liquid wastes may focus on most reuse of such waste for agriculture purposes with least operation and maintenance costs.
- Collection of waste water, near to the ground cost drainage/ small bore system, soakage pit may be adopted. Treatment of waste water the subsequent technologies may inter-alia be considered.

However, States To Identify Suitable Technologies.

a) Waste Stabilization Pond (WSP) technology
b) Duckweed based waste water treatment
c) Anaerobic decentralized west

Fig.25 Solid and liquid waste management

(3) Community Sanitary Complexes (CSCs):-

Community Sanitary Complexes comprising of suitable number of toilet seats, bathing cubicles, washing platforms, wash basins etc. are set up in a place in the village acceptable and accessible to all.

Such complexes shall be constructed only when there is lack of space in the village for construction of household toilets and the Community/ GP owns up the liability of their operation and maintenance. They can be made at public places, markets and bus stands etc. The proposal for putting up CSCs will be permitted by the State Level Scheme Sanctioning Committee (SLSSC).

Maintenance of such complex is essential for which Gram Panchayat should own the final liability and their Operation and Maintenance (O&M) should be assured.

- Swachhta in Moti-kunkavav Village- (Existing, Implementation, Activity):-

-: Existing photos of Moti-kunkavav nearest area of Small lake and behind shops area:-

-: Implementation and Activity by student:-

Chapter-7 VILLAGE CONDITION DUE TO COVID-19:-

7.1 Taken Steps In Allocated Village Related To Existing Situation:-

❖ What Is Covid-19?

- Corona disease came in the year 2019, so it is known as covid-19.
- COVID-19 is an infection 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 regularly using soap and water.
- Do not emit or shout in public places to avoid the spread of droplets.
- Do not finger 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.	MOTI-KUNKAVAV	46	40	2
2.	AMRELI	2503	2265	38
3.	GUJRAT	181K	164K	3760
4.	INDIA	8.55M	7.92M	127K
5.	WORLD-WIDE	50M	33.2M	1.26M

Table.8 cases of allocated village to world-wide (since 22/3/2019 to 10/11/2019)

- Activity by Students:-

-: Students distributing necessities and masks:-

Chapter-8 Sustainable Design Planning Proposal (Prototype Design) - Part I:-

I. PUBLIC LIBRARY :-

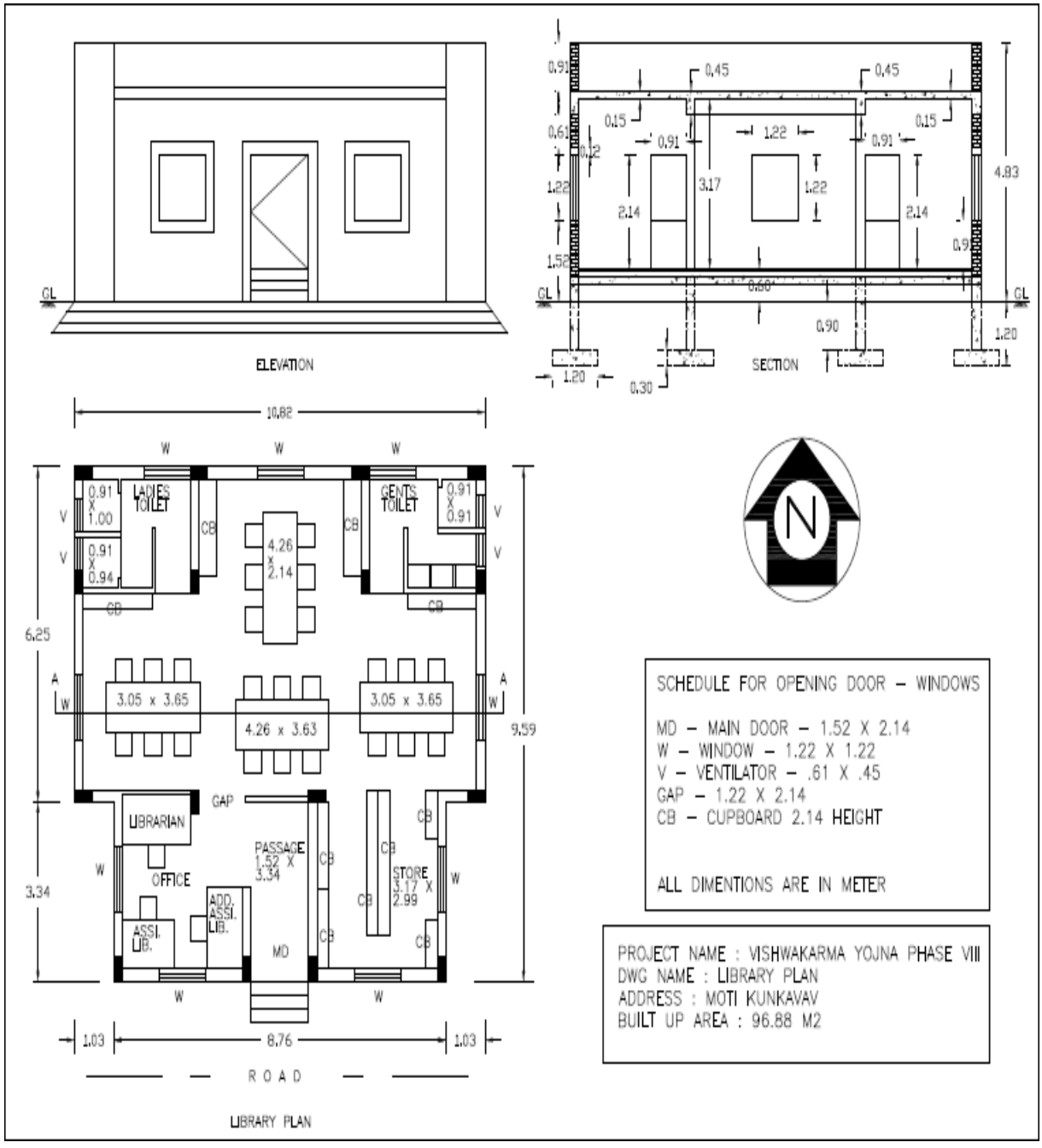


Fig.26 Library

MEASUREMENT SHEET

SR NO	DESCRIPTION	NOS	LENTH	WIDTH	HEIGHT	QTY	UNIT
1	**EXCAVATION IN FOUNDATION**	16	1.2	1.2	1.2	**27.65**	**CU. M**
2	**PCC IN FOUNDATION**	16	1.2	1.2	0.3	**6.91**	**CU. M**
3	**RCC COLUMN UPTO PLINTH**	16	0.23	0.45	0.9	**1.49**	**CU. M**
4	**PLINTH BEAM**						
	BELOW WALLS	1	65.24	0.23	0.3	4.50	
	L = 3*10.82+8.76+2*5.79+4*3.11						
	BELOW WALL IN TOILET	1	9.75	0.23	0.15	0.34	
	L = 3*2.04+1.81+2*0.91						
						4.84	**CU. M**
5	**RCC COLUMN ABOVE PLINTH UPTO LINTEL LEVEL**	16	0.23	0.45	2.14	**3.54**	**CU. M**
6	**BRICK MAOSNARY ABOVE PLINTH UPTO LINTEL LEVEL**						
	L = 2*10.82+2*5.79+2*2.14+3*3.34+1.52	1	49.04	0.23	2.14	24.14	
	PARTITION WALL						
	L = 2.04+1.01+2*0.91+2*1.13+2*1.91	1	10.95		2.14	23.43	
	DEDUCTION						
	MD - 1.52 X 2.14	1	1.52	0.23	2.14	0.75	
	DOOR - 0.76 X 2.14 (TOILET DOOR)	3	0.75		2.14	4.82	
	WINDOW - 1.22 X 1.22	9	1.22	0.23	1.22	3.08	
	VENTILATOR - 0.6 X 0.45	4	0.6	0.23	0.45	0.25	
	GAP - 1.22 X 2.14 (IN PARTITION WALL)	1	1.22		2.14	2.61	
	COLUMN	15	0.23	0.45	2.14	3.32	
	TOTAL DEDUCTION IN WALL					7.40	
	TOTAL DEDUCTION IN PARTITION WALL					7.43	
	NET MASONARY WALL					**16.74**	**CU. M**
	NET PARTITION WALL					**16.01**	**SQ.M**

7	**RCC LINTEL**						
	ABOVE WALLS	1	65.24	0.23	0.12	1.80	
	L = 3*10.82+8.76+2*5.79+4*3.11						
	ABOVE WALL IN TOILET	1	4.87	0.23	0.12	0.13	
	L = 2.04+1.01+2*0.91						
						1.94	**CU. M**
8	**RCC COLUMN ABOVE LINTEL UPTO SLAB**	16	0.23	0.45	0.61	**1.01**	**CU. M**
9	**BRICK MASONARY ABOVE LINTEL UPTO SLAB**						
	L = 2*10.82+2*5.79+2*2.14+3*3.34+1.52	1	49.04	0.23	0.61	6.88	
	DEDUCTION						
	COLUMN	15	0.23	0.45	0.61	0.95	
	NET MASONARY WALL					**5.93**	**CU. M**
10	**RCC BEAM**						
	L = 3*10.82+8.76+4*5.79+4*3.11	1	76.82	0.23	0.45	**7.95**	**CU. M**
11	**RCC SLAB**						
	1) 10.82 X 6.25	1	10.82	6.25	0.15	10.14	
	2) 8.76 X 3.34	1	8.76	3.34	0.15	4.39	
						14.53	**CU. M**
12	**RCC COLUMN ABOVE SLAB IN PARAPET WALL**	16	0.23	0.45	0.91	**1.51**	**CU. M**
13	**BRICK MASONARY ABOVE SLAB IN PARAPET WALL**						
	L = 2*10.82+2*9.13	1	39.9	0.23	0.9	8.26	
	DEDUCTION						
	COLUMN	12	0.23	0.45	0.9	1.12	
	NET MASONARY WALL					**7.14**	**CU. M**
14	**EARTH FILLING UPTO PLINTH**						
	1) 10.82 X 6.25	1	10.82	6.25	0.3	20.29	
	2) 8.76 X 3.34	1	8.76	3.34	0.3	8.78	
	DEDUCTION FOR PLINTH BEAM					4.84	
	TOTAL EARTH FILLING					**24.23**	**CU. M**

15	**CC FLOORING**						
	1) 10.82 X 6.25	1	10.82	6.25	0.15	10.14	
	2) 8.76 X 3.34	1	8.76	3.34	0.15	4.39	
	DEDUCTION FOR TOILETS	2	2.82	2.04	0.15	1.73	
	TOTAL FLOORING					**12.81**	**CU. M**
16	**TILE FLOORING**						
	1) 10.36 X 5.79	1	10.36	5.76		59.67	
	2) 8.30 X 3.34	1	8.3	3.34		27.72	
						87.40	**SQ. M**
17	**PLASTER**						
	INTERNAL WALL						
	L = 3*10.36+2*9.13+4*3.34+2*2.04+0.91*12 (UPTO LINTEL)	1	77.7		2.14	166.28	
	L = 3*10.36+2*9.13+4*3.34 (ABOVE LINTEL)	1	62.7		1.03	64.58	
	DEDUCTION						
	MD - 1.52 X 2.14	1	1.52		2.14	3.25	
	DOOR - 0.75 X 2.14 (TOILET DOOR)	3	0.75		2.14	4.82	
	WINDOW - 1.22 X 1.22	9	1.22		1.22	13.40	
	VENTILATOR - 0.6 X 0.45	4	0.6		0.45	1.08	
	TOTAL DEDUCTION					11.27	
	NET INTERNAL WALL PLASTER					**219.59**	**SQ. M**
	CEILING PLASTER						
	1) 10.36 X 5.79	1	10.36	5.79		59.98	
	2) 8.30 X 3.34	1	8.30	3.34		27.72	
						87.71	**SQ. M**
	EXTERNAL WALL						
	L = 2*10.82+2*9.59	1	40.82		4.83	197.16	
	DEDUCTION						
	MD - 1.52 X 2.14	1	1.52		2.14	3.25	
	WINDOW - 1.22 X 1.22	9	1.22		1.22	13.40	
	VENTILATOR - 0.6 X 0.45	4	0.6		0.45	1.08	
	TOTAL DEDUCTION					8.86	
	NET EXTERNAL PLASTER					**188.30**	**SQ. M**

	PLASTER INSIDE PARAPET WALL	1	49.34		0.91	**44.90**	**SQ. M**
	L = 3*10.36+2*9.13						
	TOTAL PLASTER					**540.49**	**SQ. M**
18	**PAINT**						
	INTERNAL WALL						
	L = 3*10.36+2*9.13+4*3.34+2*2.04+0.91*12 (UPTO LINTEL)	1	77.7		2.14	166.28	
	L = 3*10.36+2*9.13+4*3.34 (ABOVE LINTEL)	1	62.7		1.03	64.58	
	DEDUCTION						
	MD - 1.52 X 2.14	1	1.52		2.14	3.25	
	DOOR - 0.75 X 2.14 (TOILET DOOR)	3	0.75		2.14	4.82	
	WINDOW - 1.22 X 1.22	9	1.22		1.22	13.40	
	VENTILATOR - 0.6 X 0.45	4	0.6		0.45	1.08	
	TOTAL DEDUCTION					11.27	
	NET INTERNAL WALL PAINT					**219.59**	**SQ. M**
	CEILING PAINT						
	1) 10.36 X 5.79	1	10.36	5.79		59.98	
	2) 8.30 X 3.34	1	8.30	3.34		27.72	
						87.71	**SQ. M**
	EXTERNAL WALL						
	L = 2*10.82+2*9.59	1	40.82		4.83	197.16	
	DEDUCTION						
	MD - 1.52 X 2.14	1	1.52		2.14	3.25	
	WINDOW - 1.22 X 1.22	9	1.22		1.22	13.40	
	VENTILATOR - 0.6 X 0.45	4	0.6		0.45	1.08	
	TOTAL DEDUCTION					8.86	
	NET EXTERNAL PAINT					**188.30**	**SQ. M**
	PAINT INSIDE PARAPET WALL						
	L = 3*10.36+2*9.13	1	49.34		0.91	**44.90**	**SQ. M**
	TOTAL PAINT					**540.49**	**SQ. M**

ABSTRACT SHEET

SR NO	DESCRIPTION	QTY	UNIT	RATE	PER UNIT	AMOUNT
1	**EXCAVATION IN FOUNDATION**	27.65	CU. M	85.90	CU.M	**2375.14**
2	**PCC IN FOUNDATION**	6.91	CU. M	2137.44	CU.M	**14769.71**
3	**RCC COLUMN UPTO PLINTH**	1.49	CU. M	3879.45	CU.M	**5780.38**
4	**PLINTH BEAM**	4.84	CU. M	3879.45	CU.M	**18776.54**
5	**RCC COLUMN ABOVE PLINTH UPTO LINTEL LEVEL**	3.54	CU. M	3879.45	CU.M	**13733.25**
6	**BRICK MAOSNARY ABOVE PLINTH UPTO LINTEL LEVEL**					
	1) MASONARY WALL	16.74	CU. M	3259.75	CU.M	**54568.22**
	2) PARTITION WALL	16.01	SQ. M	387.00	SQ.M	**6195.87**
7	**RCC LINTEL**	1.94	CU. M	2137.44	CU.M	**4146.63**
8	**RCC COLUMN ABOVE LINTEL UPTO SLAB**	1.01	CU. M	3879.45	CU.M	**3918.24**
9	**BRICK MASONARY ABOVE LINTEL UPTO SLAB**	5.93	CU. M	3259.75	CU.M	**19330.32**
10	**RCC BEAM**	7.95	CU. M	3879.45	CU.M	**30841.63**
11	**RCC SLAB**	14.53	CU. M	3818.93	CU.M	**55489.05**
12	**RCC COLUMN ABOVE SLAB IN PARAPET WALL**	1.51	CU. M	3879.45	CU.M	**5857.97**

13	**BRICK MASONARY ABOVE SLAB IN PARAPET WALL**	7.14	CU.M	3259.75	CU.M	**23274.62**
14	**EARTH FILLING UPTO PLINTH**	24.23	CU.M	250.00	CU.M	**6057.50**
15	**CC FLOORING**	12.81	CU.M	2137.44	CU.M	**27380.61**
16	**TILE FLOORING**	87.40	SQ.M	453.00	SQ.M	**39592.20**
17	**PLASTER**	540.49	SQ.M	68.50	SQ.M	**37023.57**
18	**PAINT**	540.49	SQ.M	7.60	SQ.M	**4107.72**
	TOTAL AMOUNT					**373219.16**
	2% WATER CHARGES					**7464.38**
	5% COUNTIGENCIES					**18660.96**
	NET AMOUNT					**399344.50**
	SAY					**400000.00**

II. CYBER CAFÉ:-

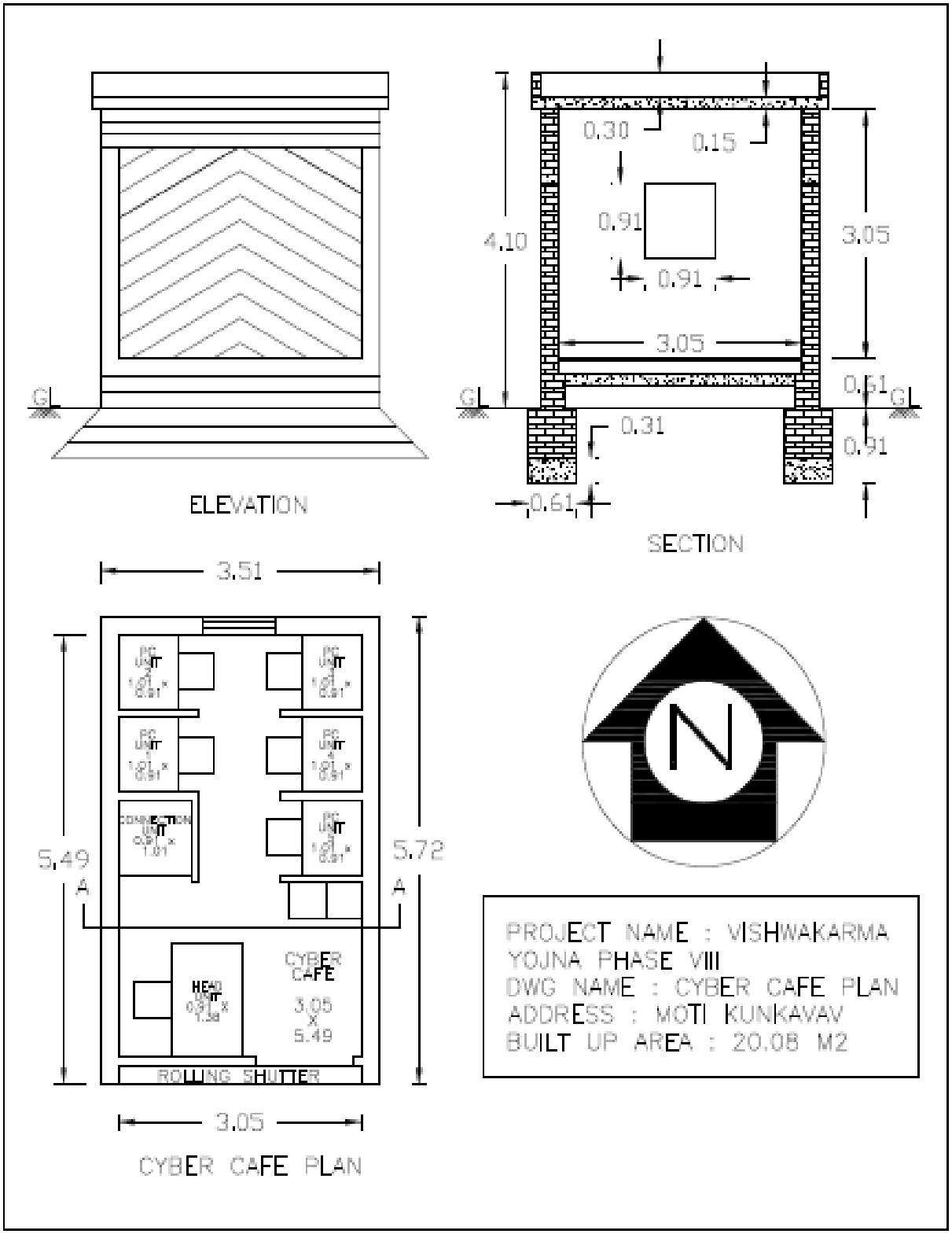


Fig.27 Cyber Café

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**

III. PUBLIC TOILET:-

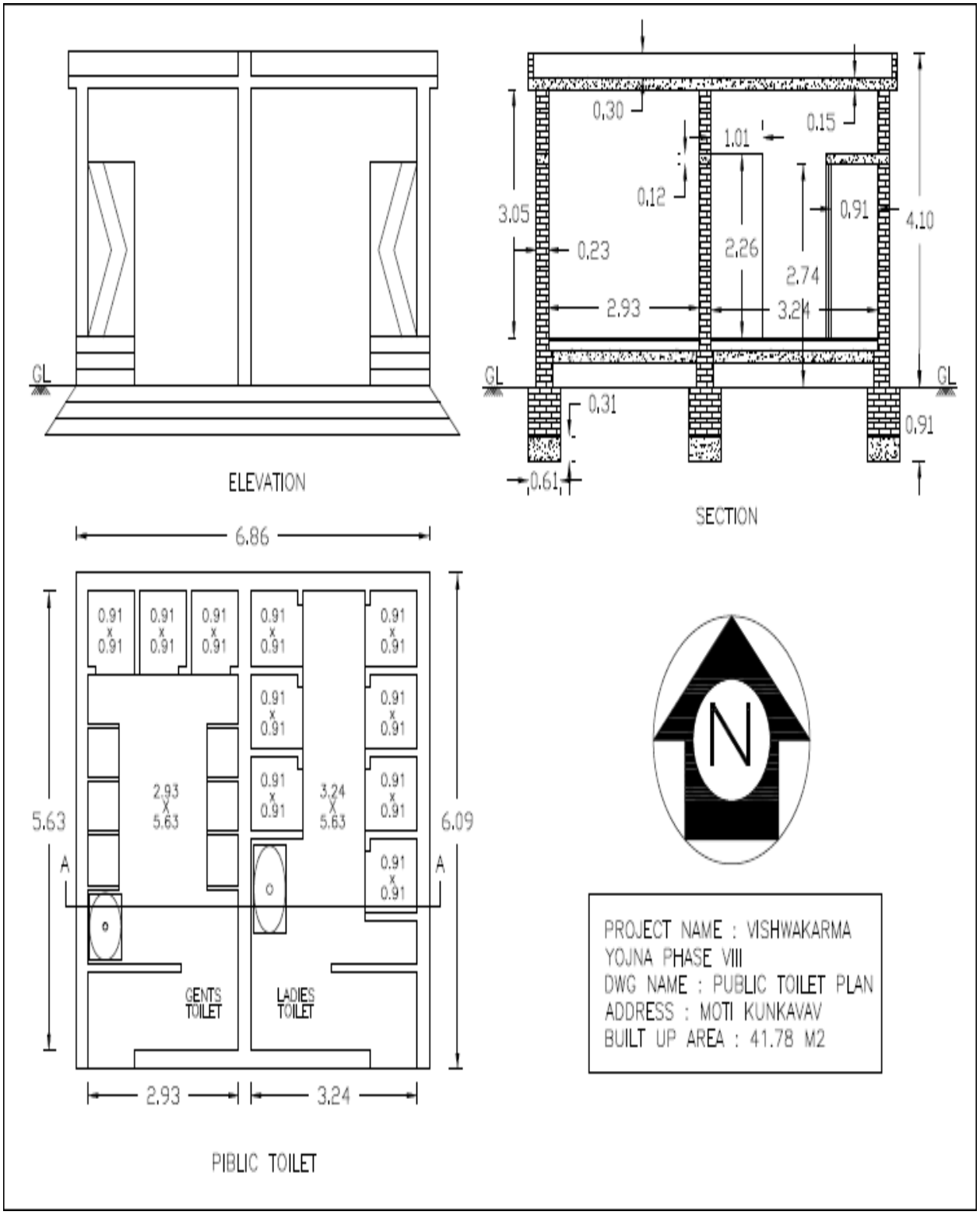


Fig.28 Public Toilet

MEASUREMENT SHEET

SR NO	DESCRIPTION	NOS	LENTH	WIDTH	HEIGHT	QTY	UNIT
1	**EXCAVATION IN FOUNDATION**						
	LONG WALL	2	7.47	0.61	0.91	8.29	
	L = 6.86+0.61						
	SHORT WALL	3	4.75	0.61	0.91	7.91	
	L = 5.36-0.61						
						16.20	**CU.M**
2	**PCC IN FOUNDATION**						
	LONG WALL	2	7.47	0.61	0.31	2.83	
	L = 6.86+0.61						
	SHORT WALL	3	4.75	0.61	0.31	2.69	
	L = 5.36-0.61						
						5.52	**CU.M**
3	**BRICK MAOSNARY IN FOUNDATION UPTO GROUND LEVEL**						
	LONG WALL	2	7.47	0.61	0.6	5.47	
	L = 6.86+0.61						
	SHORT WALL	3	4.75	0.61	0.6	5.22	
	L = 5.36-0.61						
						10.68	**CU.M**
4	**BRICK MAOSNARY IN FOUNDATION UPTO PLINTH**						
	LONG WALL	2	6.86	0.31	0.45	1.91	
	L = 6.86						
	SHORT WALL	3	5.05	0.31	0.45	2.11	
	L = 5.36-0.31						
						4.03	**CU.M**
5	**BRICK MAOSNARY ABOVE PLINTH UPTO LINTEL LEVEL**						
	LONG WALL	2	6.86	0.23	2.29	7.23	
	L = 6.86						
	SHORT WALL	3	5.36	0.23	2.29	8.47	
	L = 5.36						
	DEDUCTION FOR DOORS	2	0.91	0.23	2.14	0.90	
						14.80	**CU.M**
	PARTITION WALL	1	21.78		2.14	**46.61**	**SQ.M**
	L = 1.82+1.67+1.01*10+0.91*9						

6	**RCC LINTEL**						
	LONG WALL	2	6.86	0.23	0.12	0.38	
	L = 6.86						
	SHORT WALL	3	5.36	0.23	0.12	0.44	
	L = 5.36						
	PARTITION WALL	1	21.78	0.10	0.12	2.61	
	L = 1.82+1.67+1.01*10+0.91*9						
						3.44	**CU.M**
7	**BRICK MASONARY ABOVE LINTEL UPTO SLAB**						
	LONG WALL	2	6.86	0.23	0.80	2.52	
	L = 6.86						
	SHORT WALL	3	5.36	0.23	0.80	2.96	
	L = 5.36						
						5.48	**CU.M**
8	**RCC SLAB**	1	7.16	6.39	0.15	**6.86**	**CU.M**
9	**BRICK MASONARY ABOVE SLAB IN PARAPET WALL**						
	LONG WALL	2	7.16		0.30	4.30	
	L = 6.86+2*0.15						
	SHORT WALL	2	6.39		0.30	3.83	
	L = 6.09+2*0.15						
						8.13	**SQ.M**
10	**EARTH FILLING UPTO PLINTH**						
	GENTS TOILET	1	2.33	5.03	0.45	5.27	
	LADIES TOILET	1	2.64	5.03	0.45	5.98	
						11.25	**CU.M**
11	**CC FLOORING**						
	GENTS TOILET	1	2.33	5.03	0.15	**1.76**	
	LADIES TOILET	1	2.64	5.03	0.15	**1.99**	
						3.75	**CU.M**
12	**TILE FLOORING**						
	GENTS TOILET	1	2.93	5.63		**16.50**	
	LADIES TOILET	1	3.24	5.63		**18.24**	
						34.74	**SQ.M**

13	**PLASTER**						
	INTERNAL WALL						
	LONG WALL	2	5.72		2.14	24.48	
	SHORT WALL	2	3.05		2.14	13.05	
	PARTITION WALL	2	21.78		2.14	93.22	
	DEDUCTION FOR DOORS	2	0.91		2.14	1.95	
						128.81	**SQ.M**
	CEILING PLASTER						
	GENTS TOILET	1	2.93	5.63		16.50	
	LADIES TOILET	1	3.24	5.63		18.24	
						34.74	**SQ.M**
	EXTERNAL WALL						
	LONG WALL	2	6.86		4.10	56.25	
	SHORT WALL	2	6.09		4.10	49.94	
	DEDUCTION FOR DOORS	2	0.91		2.14	1.95	
						104.24	**SQ.M**
	PLASTER INSIDE PARAPET WALL						
	LONG WALL	2	7.16		0.30	4.30	
	SHORT WALL	2	6.39		0.30	3.83	
						8.13	**SQ.M**
	TOTAL PLASTER					**275.92**	**SQ.M**
14	**PAINT**						
	INTERNAL WALL						
	LONG WALL	2	5.72		2.14	24.48	
	SHORT WALL	2	3.05		2.14	13.05	
	PARTITION WALL	2	21.78		2.14	93.22	
	DEDUCTION FOR DOORS	2	0.91		2.14	1.95	
						128.81	**SQ.M**
	CEILING PAINT						
	GENTS TOILET	1	2.93	5.63		16.50	
	LADIES TOILET	1	3.24	5.63		18.24	
						34.74	**SQ.M**

	EXTERNAL WALL						
	LONG WALL	2	6.86		4.10	56.25	
	SHORT WALL	2	6.09		4.10	49.94	
	DEDUCTION FOR DOORS	2	0.91		2.14	1.95	
						104.24	**SQ.M**
	PAINT INSIDE PARAPET WALL						
	LONG WALL	2	7.16		0.30	4.30	
	SHORT WALL	2	6.39		0.30	3.83	
						8.13	**SQ.M**
	TOTAL PAINT					**275.92**	**SQ.M**

ABSTRACT SHEET

SR NO	DESCRIPTION	QTY	UNIT	RATE	PER UNIT	AMOUNT
1	**EXCAVATION IN FOUNDATION**	16.20	CU.M	85.90	CU.M	**1391.58**
2	**PCC IN FOUNDATION**	5.52	CU.M	2137.44	CU.M	**11798.67**
3	**BRICK MAOSNARY IN FOUNDATION UPTO GROUND LEVEL**	10.68	CU.M	3259.75	CU.M	**34814.13**
4	**BRICK MAOSNARY IN FOUNDATION UPTO PLINTH**	4.03	CU.M	3259.75	CU.M	**13136.79**
5	**BRICK MAOSNARY ABOVE PLINTH UPTO LINTEL LEVEL**					
	MAIN WALL	14.80	CU.M	3259.75	CU.M	**48244.30**
	PARTITION WALL	46.61	SQ.M	387.00	SQ.M	**18038.07**
6	**RCC LINTEL**	3.44	CU.M	2137.44	CU.M	**7352.79**
7	**BRICK MASONARY ABOVE LINTEL UPTO SLAB**	5.48	CU.M	3259.75	CU.M	**17863.43**
8	**RCC SLAB**	6.86	CU.M	3818.93	CU.M	**26197.86**
9	**BRICK MASONARY ABOVE SLAB IN PARAPET WALL**	8.13	SQ.M	387.00	SQ.M	**3146.31**
10	**EARTH FILLING UPTO PLINTH**	11.25	CU.M	250.00	CU.M	**2812.50**

11	**CC FLOORING**	3.75	CU.M	2137.44	CU.M	**8015.40**
12	**TILE FLOORING**	34.74	SQ.M	453.00	SQ.M	**15737.22**
13	**PLASTER**	275.92	SQ.M	68.50	SQ.M	**18900.52**
14	**PAINT**	275.92	SQ.M	7.60	SQ.M	**2096.99**
	TOTAL AMOUNT					**229546.57**
	2% WATER CHARGES					**4590.93**
	5% COUNTIGENCIES					**11477.33**
	NET AMOUNT					**245614.83**
	SAY					**246000.00**

IV. POLICE STATION :-

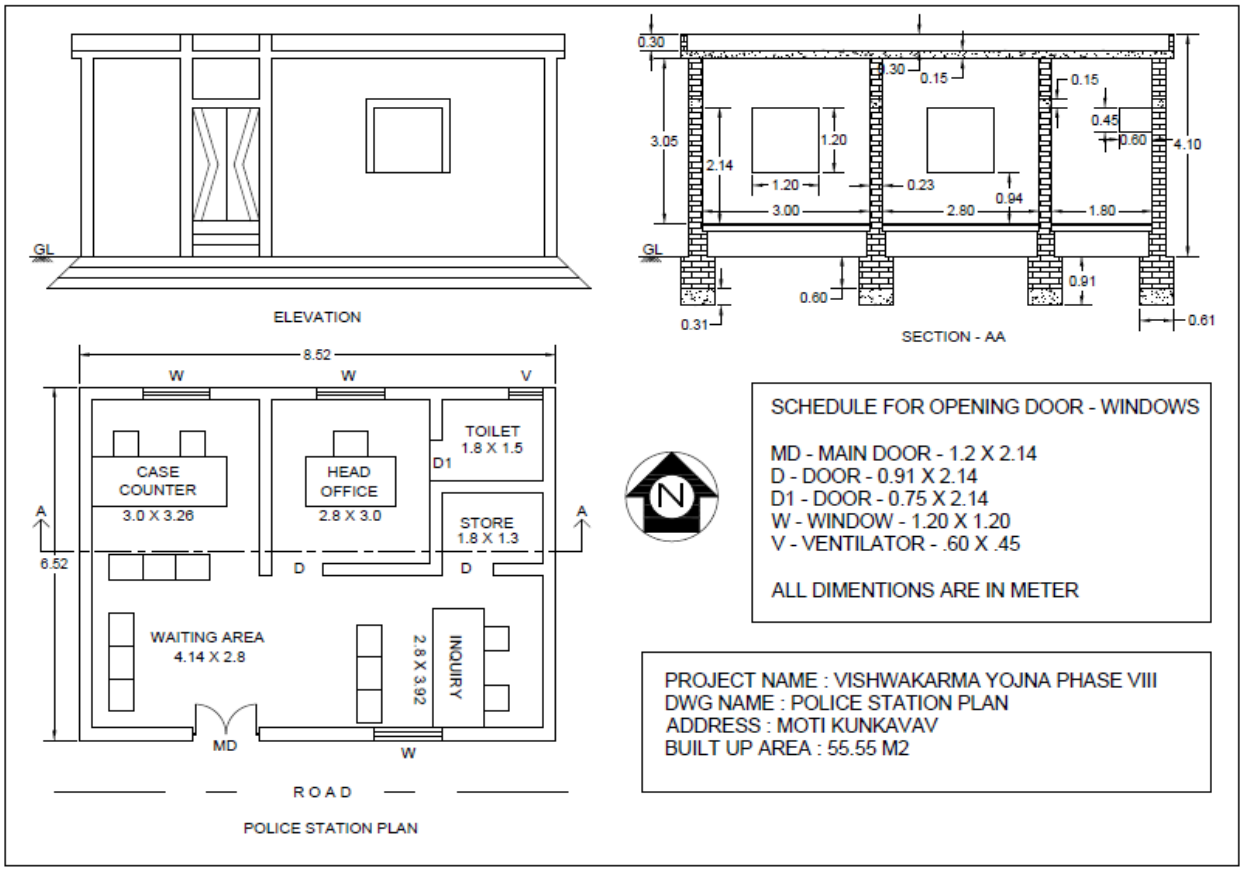


Fig.29 police station

ABSTRACT SHEET

Sr.No.	Particular items	Quantity	Rate	Per	Amount
1.	Earthwork in excavation for foundation	29.808	85	m^3	2,533.68
2.	P.C.C in foundation	7.452	3200	m^3	23,846.4
3.	Brickwork in foundation	11.40	3200	m^3	36,480
4.	Brickwork in superstructure	28.25	3500	m^3	98,975
5.	Plaster	196.3	150	m^2	29,445
					Total = 1,91,181

MEASUREMENT SHEET

Sr. No.	Description of items	No.	Length (m)	Breadth (m)	Ht. (m)	Total Qty.
	Total center line = (6.2*2) + (8*2) + 2 + 1.8 = 43.2m					
1.	Excavation for foundation = (0.5*6*0.6)- 43.2	1	41.4	0.6	1.2	29.808 m^3
2.	P.C.C work in foundation	1	41.4	0.6	0.3	7.452 m^3
3.	Brickwork in foundation					
	Step-1 : (43.2–	1	42	0.4	0.3	5.04 m^3
	Step-2 : (43.2–	1	42	0.3	0.3	3.80 m^3
	Step-3 : (43.2–	1	42	0.2	0.3	2.55m^3
						Total = 11.40 m^3
4.	Brickwork in super structure	1	42	0.2	3	25.56
	Perapet wall :8.4	2	8.	0.2	1	4.16 m^3
	6	2	6	0.2	1	2.4m^3
						Total = 31.32m^3
	Deduction:					
	D1	1	1.	0.2	2.1	0.504m^3
	D2	1	0.	0.2	2.1	0.378 m^3
	D3	2	0.	0.2	2.1	0.504 m^3
	W	4	0.	0.2	0.9	0.648m^3
	V	1	0.	0.2	0.45	0.040 m^3
						=(-2.07m^3)
	Deduction for lintel					
	D1	1	1.	0.2	0.5	0.15 m^3
	D2	1	1.	0.2	0.5	0.12 m^3
	D3	2	0.	0.2	0.5	0.18 m^3
	W	4	1.	0.2	0.5	0.48 m^3
	V	1	0.	0.2	0.5	0.07 m^3

						=(-1.00 m^3)
						Total = 28.25 m^3
5.	Plaster					
	Slab:					
	Hall = (3*5.2)	1	3	5.2	-	15.6m^2
	= (6*2.8)	1	6	2.8	-	16.8m^2
	Main office	1	2.	3	-	8.4 m^2
	Toilet	1	1.	1.8	-	2.88 m^2
	Store room	1	1	1.8	-	1.8 m^2
	Wall:					
	Hall	1	8	-	3	24 m^2
		1	6	-	3	18 m^2
		1	3	-	3	9 m^2
		1	2.	-	3	8.4 m^2
		1	5.	-	3	15.6 m^2
		1	3	-	3	9 m^2
		2	2.	-	3	16.8 m^2
		2	3	-	3	18 m^2
		2	1.	-	3	9.6 m^2
		2	1.	-	3	10.8 m^2
		2	1	-	3	6 m^2
		2	1.	-	3	10.8 m^2
						= 201.48m^2
	Deduction:					
	D1	0.5	1.	-	2.1	1.26 m^2
	D2	0.5	0.	-	2.1	0.94 m^2
	D3	1	0.	-	2.1	1.26 m^2
	W	2	0.	-	0.9	1.62 m^2
	V	0.5	0.	-	0.45	0.10 m^2
						= (-5.18 m^2)
						= 196.3 m^2

V. AVEDO:-

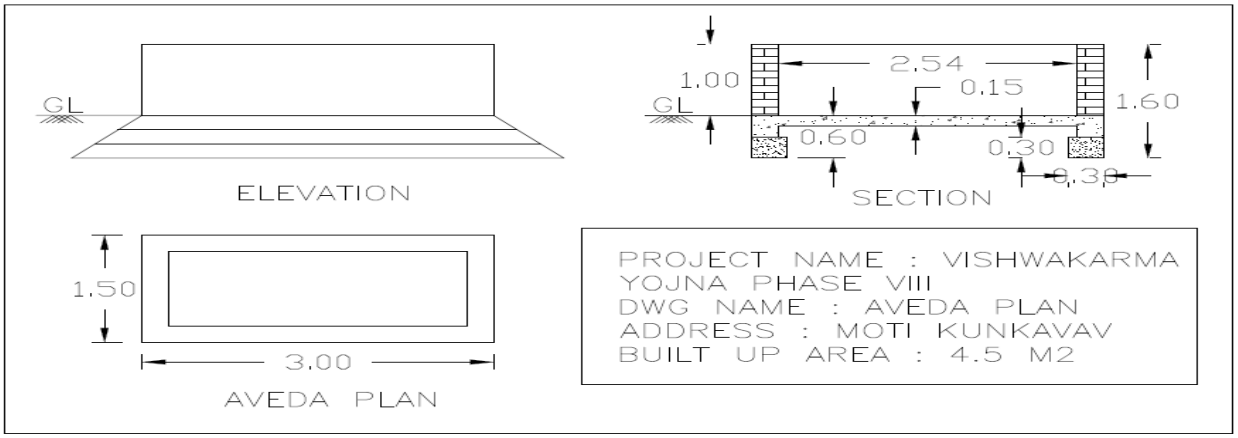


Fig.30 Avedo

ABSTRACT SHEET

Sr.	Particular items	Quantity	Rate	Per	Amount
1.	Excavation for foundation	2.952	85	Cu.m	251
2.	P.C.C work	1.905	3200	Cu.m	6096
3.	Brickwork in foundation up to plinth	0.984	3200	Cu.m	3150
4.	Brickwork for super structure	1.886	3500	Cu.m	6600
5.	Plaster	17.75	150	Sq. m	888
					Total = 16,985

MEASUREMENT SHEET

Sr.	Item description	No.	Length	Width	Height	Quantity
1.	Excavation for foundation	1	8.2	0.6	0.6	2.952
2.	P.C.C work in foundation	1	8.2	0.6	0.3	1.476
	Base layer	1	2.6	1.1	0.15	0.429
						= 1.905 Cu. M
3.	Brick work in foundation up to plinth					
	Step:-1	1	8.2	0.4	0.3	0.984
						Total = 0.984 Cu.m
4.	Brickwork for super structure:					
		1	8.2	0.2	1.15	1.886
						Total = 1.886 Cu. M
5.	Plaster					
	Inner wall	2	2.6	-	1	5.2
		2	1.1	-	1	2.2
	Outer wall	2	3	-	1.15	6.9
		2	1.5	-	1.15	3.45
						= 17.75 Sq. m

VI. MEDICAL STORE :-

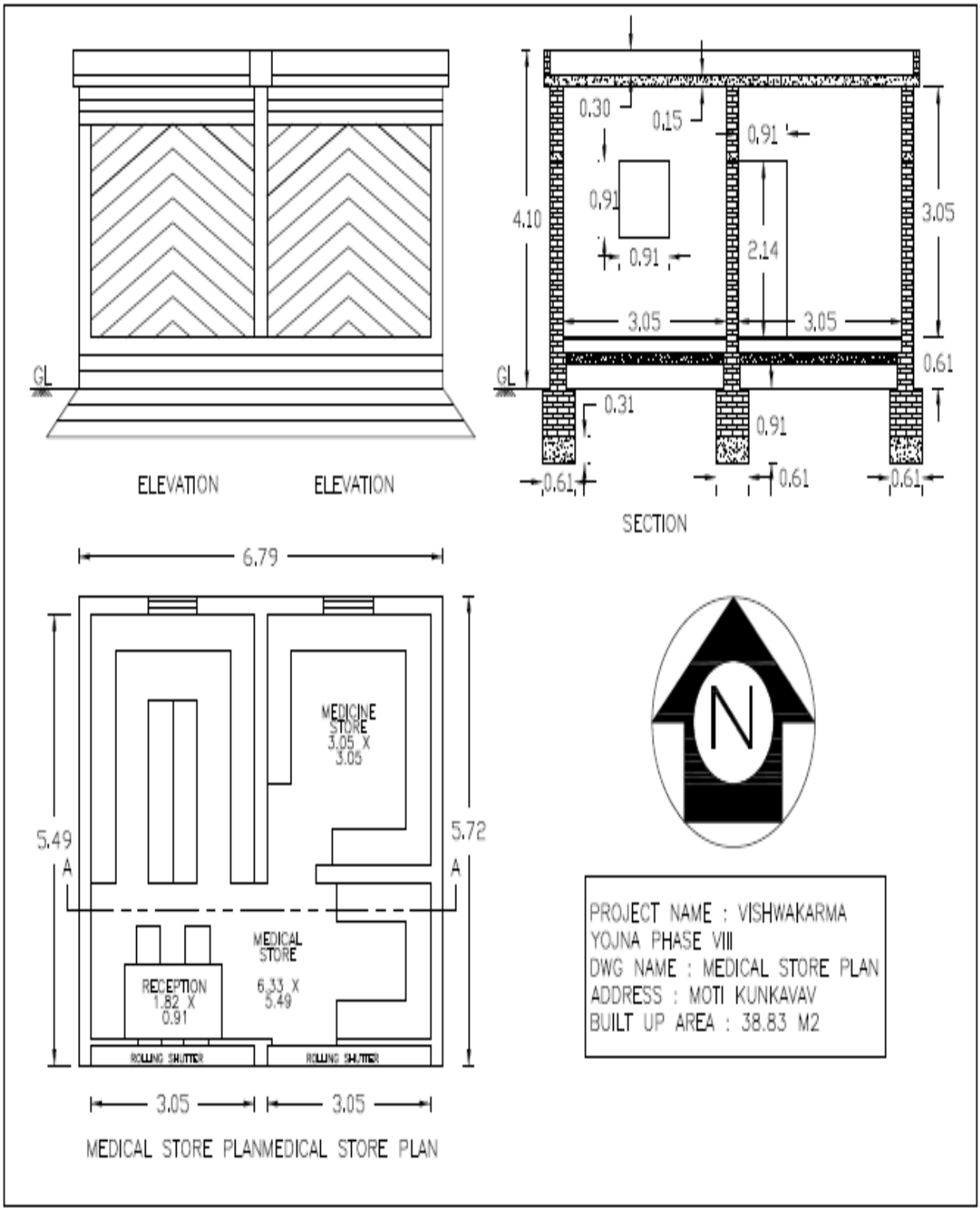


Fig.31 Medical store

ABSTRACT SHEET

SR NO	DESCRIPTION	QTY	UNIT	RATE	PER UNIT	AMOUNT
1	EXCAVATION IN FOUNDATION	16.21	CU.M	85.90	CU.M	1392.439
2	PCC IN FOUNDATION	5.51	CU.M	2137.44	CU.M	11777.3
3	BRICK MAOSNARY IN FOUNDATION UPTO GROUND LEVEL	10.69	CU.M	3259.75	CU.M	34846.73
4	BRICK MAOSNARY IN FOUNDATION UPTO PLINTH	4.16	CU.M	3259.75	CU.M	13560.56
5	BRICK MAOSNARY ABOVE PLINTH UPTO LINTEL LEVEL	15.54	CU.M	3259.75	CU.M	50656.51
6	RCC LINTEL	0.82	CU.M	2137.44	CU.M	1752.7
7	BRICK MASONARY ABOVE LINTEL UPTO SLAB	5.52	CU.M	3259.75	CU.M	17993.82
8	RCC SLAB	3.88	CU.M	3818.93	CU.M	14817.45
9	BRICK MASONARY ABOVE SLAB IN PARAPET WALL	9.311	SQ.M	387.00	SQ.M	3603.357
10	EARTH FILLING UPTO PLINTH	12.61	CU.M	250.00	CU.M	3152.5
11	CC FLOORING	4.20	CU.M	2137.44	CU.M	8977.25
12	TILE FLOORING	37.28	SQ.M	453.00	SQ.M	16887.84
13	PLASTER	180.21	SQ.M	68.50	SQ.M	12344.385
14	PAINT	147.14	SQ.M	7.60	SQ.M	1118.264
	TOTAL AMOUNT					192881.16
	2% WATER CHARGES					2142.53
	5% COUNTIGENCIES					5356.31
	NET AMOUNT					200380.00
	SAY					200380.00

MEASUREMENT SHEET

SR NO	DESCRIPTION	NOS	LENTH	WIDTH	HEIGHT	QTY	UNIT
1	**EXCAVATION IN FOUNDATION**						
	LONG WALL	2	6.94	0.61	0.91	7.70	
	L = 6.33+0.61						
	SHORT WALL	3	5.11	0.61	0.91	8.51	
	L = 5.72-0.61						
						16.21	**CU.M**
2	**PCC IN FOUNDATION**						
	LONG WALL	2	6.94	0.61	0.31	2.62	
	L = 6.33+0.61						
	SHORT WALL	3	5.11	0.61	0.31	2.89	
	L = 5.72-0.61						
						5.51	**CU.M**
3	**BRICK MAOSNARY IN FOUNDATION UPTO GROUND LEVEL**						
	LONG WALL	2	6.94	0.61	0.6	5.08	
	L = 6.33+0.61						
	SHORT WALL	3	5.11	0.61	0.6	5.61	
	L = 5.72-0.61						
						10.69	**CU.M**
4	**BRICK MAOSNARY IN FOUNDATION UPTO PLINTH**						
	LONG WALL	2	6.79	0.31	0.45	1.89	
	L = 6.79						
	SHORT WALL	3	5.18	0.31	0.45	2.2	
	L = 5.49-0.31						
						4.16	**CU.M**
5	**BRICK MAOSNARY ABOVE PLINTH UPTO LINTEL LEVEL**						
	LONG WALL	2	6.79	0.23	2.32	7.25	
	L = 6.79						
	SHORT WALL	3	5.18	0.23	2.32	8.29	
	L = 5.49-0.31						
						15.54	**CU.M**
6	**RCC LINTEL**						
	LONG WALL	2	6.79	0.23	0.12	0.37	
	L = 6.79						
	SHORT WALL	3	5.49	0.23	0.12	0.45	
	L = 5.49						
						0.82	**CU.M**

7	**BRICK MASONARY ABOVE LINTEL UPTO SLAB**						
	LONG WALL	2	6.79	0.23	0.80	2.49	
	L = 6.79						
	SHORT WALL	3	5.49	0.23	0.80	3.03	
	L = 5.49						
						5.52	**CU.M**
8	**RCC SLAB**	1	6.99	3.71	0.15	**3.88**	**CU.M**
9	**BRICK MASONARY ABOVE SLAB IN PARAPET WALL**						
	LONG WALL	2	6.99		0.30	4.19	
	L = 6.79+2*0.1						
	SHORT WALL	3	5.69		0.30	5.121	
	L = 5.49+2*0.1						
						9.311	**SQ.M**
10	**EARTH FILLING UPTO PLINTH**	1	5.73	4.89	0.45	**12.61**	**CU.M**
11	**CC FLOORING**	1	5.73	4.89	0.15	**4.20**	**CU.M**
12	**TILE FLOORING**	1	5.49	6.79		**37.28**	**SQ.M**
13	**PLASTER**						
	INTERNAL WALL						
	LONG WALL	1	6.79		2.14	14.53	
	SHORT WALL	4	5.72		2.14	48.96	
						63.49	**SQ.M**
	CEILING PLASTER	1	5.49	6.33		**34.75**	**SQ.M**
	EXTERNAL WALL						
	LONG WALL	1	6.79		4.11	27.91	
	SHORT WALL	2	5.49		4.11	45.13	
						73.04	**SQ.M**
	PLASTER INSIDE PARAPET WALL						
	LONG WALL	1	6.99		0.30	2.1	
	SHORT WALL	4	5.69		0.30	6.83	
						8.93	**SQ.M**
	TOTAL PLASTER					**180.21**	**SQ.M**
14	**PAINT**						
	INTERNAL WALL						
	LONG WALL	2	6.79		2.14	29.06	

	SHORT WALL	1	5.49		2.14	11.75	
						40.81	**SQ.M**
	CEILING PAINT	1	5.49	6.79		**37.28**	**SQ.M**
	EXTERNAL WALL						
	LONG WALL	2	6.79		4.11	55.81	
	SHORT WALL	1	5.49		4.11	22.56	
						61.44	**SQ.M**
	PAINT INSIDE PARAPET WALL						
	LONG WALL	2	6.99		0.30	4.2	
	SHORT WALL	2	5.69		0.30	3.41	
						7.61	**SQ.M**
	TOTAL PAINT					**147.14**	**SQ.M**

Chapter-9 Description of All The Proposed Designs Including Total Existing Scenario Of Implementation:-

- 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 Moti-kunkavav 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.

(1) Cyber Cafe :-

In Moti-Kunkavav 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.

(2) Public Library:-

In Moti-Kunkavav village, there is no any public library for the villagers aim to reading book and novels or any other books. So we design public library for the provide government and increase villager's knowledge and reading level and literacy rate also.

(3) Public Toilet:-

In Moti-kunkavav village, there is no any public toilet for the villagers. So public toilet provide in village to clean the village and also air pollution will be decrease.

(4) Avedo:-

As the main occupation of the people of Moti-kunkavav 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) Police station :-

A design of police station is provided by us because the police station in the village is in deteriorating condition. So, we have provided the design of police station.

(6) Medical store:-

A design of medical store is provide us because the medicine provide at free of cost or minimum charge pay for medicine in generic medical store.

Chapter-10 Conclusion:-

As per our actual visit of Moti-kunkavav 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 is major crops grown in village. Village is connected with local public transport of Amreli and Gondal and near other cities. 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.

After analyzing all the data, we found that village needs some new facilities and some facilities need maintenance. We provided three new designs for our village, A Public Library, Public toilet and Cyber café to fulfill the requirement of existing population. Also village need initiative for the approach to various Govt. schemes by local bodies.

By providing such facilities it will be quite easy for all the people of village to connect to peoples of outer world and it will be helpful to create more opportunities for village peoples.

After providing the facilities suggested, we tried to approach towards smart village concept. With the help of Yojana and Village governance we have tried to make the village digital by providing E-facilities in later half. Also it is important to maintain the existing facilities rather than new development.

We can only approach to digital facilities and sustainable technology and connectivity for our village. Because we cannot directly approach to latest technologies, we have to consider its future scope also. Now a day's awareness is more required rather than technology. Also aware the people of the village use this new technology and facilities for their own benefit in the future. Due to the lack of basic facilities it is necessary to first provide basic facilities and after that we will provide E-facilities.

Chapter-11 References Refereed For This Project:-

❖ BOOKS:-

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

❖ CODE:-

- System of record(SOR) (Year 2015-16)
- IS 456 : 2000 Indian Standard PLAIN AND REINFORCED CONCRETE - CODE OF PRACTICE

❖ WEBSITES:-

- https://censusindia.gov.in/2011-common/censusdata2011.htm
- https://villageinfo.in/gujarat/amreli/kunkavav-vadia/kunkavav-moti.html
- http://wikiedit.org/India/Kunkavav-Moti/155888/
- https://www.villagemaps.in/gujarat/kunkavav-moti-kunkavav-vadia-amreli-515422/
- http://kunkavav.com/
- https://en.wikipedia.org/wiki/Smart_Village_India
- https://rural.nic.in/scheme-websites

Chapter-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:	MOTI - KUNKAVAV
Name of Institute:	Smt. Shantaben Harjibhai Gajiwala engineering Clg.
Nodal Officer Name & Contact Detail:	Prof. Nirvaci Bheda 8780193488 / 95587 13503
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Subhashbhai L, Sukhadiya 95862 68510
Date of Survey:	28/8/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	10789	5497	5292	2245

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	3777.5 hectares
2.	Forest Area (In hect.)	-
3.	Agricultural Land Area (In hect.)	393 hectares
4.	Residential Area (In hect.)	1 km Ground
5.	Other Area (In hect.)	-
6.	Distance to the nearest railway station (in kilometers):	1 km (out of the village)

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7.	Name of Nearest Town with Distance:	Bajasaria (18 km away)
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?	Gujarat State highway 110

III. OCCUPATIONAL DETAILS:

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

Major crops grown in the village:	1. Vegetables 2. Wheat 3. Cotten

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
1.	**PIPED WATER**				
	Piped Into Dwelling	yes	yes		
	Piped To Yard/Plot	yes	yes		
	Public Tap/Standpipe	yes	yes		
	Tube Well Or Bore Well				
2.	**DUG WELL**	yes	yes		
	Protected Well				
	Un Protected Well				
3.	**WATER FROM SPRING**				
	Protected Spring				
	Unprotected Spring				
	Rainwater	yes	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		✓		
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: 10,00,000 Lit	✓		
	Underground Sump	Capacity:		✓	
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1		✓		
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road		Pucca		
	Main road	Bituminous (All weather)			
	Internal streets		kutcha + pucca		
	Nearest NH/SH/MDR/ODR Dist. in kms. 7km around				
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)		✓		nearest Out side of the village
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)		✓		In village
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto, Private vehicles			
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	24 hrs.			

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Techno Economic Survey

	Power supply for Domestic Use		✓		
	Power supply for Agricultural Use	8 hours	✓		
	Power supply for Commercial Use		✗	✓	
	Road/ Street Lights	In night	✓		
	Electrification in Government Buildings/ Schools/ Hospitals	24 hrs	✓		
	Renewable Energy Source Facilities (Y/ N)	Solar Power	✓		
	LED Facilities	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			✓	

Suggestions if any:

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

Suggestions if any:

I.	Housing Condition:				
	Kutchha/Pucca (Approx. ratio)	Kutcha=55% Pucca=45%	✓		

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)		✓	✓	
	Sub-Centre				
	PHC	Gov, Hospital	✓		
	BLOCK PHC		✓		
	CHC/RH	private, hospital		✓	
	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: .....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	In village	✓		
	Primary School		✓		
	Secondary school		✓		
	Higher sec. School		✓		
	ITI college/ vocational Training Center		✓		
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities			✓	

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Techno Economic Survey

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

Suggestions if any:

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

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

Suggestions if any:

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

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Techno Economic Survey

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

Suggestions if any:

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

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Techno Economic Survey

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	few people 450 private Solar panel for electricity generation.		✓	
2.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System			✓	
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			✓	
4.	Any natural calamity in the village during the last one year: EARTHQUAKES FLOODS CYCLONE DROUGHT LANDSLIDES AVALANCHE OTHER (SPECIFY)			✓	

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VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building, Health Center, Panchayat Building, Public Toilets & any other	Good condition (School Building, Health Center); old condition (Panchayat Building); yes (Public Toilets)	No public toilet & No latrin so need this facilities
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING ....✓.... FOGGING....✓.... (In occasional time) 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 Library, cyber cafe (full capacity), public Toilet	

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

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ગ્રા.પં.-કુંકાવાવ મોટી

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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:	Himatnagar
Name of Taluka:	Bayad
Name of Village:	Pansoli
Name of Institute:	Smt, Shantaben Haribhai Gacleria Engineering clg.
Nodal Officer Name & Contact Detail:	Prof, Nishad, R. bheda
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Smt, Sharadaben patel
Date of Survey:	14/8/2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001				
2.	2011	4677	2221	2456	

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1531 Hec, / 65.76 Km ground
2.	Forest Area (In hect.)	-
3.	Agricultural Land Area (In hect.)	3.62 km ground
4.	Residential Area (In hect.)	57km ground
5.	Other Area (In hect.)	45 km ground
6.	Distance to the nearest railway station (in kilometers):	-

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

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1.	Farmers
	2.	Businessman
	3.	Artisans

Major crops grown in the village:	1.	Rice
	2.	Wheat
	3.	millet

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	yes			
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**				RO plant water is supplied

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Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity:	✓		
	Underground Sump	Capacity:	✓		
Suggestions if any:					
C.	**The Type of Drainage Facility**				
	A. UNDERGROUND DRAINAGE 1 Protected 2 B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET	yes	✓		
Suggestions if any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	yes	✓		All Water
	Main road	yes	✓		"
	Internal streets	yes	✓		"
	Nearest NH/SH/MDR/ODR Dist. in kms.	SH-68	✓		"
Suggestions if any:					
E.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	NO (2km) Dhamnagar	✓		
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	yes	✓		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto, Jeep, Private vehicle	✓		
Suggestions if any:					
F.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	24 hrs			

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Vishwakarma Yojana: Phase VIII
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	Power supply for Domestic Use	24 hrs 16 Amp	✓		
	Power supply for Agricultural Use	24 hrs 16 Amp	✓		
	Power supply for Commercial Use	24 hrs	✓		
	Road/ Street Lights	yes	✓		
	Electrification in Government Buildings/ Schools/ Hospitals	yes	✓		
	Renewable Energy Source Facilities (Y/ N)	yes	✓		
	LED Facilities	yes	✓		
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	yes (2 nos)	✓		
	Location Condition	Good			
	Community Toilet (With bath/ without bath facilities)	yes	✓		
	Solid & liquid waste Disposal system available	yes	✓		
	Any facility for Waste collection from road	yes	✓		A.m. Comobile van
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND STREAM/RIVER CANAL WELL TUBE WELL OTHER (SPECIFY)	River Canal well Tube well	✓		
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	pucca (90%) kuchha (10%)			

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V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	8	✓		
	Sub-Centre	1	✓		
	PHC	1	✓		24/7 service
	BLOCK PHC				
	CHC/RH				
	District/ Govt. Hospital				
	Govt. Dispensary	1	✓		With full facilities
	Private Clinic	1	✓		
	Private Hospital/ Nursing Home				
	AYUSH Health Facility	yes			In PHC
	sonography /ultrasound facility	yes			
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	8	✓		With TV
	Primary School	1	✓		Std 1 to 8
	Secondary school	NO			
	Higher sec. School	NO			
	ITI college/ vocational Training Center	NO			
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	NO			
	If any of the above Facility is not available in village than approx. distance from village: .....kms.				

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Suggestions if any:

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

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

Suggestions if any:

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

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

Suggestions if any:

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

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

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

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	Many Projects	✓		
3.	Any NGO working for village development	NO			
4.	Any natural calamity in the village during the last one year: EARTHQUAKES FLOODS CYCLONE DROUGHT LANDSLIDES AVALANCHE OTHER (SPECIFY)	NO			

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks

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Ahmedabad, Gujarat

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1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	NO	All building are in Good Condition
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING .....101..... FOGGING.....125..... 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 ? yes	secondary & higher secondary school is needed	

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

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12.3 Survey Form of Ideal Village Scanned Copy Attachment in the Report:-

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII Techno Economic Survey

Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	Devaliya
Name of Taluka:	Amreli
Name of District:	Amreli
Name of Institute:	Smt. Shantaben Haribhai Gajera Engg. Clg.
Nodal Officer Name & Contact Detail:	Mr. Nirav Bheda 8780193488
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	Kapil Makwana - TCM 9974661043 Jaydipbhai Jebaliya - VC (Village Computer Operator) 8200219087
Date of Survey:	10/03/2021

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	500			
ii)	2011	1012	530	482	312-315

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	724.87 Hector
	Forest Area (In hect.)	35.09 Hector
	Agricultural Land Area (In hect.)	149.1 Hector
	Residential Area (In hect.)	531.17 Hector
	Other Area (In hect.)	8.51 Hector
	Water bodies	Water stream (Vakal)
	Nearest Town with Distance:	Amreli (14km)

3. **Occupational Details:**

Name of Three Major Occupation groups in Village	1. Farming 2. Wadge. Workers 3. Self - business

4. **Physical Infrastructure Facilities:**

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated)	yes	✓		Good
	• RO Water	yes	✓		Good
	• Well (Covered/ Uncovered)	NO	×	✓	Not present
	• Hand pumps	yes	✓		Good
	• Tube well/ Borehole	yes	✓		Good
	• River/ Canal/ Spring/ Lake/ Pond	yes	✓		Good
Suggestions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: 25,000 Ltrs	✓		Good
	Underground Sump	Capacity: 50,000 Ltrs	✓		Good
Suggestions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	yes	✓		Good
Suggestions if any:					
D.	**Type of Drainage**				
	Closed/ Open	yes	✓		Good
	If Open than Pucca / Kutcheha	yes	✓		Good
	Whether drain water is discharged directly in to Water bodies/ Sewer plants	yes	✓		Good
Suggestions if any:					

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E.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Yes	✓		Good
	Main road	Yes	✓		
	Internal streets	Yes	✓		Good
	Nearest NH/SH/MDR/ODR Dist. in kms. 1 - 1.5 km	SH-34 Yes	✓		(Amreli Kodinar Highway) Good
Suggestions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms) 10 km (Chaliya)	NO		✓	Not present
	Bus station (Y/N) Condition: Good (If No than Nearest Bus Station---Kms)	Yes	✓		Good
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Chakda, private vehicles	✓		Good
Suggestions if any:	In current condition Not present Railway Station so I hope Government provide this facility.				
G.	**Electricity Distribution**				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes (Sambhmbhada Gidy)	✓		Good
	Power supply for Domestic Use 24 hrs	Yes	✓		Good
	Power supply for Agricultural Use Approx. 12 hrs	Yes	✓		Good
	Power supply for Commercial Use 24 hrs	Yes	✓		Good
	Road/ Street Lights	Yes	✓		Good

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	Electrification in Govt Buildings/ Schools/ Hospitals	Gram, buildings, Schools	✓		Yes
	Renewable Energy Source Facilities (Y/N) Solar Street light	Yes	✓		present
	LED Facilities	Yes	✓		Yes
Suggestions if any:					
H.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos. 2	Yes	✓		Yes Good
	Location Behind bus stop Condition & plot Area Good	yes	✓		Good
	Community Toilet (With bath/ without bath facilities)	yes	✓		Good
	Solid & liquid waste Disposal system available one in every streets.	Yes	✓		Good
	Any facility for Waste collection from road	NO	✓		Not present
Suggestions if any: In current condition Not present waste collection from road so this type of facility in village Present in future.					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	yes	✓		Good
Suggestions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca Kutchha/Pucca (Approx. ratio) 3%/97%	Yes	✓		Good

5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks

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Techno Economic Survey

K.	Health Facilities:				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) NO Condition: NO	PHC, Sub Center	Yes ✓		Good
	Private Clinic/Private Hospital/ Nursing Home	NO		✓	Not present
	If any of the above Facility is not available in village than approx. distance from village: 13.....kms. (Vakiya CHC)				
Suggestions if any: In Village NO CHC present SO I hope in Village this facility will present in Future.					

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

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

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	Condition:	-	-	-	Medium
	Public Library (With daily newspaper supply: Y/N) Location: Condition:	NO		✓	Not present
	Public Garden Location: behind bus stop Condition: Good	yes	✓		Excellent
	Village Pond Location: Condition:	NO		✓	Not present
	Recreation Center Senior Citizen park Location: Village pasa Condition: Good	yes	✓		Good
	Cinema/ Video Hall Location: Condition:	NO		✓	Not present
	Assembly Polling Station Primary school Location: school pasa vistar, devagatina Condition: Good	yes	✓		Good
	Birth & Death Registration Office Gram panchayat Location: In padar Condition:	yes	✓		Good

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

Suggestions if any:

N.	Other Facilities				
	Post-office	yes	✓		Good
	Telecommunication Network/ STD booth	NO	X	✓	Not present

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General Market	NO		✓	Not present
Shops (Public Distribution System)	Yes	✓		Good
Panchayat Building	Yes	✓		Good
Pharmacy/Medical Shop	NO		✓	Not present
Bank & ATM Facility	NO		✓	Good
Agriculture Co-operative Society	Yes	✓		Good (Devrajiya khedut seva sahkari mandali)
Milk Co-operative Soc.	NO		✓	Good.
Small Scale Industries	Yes	✓		Good. (plastic Line Indus [illegible] (Nets))
Internet Cafes/ Common Service Center/Wi Fi	Wifi	✓		Good.
Other Facility	CCTV Camera	✓		Good

Suggestions if any:

6. **Sustainable /Green Infrastructure Facilities:**

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

7. **Data Collection From Village**

Village Base Map Available: Hard Copy/Soft Copy	

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Recent Projects going on for Development of Village	Pradhanmantri Avas Yojana, Vidhva pention skim.
Any NGO working for village development	Not present.

8. **Additional Information/ Requirement:**

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities(School Building, Health Center, Panchayat Building, Public Toilets & any other)	All faciliter are present in village are in Good contion	No maintenance or Repair required.
2.	Additional Information/ Requirement		
1.	Two petrol pumps are in village present.		Good
2.	Spining mill are present in village.		Good

9. **Smart Village Proposal Design**

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	All faciliter or most smartest faciliter in village so devadiya areis in our mindiy are smartest village.	like smart village.	Good.

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

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

તલાટી-કમ-મંત્રી
દેવરાજીયા ગ્રામ પંચાયત

12.4 Gap Analysis of the Allocated Village:-

Facilities	**Planning Commission/UDPFI Norms**	**Moti-kunkavav Population 17120**		
		Existing	**Required as per Norms**	**Gap**
Education				
Anganwadi	Each Village(per 2500 population)	3	1	+2
Primary School	Each Village(per 2500 population)	3	1	+2
Secondary School	Per 7,500 population	2	0	+2
Higher Secondary School	Per 15,000 Population	1	0	+1
College	Per 125,000 Population	0	0	0
Tech. Training Institute	Per 100000 Population	1	0	+1
Agriculture Research Centre	Per 100000 Population	0	0	0
Medical Facility				
Gov./Panchayat Dispensary.	Each Village	1	1	0
PHC & CHC	Per 20,000 population	1	1	0
Child Welfare and Maternity Home	Per 10,000 population	0	0	0
Hospital	Per 100000 Population	0	0	0
Transportation				
Internal road Approach Road	Each village must have Good quality roads.	Internal roads are adequate. Approach road is adequate.		
Bus/Auto Stand provision	All Villages connected by PT (ST Bus or Auto)	1	1	0
Drinking Water				
Water Facilities		Adequate		
Over Head Tank	Total Demand	Adequate	2 lac. Liter Capacity.	0
Public Latrines	per 20,000 population	0	6	-6
Cremation Ground	Per 20,000 population	1	0	+1
Post Office	Per 10,000 population	1	1	0
Gram Panchayat Building	Each individual/group panchayat	1	1	0
APMC	Per 100000 Population	0	0	0
Fire Station	Per 100000 Population	0	0	0
Police Station	Per 15000 Population	1	1	0
Community Hall	Per 10000 Population	1	1	0

12.5 Summary Details of the villages designs in Table form:-

Sr.no.	Village Name	Discipline	Part - 1
1.	Moti- Kunkavav	Civil	Public Toilet, Police station
			Public library, Avedo
			Cyber café, Medical store
2.	Vadiya	Civil	Public Garden
			Market
			Soak Pit
			Septic Tank
			Angan Wadi
			Road
3.	Nani Kunkavav	Civil	Gram Panchayat
			Renewable Enery
			PHC
			Avedo

Table.9 Gap analysis & summary of allocated village

12.6 Village Interaction with Sarpanch Report:-

Moti-Kunkavav Village, Taluka: Kunkavav-vadiya, District: Amreli

To know or to understand the actual necessities of village it's required to visit village and interact with Sarpanch, Talati and Other village dwellers.

Techno economic survey forms give much information about village by interacting with Talati and Sarpanch. But interaction with village dwellers and observation of village condition is required.

We visited allocated village Moti-kunkavav and also visited ideal village and Smart village punsari. We meet to Sarpanch Subhashbhai and Talati of Moti-kunkavav village. They both are very dynamic person and gave us the detailed information and data whenever we required.

We visited all the internal part of the village and interacted with villagers directly and ask them about the present situation of village. We conducted a Techno-economic survey of Moti- kunkavav

village. After all, we analyzed the gap analysis and provided the necessary facilities to village. We saw that as per UDPFI norms there are some non-adequate facilities.

We provide Public library, Public toilet, Cyber café for village at primary basis.

We also send our design proposal to Gram Panchayat of Moti-kunkavav Village. In this way we approach to various problems faced by villagers and various criteria given by GTU.

12.7 Summary Of Good Photographs In Table Format:-

-: Railway station: -

-: school:-

-: Water tank: -

-: Anganwadi: -

-:Grampanchayat:-

Fig.32 Good photographs

12.8 Village Interaction with Sarpanch:-

Village Interaction with Sarpanch / Talati Letter

Vishwakarma Yojana: Phase VIII

Moti-kunkavav Village, Kunkavav-vadiya Taluka, Amreli Dist.

Village Code: 365450

Subject: Village Interaction Form with Sarpanch / Talati of Moti-kunkavav Village

I sarpanch/talati of Moti-kunkavav Village undersigned gives approval of doing village interaction activity under Vishwakarma Yojana Phase VIII-An approach towards rurbanisation by Students of SHGEC, Amreli named Gevariya Abhishek (171300106003) and Chopda Bhoju (181303106003).

Date: 15/03/2021

Sign: –

સરપંચ,
ગા.પં.–કુંકાવાવ મોટી

Seal of Grampanchaya

12.9 Sarpanch Letter Giving Information About The Village Development:-

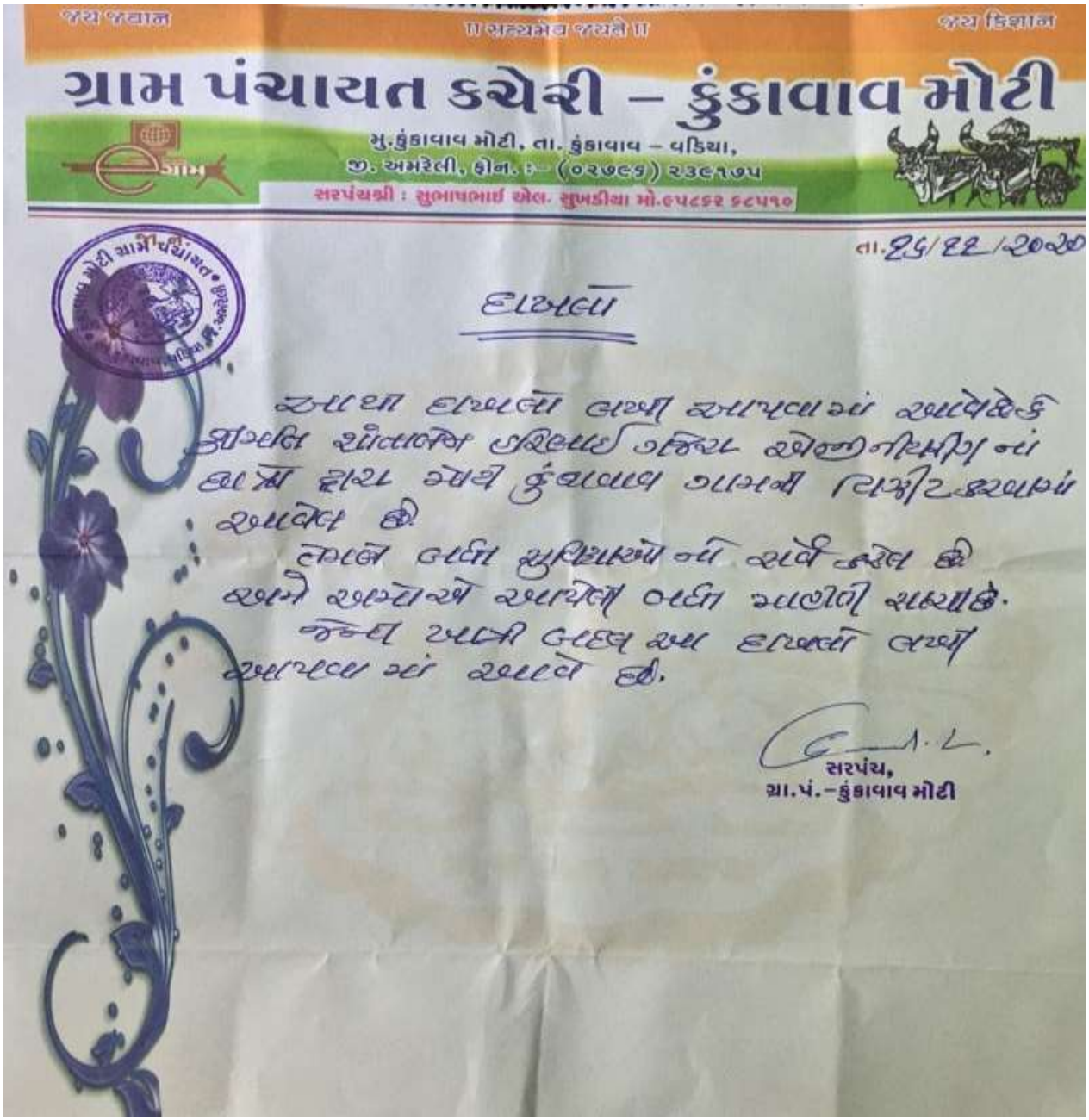


Fig.33 Surpanch later pad

Chapter-13 Future designs of the aspects Feasibility, Construction, Operation and maintenance of various design options in Rural Areas along with cost with AutoCAD designs:-

13.1 Design Proposals :-

➢ In the Vishwakarma Yojana Phase-VIII Part – II we have given total six design according to the Village need and useful for the villagers.

➢ The design proposals are :-

13.1.1 Civil Design 1- Public garden
13.1.2 Civil Design 2- CCTV
13.1.3 Civil Design 3- Entrance gate
13.1.4 Civil Design 4- Multipurpose community hall
13.1.5 Civil Design 5- Grampanchayat building
13.1.6 Civil Design 6- Post-office

13.2 Reason for Students Recommending this Design:-

(I) Public garden:-

- Park and recreation are resources and services provided for the purposes of leisure, entertainment, and recreational pursuits. Man can sit in the garden and get rid of his tiredness all day long, get fresh air. Garden can also be used as a senior citizen park for older people.

(II) CCTV (Smart Security):-

- Cameras can be used to monitor the movement of the village and the rural transport system and CCTV cameras can be used as smart security.

(III) Entrance gate:-

- The village gate is a type of architecture and culture that was very popular in the delta and Northern midlands in the old day.

(IV) Multipurpose community hall:-

- The multi-purpose community hall can be used for various types of activities like group meeting, wedding hall, panchayat meeting etc. group work in which a large group of people are to gather is done in this hall.

(V) Grampanchayat building:-

- When we visited the grampanchayat, we felt that the structure was old and very old, so we wanted to install a new design structure in the village.

(VI) Post-office:-

- There is an already sub post office in the village but we want to set up another branch in the village by increasing the facilities.

13.3 About designs Suggestions with (AutoCAD) Drawing and 3D View:-

I. Public Garden:-

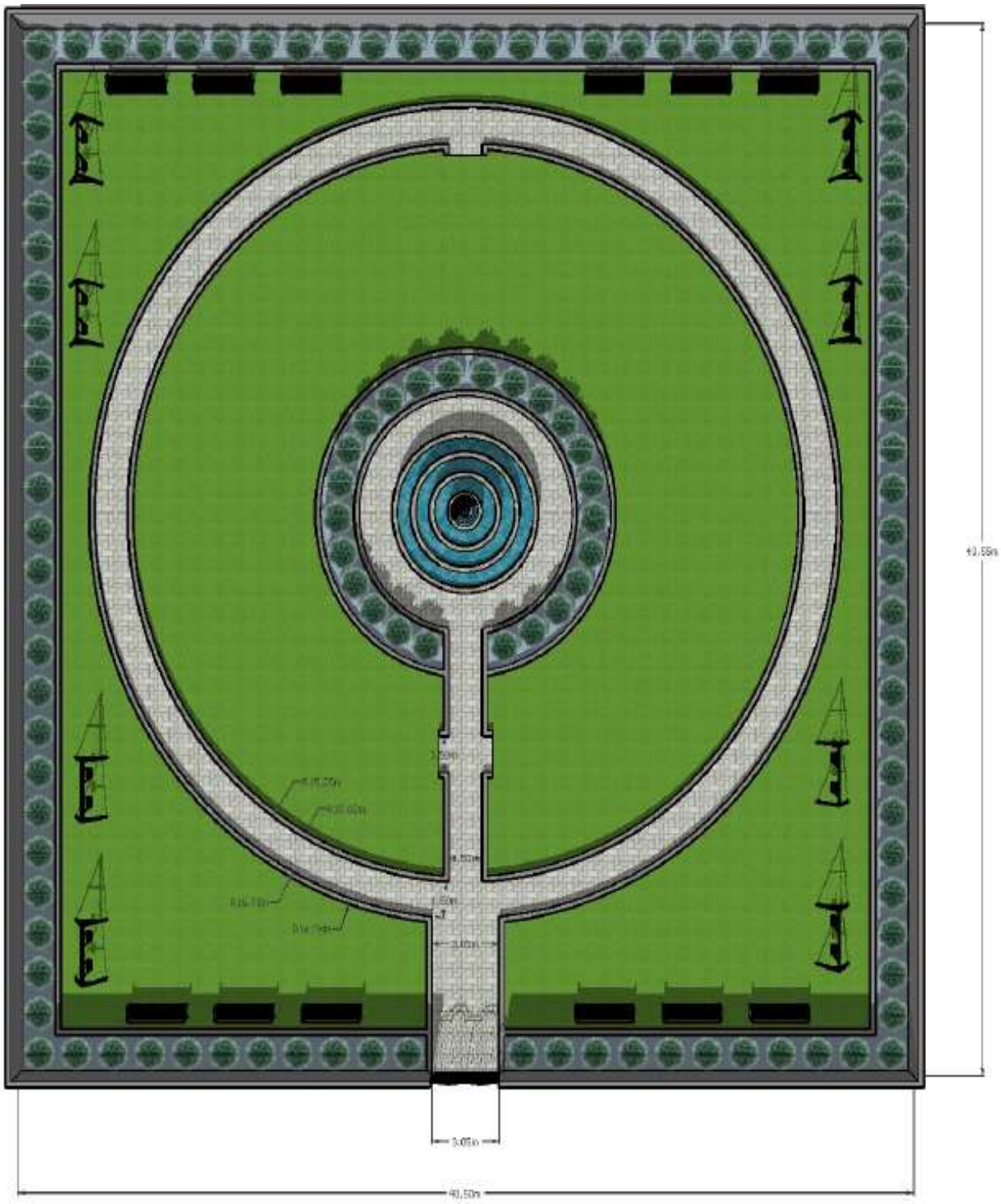


Fig.34 Public Garden

❖ 3D View:-

Fig.35 Public Garden (3D View)

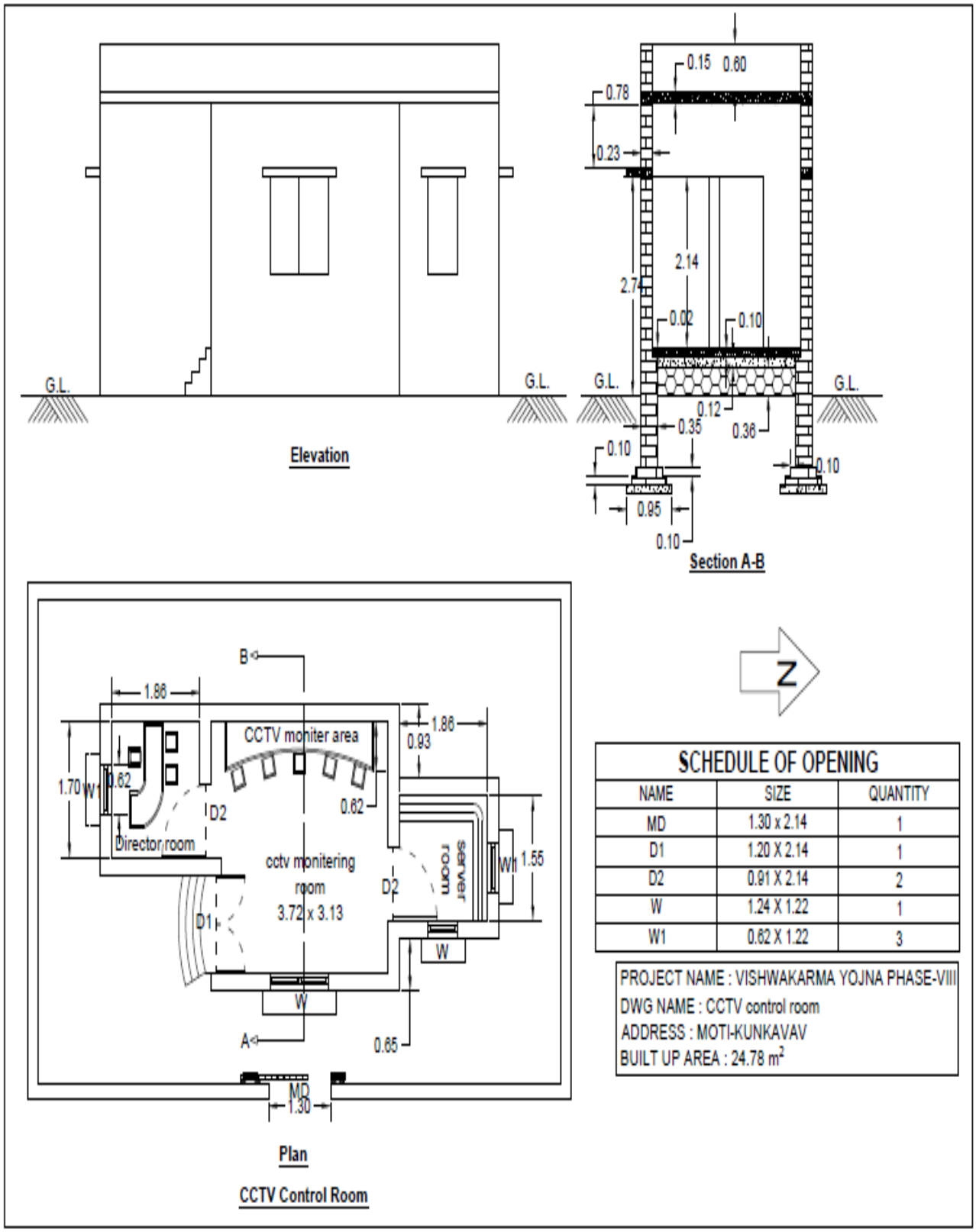
ABSTRACT SHEET

SR NO	DESCRIPTION	QTY	UNIT	RATE	PER UNIT	AMOUNT
1	EXCAVATION IN FOUNDATION	30.09	CU.M	90.00	CU.M	**2708.10**
2	PCC IN FOUNDATION	7.52	CU.M	2140.00	CU.M	**16092.80**
3	GROUND BEAM	22.57	CU.M	4000.00	CU.M	**90280.00**
4	MASONARY ABOVE GROUND BEAM	91.33	CU.M	3260.00	CU.M	**297735.80**
5	PLASTER	750.52	SQ.M	70.00	SQ.M	**52536.40**
6	PAINT	750.52	SQ.M	10.00	SQ.M	**7505.20**
	TOTAL AMOUNT					**466858.30**
	2% WATER CHARGES					**9337.17**
	5% COUNTIGENCIES					**23342.92**
	NET AMOUNT					**499538.38**
	SAY					**500000.00**

MEASUREMENT SHEET

SR NO	DESCRIPTION	NOS	LENGTH	WIDTH	HEIGHT	QTY	UNIT
1	**EXCAVATION IN FOUNDATION**	1	167.18	0.3	0.6	**30.09**	**CU MT**
2	**PCC IN FOUNDATION**	1	167.18	0.3	0.15	**7.52**	**CU MT**
3	**GROUND BEAM**	1	167.18	0.3	0.45	**22.57**	**CU MT**
4	**MASONARY ABOVE GROUND BEAM**	1	167.18	0.23	1.82	69.98	
	DEDUCTION FOR ENTRY GATE	1	3.05	0.23	1.82	1.28	
	NET MASONARY					68.70	CU MT
	MASONARY IN KYARA-PALI	1	427.65	0.23	0.23	22.62	CU MT
	TOTAL MASONARY					**91.33**	**CU MT**
5	**PLASTER ON WALL**	2	167.18		1.82	608.54	
	DEDUCTION FOR ENTRY GATE	1	3.05		1.82	5.55	
	NET PLASTER					602.98	SQ MT
	PLASTER IN KYARA-PALI	1.5	427.65		0.23	147.54	SQ MT
	TOTAL PLASTER					**750.52**	**SQ MT**
6	**PAINT ON WALL**	2	167.18		1.82	608.54	
	DEDUCTION FOR ENTRY GATE	1	3.05		1.82	5.55	
	NET PAINT					602.98	SQ MT
	PAINT IN KYARA-PALI	1.5	427.65		0.23	147.54	SQ MT
	TOTAL PAINT					**750.52**	**SQ MT**

II. CCTV Camera Point with Control Room:-



SCHEDULE OF OPENING		
NAME	SIZE	QUANTITY
MD	1.30 x 2.14	1
D1	1.20 X 2.14	1
D2	0.91 X 2.14	2
W	1.24 X 1.22	1
W1	0.62 X 1.22	3

PROJECT NAME : VISHWAKARMA YOJNA PHASE-VIII
DWG NAME : CCTV control room
ADDRESS : MOTI-KUNKAVAV
BUILT UP AREA : 24.78 m^2

Fig.36 CCTV control Room

❖CCTV Point:-

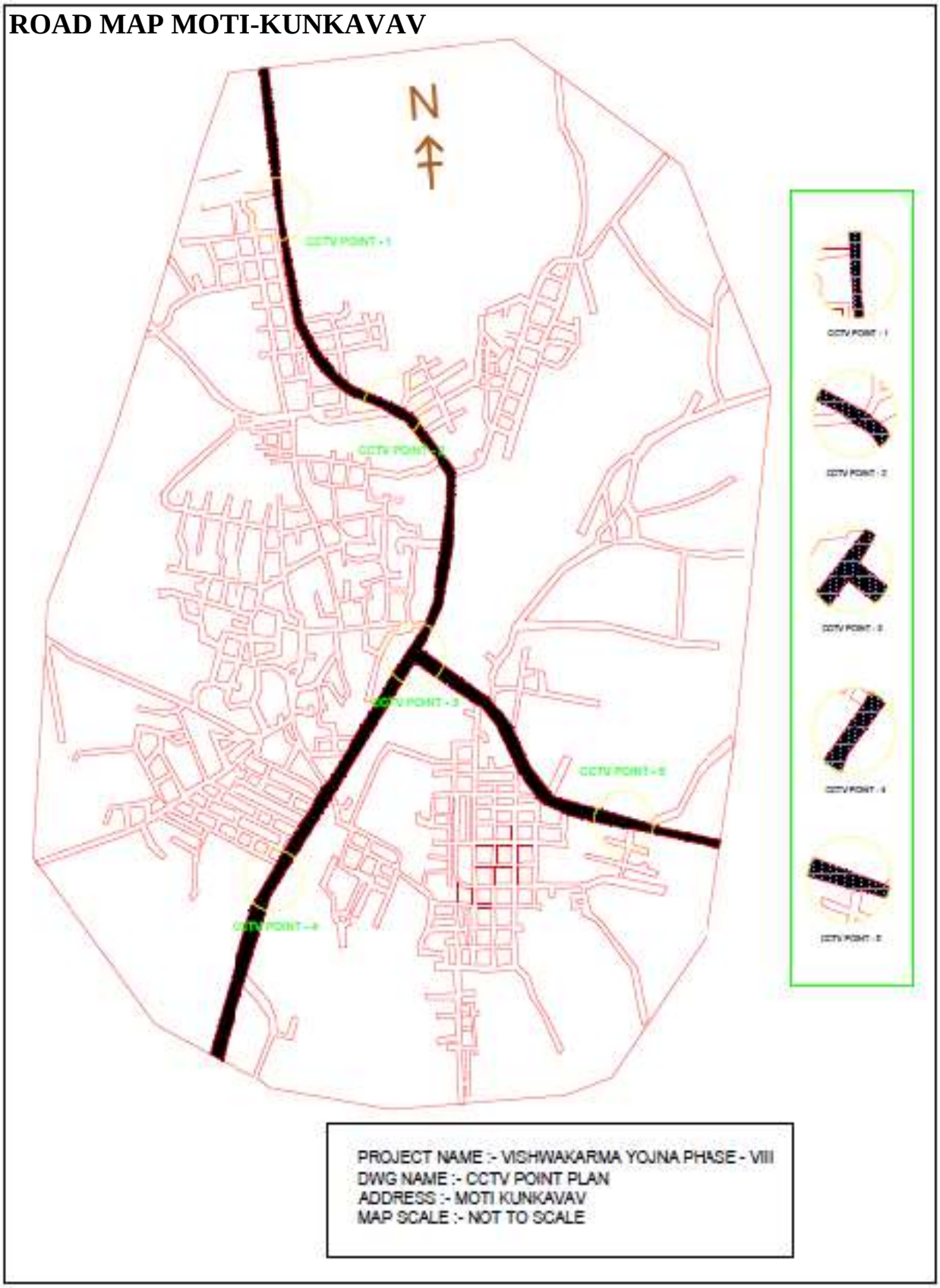


Fig.37 CCTV point in Moti-kunkavav village

❖ 3D View:-

Fig.38 CCTV Control Room (3D view)

ABSTRACT SHEET

SR NO	DESCRIPTION	QTY	UNIT	RATE	PER UNIT	AMOUNT
1	**EXCAVATION IN FOUNDATION**	25.73	CU.M	85.90	CU.M	**2210.21**
2	**PCC IN FOUNDATION**	3.19	CU.M	2137.44	CU.M	**6818.43**
3	**MASONARY IN FONDATION**	13.88	CU.M	3259.75	CU.M	**45245.33**
4	**EARTH FILLING UPTO PLINTH**	6.55	CU.M	250.00	CU.M	**1637.50**
5	**CC FLOORING UPTO PLINTH**	2.18	CU.M	2137.44	CU.M	**4659.62**
6	**TILE FLOORING**	17.69	SQ.M	453.00	CU.M	**8013.57**
7	**MASONARY ABOVE PLINTH UP TO LINTEL**	9.33	CU.M	3259.75	CU.M	**30413.47**
8	**RCC LINTEL**	1.94	CU.M	2137.44	CU.M	**4146.63**
9	**BRICK MASONARY ABOVE LINTEL UPTO SLAB**	4.19	CU.M	3259.75	CU.M	**13658.35**
10	**RCC SLAB**	4.01	CU.M	3818.93	CU.M	**15313.91**
11	**BRICK MASONARY ABOVE SLAB IN PARAPET WALL**	3.17	CU.M	3259.75	CU.M	**10333.41**
12	**PLASTER**	293.38	SQ.M	68.50	SQ.M	**20096.53**
13	**PAINT**	293.38	SQ.M	7.60	SQ.M	**2229.69**

	TOTAL AMOUNT	**164776.65**
	2% WATER CHARGES	**3295.53**
	5% COUNTIGENCIES	**8238.83**
	NET AMOUNT	**176311.01**
	SAY	**176500.00**

MEASUREMENT SHEET

SR NO	DESCRIPTION	NOS	LENGTH	WIDTH	HEIGHT	QTY	UNIT
	CENTRE LINE	1	23.33				
	JUNCTION	4					
1	**EXCAVATION IN FOUNDATION**						
	L = 23.33+.95-.5*4*.95	1	22.38	0.95	1.21	**25.73**	**CU MT**
2	**PCC IN FOUNDATION**						
	L = 23.33+.95-.5*4*.95	1	22.38	0.95	0.15	**3.19**	**CU MT**
3	**MASONARY IN FONDATION**						
	STEP 1						
	L = 23.33+.75-.5*4*.75	1	22.58	0.75	0.1	1.69	
	STEP 2						
	L = 23.33+.55-.5*4*.55	1	22.78	0.55	0.1	1.25	
	STEP 3						
	L = 23.33+.35-.5*4*.35	1	22.98	0.35	1.36	10.94	
						13.88	**CU MT**
4	**EARTH FILLING UPTO PLINTH**						
	DIRECTOR ROOM	1	1.62	1.46	0.45	1.06	
	MONITORIN ROOM	1	3.48	2.89	0.45	4.53	
	SERVER ROOM	1	1.62	1.31	0.45	0.95	
						6.55	**CU MT**
5	**CC FLOORING UPTO PLINTH**						
	DIRECTOR ROOM	1	1.62	1.46	0.15	0.35	
	MONITORIN ROOM	1	3.48	2.89	0.15	1.51	
	SERVER ROOM	1	1.62	1.31	0.15	0.32	
						2.18	**CU MT**
6	**TILE FLOORING**						
	DIRECTOR ROOM	1	1.86	1.7		3.16	
	MONITORIN ROOM	1	3.72	3.13		11.64	
	SERVER ROOM	1	1.86	1.55		2.88	
						17.69	**SQ MT**

7	**MASONARY ABOVE PLINTH UP TO LINTEL**						
	L = 23.33	1	23.33	0.23	2.14	11.48	CU MT
	DEDUCTION						
	DOOR D1	1	1.21	0.23	2.14	0.60	
	DOOR D2	2	0.9	0.23	2.14	0.89	
	WINDOW W	1	1.21	0.23	1.21	0.34	
	WINDOW W1	2	0.61	0.23	1.21	0.34	
						2.16	
	NET MASONARY					**9.33**	**CU MT**
8	**RCC LINTEL**						
	L = 23.33	1	23.33	0.23	0.12	**0.64**	**CU MT**
9	**MASONARY ABOVE LINTEL UPTO SLAB**						
	L = 23.33	1	23.33	0.23	0.78	**4.19**	**CU MT**
10	**RCC SLAB**	1	6.27	3.59	0.15	3.38	
		1	2.09	2.01	0.15	0.63	
						4.01	**CU MT**
11	**MASONARY IN PARAPET WALL**						
	L = 2*3.13+2*(.46+.46+1.86+1.86+3.72)	1	22.98	0.23	0.6	**3.17**	**CU MT**
12	**PLASTER INSIDE ROOMS**						
	DIRECTOR ROOM	2	1.86		3.05	11.35	
		2	1.7		3.05	10.37	
	MONITORIN ROOM	2	3.72		3.05	22.69	
		2	3.13		3.05	19.09	
	SERVER ROOM	2	1.86		3.05	11.35	
		2	1.55		3.05	9.46	
						84.30	SQ MT
	DEDUCTION						
	DOOR D1	1	1.21		2.14	2.59	
	DOOR D2	2	0.9		2.14	3.85	
	WINDOW W1	2	0.61		1.21	1.48	
	WINDOW W	2	1.21		1.21	2.93	
						10.85	SQ MT
	NET PLASTER					**73.46**	**SQ MT**
13	**CEILING PLASTER**						
	DIRECTOR ROOM	1	1.86	1.7		3.16	
	MONITORIN ROOM	1	3.72	3.13		11.64	
	SERVER ROOM	1	1.86	1.55		2.88	
						17.69	**SQ MT**
14	**PLASTER ON PAPARET WALL**						
	L = 2*3.13+2*(.46+.46+1.86+1.86+3.72)	2	22.98		0.6	**27.58**	**SQ MT**
15	**EXTERNAL PLASTER**						
	L = 2*3.13+2*(.46+.46+1.86+1.86+3.72)	2	22.98		3.8	**174.65**	**SQ MT**

16	**PAINT INSIDE ROOMS**						
	DIRECTOR ROOM	2	1.86		3.05	11.35	
		2	1.7		3.05	10.37	
	MONITORIN ROOM	2	3.72		3.05	22.69	
		2	3.13		3.05	19.09	
	SERVER ROOM	2	1.86		3.05	11.35	
		2	1.55		3.05	9.46	
						84.30	SQ MT
	DEDUCTION						
	DOOR D1	1	1.21		2.14	2.59	
	DOOR D2	2	0.9		2.14	3.85	
	WINDOW W1	2	0.61		1.21	1.48	
	WINDOW W	2	1.21		1.21	2.93	
						10.85	SQ MT
	NET PAINT					**73.46**	**SQ MT**
17	**CEILING PAINT**						
	DIRECTOR ROOM	1	1.86	1.7		3.16	
	MONITORIN ROOM	1	3.72	3.13		11.64	
	SERVER ROOM	1	1.86	1.55		2.88	
						17.69	**SQ MT**
18	**PAINT ON PAPARET WALL**						
	L = 2*3.13+2*(.46+.46+1.86+1.86+3.72)	2	22.98		0.6	**27.58**	**SQ MT**
19	**EXTERNAL PAINT**						
	L = 2*3.13+2*(.46+.46+1.86+1.86+3.72)	2	22.98		3.8	**174.65**	**SQ MT**

III. Entrance Gate:-

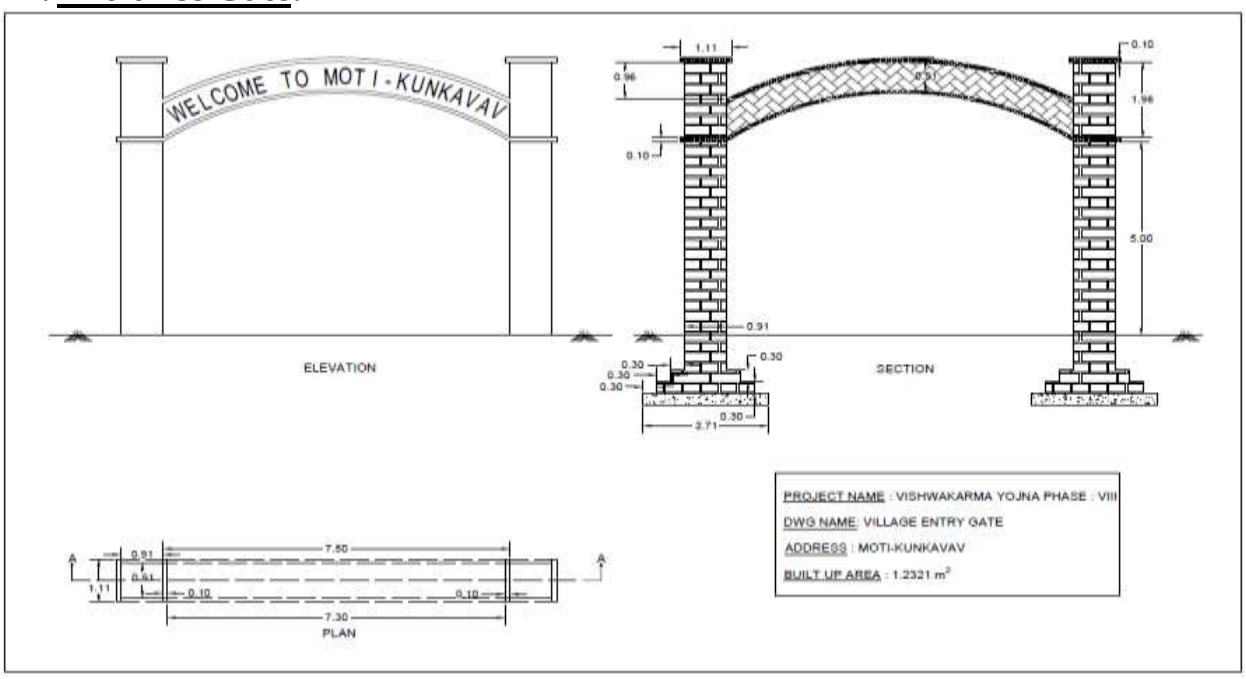


Fig.39 Entrance Gate

❖ 3D View:-

Fig.40 Entrance Gate (3D View)

Abstract Sheet						
Sr. No.	**Description**	**Qty**	**Unit**	**Rate**	**Per Unit**	**Amount**
1	**Excation in foundation**	26.73	**Cu.m**	268	**Cu.m**	7163.64
2	**PCC in foundation**	4.41	**Cu.m**	1887	**Cu.m**	8321.67
3	**Stone masonry in Foundation**	5.55	**Cu.m**	1558	**Cu.m**	8646.90
4	**Stone masonry in Super structure**	8.28	**Cu.m**	1558	**Cu.m**	12900.24

5	**Lintel**	0.22	**Cu.m**	1853.46	**Cu.m**	407.76
6	**Stone masonry above lintel**	3.25	**Cu.m**	1558	**Cu.m**	5063.50
7	**Coping**	0.25	**Cu.m**	1297.65	**Cu.m**	324.41
8	**stone masonry in arc**	6.38	**Cu.m**	1558	**Cu.m**	9940.04
9	**Arc bottom**	0.88	**Cu.m**	1853.46	**Cu.m**	1631.04
10	**Arc above**	0.88	**Cu.m**	1853.46	**Cu.m**	1631.04
						56030.25
	Water charges 2%					1120.61
	Contigency 5%					2801.513
	Total amount					**59952.37**
Say						**60000**

MEASUREMENT SHEET

Sr. no.	Description	Nos	Length	Width	Hight	Qty	Unit
1	Excation in foundation	2	2.71	2.71	1.82	**26.73**	**Cu.m**
2	PCC in foundation	2	2.71	2.71	0.3	**4.41**	**Cu.m**
3	Stone masonry in Foundation						
	Step - 1	2	2.11	2.11	0.3	2.67	Cu.m
	Step - 2	2	1.51	1.51	0.3	1.37	Cu.m
	Step - 3	2	0.91	0.91	0.91	1.51	
						5.55	**Cu.m**
4	Stone masonry in Super structure	2	0.91	0.91	5	**8.28**	**Cu.m**
5	Lintel	2	1.01	1.11	0.1	**0.22**	**Cu.m**
6	Stone masonry above lintel	2	0.91	0.91	1.96	**3.25**	**Cu.m**
7	Coping	2	1.11	1.11	0.1	**0.25**	**Cu.m**
8	stone masonry in arc	1	7.97	0.91	0.88	**6.38**	**Cu.m**
9	Arc bottom	1	7.97	1.11	0.1	**0.88**	**Cu.m**
10	Arc above	1	7.97	1.11	0.1	**0.88**	**Cu.m**

IV. Panchayat building:-

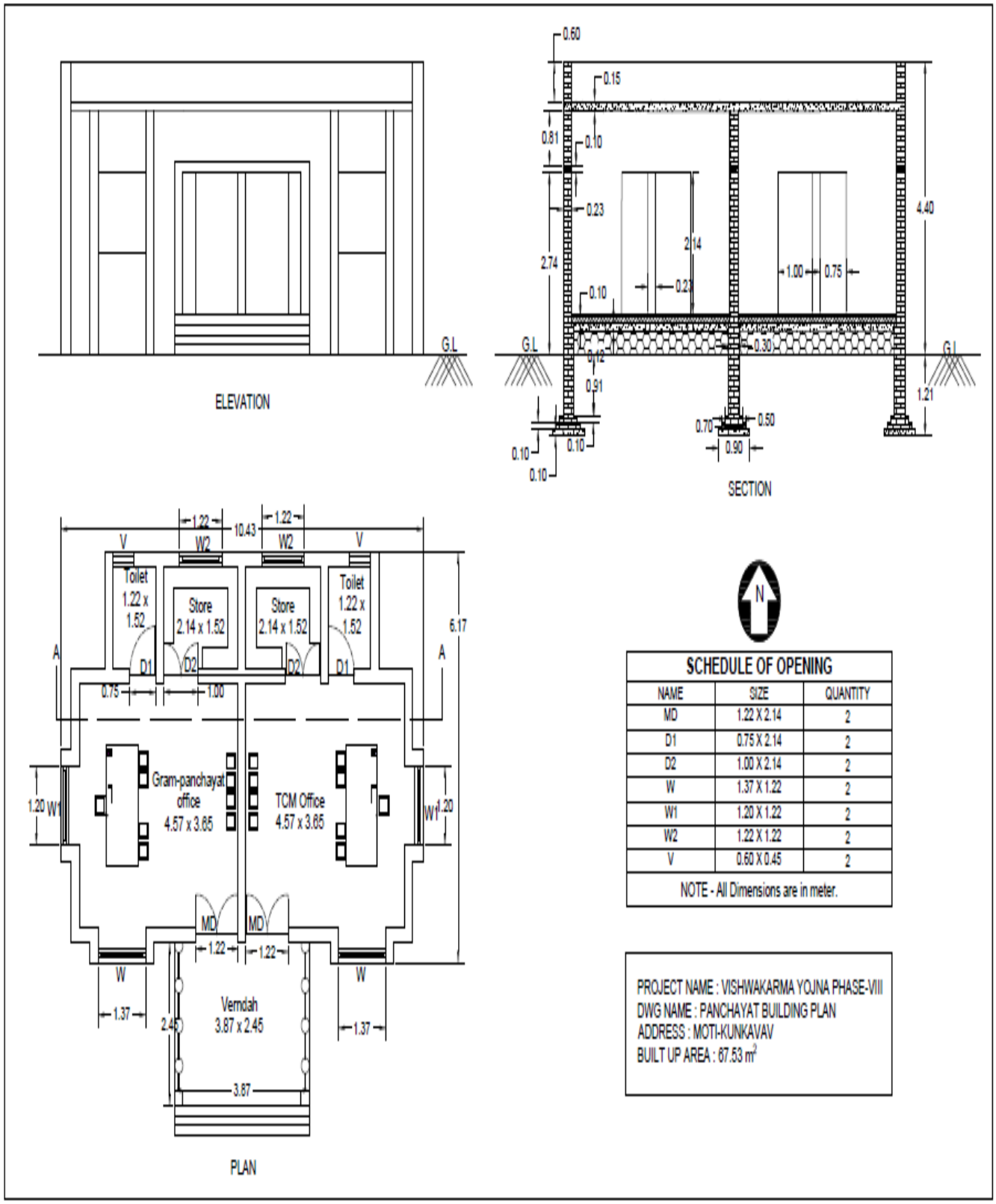


Fig.41 Gram-Panchayat Building

❖ 3D View:-

Fig.42 Panchayat Building (3D View)

ABSTRACT SHEET

SR NO	DESCRIPTION	QTY	UNIT	RATE	PER UNIT	AMOUNT
1	EXCAVATION IN FOUNDATION	47.51	CU.M	85.90	CU.M	**4081.11**
2	PCC IN FOUNDATION	5.89	CU.M	2137.44	CU.M	**12589.52**
3	MASONARY IN FONDATION	24.15	CU.M	3259.75	CU.M	**78722.96**
4	EARTH FILLING UPTO PLINTH	16.61	CU.M	250.00	CU.M	**4152.50**
5	CC FLOORING UPTO PLINTH	5.54	CU.M	2137.44	CU.M	**11841.42**
6	TILE FLOORING	43.58	SQ.M	453.00	SQ.M	**19741.74**
7	MASONARY ABOVE PLINTH UP TO LINTEL	17.96	CU.M	3259.75	CU.M	**58545.11**
8	RCC LINTEL	1.30	CU.M	2137.44	CU.M	**2778.67**
9	BRICK MASONARY ABOVE LINTEL UPTO SLAB	8.80	CU.M	3259.75	CU.M	**28685.80**
10	RCC SLAB	8.82	CU.M	3818.93	CU.M	**33682.96**
11	BRICK MASONARY ABOVE SLAB IN PARAPET WALL	4.20	CU.M	3259.75	CU.M	**13690.95**
12	PLASTER	338.28	SQ.M	68.50	SQ.M	**23172.18**

13	**PAINT**	338.28	SQ.M	7.60	SQ.M	**2570.93**
	TOTAL AMOUNT					**294255.85**
	2% WATER CHARGES					**5885.12**
	5% COUNTIGENCIES					**14712.79**
	NET AMOUNT					**314853.76**
	SAY					**315000.00**

MEASUREMENT SHEET

SR NO	DESCRIPTION	NOS	LENGTH	WIDTH	HEIGHT	QTY	UNIT
	CENTRE LINE	1	47.23				
	JUNCTION	10					
1	**EXCAVATION IN FOUNDATION**						
	L = 47.23+.90-.5*10*.90	1	43.63	0.9	1.21	**47.51**	**CU MT**
2	**PCC IN FOUNDATION**						
	L = 47.23+.90-.5*10*.90	1	43.63	0.9	0.15	**5.89**	**CU MT**
3	**MASONARY IN FONDATION**						
	STEP 1						
	L = 47.23+.70-.5*10*.70	1	44.43	0.7	0.1	3.11	
	STEP 2						
	L = 47.23+.50-.5*10*.50	1	45.23	0.5	0.1	2.26	
	STEP 3						
	L = 47.23+.30-.5*10*.30	1	46.03	0.3	1.36	18.78	
						24.15	**CU MT**
4	**EARTH FILLING UPTO PLINTH**						
	OFFICE	2	4.33	3.41	0.45	13.29	
	STORE	2	1.9	1.28	0.45	2.19	
	TOILET	2	0.98	1.28	0.45	1.13	
						16.61	**CU MT**
5	**CC FLOORING UPTO PLINTH**						
	OFFICE	2	4.33	3.41	0.15	4.43	
	STORE	2	1.9	1.28	0.15	0.73	
	TOILET	2	0.98	1.28	0.15	0.38	
						5.54	**CU MT**
6	**TILE FLOORING**						
	OFFICE	2	4.57	3.65		33.36	
	STORE	2	2.14	1.52		6.51	
	TOILET	2	1.22	1.52		3.71	
						43.58	**SQ MT**

7	**MASONARY ABOVE PLINTH UP TO LINTEL**						
	L = 47.23	1	47.23	0.23	2.14	23.25	CU MT
	DEDUCTION						
	MAIN DOOR MD	2	1.22	0.23	2.14	1.20	
	DOOR D1	2	1	0.23	2.14	0.98	
	DOOR D2	2	0.75	0.23	2.14	0.74	
	WINDOW W	6	1.21	0.23	1.21	2.02	
	VENTILATOR V	2	0.61	0.23	1.21	0.34	
						5.28	
	NET MASONARY					**17.96**	**CU MT**
8	**RCC LINTEL**						
	L = 47.23	1	47.23	0.23	0.12	**1.30**	**CU MT**
9	**MASONARY ABOVE LINTEL UPTO SLAB**						
	L = 47.23	1	47.23	0.23	0.81	**8.80**	**CU MT**
10	**RCC SLAB**	1	9.83	5.86	0.15	8.64	
		2	0.75	1.85	0.15	0.42	
						8.22	**CU MT**
11	**MASONARY IN PARAPET WALL**						
	L = 2*(9.83+5.86-.46)	1	30.46	0.23	0.6	**4.20**	**CU MT**
12	**PLASTER INSIDE ROOMS**						
	OFFICE	4	4.57		3.05	55.75	
		4	3.65		3.05	44.53	
	STORE	4	2.14		3.05	26.11	
		4	1.52		3.05	18.54	
	TOILET	4	1.2		3.05	14.64	
		4	1.52		3.05	18.54	
						178.12	SQ MT
	DEDUCTION						
	MAIN DOOR MD	2	1.22		2.14	5.22	
	DOOR D1	4	1		2.14	8.56	
	DOOR D2	4	0.75		2.14	6.42	
	WINDOW W	12	1.21		1.21	17.57	
	VENTILATOR V	4	0.61		1.21	2.95	
						40.72	SQ MT
	NET PLASTER					**137.40**	**SQ MT**
13	**CEILING PLASTER**						
	OFFICE	2	4.57	3.65		33.36	
	STORE	2	2.14	1.52		6.51	
	TOILET	2	1.22	1.52		3.71	
						43.58	**SQ MT**
14	**PLASTER ON PAPARET WALL**						
	L = 2*(9.83+5.86-.46)	2	30.46		0.6	**36.55**	**SQ MT**

15	**EXTERNAL PLASTER**						
	L = 2*(9.83+5.86-.46)	1	30.46		3.8	**115.75**	**SQ MT**
16	**PLASTER INSIDE ROOMS**						
	OFFICE	4	4.57		3.05	55.75	
		4	3.65		3.05	44.53	
	STORE	4	2.14		3.05	26.11	
		4	1.52		3.05	18.54	
	TOILET	4	1.2		3.05	14.64	
		4	1.52		3.05	18.54	
						178.12	SQ MT
	DEDUCTION						
	MAIN DOOR MD	2	1.22		2.14	5.22	
	DOOR D1	4	1		2.14	8.56	
	DOOR D2	4	0.75		2.14	6.42	
	WINDOW W	12	1.21		1.21	17.57	
	VENTILATOR V	4	0.61		1.21	37.77	SQ MT
						140.35	**SQ MT**
	NET PLASTER						
17	**CEILING PLASTER**					0.00	
	OFFICE	2	4.57	3.65		33.36	
	STORE	2	2.14	1.52		6.51	
	TOILET	2	1.22	1.52		**39.87**	**SQ MT**
18	**PLASTER ON PAPARET WALL**					**0.00**	**SQ MT**
	L = 2*(9.83+5.86-.46)	2	30.46		0.6		
19	**EXTERNAL PLASTER**					**0.00**	**SQ MT**
	L = 2*(9.83+5.86-.46)	1	30.46		3.8		
	L = 2*(9.83+5.86-.46)	1	30.46		3.8		

V. Multi-purpose Hall:-

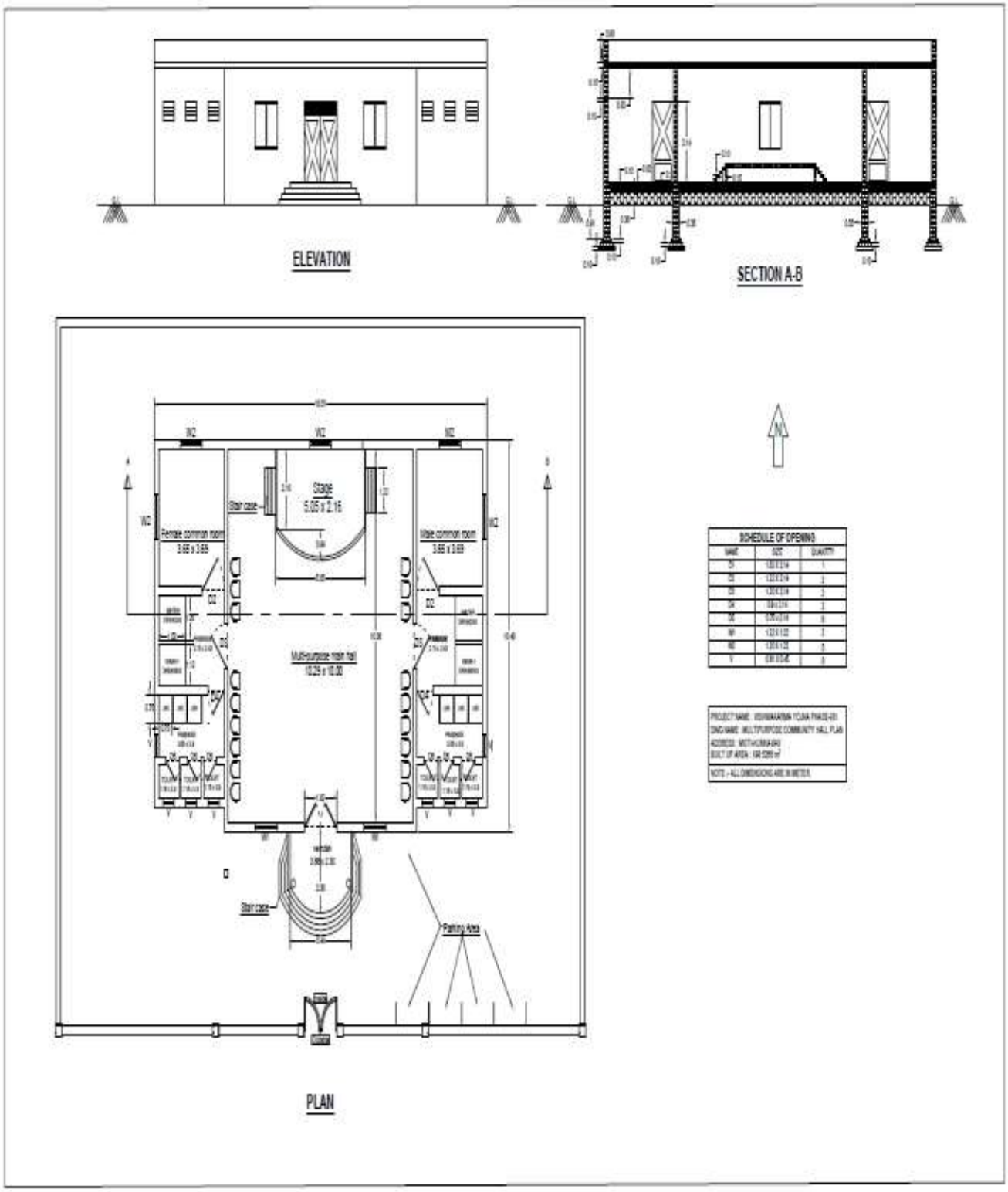


Fig.43 Multi-purpose hall

❖ 3D View:-

Fig.44 Multi-purpose Hall (3D View)

ABSTRACT SHEET

SR NO	DESCRIPTION	QTY	UNIT	RATE	PER UNIT	AMOUNT
1	EXCAVATION IN FOUNDATION	106.71	CU.M	85.90	CU.M	**9166.39**
2	PCC IN FOUNDATION	13.23	CU.M	2137.44	CU.M	**28278.33**
3	MASONARY IN FONDATION	58.71	CU.M	3259.75	CU.M	**191379.92**
4	EARTH FILLING UPTO PLINTH	70.09	CU.M	250.00	CU.M	**17522.50**
5	CC FLOORING UPTO PLINTH	23.36	CU.M	2137.44	CU.M	**49930.60**
6	TILE FLOORING	166.97	SQ.M	453.00	SQ.M	**75637.41**
7	MASONARY ABOVE PLINTH UP TO LINTEL	39.44	CU.M	3259.75	CU.M	**128564.54**
8	RCC LINTEL	2.75	CU.M	2137.44	CU.M	**5877.96**
9	BRICK MASONARY ABOVE LINTEL UPTO SLAB	18.76	CU.M	3259.75	CU.M	**61152.91**
10	RCC SLAB	28.48	CU.M	3818.93	CU.M	**108763.13**
11	BRICK MASONARY ABOVE SLAB IN PARAPET WALL	7.83	CU.M	3259.75	CU.M	**25523.84**

12	**PLASTER**	839.5	SQ.M	68.50	SQ.M	**57505.75**
13	**PAINT**	839.5	SQ.M	7.60	SQ.M	**6380.20**
	TOTAL AMOUNT					**765683.48**
	2% WATER CHARGES					**15313.67**
	5% COUNTIGENCIES					**38284.17**
	NET AMOUNT					**819281.32**
	SAY					**820000.00**

MEASUREMENT SHEET

SR NO	DESCRIPTION	NOS	LENGTH	WIDTH	HEIGHT	QTY	UNIT
	CENTRE LINE	1	99.48				
	JUNCTION	16					
1	**EXCAVATION IN FOUNDATION**						
	L = 99.48+.95-.5*16*.95	1	92.83	0.95	1.21	**106.71**	**CU MT**
2	**PCC IN FOUNDATION**						
	L = 99.48+.95-.5*16*.95	1	92.83	0.95	0.15	**13.23**	**CU MT**
3	**MASONARY IN FONDATION UPTO PLINTH**						
	STEP 1						
	L = 99.48+.75-.5*16*.75	1	94.23	0.75	0.1	7.07	
	STEP 2						
	L = 99.48+.75-.5*16*.55	1	95.83	0.55	0.1	5.27	
	STEP 3						
	L = 99.48+.75-.5*16*.35	1	97.43	0.35	1.36	46.38	
						58.71	**CU MT**
4	**EARTH FILLING UPTO PLINTH**						
	WHOLE AREA	1	18.15	10.46	0.45	85.43	
	DEDUCTION						
	WALL	1	97.43	0.35	0.45	15.35	
						70.09	**CU MT**
5	**CC FLOORING UPTO PLINTH**						
	WHOLE AREA	1	18.15	10.46	0.15	28.48	
	DEDUCTION						
	WALL	1	97.43	0.35	0.15	5.12	
						23.36	**CU MT**
6	**TILE FLOORING**						

	WHOLE AREA	1	18.15	10.46		189.85	**SQ MT**
	DEDUCTION						
	WALL	1	99.48	0.23		22.88	
						166.97	**SQ MT**
7	**MASONARY ABOVE PLINTH UP TO LINTEL**						
	L = 99.05	1	99.48	0.23	2.14	48.96	**CU MT**
	DEDUCTION						
	MAIN DOOR MD	1	1.82	0.23	2.14	0.90	
	DOOR D1	6	1.2	0.23	2.14	3.54	
	DOOR D2	6	0.75	0.23	2.14	2.21	
	WINDOW W1	2	1.22	0.23	1.22	0.68	
	WINDOW W2	5	1.2	0.23	1.22	1.68	
	VENTILATOR V	8	0.6	0.23	0.45	0.50	
						9.52	
	NET MASONARY					**39.44**	**CU MT**
	PARTITION WALL						
	L = 0.9	4	0.9		2.14	**7.70**	**SQ MT**
8	**RCC LINTEL**						
	L = 99.48	1	99.48	0.23	0.12	**2.75**	**CU MT**
9	**MASONARY ABOVE LINTEL UPTO SLAB**						
	L = 99.48	1	99.48	0.23	0.82	**18.76**	**CU MT**
10	**RCC SLAB**	1	18.15	10.46	0.15	**28.48**	**CU MT**
11	**MASONARY IN PARAPET WALL**						
	L = 56.76	1	56.76	0.23	0.6	**7.83**	**CU MT**
12	**PLASTER INSIDE ROOMS**						
	MAIN HALL	2	10.29		3.05	62.77	
		2	10		3.05	61.00	
	COMMON ROOMS	4	3.65		3.05	44.53	
		4	3.69		3.05	45.02	
	WATER AREA	8	3.65		3.05	89.06	
		4	4.08		3.05	49.78	
	TOILETS	12	1.16		3.05	42.46	
		12	0.9		3.05	32.94	
						427.55	**SQ MT**
	DEDUCTION						
	MAIN DOOR MD	1	1.82		2.14	3.89	
	DOOR D1	6	1.2		2.14	15.41	
	DOOR D2	6	0.75		2.14	9.63	
	WINDOW W1	2	1.22		1.21	2.95	
	WINDOW W2	6	1.2		1.21	8.71	
	VENTILATOR V	2	0.6		0.45	0.54	
						41.14	**SQ MT**

	NET PLASTER					**386.41**	**SQ MT**
13	**CEILING PLASTER**						
	WHOLE AREA	1	18.15	10.46		189.85	
	DEDUCTION						
	WALL	1	99.48	0.23		22.88	
						166.97	**SQ MT**
14	**PLASTER ON PAPARET WALL**						
	L = 56.76	2	56.76		0.6	**68.11**	**SQ MT**
15	**EXTERNAL PLASTER**						
	L = 28.61	2	28.61		3.81	**218.01**	**SQ MT**
16	**PAINT INSIDE ROOMS**						
	MAIN HALL	2	10.29		3.05	62.77	
		2	10		3.05	61.00	
	COMMON ROOMS	4	3.65		3.05	44.53	
		4	3.69		3.05	45.02	
	WATER AREA	8	3.65		3.05	89.06	
		4	4.08		3.05	49.78	
	TOILETS	12	1.16		3.05	42.46	
		12	0.9		3.05	32.94	
						427.55	**SQ MT**
	DEDUCTION						
	MAIN DOOR MD	1	1.82		2.14	3.89	
	DOOR D1	6	1.2		2.14	15.41	
	DOOR D2	6	0.75		2.14	9.63	
	WINDOW W1	2	1.22		1.21	2.95	
	WINDOW W2	6	1.2		1.21	8.71	
	VENTILATOR V	2	0.6		0.45	0.54	
						41.14	**SQ MT**
	NET PAINT					**386.41**	**SQ MT**
17	**CEILING PAINT**						
	WHOLE AREA	1	18.15	10.46		189.85	
	DEDUCTION						
	WALL	1	99.48	0.23		22.88	
						166.97	**SQ MT**
18	**PAINT ON PAPARET WALL**						
	L = 56.76	2	56.76		0.6	**68.11**	**SQ MT**
19	**EXTERNAL PAINT**						
	L = 28.61	2	28.61		3.81	**218.01**	**SQ MT**

VI. Post Office:-

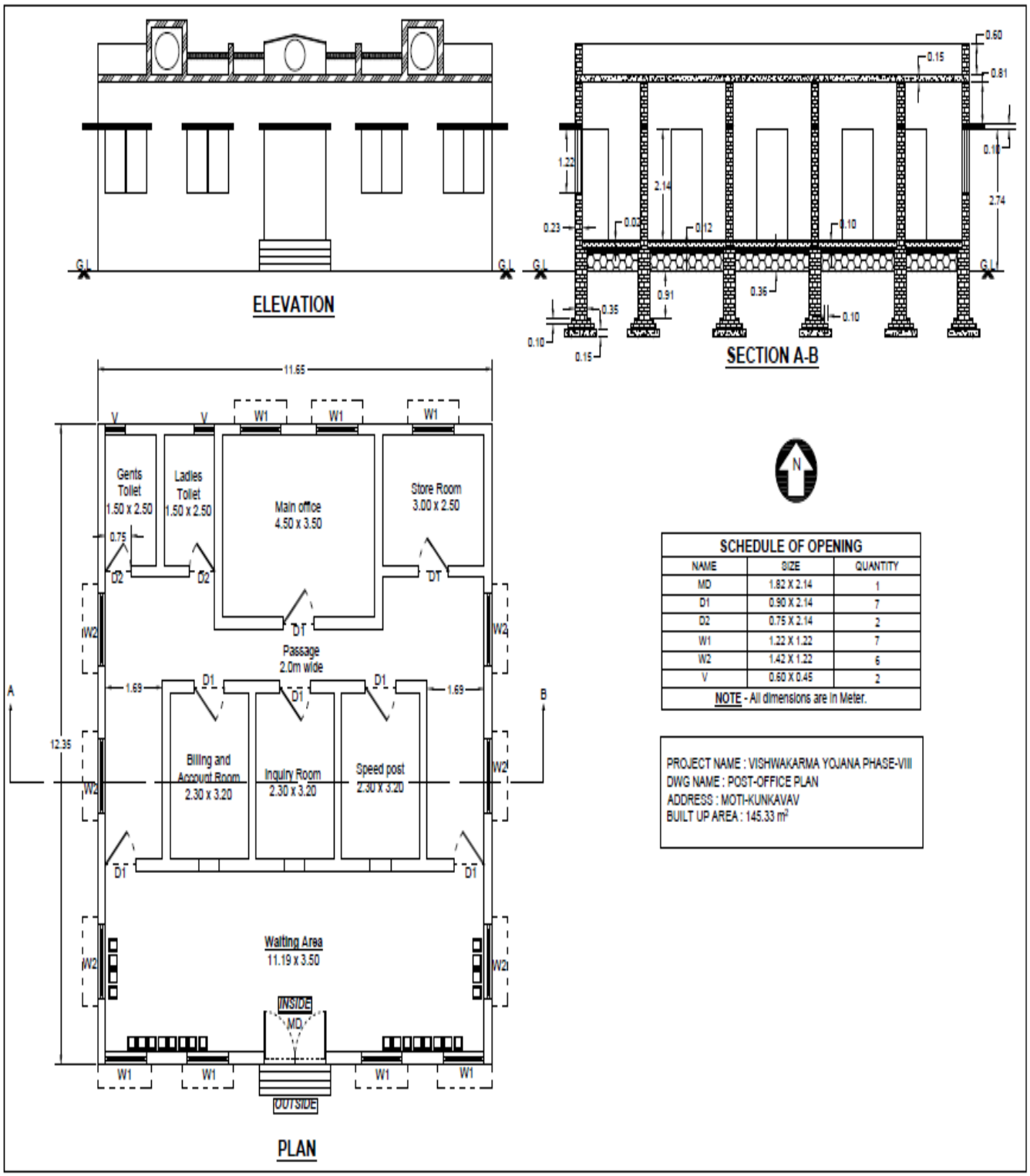


Fig.45 Post office

❖ 3D View:-

Fig.46 Post Office (3D view)

ABSTRACT SHEET

SR NO	DESCRIPTION	QTY	UNIT	RATE	PER UNIT	AMOUNT
1	EXCAVATION IN FOUNDATION	108.40	CU.M	85.90	CU.M	**9311.56**
2	PCC IN FOUNDATION	13.44	CU.M	2137.44	CU.M	**28727.19**
3	MASONARY IN FONDATION	58.76	CU.M	3259.75	CU.M	**191542.91**
4	EARTH FILLING UPTO PLINTH	44.55	CU.M	250.00	CU.M	**11137.50**
5	CC FLOORING UPTO PLINTH	14.85	CU.M	2137.44	CU.M	**31740.98**

6	**TILE FLOORING**	110.27	SQ.M	453.00	SQ.M	**49952.31**
7	**MASONARY ABOVE PLINTH UP TO LINTEL**	40.03	CU.M	3259.75	CU.M	**130487.79**
8	**RCC LINTEL**	2.73	CU.M	2137.44	CU.M	**5835.21**
9	**BRICK MASONARY ABOVE LINTEL UPTO SLAB**	18.45	CU.M	3259.75	CU.M	**60142.39**
10	**RCC SLAB**	21.90	CU.M	3818.93	CU.M	**83634.57**
11	**BRICK MASONARY ABOVE SLAB IN PARAPET WALL**	6.56	CU.M	3259.75	CU.M	**21383.96**
12	**PLASTER**	543.6	SQ.M	68.50	SQ.M	**37236.60**
13	**PAINT**	543.6	SQ.M	7.60	SQ.M	**4131.36**
	TOTAL AMOUNT					**665264.34**
	2% WATER CHARGES					**13305.29**
	5% COUNTIGENCIES					**33263.22**
	NET AMOUNT					**711832.84**
	SAY					**712000.00**

MEASUREMENT SHEET

SR NO	DESCRIPTION	NOS	LENGTH	WIDTH	HEIGHT	QTY	UNIT
	CENTRE LINE	1	99.05				
	JUNCTION	12					
1	**EXCAVATION IN FOUNDATION**						
	L = 99.05+.95-.5*12*.95	1	94.3	0.95	1.21	**108.40**	**CU MT**
2	**PCC IN FOUNDATION**						
	L = 99.05+.95-.5*12*.95	1	94.3	0.95	0.15	**13.44**	**CU MT**
3	**MASONARY IN FONDATION UPTO PLINTH**						
	STEP 1						
	L = 99.05+.75-.5*12*.75	1	95.3	0.75	0.1	7.15	
	STEP 2						
	L = 99.05+.55-.5*12*.55	1	96.3	0.55	0.1	5.30	
	STEP 3						
	L = 99.05+.35-.5*12*.35	1	97.3	0.35	1.36	46.31	
						58.76	**CU MT**
4	**EARTH FILLING UPTO PLINTH**						
	WHOLE AREA	1	11.19	11.89	0.45	59.87	
	DEDUCTION						
	WALL	1	97.3	0.35	0.45	15.32	
						44.55	**CU MT**
5	**CC FLOORING UPTO PLINTH**						
	WHOLE AREA	1	11.19	11.89	0.15	19.96	

	DEDUCTION						
	WALL	1	97.3	0.35	0.15	5.11	
						14.85	**CU MT**
6	**TILE FLOORING**						
	WHOLE AREA	1	11.19	11.89		133.05	
	DEDUCTION						
	WALL	1	99.05	0.23		22.78	
						110.27	**SQ MT**
7	**MASONARY ABOVE PLINTH UP TO LINTEL**						
	L = 99.05	1	99.05	0.23	2.14	48.75	CU MT
	DEDUCTION						
	MAIN DOOR MD	1	1.82	0.23	2.14	0.90	
	DOOR D1	5	0.9	0.23	2.14	2.21	
	DOOR D2	2	0.75	0.23	2.14	0.74	
	WINDOW W1	7	1.22	0.23	1.21	2.38	
	WINDOW W2	6	1.42	0.23	1.21	2.37	
	VENTILATOR V	2	0.6	0.23	0.45	0.12	
						8.72	
	NET MASONARY					**40.03**	**CU MT**
8	**RCC LINTEL**						
	L = 99.05	1	99.05	0.23	0.12	**2.73**	**CU MT**
9	**MASONARY ABOVE LINTEL UPTO SLAB**						
	L = 99.05	1	99.05	0.23	0.81	**18.45**	**CU MT**
10	**RCC SLAB**	1	11.65	12.53	0.15	**21.90**	**CU MT**
11	**MASONARY IN PARAPET WALL**						
	L = 47.54	1	47.54	0.23	0.6	**6.56**	**CU MT**
12	**PLASTER INSIDE ROOMS**						
	MAIN OFFICE	2	4.5		3.05	27.45	
		2	3.5		3.05	21.35	
	ROOMS	6	2.3		3.05	42.09	
		6	3.2		3.05	58.56	
	STORE ROOM	2	3		3.05	18.30	
		2	2.5		3.05	15.25	
	TOILETS	4	1.5		3.05	18.30	
		4	2.5		3.05	30.50	
						231.80	SQ MT
	DEDUCTION						
	MAIN DOOR MD	1	1.82		2.14	3.89	
	DOOR D1	5	0.9		2.14	9.63	
	DOOR D2	2	0.75		2.14	3.21	
	WINDOW W1	7	1.22		1.21	10.33	
	WINDOW W2	6	1.42		1.21	10.31	
	VENTILATOR V	2	0.6		0.45	0.54	

						37.92	SQ MT
	NET PLASTER					**193.88**	**SQ MT**
13	**CEILING PLASTER**						
	WHOLE AREA	1	11.19	11.89		133.05	
	DEDUCTION						
	WALL	1	99.05	0.23		22.78	
						110.27	**SQ MT**
14	**PLASTER ON PAPARET WALL**						
	L = 47.54	2	47.54		0.6	**57.05**	**SQ MT**
15	**EXTERNAL PLASTER**						
	L = 24	2	24		3.8	**182.40**	**SQ MT**
16	**PAINT INSIDE ROOMS**						
	MAIN OFFICE	2	4.5		3.05	27.45	
		2	3.5		3.05	21.35	
	ROOMS	6	2.3		3.05	42.09	
		6	3.2		3.05	58.56	
	STORE ROOM	2	3		3.05	18.30	
		2	2.5		3.05	15.25	
	TOILETS	4	1.5		3.05	18.30	
		4	2.5		3.05	30.50	
						231.80	SQ MT
	DEDUCTION						
	MAIN DOOR MD	1	1.82		2.14	3.89	
	DOOR D1	5	0.9		2.14	9.63	
	DOOR D2	2	0.75		2.14	3.21	
	WINDOW W1	7	1.22		1.21	10.33	
	WINDOW W2	6	1.42		1.21	10.31	
	VENTILATOR V	2	0.6		0.45	0.54	
						37.92	SQ MT
	NET PAINT					**193.88**	**SQ MT**
17	**CEILING PAINT**						
	WHOLE AREA	1	11.19	11.89		133.05	
	DEDUCTION						
	WALL	1	99.05	0.23		22.78	
						110.27	**SQ MT**
18	**PAINT ON PAPARET WALL**						
	L = 47.54	2	47.54		0.6	**57.05**	**SQ MT**
19	**EXTERNAL PAINT**						
	L = 24*2	2	24		3.8	**182.40**	**SQ MT**

Chapter-14 Technical Options with Case Studies:-

14.1 Civil Engineering:-

14.1.1 Advanced Earthquake Resistant:-

These range from appropriately sizing the structure to be strong and ductile enough to survive the shaking with an acceptable damage. The conventional approach to earthquake resistant design of buildings depends upon providing the building with strength, stiffness and inelastic deformation capacity which are great enough to withstand a given level of earthquake-generated force. This is generally accomplished through the selection of an appropriate structural configuration and the careful detailing of structural members, such as beams and columns, and the connections between them. But more advanced techniques for earthquake resistance is not to strengthen the building, but to reduce the earthquake-generated forces acting upon it.

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

  (1)Base isolation (2) Energy dissipation device

Base Isolation Method of Earthquake Resistant Design:-

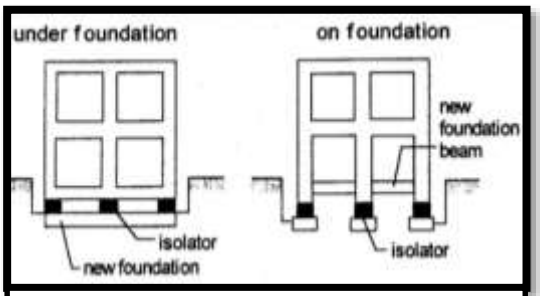


Fig.47 Base isolation

A base isolated structure is supported by a series of bearing pads which are placed between the building and the building's foundation. A variety of different types of base isolation bearing pads have now been developed. The bearing is very stiff and strong in the vertical direction, but flexible in the horizontal direction. This shows an earthquake acting on both a base isolated building and a conventional, fixed-base, and building. As a result of an earthquake, the ground beneath each building begins to move. In Figure, it is Shown moving to the left. Each building responds with movement which tends toward the right. The building undergoes displacement towards the right. The building's displacement in the direction opposite the ground motion is actually due to inertia. The inertial forces acting on a building are the most important of all those generated during an earthquake. It is important to know that the inertial forces which the building undergoes are proportional to the building's acceleration during ground motion. It is also important to realize that buildings don't actually shift in only one direction. Because of the complex nature of earthquake ground motion, the building actually tends to vibrate back and forth in varying directions. By contrast, even though it too displacing, the base-isolated building retains its original, rectangular shape. It is the lead-rubber bearings supporting the building that are deformed.

The base-isolated building itself escapes the deformation and damage, which implies that the inertial forces acting on the base-isolated building have been reduced. Experiments and observations of base-isolated buildings in earthquakes have been shown to reduce building accelerations to as little as 1/4 of the acceleration of comparable fixed-base buildings, which each

building undergoes as a percentage of gravity. As we noted above, inertial forces increase, and decrease, proportionally as acceleration increases or decreases. Acceleration is decreased because the base isolation system lengthens a building's period of vibration, the time it takes for the building to rock back and forth and then back again. And in general, structures with longer periods of vibration tend to reduce acceleration, while those with shorter periods tend to increase or amplify acceleration. Finally, since they are highly elastic, the rubber isolation bearings don't suffer any damage. But the lead plug in the middle of our example bearing experiences the same deformation as the rubber. However, it generates heat.

Energy Dissipation Devices:-

The second of the major new techniques for improving the earthquake resistance of buildings also relies upon damping and energy dissipation, but it greatly extends the damping and energy dissipation provided by lead-rubber bearings. As we've said, a certain amount of vibration energy is transferred to the building by earthquake ground motion. Buildings themselves do possess an inherent ability to dissipate, or damp, this energy. However, the capacity of buildings to dissipate energy before they begin to suffer deformation and damage is quite limited. The building will dissipate energy either by undergoing large scale movement or sustaining increased internal strains in elements such as the building's columns and beams. Both of these eventually result in varying degrees of damage. So, by equipping a building with additional devices which have high damping capacity, we can greatly decrease the seismic energy entering the building, and thus decrease building damage. Accordingly, a wide range of energy dissipation devices have been developed and are now being installed in real buildings. Energy dissipation devices are also often called damping devices. The large number of damping devices that have been developed can be grouped into three broad categories:-

1) Friction Dampers: these utilize frictional forces to dissipate energy.
2) Metallic Dampers: utilize the deformation of metal elements within the damper.
3) Viscoelastic Dampers: utilize the controlled shearing of solids.
4) Viscous Dampers: utilized the forced movement (orificing) of fluids within the damp, etc.

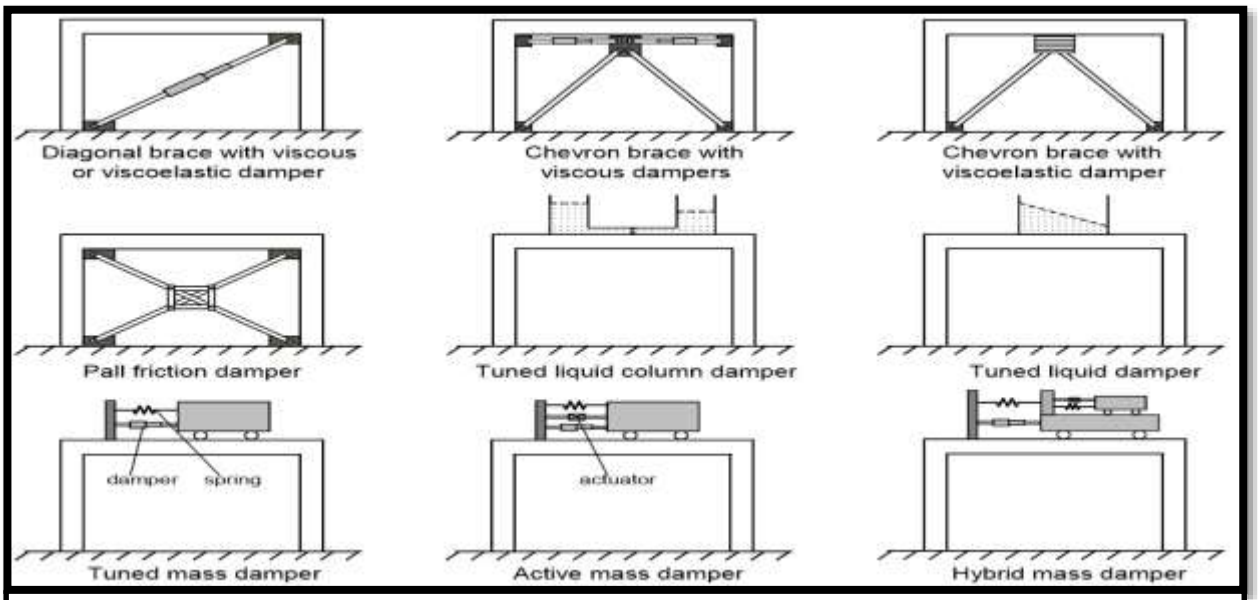


Fig.48 various types of damping devises

14.1.2 Seismic Retrofitting of Buildings:-

- Earthquake creates great devastation in terms of life, money and failures of structures.
- Earthquake Mitigation is an important field of study from a long time now.
- Seismic Retrofitting is a collection mitigation techniques for Earthquake Engineering.
- It is of utmost importance for historic monuments, areas prone to severe earthquakes and tall or expensive structures.

❖ Seismic Retrofitting:-

❖ Definition: -

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

✓ When is Seismic Retrofitting Needed?

⇨ The two circumstances are:-

- Earthquake damaged buildings, and
- Earthquake-vulnerable buildings (with no exposure to severe earthquakes).

↳ Retrofit Performance Objectives:-

- Public safety only:- The goal is to protect human life, ensuring that the structure will not collapse upon its occupants or passersby, and that the structure can be safely exited. Under severe seismic conditions the structure may be a total economic write-off, requiring tear-down and replacement.

- Structure survivability:- The goal is that the structure, while remaining safe for exit, may require extensive repair (but not replacement) before it is generally useful or considered safe for occupation. This is typically the lowest level of retrofit applied to bridges.

↳ Problems faced by Structural Engineers are: -

Lack of standards for retrofitting methods Effectiveness of each methods varies a lot depending upon parameters like type of structures, material condition, amount of damage, etc.

↳ Basic Concept of Retrofitting The aim is :-

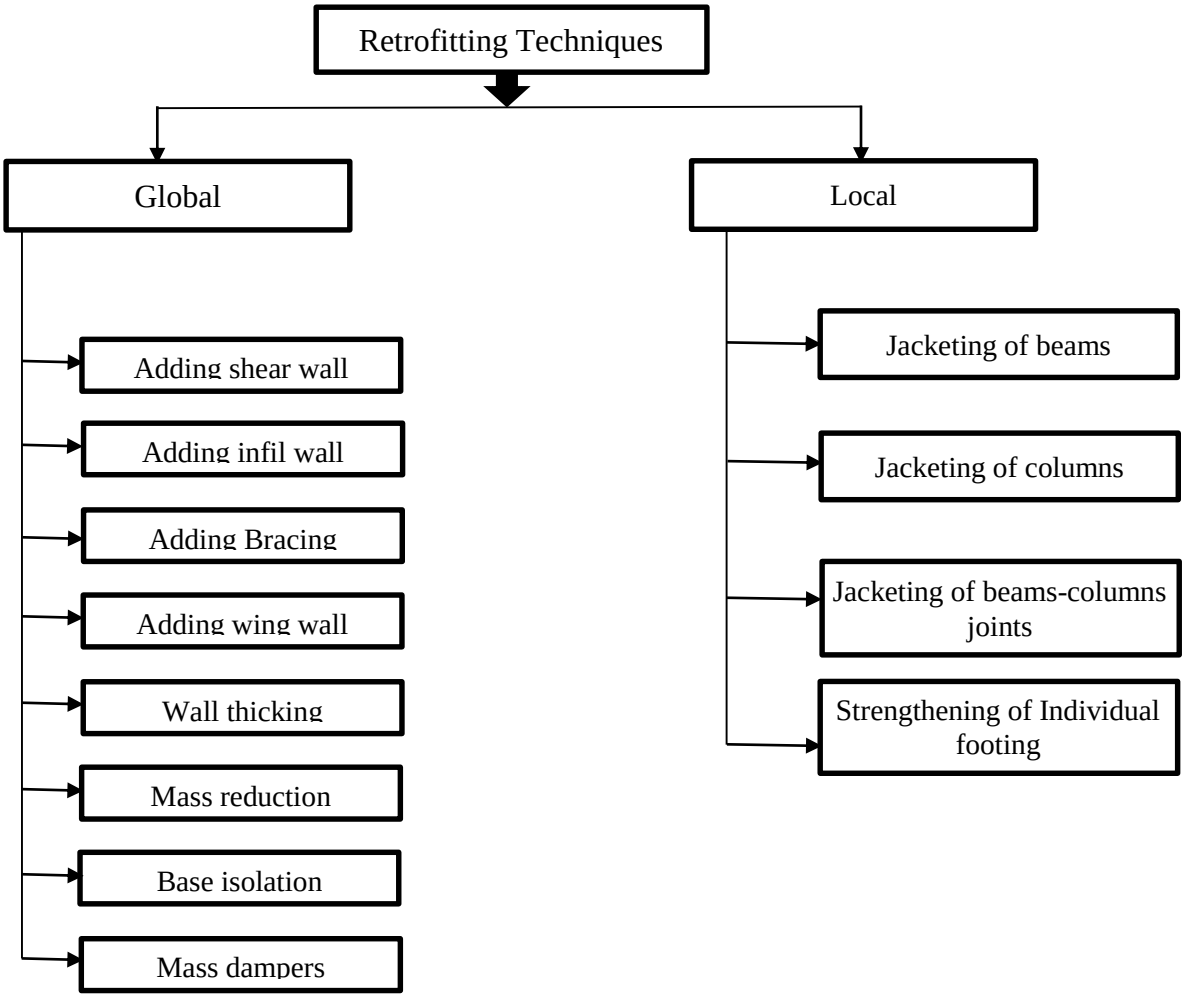
- Up gradation of lateral strength of the structure.
- Increase in the ductility of the structure.
- Increase in strength and ductility.

❖ Base Isolation (or Seismic Isolation):-

- Isolation of superstructure from the foundation is known as base isolation.
- It is the most powerful tool for passive structural vibration control technique.

Fig.49 Base Isolated Structures

Classification of Retrofitting Techniques:-



-: Classification of retrofitting techniques:-

Types of Base Isolations:-

- Base isolation systems which uses Elastomeric Bearings.
- Base isolation systems with Sliding System.

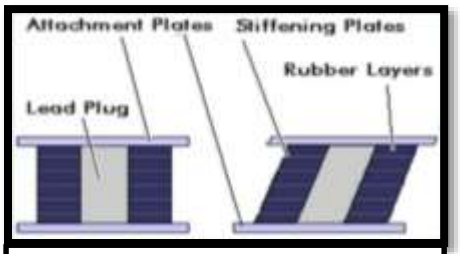


Fig.50 Elastomeric isolators

Elastomeric Base Isolation Systems:-

- This is the mostly widely used Base Isolator.
- The elastomer is made of either Natural Rubber or Neoprene.
- The structure is decoupled from the horizontal components of the earthquake ground motion.

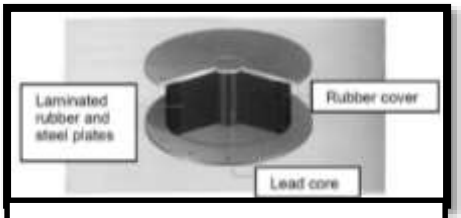


Fig.51 Steel reinforced elastomeric Isolators

Sliding Base Isolation Systems:-

Fig.52 Metallic roller bearing

- It is the second basic type of isolators.
- This works by limiting the base shear across the isolator interface.

Spherical Sliding Base Isolators:-

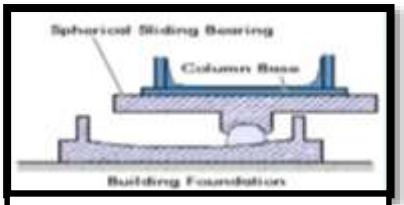


Fig.53 Spherical sliding base isolator

- The structure is supported by bearing pads that have curved surface and low friction.
- During an earthquake, the building is free to slide on the bearings.

Advantages of Base Isolation:-

- Isolates Building from ground motion
  - ❖ Lesser seismic loads, hence lesser damage to the structure.
  - ❖ Minimal repair of superstructure.
- Building can remain serviceable throughout construction.
- Does not involve major intrusion upon existing superstructure.

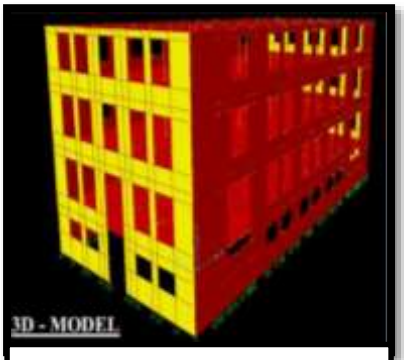


Fig.54 Effectiveness of base isolation

Disadvantages of Base Isolation:-

- Expensive
- cannot be applied partially to structures unlike other retrofitting
- challenging to implement in an efficient manner
- Allowance for building displacements
- Inefficient for high rise buildings
- Not suitable for buildings rested on soft soil.

Conclusion:-

- Seismic Retrofitting is a suitable technology for protection of a variety of structures.
- It has matured in the recent years to a highly reliable technology.
- But, the expertise needed is not available in the basic level.
- The main challenge is to achieve a desired performance level at a minimum cost, which can be achieved through a detailed nonlinear analysis.
- Optimization techniques are needed to know the most efficient retrofit for a particular structure.
- Proper Design Codes are needed to be published as code of practice for professionals related to this field.

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

❖ Introduction:-

- Now a days the construction technology and equipment's becomes very advanced.
- The advanced construction techniques such as under water construction, trenchless technology and many new innovative materials used in advanced construction techniques and equipment's to speed up the construction of any building works.
- So that we will discuss about few techniques and materials used in that.

❖ Under Water Construction:-

- During the construction of bridges, dams or any other structure where foundation part of the structure is mostly like to lie underwater, we have to opt for underwater construction.
- Construction in water poses many difficulties especially in the places where there the depth is considerable.
- During underwater construction our main objective is to create a dry and water free environment for working in such a manner that the structural stability of the structure is not compromised.

Fig.55 Under water construction

❖ Classifications Of Under Water Construction:-

➢ Under Water Construction:-
- ✓ Construction Techniques
- ✓ Methods Of Placing Of Concrete

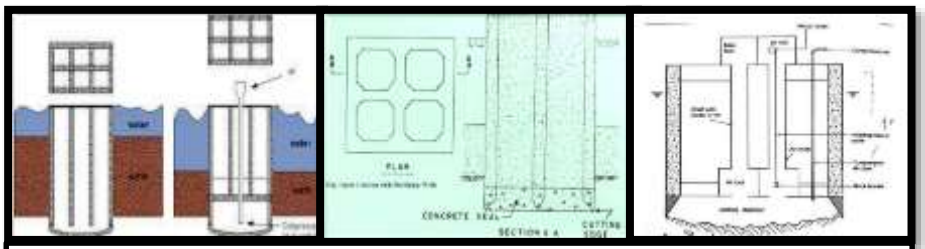
➢ Underwater Construction Techniques:-
(1) Caissons (2) Cofferdams

➢ Methods of Placing Of Concrete:-
(1) Tremie Method (2) Pump Method (3) Toggle Bags (4) Bag Works

❖ Caissons:- Caissons are the structure used in underwater construction work, consisting of an air tight chamber, open at the bottom and containing air under sufficient pressure to exclude the water.

❖ Types of Caissons:-

(1) Box Caisson
(2) Open Caisson
(3) Pneumatic Caisson

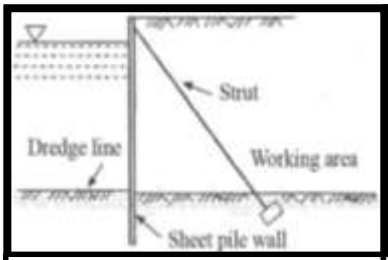


-: Box Caisson: - -: Open Caisson: - -: Pneumatic Caisson:-

❖ Cofferdams:- A cofferdam is a type of watertight construction designed to facilitate construction projects in areas that are normally submerged, such as bridges and piers.

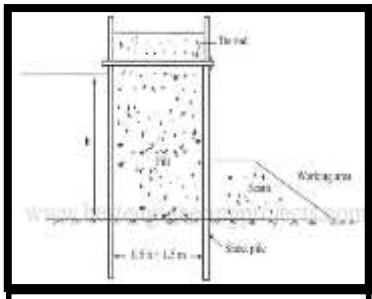
❖ Types Of Cofferdam:-

1) Cantilever sheet piles
2) Braced cofferdam
3) Double wall cofferdam
4) Cellular cofferdam
5) Earth embankment
6) Rock fill cofferdam

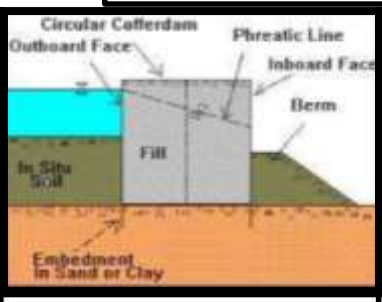


-:Cantilever Sheet Pile:-

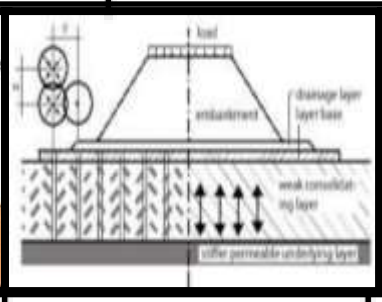
-: Braced cofferdam:-



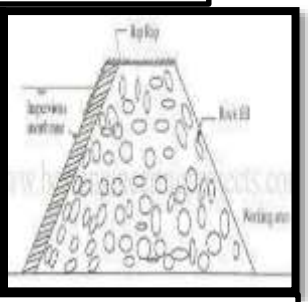
-:Double wall Cofferdam:-



-: Cellular Cofferdam:-



-:Earth embankment:-



-:Rock fill Cofferdam:-

Fig.56 Type of Cofferdams

❖ Methods Of Placing Of Concrete:-

(1) Tremie Method (2) Toggle Bags (3) Pump Method (4) Bag Works

❖ Trenchless Technology:-

- Trenchless technology methods include all methods of installing or renewing underground utility systems with minimum disruption of the surface or subsurface.
- Trenchless technology consist of various methods, materials and equipment for inspection, utilization and rehabilitation.
- Trenchless technology has become popular for underground utility construction road crossings.
- In recent years, there has been remarkable progress in development of new trenchless technology equipment and methods.

Advantages Of Trenchless Technology:-

- Expenses and dates are much easier to calculate.
- Surface life stays mainly undisturbed.
- Up to 95 percent lesser load for landfills due to minimal excavations.
- Small stress for streets and traffic.
- Minimization of CO2 emissions.

Introduction To Modern Construction Materials:-

- Now a days many new innovative materials are being invented and many new materials are being in research.
- New innovative thinking and new invention is necessary to save our valuable time and energy.

- Some of the innovative materials are listed below.

Modern Construction Materials:- These are the several materials used in advanced construction techniques and equipment's such as,

MORDEN CONSTRUCTION MATERIALS	
⇨ Fly ash bricks.	⇨ Bendable concrete.
⇨ Translucent concrete.	⇨ Radient barriers.
⇨ Sensi tiles.	⇨ Transparent aluminium.
⇨ Liquid granite.	⇨ Carbon fiber.
⇨ Carbon Nano-tubes.	⇨ Richlite.
⇨ Unfired clay bricks.	⇨ Solar pannel roofing tiles.

Table.10 Constructions Materials

➢ Fly Ash Bricks:-

- Fly ash bricks are building materials containing class c fly ash.
- In India, the fly ash was first used in rihad dam which is located at Pipri sonbhadra district in uttar Pradesh.
- The composition of fly ash bricks are fly ash, lime, gypsum, sand, cement.
- These bricks are environment friendly and they can be manufactured at construction site itself.

Fig.57 Fly Ash Bricks

➢ Translucent Concrete:-

- They have been developed by Hungarian architect ARON LOSONCZI.
- It is mostly same as the regular concrete, visually appealing by mixing concrete with optical glass fibers and thus the result was light transmitting concrete.
- The glass fiber in the concrete act like a slit and carry the light across and the light carried maintains its original color.
- It carries the same amount of light through it, no matter how thick it is.

Fig.58 Translucent Concrete

➢ Sensi Tile:-

- If you walk across your kitchen the floor to get something from the refrigerator, the floor twinkles with light path that guides your way through the dark room.

- The concrete of the tile is embedded with acrylic fiber optic channels that transfer the light from
  One point to another.
- As shadow move across terrazzo's surface, the light channels flicker with a randomized.

Fig.59 Sensi Tile

➢ Liquid Granite:-

- The material is light weighted and has the same load bearing capacity of cement but it is made of recycled materials.
- Liquid granite is not only a fire- resistant beyond 1,100 degrees Celsius, it can also withstand high temperature for longer periods.
- So, it has moisture resisting properties also.

Fig.60 Liquid Granite

➢ Unfired Clay Bricks:-

- Unfired clay bricks are made up of earthy materials and are air-dried instead of fired like conventional bricks.
- It is eco- friendly and with additional construction properties.
- It have the benefit of reducing the energy used in manufacturing and increases strength and decreases shrinkage.

Fig.61 Unfired Clay Bricks

➢ Bendable Concrete:-

- A new type of fiber reinforced bendable concrete is used in various places.
- This new concrete is around 500 times more resistant to cracking than regular.
- The fibers slide within the concrete when bending occurs, providing with it is enough ton prevent breakage.

Fig.62 Bendable Concrete

➢ Richlite:-

- It is a dense material made from partially recycled paper and phenolic resin.
- The 70 percentage of the material is made with recycled paper.
- It has high strength and has resistance to high temperature up to 350 F.

Fig.63 Richlite

❖ Radient Barriers:-

- It can be applied anywhere in attic space of house.
- It keeps heat out in summer and warm in during winter.
- It is usually made up of aluminum.
- Radient barriers are widely used in many areas.

Fig.64 Radient Barriers

➢ Transparent Aluminium:-

- It is extremely durable material with excellent optical transparency.
- To be used for windows, domes, plates, rods and tubes with a wide range of sizes and varieties.
- It has excellent clarity.
- Outstanding strength and hardness.
- Cost effective advanced material solution.
- It is used in aerospace, security, defense, and energy and consumer products.

Fig.65 Transparent Aluminum

➢ Solar Pannel Roofing Tiles:-

- It transforms the solar energy into usable electricity which is required for our homes.
- Receives rebate from the government for installing them.
- Solar panel roofing tiles are play an important role in our field or profession.

Fig.66 Solar Panel Roofing

➢ Carbon Fiber:-

- Carbon fiber is made up of carbon strands that are thinner than human hair. The strands can be woven together, like cloth, and then that can be molded to any shape you might want.
- Carbon fiber is extremely strong, light weighted material.
- It is five times strong as steel, two times as stiff and weight is about two- thirds less.

Fig.67 Carbon Fiber

➢ Applications Of Modern Materials:-

- Several modern construction materials have more strength, hardness, toughness and durability.
- For example, fly ash bricks have these characters when compared with normal bricks.
- From the above discussions the modern materials are mostly used in all over the world.
- We can make our nation as Hi-tech using these innovative materials.

➢ Conclusion:-

- Hence the following techniques such as under water construction and trenchless technology or like that are very use full in today's life and make our country as pollution free.
- These new emerging building materials should be replaced with the old ones to improve the properties of materials and helps in recycling of the materials to save energy, time, and money.

- So more innovative materials should be created and make construction of the building simpler with more strength.

14.1.4 Engineering Aspects of Soil mechanics - Environmental Impact Assessment:-

Environmental impact Assessment:-

- An environmental impact assessment is a formal process used to predict the environmental consequences of a plan ,policy, program of project prior the implementation decision, it proposes measures to adjust impacts to acceptable levels or to investigate new technological solution.
- Defined as the systematic identification and evaluation of potential impacts of proposed projects, plans or actions on physical, chemical, biological, cultural and socio-economic components of environment.
- EIA planning tool, helps planner in predicting future impacts of different developments.
- EIA must be conducted for projects like highways, airports, canals, dams, and power plants etc. which disturb environment.
- Applicable for developmental activities which involves plans, programmers and policies.

Need of EIA:-

- When a project undertaken it disturb environmental equilibrium.
- To maintain quality of environment it is essential to study impacts of project on environment.
- This also suggest remedial measures for development of projects.

An ideal EIA system:-

- Apply to all projects that have a significant environmental effects.
- Compare alternatives of proposed effect, management techniques, and mitigation measures.
- Preparation of EIS (Environmental Impact Statement).
- Include broad public participation and administrative review procedure.
- Be timed to provide information for decision making.
- Be enforceable.
- Include monitoring and feedback procedures.

CASE STUDY Qutab Minar – Gurgaon MRTS Corridor Environmental Impact And Socio Economic Assessment:-

❖ Introduction:-

- Corridor- From Qutub Minar to Gurgaon
- Distance = 14.47km
- Open In = 21st June 2010
- Stations in B/W= Chattarpur, Sultanpur, Ghitorni, Arjangarh, Sikandarpur, M.G Road, Iffco Chowk, Huda City Centre

Fig.68 Delhi MRTS

❖ Water And Soil Analysis:-

- The Water And Soil Samples Have Been Tested For Chemical Analysis.
- Most Of The Parameters Are Within The Permissible Limits Except The Two Values I.E Tds And Nitrates Which Are Exceeding The Limits.
- Based On This Data, It Could Be Concluded That Sub Soil And Underground Water Are Unlikely To Undergo Any Deteriorating Effect Due To Proposed Mrts Structures And Foundation.
- The Texture Of Soil Is Mainly Sandy. The Higher Concentration Of Phosphate And Organic Matter Is An Indication Of Good Fertility Value. As Metro Will Be Above Ground Hence It Will Not Be In Contact With Soil And Water.

❖ Forestry:-

- Most of the trees were planted along the roads in the past. θThe main species are Pipal, Neem, Kikar, Mango, Ashok, Ficus and Bakaan, etc.
- No rare or endangered species of trees have been noticed during field studies.
- An inventory Report of trees, likely to be lost is presented in Table.
- About 755 trees are existing on the proposed alignment from Qutab Minar (30.95 km) to Sushant lok (47.003).

S.No.	Chainage in Km		No. of trees			
	From	To	Left	Middle	Right	Total
1.	30.95	35.525	133	86	104	323
2.	35.525	36.919	38	41	104	183
3.	36.919	39.388	20	68	60	148
4.	39.388	40.546	8	19	3	30
5.	40.546	42.816	6	1	16	23
6.	42.816	44.214	2	0	1	3
7.	44.214	45.240	2	0	0	2
8.	45.942	47.025	7	36	0	43
		TOTAL	216	251	288	755

Table.11 Report of trees and lost

❖ Air Quality:-

- As A Part Of This Study Ambient Air Quality Monitoring (Aaqm) Has Been Carried Out By Setting Up Ambient Air Quality Monitoring Stations At Five Locations For The Parameters Spm, Co, Hc, And Nox.
- The Ambient Air Quality Data Indicates Much Higher Values Of Suspended Particulate Matter, Than The Prescribed Limits Established By Cpcb At All The Monitoring Stations. However The Values Of Nox And Co Are Within The Permissible Limits.

❖ Seismicity:-

- Project Area Falls in Zone (IV) Of Seismic Zoning Map of India.
- The India Meteorological Department (Imd) Has Considered Suitable Seismic Factor For Design Purpose For Civil Engineering Structures. This Factor Needs To Be Appropriately Incorporated While Finalizing Civil Designs.

• Noise:-

- RITES have measured noise levels at different places in Delhi and Gurgaon along the project alignment at 2.0m away from source as per standard practice.
- It could be concluded that the noise levels recorded at various places are higher than prescribed permissible levels of 65 dBA (day) and 55dBA (night).

❖ Impact Assessment :-

↳ Positive Environmental Impacts:-

- Traffic congestion reduction,
- Quick service and safety,
- Less fuel consumption,
- Reduction in Air Pollution,
- Better roads, and
- Employment opportunities

↳ Negative Environmental Impacts:-

(1) Impacts Due To Project Location:-

- Change of Land Use-. The Change In Land Use In Delhi Portion Is Estimated To Be 16.5857ha.
- Loss Of Trees- 755 Trees Lost, The Total Value Of These Trees Lost Is Rs. 5.285 Lakhs.
- Loss of Historical and Cultural Monuments-No Impact.

(2) Impacts due to project construction:-

- Soil Erosion and Health Risk at Construction Site:- Runoff from unprotected excavated areas can result in excessive soil erosion, especially when erodibility of soil is high.
- Traffic Diversions and Risk to Existing Buildings:- As most of the construction activities will be confined to Centre of the road and most of the roads are double lane, it will be appropriate that the side lanes may also be utilized for traffic and also for smooth progress of construction activities.
- Water Quality:- Contamination of ground water can take place, if the dump containing above substances gets leached and percolate into the ground water table.

(3) Impacts due to project operation:-

- Oil pollution:- Oil spillage during change of lubricants, cleaning and repair processes, in the maintenance Depot cum workshop for maintenance of rolling stock, is very common.
- Noise:-total noise level would be about 80.4 dB (A). However, due to reduction of vehicular traffic, the road traffic noise as compared with existing levels will come down by about 7 to 9%.
- Accidental hazards.
- Water quality:- CPHEEO has recommended 45litres/day, water supply to persons working at railway stations.
- Railway station refuse:- The total refuse generated at all the stations of the present section under consideration is estimated to be about 2.79 tons/day with the assumption that only about 25% of the passengers visiting various stations will be producing refuse.

(4) Environmental Monitoring:-

- Water Quality:- Water quality parameters shall be monitored one year before the construction, during the construction phase and also for at least three years after the completion of the project (total 10 years). Monitoring shall be carried out at least four times a year to cover seasonal variations.

  The parameters for monitoring would be: pH, Dissolved Oxygen, Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Coliform Count, Total Dissolved Solids, Chlorides, Nitrates, Sulphates, Total Nitrogen, Total Phosphates, oils and greases etc. The main

monitoring stations could be at Qutab Minar, Sikandarpunr, IFFCO Chowk, and the Sushantlok proposed station. The cost for water quality analysis works out to be Rs.5.76 lakhs.

- Air Quality and Noise Levels:- Ambient air quality and Noise levels should be monitored one year before the construction, during the construction phase and for at least three years after the completion of the project (total 10 years).
  The proposed monitoring program for field monitoring and laboratory analysis of air and noise is given in Table.
  The cost for ambient air quality and Noise levels monitoring works out to be Rs. 33.00 lakhs.

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

❖ Waste Water Management:-

⇨ Wastewater is generally divided into two categories: black water and gray water.

⇨ Black water refers to toilet waste and gray water refers to the remaining wastewater from sinks, showers, laundry, etc.

⇨ The septic tank provides primary treatment of both types of wastewater by settling out the solids and providing space for floating scum to be retained. Relatively clear, but not clean, water is discharged from the septic tank to the absorption field. The soil provides for further treatment when the waste water percolates through the soil profile.

⇨ Untreated or improperly treated wastewater contains biological contaminants known to cause disease.

⇨ Wastewater is not safe to drink, and discharging this water directly into the environment (onto the ground or into a water body) can pose health and safety problems.

⇨ After all, this water is part of the water cycle and will eventually make its way into a source for our water supply. The wastewater must be properly managed to protect human and environmental health and safety.

❖ Characteristics of waste water:-

⇨ Temperature:-

⇩ Changes in waste water temperatures affect the settling rates, dissolved oxygen levels, and biological action.

⇩ The temperature of wastewater becomes extremely important in certain wastewater operations has sedimentation tanks and recirculating filters.

⇨ Color:-

⇩ The color of waste water containing Dissolved Oxygen (DO) is normally gray. Black – colored waste water usually accompanied by foul odors, containing little or no DO, is said to be septic.

Color	Problem indicated
Gray	–
Red	Blood or other industrial wastes or TNT complex
Green, Yellow	Industrial wastes not pretreated (paints etc.)
Brown or other soil color	Surface runoff into effluent, also industrial flows
Black	Septic conditions or industrial flows

Table.12 Characteristic

⇨ Odor:-

- Domestic waste water have a musty odor. Bubbling gas and foul odor may indicate industrial wastes, anaerobic (septic) conditions.

❖ Waste Water Management:-

⇨ Wastewater management encompasses a broad range of efforts that promote effective and responsible water use, treatment, and disposal and encourage the protection and restoration of watersheds.

Reuse	Recycle	Discharge
• Some relatively clean waste water can be reused without treatment.	• Waste water can be treated (on-site or off-site) and reused for nondrinking purposes.	• Waste water is transported to an (on- site or off-site) treatment facility, treated, and discharged into a water body.
• Gray water is wastewater generated by washing, laundry, and bathing (not from toilets).	• Closed-loop treatment systems are often used to capture, treat, and reuse wastewater on-site.	• These treated water can be discharged and reused, which can be used for watering in gardens or other washing purposes.
• 50-80% of domestic wastewater.	• Waste water reclamation involves treating the wastewater and using it for a different purpose.	
• Reused for irrigation or flushing toilets.		

Table.13 Reuse / Recycle / Discharge

❖ Motivational Factors For Recycle/ Reuse:-

⇨ In order to avoid environmental problems arising due to discharge of treated/untreated wastewater to the environment is another factor that encourages reuse. While the nutrients in wastewater can assist plant growth when reused for irrigation, their disposal, in extreme cases, is detrimental to ecosystems of the receiving environment.

⇨ Major among the motivational factors for wastewater recycle/reuse are:

- opportunities to augment limited primary water sources;
- prevention of excessive diversion of water from alternative uses, including the natural environment;
- possibilities to manage in-situ water sources;
- minimization of infrastructure costs, including total treatment and discharge costs;
- reduction and elimination of discharges of wastewater (treated or untreated) into receiving environment;

⇨ Reuse of wastewater can be a supplementary source to existing water sources, especially in arid/semi-arid climatic regions. RECYCLE/ REUSE are considered as a method of water resource management.

Rural Water Supply:-

- Supply of drinking and household water to rural area.
- Do not have access to safe potable water.
- Different traditional means.
- WHO- 7 million people die every year due to the consumption of contaminated water.

Water Supply Systems:-

1. Centralized water supply system
2. Decentralized water supply system

(1) Centralized Water Supply System:-

- Centralized water treatment plants.
- Extensive pipe network.
- Larger municipalities or water board.

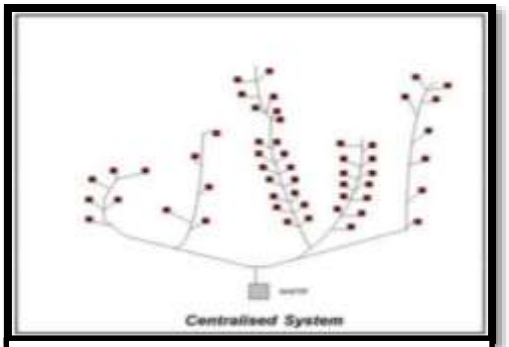


Fig.69 Centralized Supply System

Limitations of Centralized System:-

- High initial cost.
- Lack of skilled and trained people.
- Does not reach rural areas.
- High energy consumption.

(2) Decentralized Water Supply System:-

- Safe drinking water.
- Small scale purification and distribution.
- Treatment and reuse close to source of generation.
- Small conveyance network.
- Sources: lakes, rivers, groundwater, rainwater etc.

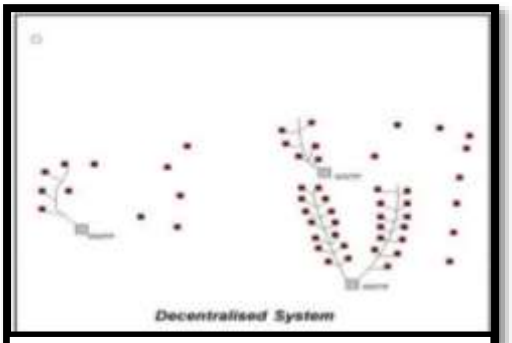


Fig.70 Decentralized Supply

Health Aspects:-

- Lead to large improvements in public health by making water both available and safe to drink.

Cost Considerations:-

- Cost depends on technology chosen.
- Some technologies are affordable in poor communities.

Operation and Maintenance:-

- Requires time consuming daily operation and maintenance by users.
- Decentralized system has the benefit of putting users in control of their system maintenance.

Advantages:-

- Maintained And Designed.
- Reduces Pollution.
- Reduces Consumption Of Fresh Water.
- Reduces Requirement Of Pipe Networks.

Disadvantages:-

- Need To Control Various Treatments.
- Time Consuming Daily Operation.

Sewage – sewer – sewerage System:-

- Sewage:- municipal wastewater (domestic sewage, storm water and infiltrated ground water).
- Sewerage:- system for the collection and conveyance of municipal wastewater to the STP or the point of disposal.
- Sewer:- conduit carrying the sewage.
  - – Sanitary sewers, storm sewers and combined sewers
  - – Sanitary sewers carry sewage
    - ✓ Residential, commercial and institutional sewage.
    - ✓ Industrial wastewater.
    - ✓ Infiltration water and some storm water.

Sewerage System:-

Sewers:-

- Conduit carrying the sewage mostly by gravity.
- Asbestos cement, ductile iron, reinforced concrete, pre stressed concrete, PVC, and vitrified clay material are used in sewer manufacturing.
- Sewerage is converging network of sewers (building connections, lateral sewers, main sewers, trunk sewers and intercepting sewers).
  - – Building sewers/building connections – begins beyond a building foundation conveying sewage from the building to (lateral) sewer
  - – Lateral/branch sewer – first element of the sewerage system – receives sewage from buildings and conveys to main sewers
  - – Main sewer – receives sewage from lateral sewers and conveys to trunk sewers or intercepting sewers
  - – Trunk sewers – large sewers conveying sewage from main sewers to STP or disposal facilities or to large intercepting sewers
  - – Intercepting sewers – large sewers used to intercept a number of main or trunk sewers and convey sewage to STP/disposal facilities

Rural Sanitation in India:-

- India's First Nationwide Program for Rural Sanitation, the Central rural Sanitation Program Was Launched In 1986.
- The Basic Objective Of This Program Was To Improve The Quality Of Life of Rural People And To Provide Privacy And Dignity To Women. Toilet Construction in Rural India.
- The Program was reconstructed again In April, 1999 which Focuses on Demand Driven Approach in Phased Manner with a View to cover The Wider Range of Rural population By the End of 9th Five-year Plan.
- The Department Of Water Supply and Sanitation Is Responsible For the Sanitation In Rural Areas.

There are three systems of sewerage adopted in practice:-

(1) Combined system (2) Separate system (3) partially separate system

(1) Combined system:-

- When both sanitary sewage and storm water are carried in a single sewer, it is called a combined sewer system.
- When the flow in a combined sewer consist of only domestic sewage and industrial waste without storm water, flow is called 'DRY WEATHER FLOW'.

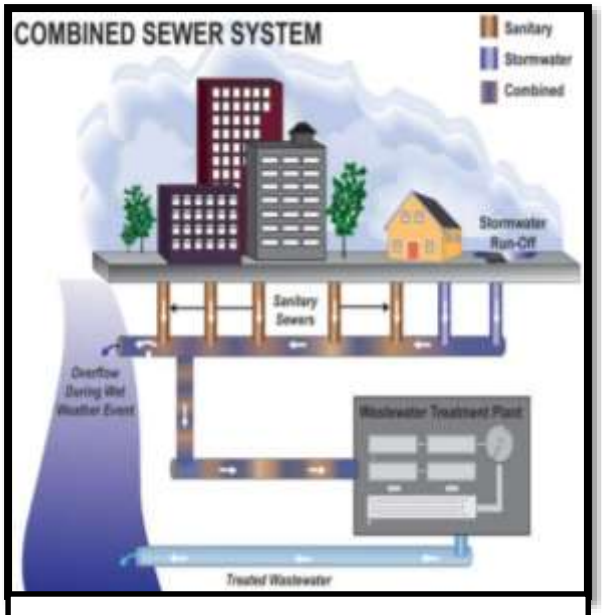


Fig.71 Combined Sewer System

↳ Advantages:-

- Both domestic sewage and storm water are carried in a single sewer, so construction cost is less.
- The strength of domestic sewage is reduced because of dilution of storm water.
- The sewers are of large size, and therefore the chances of their chocking are rare. It is easy to clean them.
- In town with Narrow Street, this systems is preferred.

↳ Disadvantages:-

- Initial cost is high because of large dimensions of sewers.
- Because of large size of sewer, their handling and transportation is difficult.
- Due to the inclusion of storm water, the load on the treatment plant increase.
- During heavy rain the sewer may be overflow and may thus create unhygienic conditions.
- If the whole sewage is to be disposed of by pumping it is uneconomical.

(2) Separate system:-

- In this system two separate sets of sewer are installed, one for collection and conveyance of sanitary sewage and other for storm water.
- As storm water is carried separately, it is not foul in nature and normally disposed of to natural water course without any treatment.
- Whereas the sanitary sewage is taken to treatment plant separately and after requires treatment it is disposed of.

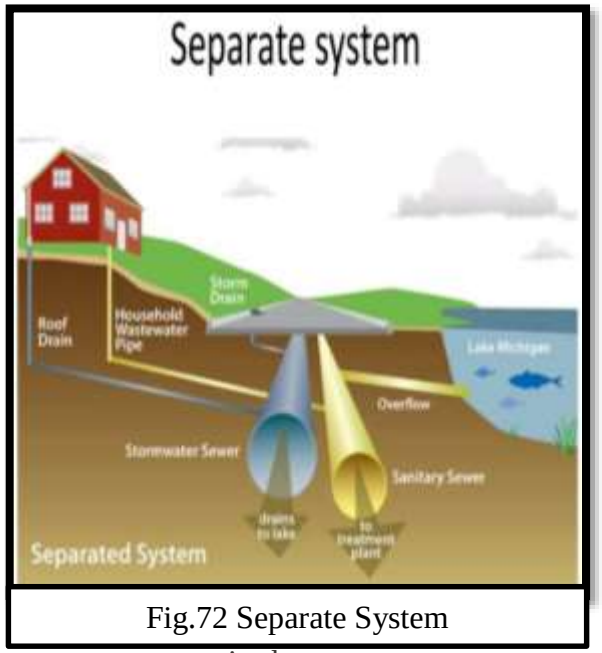


Fig.72 Separate System

↳ Advantages:-

- Size of sewer requires less.
- Since the sanitary sewage and storm water flows in a separate pipes, the quantity of sewage to be treated is less.
- As the sewer are smaller in section, they can be easily ventilated.
- During disposal if the sewage is to be pumped, the separate system is cheaper.

- Rain water can be discharge in to steams without any treatment.

Disadvantages:-

- Since the sewer are smaller size, it is difficult to clean them.
- They are likely to get chocked.
- Initial cost is high, when two separate set are used.
- Maintenance cost of sewer is also high.
- Generally self-cleaning velocity is not available due to small quantity of sewage therefore, flushing is required at various point.

(3) Partially separate system:-

- In this system, only one set of underground sewer is laid.
- These sewer admit the sanitary sewage as well as the early washings from the drainage area due to rains.
- When the storm water exceed its specified limit, the excess is diverted in to natural water courses.

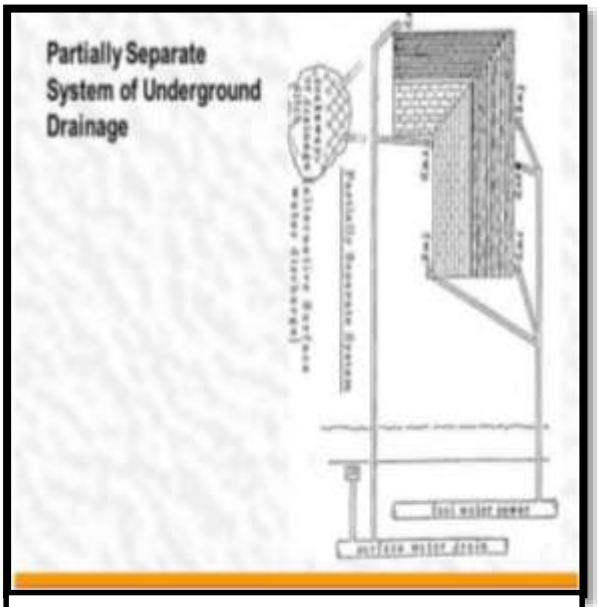


Fig.73 Partially Separate System

Advantages:-

- The sewer are of reasonable size. Their cleaning is therefore not difficult.
- It combines the advantages of both the separate as well as the combined systems.
- The work of house plumbing is reduced, because the rain water from roof, sullage from baths and kitchen, etc. can be taken in the pipe carrying the discharge from the water closest.

Disadvantages:-

- During dry weather floe deposition take place in sewer.
- As initial storm water is included the cost of pumping and size of disposal units increase.
- The storm water increase the load on treatment units.
- There are possibilities of over flow, requiring the construction of storm water overflow.

Chapter-15 Smart and/or Sustainable features of Chapter 8 & 13 designs, Impact on society. (For Allocated village development, villager's happiness, comfortable and for enhancement of the village):-

- We have tried to make the village helpful by making 12 corresponding designs on paper in Moti-kunkavav village and if these designs are made in the village in future it will definitely define the village and definitely benefit the villagers.
- All these designs are as follows.
    1. Public library
    2. Cyber café
    3. Public toilet
    4. Police station
    5. Avedo
    6. Medical store
    7. Public garden
    8. CCTV camera point with control room
    9. Gram Panchayat
    10. Post office
    11. Multipurpose hall
    12. Entry gate

(1) Public library:- It is believed that a rural library has an advantage over other communication channels such as media and printed materials in that it can deliver highly personalized services to the village people.so we have design public library in the Moti-kunkavav village. Its total cost is 4,00,000 Rs.

(2) Cyber café: - In Moti-Kunkavav 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 and internet access capacity. Its total cost is 1,15,000 Rs.

(3) Public toilet:- In Moti-kunkavav village, there is no any public toilet for the villagers. So public toilet provide in village to clean the village and also air pollution will be decrease. Its total cost is 2,46,000 Rs.

(4) Police station:- A design of police station is provided by us because the police station in the village is in deteriorating condition and decreases complains like robbery, fighting, kidnapping, etc. So, we have provided the design of police station. Its total cost is 1,91,181 Rs.

(5) Avedo:- As the main occupation of the people of Moti-kunkavav 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. Its total cost is 16,985 Rs.

(6) Medical store:- A design of medical store is provide us because the medicine provide at free of cost or minimum charge pay for medicine in generic medical store. Its total coast is 2,00,380 Rs.

(7) Public garden:- Public gardens have always enjoyed the respect of the communities in Moti-kunkavav. They are resources for recreation, as well as education and research opportunities. Public gardens can play very significant roles in sustainable community development, so we design public garden for moti-kunkavav village. Its total cost is 5,00,000 Rs.

(8) CCTV camera point with control room:- Cameras can be used to monitor the movement of the Moti-kunkavav village and the rural transport system and CCTV cameras can be used as smart security, so we design this plan. Its total cost is 1,76,500 Rs.

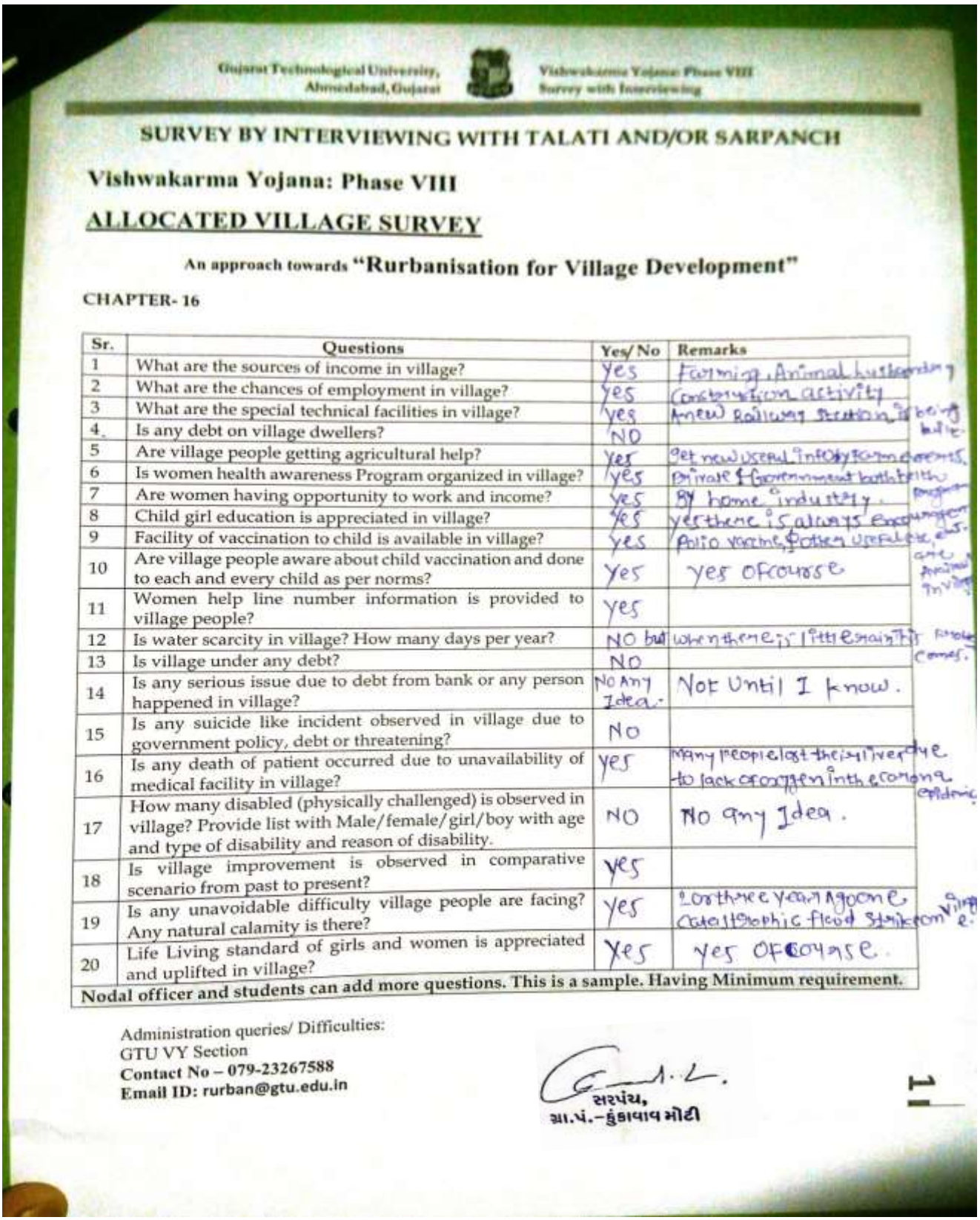
(9) Gram-Panchayat:- When we visited the Gram-Panchayat, we felt that the structure was old and very old, so we wanted to install a new design structure in the Moti-kunkavav village. Its total cost is 3,15,000 Rs.

(10) Post office:- There is an already sub post office in the village but we want to set up another branch in the village by increasing the facilities. Its total cost is 7,12,000 Rs.

(11) Multipurpose Hall:- multipurpose hall is a space that is well-equipped to accommodate a wide variety of events or activities. It is an ideal space to address a large group of executives while simultaneously functioning as a space for networking and break-out activities as well. Its total cost is 8,20,000 Rs.

(12) Entry Gate:- The village gate is a type of architecture and culture that was very popular in the delta and Northern midlands in the old day. In Moti-kunkavav there is no existing this type of gate so we wanted to install this of entry gate structure. Its total cost is 60,000 Rs.

Chapter-16 Survey by Interviewing With Talati and/or Sarpanch:-



Gujarat Technological University, Ahmedabad, Gujarat — Vishwakarma Yojana: Phase VIII, Survey with Interviewing

SURVEY BY INTERVIEWING WITH TALATI AND/OR SARPANCH

Vishwakarma Yojana: Phase VIII

ALLOCATED VILLAGE SURVEY

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

CHAPTER- 16

Sr.	Questions	Yes/ No	Remarks
1	What are the sources of income in village?	Yes	Farming, Animal husbandry
2	What are the chances of employment in village?	Yes	Construction activity
3	What are the special technical facilities in village?	Yes	A new Railway Station is being built.
4	Is any debt on village dwellers?	NO	
5	Are village people getting agricultural help?	Yes	Get new useful info by farm ponds.
6	Is women health awareness Program organized in village?	Yes	Private & Government both with programs
7	Are women having opportunity to work and income?	Yes	By home industry.
8	Child girl education is appreciated in village?	Yes	Yes there is always encouragement
9	Facility of vaccination to child is available in village?	Yes	Polio vaccine, & other vaccine, etc.
10	Are village people aware about child vaccination and done to each and every child as per norms?	Yes	Yes ofcourse
11	Women help line number information is provided to village people?	Yes	
12	Is water scarcity in village? How many days per year?	NO but	When there is little rain this problem comes.
13	Is village under any debt?	NO	
14	Is any serious issue due to debt from bank or any person happened in village?	No Any Idea.	Not Until I know.
15	Is any suicide like incident observed in village due to government policy, debt or threatening?	NO	
16	Is any death of patient occurred due to unavailability of medical facility in village?	yes	Many people lost their liver due to lack of oxygen in the corona epidemic
17	How many disabled (physically challenged) is observed in village? Provide list with Male/female/girl/boy with age and type of disability and reason of disability.	NO	No any Idea.
18	Is village improvement is observed in comparative scenario from past to present?	Yes	
19	Is any unavoidable difficulty village people are facing? Any natural calamity is there?	yes	For three years ago one catastrophic flood strike on village.
20	Life Living standard of girls and women is appreciated and uplifted in village?	Yes	Yes Ofcourse.

Nodal officer and students can add more questions. This is a sample. Having Minimum requirement.

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

સરપંચ,
ગ્રા.પં.-કુંકાવાવ મોટી

Chapter-17 Irrigation / Agriculture Activities and Agro Industry, Alternate Technics and Solution:-

❖ Irrigation In The Past:-

- Farming was more focused on subsistence rather than selling products in the market.
- Labor intensive.
- Irrigated land used to be small.
- Highly dependent on weather.
- Inefficient.

❖ Modern Irrigation:-

- More focus is now on selling the output.
- Machine intensive.
- More sophisticated.
- Rains are no longer the controlling force.

❖ Surface Irrigation:-

- In surface irrigation systems, the land is filled completely with water. In this way crops like rice are able to get ample amount of water.

Fig.74 Surface Irrigation

⇨ Methods of Surface Irrigation:-

- Controlled: Water is applied from the head ditch and guided by corrugations, furrows, borders, or ridges.
- Uncontrolled- wild flooding.

↳ Disadvantages:-

- Wastage of water
- Soil erosion
- Loss of minerals in soil

❖ Drip Irrigation:-

- Also known as trickle irrigation.
- Water is supplied at the roots of the plants, drop by drop.
- Most efficient and effective way of irrigation.
- Drip irrigation method can be either high tech computerized or labor intensive.

Fig.75 Drip Irrigation

❖ Sprinkler Irrigation:-

- Water is piped through different locations in the field and is then distributed by high pressure sprinklers or guns.
- Sprinklers are mostly installed on permanent risers.
- Some sprinklers which rotate are called rotors.

Fig.76 Sprinkler Irrigation

Center Pivot:-

- Center pivot irrigation is a form of sprinkler irrigation.
- It consists of several segments of pipe which is joined together and is supported by trusses, mounted on wheeled towers with sprinklers positioned along it's length.
- It moves in a circular pattern and is fed with water from the pivot point at the center of the arc.

Disadvantages Of Sprinkler:-

- Costly to install
- Average cost is $2682
- Also, large number of sprinklers have to be installed in a field because area covered by a single sprinkler is not large.
- Center pivot is also extremely costly.

Fig.77 Center Pivot

❖ Sub-Irrigation:-

- It has been used for many years where there is a lot of ground water available.
- It is a method of artificially raising the water table to allow the soil to be moistened from below the plants' root zone.
- Advantages are water and nutrient conservation, and labor-saving through lowered system maintenance and automation.
- It is similar to surface drip irrigation system.

❖ Comparison:-

TRADITIONAL METHOD OF IRRIGATION	MODERN IRRIGATIONAL TECHNIQUE
•Inefficient as crops don't get water properly.	•Efficient because crops get correct amount of water. The best example is drip irrigation system.
•Very cheap because there is no installation cost.	•Extremely costly. A lot of investment has to be made to get a proper irrigational system.
•Labor intensive.	•Machine intensive.

✓ Why is everyone using modern irrigational techniques?

- These days' people prefer to use modern irrigational techniques because they are extremely efficient and effective.
- Modern irrigational techniques are also pivotal in increasing the crop yield.
- Also since these days farming is done with the help of fertilizers, crops need a certain amount of water to grow properly.

❖ My View On Using Modern Irrigational Techniques:-

- According to me, modern irrigational techniques should be used and promoted because they save a lot of water.
- For example: drip irrigation, if done properly can save up to 95% of water.
- Also modern irrigational methods are important because of scarcity of water and increasing demand for food crops.
- Modern irrigational techniques are also cost effective, if done on a large scale.

Chapter-18 Social Activities like Swachhta and Activity carried out in the village during the corona epidemic:-

- The first social activity we did in the village was the Swachhta activity.
- Inspired by the prime minister's "SWACHHTA ABHIYAN" campaign, we cleaned up some of the polluted areas in the village.
- We campaigned to clear the rubbish behind the village bus stand and behind the right side shops on main road and also main road.

- Swachhta in Moti-kunkavav Village- (Existing, Implementation, Activity):-

-: Existing photos of Moti-kunkavav nearest area of Small lake and behind shops area:-

-: Implementation and Activity by student:-

- Then we did another social activity in the village, distributing masks and essential items to the people in view of the recent corona epidemic condition and advising the people to be careful in this situation.
- The second wave of corona that is going on right now has proved to be very dangerous for the people and many attempts are being made by the corona warriors to stop them.
- That's why we did this activity in the village to be aware of the corona epidemic and we got a good response.

- Below are a few snapshots of the mask distribution and precautions we captured on our work camera.

-: distributing necessities and masks:-

- According to scientists, the third wave of corona can be even more dangerous than the second wave if people do not keep their self-awareness.

Chapter-19 <<ALLOCATED VILLAGE>> SAGY Questionnaire Survey form with the Sarpanch Signature:-

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

Village: AKALA Gram Panchayat: AKALA Ward No. 1

Block: Lathi District: Amreli

State: Gujarat L S Constituency: lathi-babara 96

1. Family Identity and Size

Name of Head of Household	Patel Vikashbhai Manjibhai						Male/ Female	
SECC Survey ID:	–	Family Size	6	Over 18	4	6 to 18	2	Under 6	–

2. Category & Entitlement Details (Tick as appropriate)

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

2. Adults (above 18 years)

Name	Age	Sex M/F / O	Disability Status Y/N	Marital Status[3]	Education Status[4]	Adhaar Card (Y/ N)	Bank A/C (Y/N)	Social Security Pension[5]
Vikashbhai Patel	40	M	N	Y	12 pass	Y	Y	N
Manjibhai Patel	68	M	N	Y	Uneducated	Y	Y	N
Maniben Patel	64	F	N	Y	Uneducated	Y	Y	N
Sobhanaben patel	38	F	N	Y	10 pass	Y	Y	N

3. Children from 6 years and up to 18 years

Name	Age	Sex M/F/O	Disability Y/N	Marital Code*	Level of Education: Code#	Going to School /College (Y/N)	Current Class	Computer Literate Y/N
Abhay patel	17	M	N	N	11th	Y	11th	Y
Mansi patel	13	F	N	N	8th	Y	8th	Y

4. Children below 6 years

Name	Age	Sex M/F/ O	Disability Yes/No	Going to School (Y/N)	Going to AWC Y/N	De-worming Done	Fully Immu-nised Y/N	Mother's Age at the time of Child's Birth

[1] Scheduled Caste 1, Scheduled Tribe 2, Other Backward Castes 3, Other 4

[2] Enter the BPL Survey round being used in the Gram Panchayat for identification of BPL Families (e.g. 1997/2002/2011)

[3] Marital Status: Not Married – 1, Married – 2, Widowed – 3, Divorced/Separated – 4

SAANSAD ADARSH GRAM YOJANA (SAGY) Baseline Household Survey Questionnaire

5. Hand washing

	Always		Sometimes		Never
After use of Toilet	Soap ✓	Other	Soap ✓	Other	
Before Eating	Soap ✓	Other	Soap ✓	Other	

6. Use of Mosquito Net
Children: Yes / No Adults: Yes / No

7. Do members take Regular Physical Exercise

	Yoga	Games	Other Exercises
Adults	Yes / No	Yes / No	Yes / No
Children	Yes / No	Yes / No	Yes / No

8. Consumption of Tobacco

	Smoking	Chewing
Adults	Yes	Yes
Children	NO	NO

9. House & Homestead Data

Own House: Yes / No	No. of Rooms: 4
Type: Kutcha / Semi Pucca / Pucca	
Toilet: Private / Community / Open Defecation	
Drainage linked to House: Covered / Open / None	
Waste Collection System	Door Step / Common Point / No Collection System
Homestead Land: Yes / No	Kitchen Garden : Yes / No
Compost Pit: Individual/ Group/ None	Biogas Plant: Individual/ Group/ None

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

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

11. Source of Lighting and Power

Electricity Connection to Household: Yes / No
Lighting: Electricity/Kerosene/Solar Power
Mention if Any Other: LPG1
Cooking: LPG/Biogas/Kerosene/Wood/Electricity
Mention if Any Other: Normal
If cooking in Chullah: Normal/ Smokeless

12. Landholding (Acres)

1. Total	0.093 acres	2. Cultivable Area	✓
3. Irrigated	✓	4. Uncultivable	✓

13. Principal Occupations in the Household

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

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

15. Agriculture Inputs

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

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

Name	Unit	Quantity
kapas	kg	200
Vegetable	-	-

17. Livestock Numbers

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

18. What games do Children Play
PUb-G, outdoor Games .. etc.

19. Do children play musical instrument (mention)
NO.

Schedule Filled By: Abhishek Gevariya, Gevon chopda bheem.
Date of Survey :- 30/5/2021

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: AKALA

b. Ward Number: 1

c. Gram Panchayat: AKALA

d. Block: Lathi

e. District: Amreli

f. State: Gujarat

g. Lok Sabha Constituency: Lathi-Babra 96

h. Number of Habitations / Hamlets in the Gram Panchayat: khunt dhirubhai.

i. Names of Habitations / Hamlets:

khunt Dhirubhai.

Demographic Information

Number of Households 661 Total Population 3159 Male 1612 Female 1547

SC HHs 71 ST HHs 66 OBC HHs 56 Other HHs 468

II. Access to Infrastructure/Amenities etc.

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

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

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

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

IV. Sports Facilities in the Gram Panchayat

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

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

V. Education, ICDS

a. Number of Angan Wadi Centres: 1

b. Number of villages without Angan Wadi Centres –

Names of such villages: –

c. Schools (Number)

Primary Private: – Primary Govt.: ✓

Middle Private: – Middle Govt.: ✓

Secondary Private: – Secondary Govt.: –

Higher Secondary Private: – Higher Secondary Govt.: –

VI. Public Distribution System

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

Saansad Adarsh Gram Yojana (SAGY) Panchayat Details Survey Questionnaire

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

VII. Coverage of Villages under different Facilities & Services

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

VIII. Land and Irrigation

	Private Land	Area in Acres		Common Land	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	2534.77 Hec	d.	Pasture / Grazing Land	-	g.	Check Dam	2
b.	Irrigated Land	-	e.	Forests/ Plantations	Y	h.	Wells/Bore Wells	14
c.	Un-irrigated Land	-	f.	Other Common Land	N	i	Tanks /Ponds	2

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

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

IX. Parameters relating to Households & Institutions

		Number
a)	Number of eligible Households for pension (old age, widow, disability)	33(Old age)
b)	Number of Households receiving pension (old age, widow, disability)	19 (Old age)
c)	Number of eligible Households who are not receiving pension	Other all
d)	Number of Households eligible for Ration Card	Maximum
e)	Number of eligible HHs having ration cards	12
f)	Number of households covered under RSBY (Rashtriya Swasthya Bima Yojana)	13
g)	Number of HHs covered under AABY (Aam Aadmi Bima Yojana)	14
h)	Number of active Job Card holders under MGNREGA	13
i)	Number of Job Card holders who completed 100 days of work during 2013-14	15
j)	Number of shops selling alcohol	0
k)	Number of BPL families	11
l)	Number of landless households	13
m)	Number of IAY beneficiaries	11
n)	Number of FRA[2] beneficiaries	11
o)	Number of Community Sanitary Complexes	10
p)	Number of Households headed by single women	7
q)	Number of Households headed by physically handicapped persons	3
r)	Total number of Persons with Disability in the village	97
s)	Number of SHGs	0
t)	Number of active SHGs	0
u)	Number of SHG Federations	0
v)	Number of Youth Clubs	1
w)	Number of Bharat Nirman Volunteers	10

Name and Signature of Surveyor and Respondent[4]

Abhishek Gevariya, Chopda bhotiy. Surveyor	સરપંચ અકાળા ગ્રામ પંચાયત PRI Respondent (Preferably Gram Panchayat Chairperson)	સરપંચ અકાળા ગ્રામ પંચાયત Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	30/05/2021 Date of Survey

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

I. Basic Information

a. Village: AKALA

b. Ward Number: 1

c. Gram Panchayat: AKALA

d. Block: Lathi

e. District: Amreli

f. State: Gujarat

g. Lok Sabha Constituency: Lathi-Lahara 96

h. Number of Habitations / Hamlets in the Gram Panchayat: khunt dhirubhai.

i. Names of Habitations / Hamlets:

khunt Dhirubhai.

Demographic Information

Number of Households 661 Total Population 3159 Male 1612 Female 1547

SC HHs 71 ST HHs 66 OBC HHs 56 Other HHs 468

II. Access to Infrastructure/Amenities etc.

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

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

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

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

ii. Road Connectivity

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

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

iii. Drinking Water Facilities

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

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

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

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

iv. Coverage of Habitations under Waste Management System

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

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

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

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

c. Coverage under Doorstep Waste Collection: *(1-All 2-None 3-Some)* NO (2)

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

v. Coverage of Habitations under Electrification

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

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

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

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

vi. Sports Facilities in the Village

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

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

vii. Education, ICDS

a. Number of Anganwadi Centres: 1

c. Schools (Number)

Primary Private: – Primary Govt.: ✓

Middle Private: – Middle Govt.: ✓

Secondary Private: – Secondary Govt.: –

Higher Secondary Private: – Higher Secondary Govt: –

SAANSAD ADARSH GRAM YOJANA (SAGY) Village Details Survey Questionnaire

viii. Land Category		Area in Acres		Land Category	Area in Acres		Irrigation Structure	No.
a.	Cultivable Land	2534.74 (Hec)	d.	Pasture / Grazing Land	-	g.	Check Dam	2
b.	Irrigated Land	-	e.	Forests/ Plnatations	૪	h.	Wells/Bore Wells	14
c.	Un-irrigated Land	-	f.	Other Common Land	૫	I	Tanks /Ponds	2

ix. Entitlement Related Parameters		
1	Number of active Job Card holders under MGNREGA	13
2	Number of active Job Card holders who have completed 100 days of work	15
3	Number of shops selling alcohol	0
4	Number of BPL families	11
5	Number of landless households	13
6	Number of IAY beneficiaries	11
7	Number of FRA beneficiaries	11
8	Number of common sanitation complexes	10
9	Number of SHGs	0
10	Number of active SHGs	0
11	Existence of SHG Federation in the Village (Yes / No)	0
12	Number of Youth Clubs	1
13	Number of Bharat Nirman Volunteers	10

Name and Signature of Surveyor and Respondent'

Gevariya Abhishek, Chopdabhadi 4, Surveyor	PRI Respondent (Preferably a ward member from a ward that is fully or partially covered under the Village)	Official Respondent (Preferably seniormost Government official in the Gram Panchayat)	30/05/2021 Date of Survey

Chapter-20 TDO-DDO-Collector email sending Soft copy attachment in the report:-

(Vishwakarma Yojana: phase-VIII)Development scenario of Moti-Kunkavav village, Amreli, Gujarat.
2 messages

Abhishek Gevariya <abhishekgevariya1@gmail.com> Sat, 22 May 2021 at 3:43 p.m.
To: tdo.kukavav@gujarat.gov.in, ddo-amr@gujarat.gov.in

Respected Sir/Madam
We are the students of Smt,Shantaben Haribhai Gajera Engineering College,Amreli affiliated to Gujarat Technological University-GTU. GTU has been assigned to Vishwakarma Yojana-VIII in which Students survey Various Village and Design Various Facilities to Deliver it to them Making them ideal for living a better life as per requirements & Village problem statements.

As a part of vishwakarma yojana's guidelines, we have been asked to inform all the respected officers about our project in which we will shortly notify about Moti-kunkavav village profile of issues for development and our design work for them which is as below.
VISHWAKARMA YOJANA MOTI-KUNKAVAV VILLAGE,
AMRELI DISTRICT.

(1) Public library:- It is believed that a rural library has an advantage over other communication channels such as media and printed materials in that it can deliver highly personalized services to the village people.so we have designed a public library in the Moti-kunkavav village. Its total cost is 4,00,000 Rs.

(2) Cyber café: - In Moti-Kunkavav 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 and internet access capacity. Its total cost is 1,15,000 Rs.

(3) Public toilet:- In Moti-kunkavav village, there is no any public toilet for the villagers. So public toilet provide in village to clean the village and also air pollution will be decrease. Its total cost is 2,46,000 Rs.

(4) Police station:- A design of police station is provided by us because the police station in the village is in deteriorating condition and decreases complains like robbery, fighting, kidnapping, etc. So, we have provided the design of police station. Its total cost is 1,91,181 Rs.

(5) Avedo:- As the main occupation of the people of Moti-kunkavav 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. Its total cost is 16,985 Rs.

(6) Medical store:- A design of medical store is provide us because the medicine provide at free of cost or minimum charge pay for medicine in generic medical store. Its total coast is 2,00,380 Rs.

(7) Public garden:- Public gardens have always enjoyed the respect of the communities in Moti-kunkavav. They are resources for recreation, as well as education and research opportunities. Public gardens can play very significant roles in sustainable community development, so we design public garden for moti-kunkavav village. Its total cost is 5,00,000 Rs.

(8) CCTV camera point with control room:- Cameras can be used to monitor the movement of the Moti-kunkavav village and the rural transport system and CCTV cameras can be used as smart security, so we design this plan. Its total cost is 1,76,500 Rs.

(9) Gram-Panchayat:- When we visited the Gram-Panchayat, we felt that the structure was old and very old, so we wanted to install a new design structure in the Moti-kunkavav village. Its total cost is 3,15,000 Rs.

(10) Post office:- There is an already sub post office in the village but we want to set up another branch in the village by increasing the facilities. Its total cost is 7,12,000 Rs.

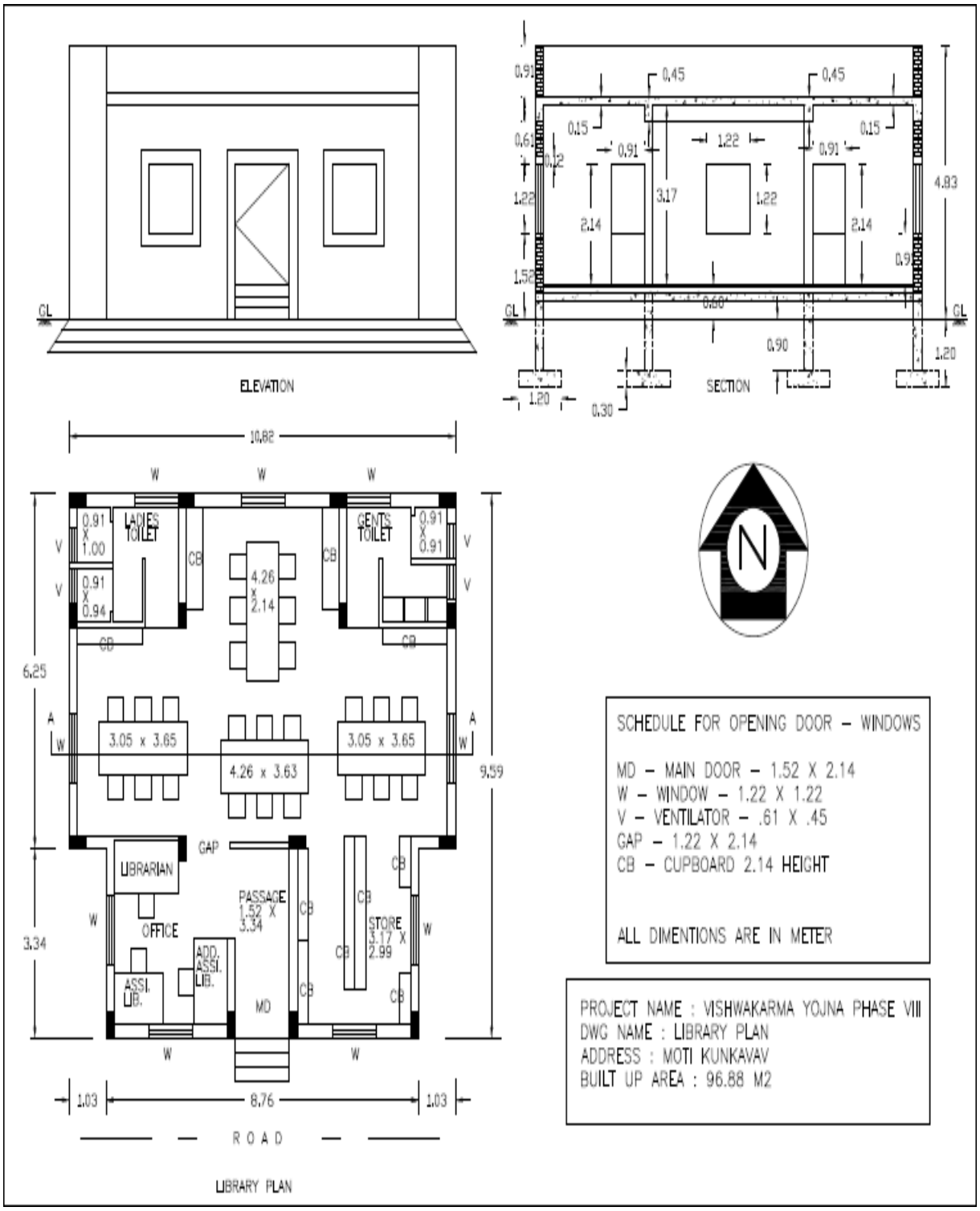
(11) Multipurpose Hall:- multipurpose hall is a space that is well-equipped to accommodate a wide variety of events or activities. It is an ideal space to address a large group of executives while simultaneously functioning as a space for networking and break-out activities as well. Its total cost is 8,20,000 Rs.

(12) Entry Gate:- The village gate is a type of architecture and culture that was very popular in the delta and Northern midlands in the old day. In Moti-kunkavav there is no existing this type of gate so we wanted to install this of entry gate structure. Its total cost is 60,000 Rs.

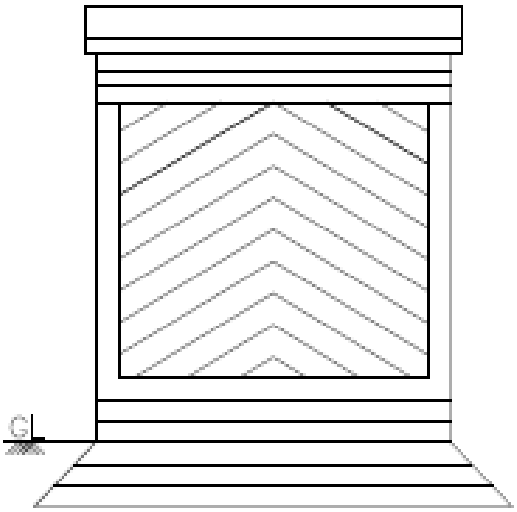
Best Regards,
Abhishek Gevariya & Chopda Bhoju
U.G. Civil engineering
Smt,Shantaben Haribhai Gajera engineering college,Amreli, Gujarat.
Gujarat Technological University
Mail: abhishekgevariya1@gmail.com
Mail: bhojuchopda0@gmail.com

Chapter-21 Comprehensive report for the entire village:-

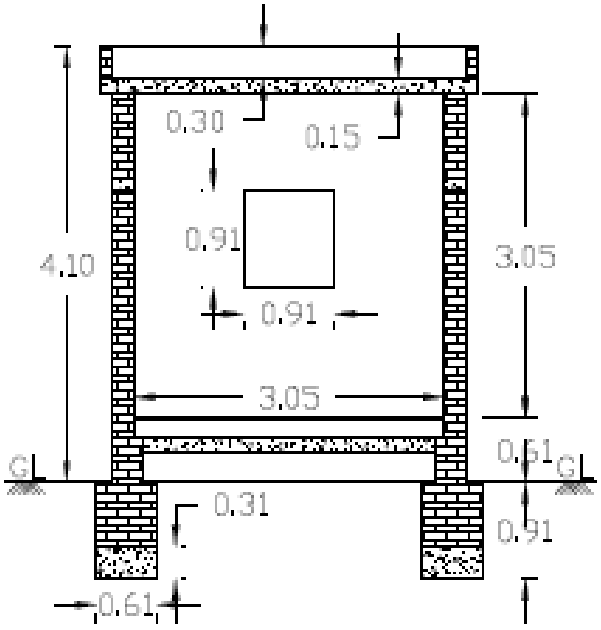
Design Infrastructure: Public library
Village: Moti-kunkavav **District:** Amreli



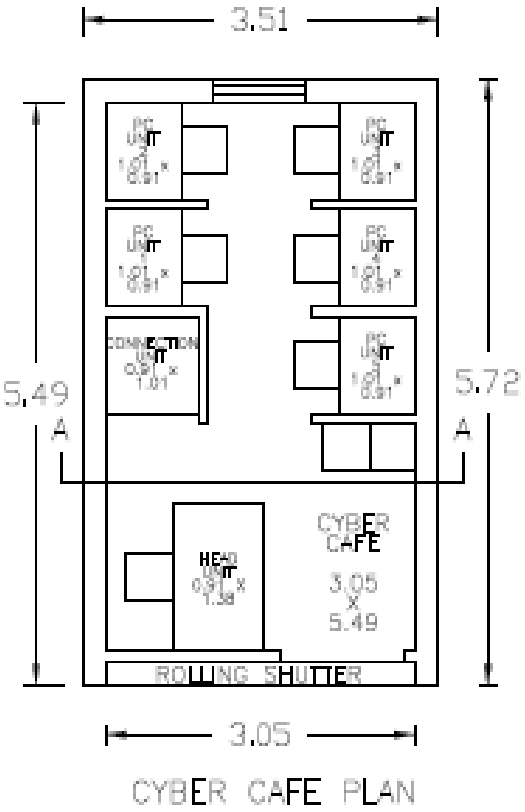
Design Infrastructure: Cyber café
Village: Moti-kunkavav **District:** Amreli



ELEVATION



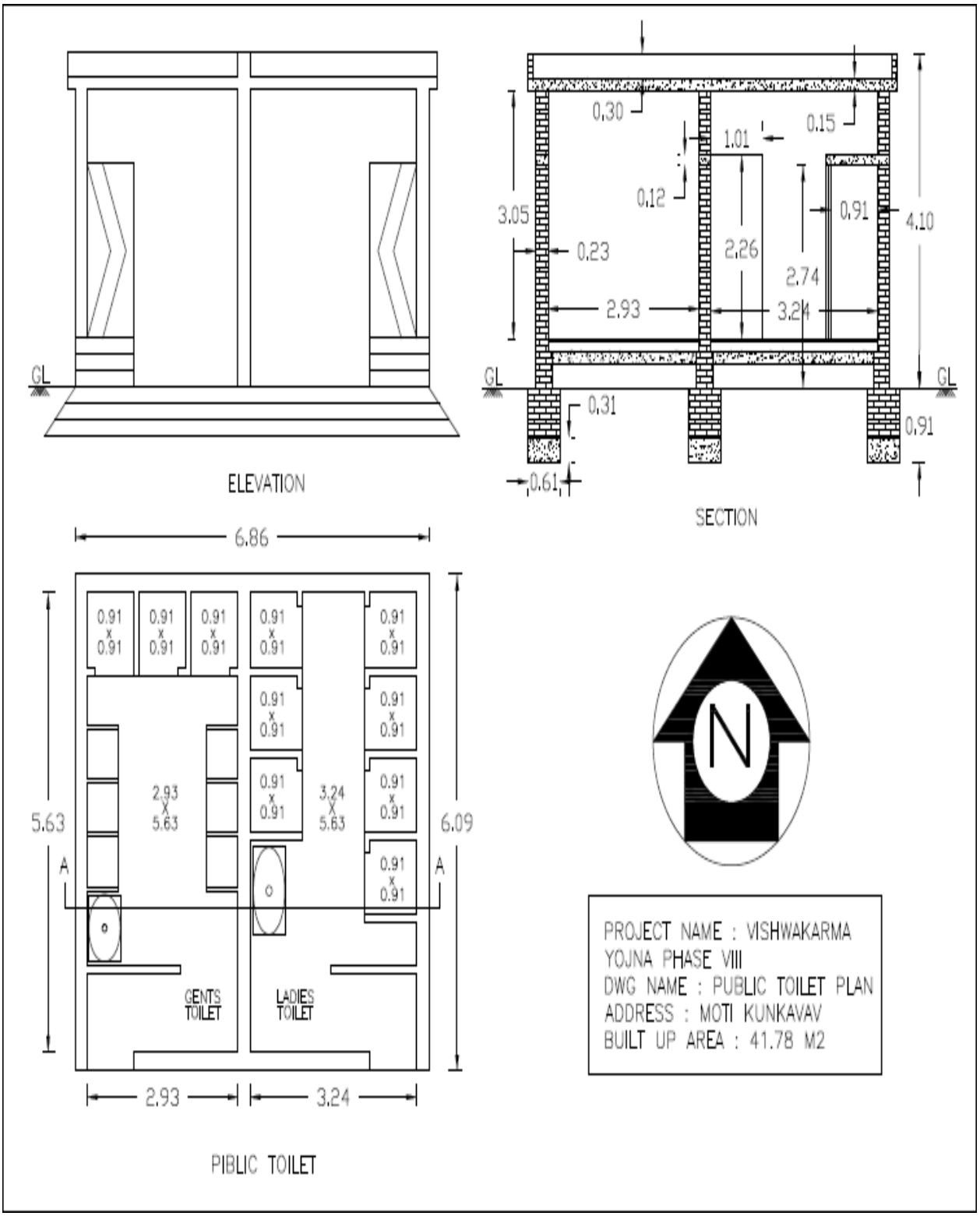
SECTION



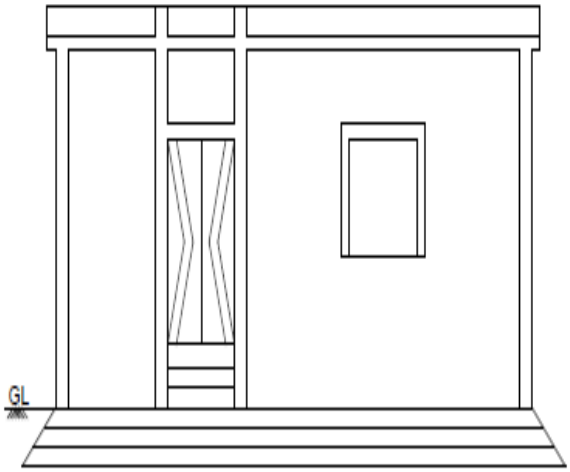
CYBER CAFE PLAN

PROJECT NAME : VISHWAKARMA YOJNA PHASE VIII
DWG NAME : CYBER CAFE PLAN
ADDRESS : MOTI KUNKAVAV
BUILT UP AREA : 20.08 M2

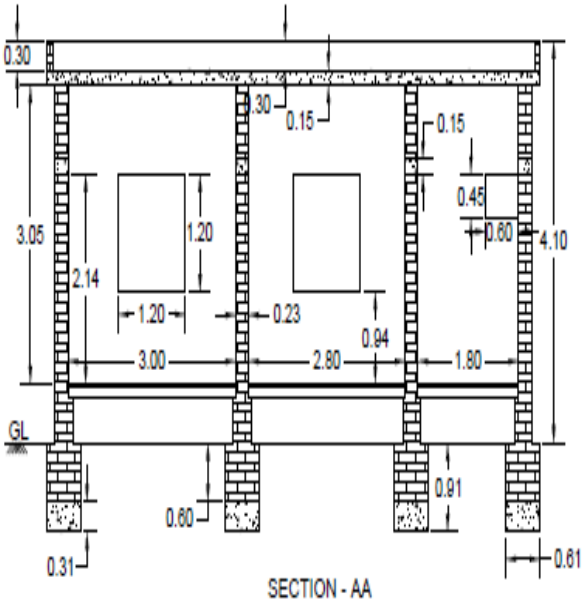
Design Infrastructure: Public Toilet
Village: Moti-kunkavav **District:** Amreli



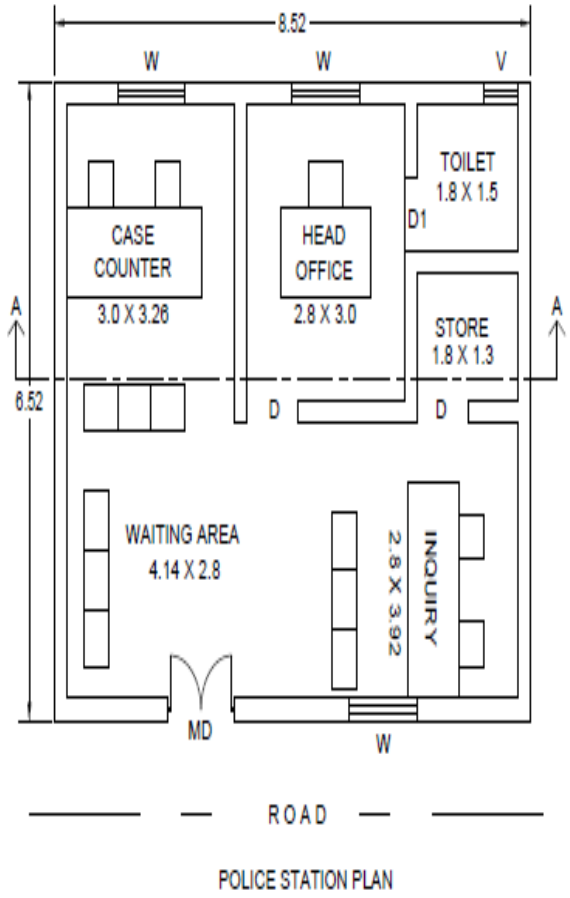
Design Infrastructure: Police Station
Village: Moti-kunkavav **District:** Amreli



ELEVATION



SECTION - AA



POLICE STATION PLAN

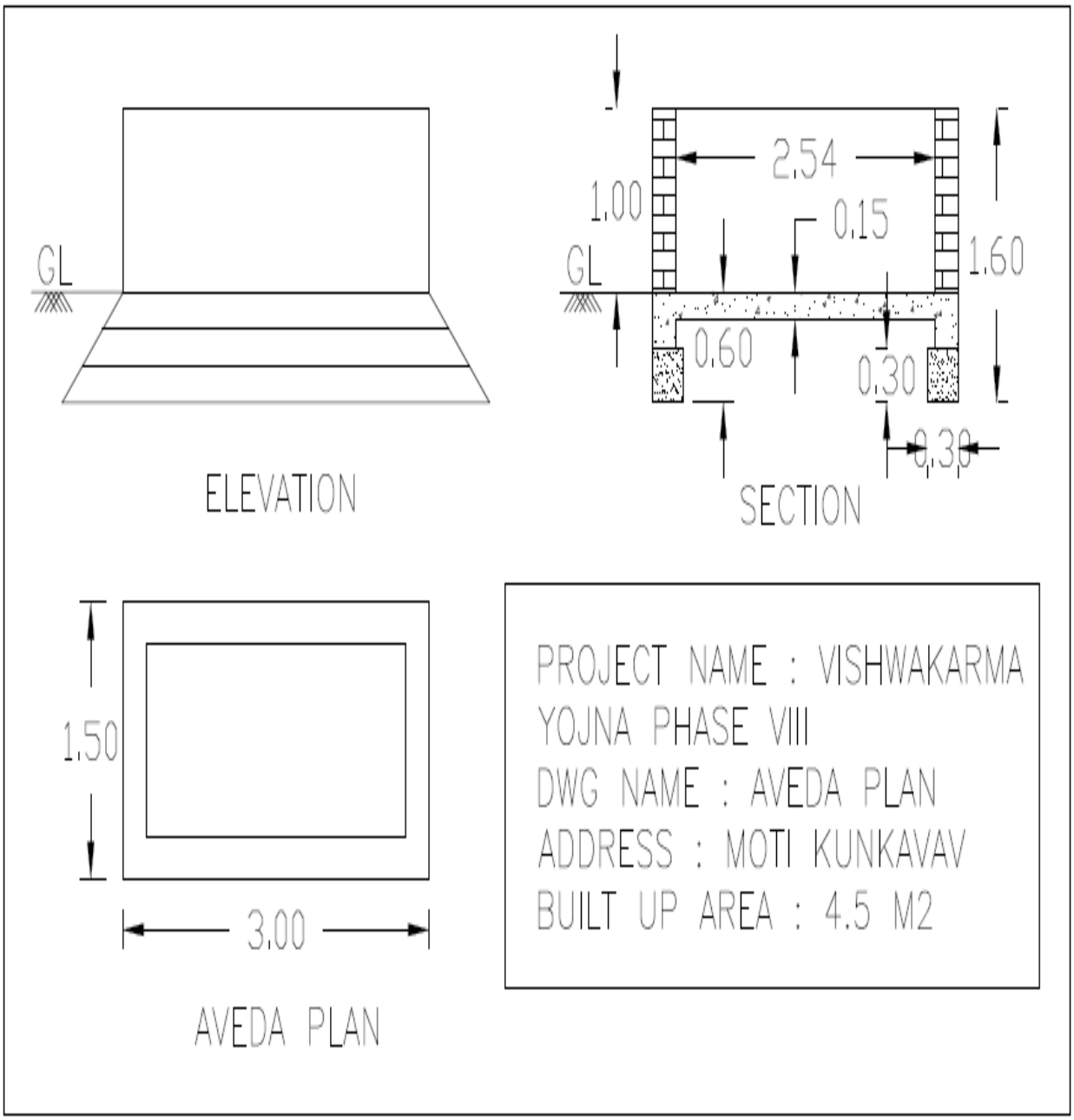
SCHEDULE FOR OPENING DOOR - WINDOWS

MD - MAIN DOOR - 1.2 X 2.14
D - DOOR - 0.91 X 2.14
D1 - DOOR - 0.75 X 2.14
W - WINDOW - 1.20 X 1.20
V - VENTILATOR - .60 X .45

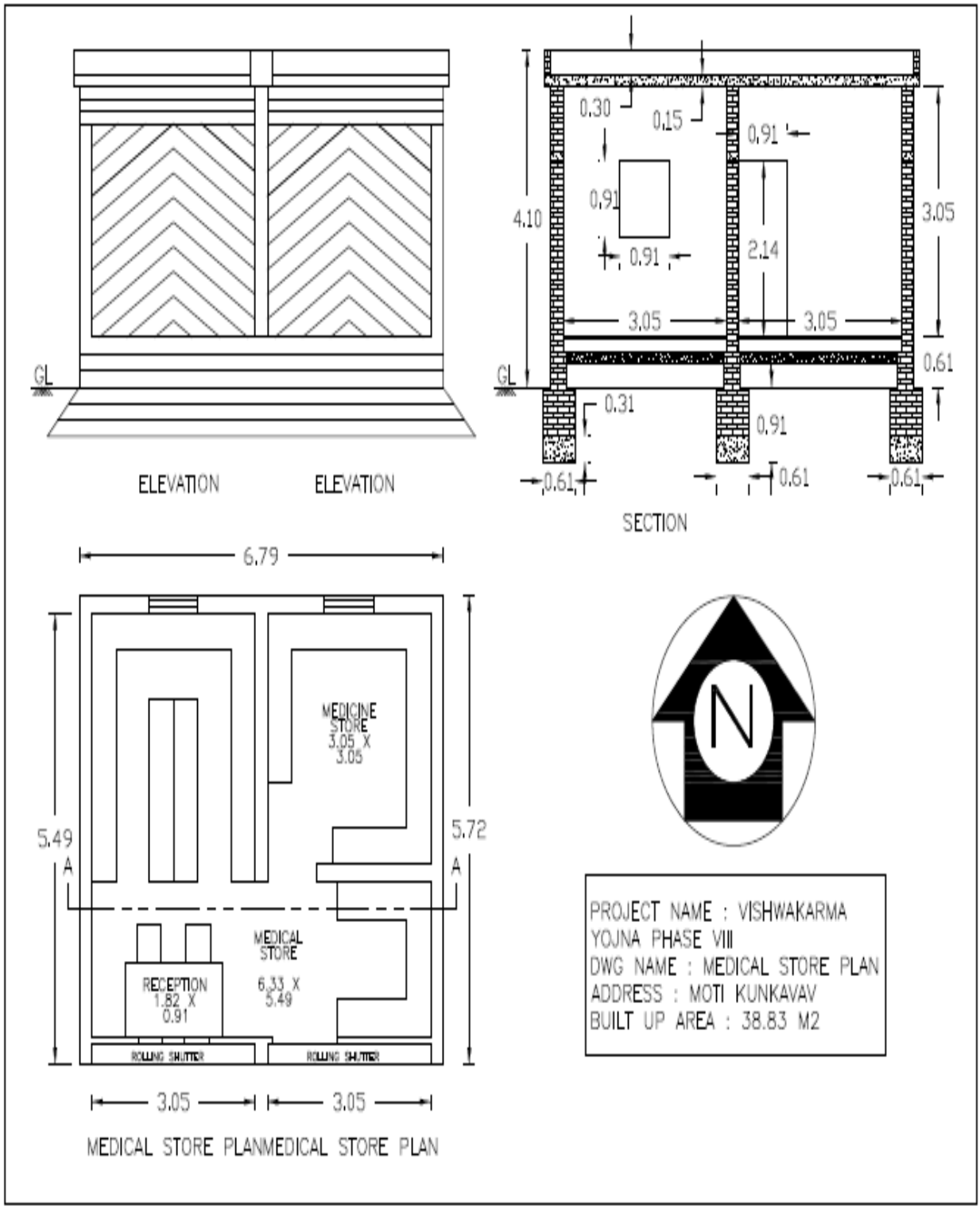
ALL DIMENTIONS ARE IN METER

PROJECT NAME : VISHWAKARMA YOJNA PHASE VIII
DWG NAME : POLICE STATION PLAN
ADDRESS : MOTI KUNKAVAV
BUILT UP AREA : 55.55 M2

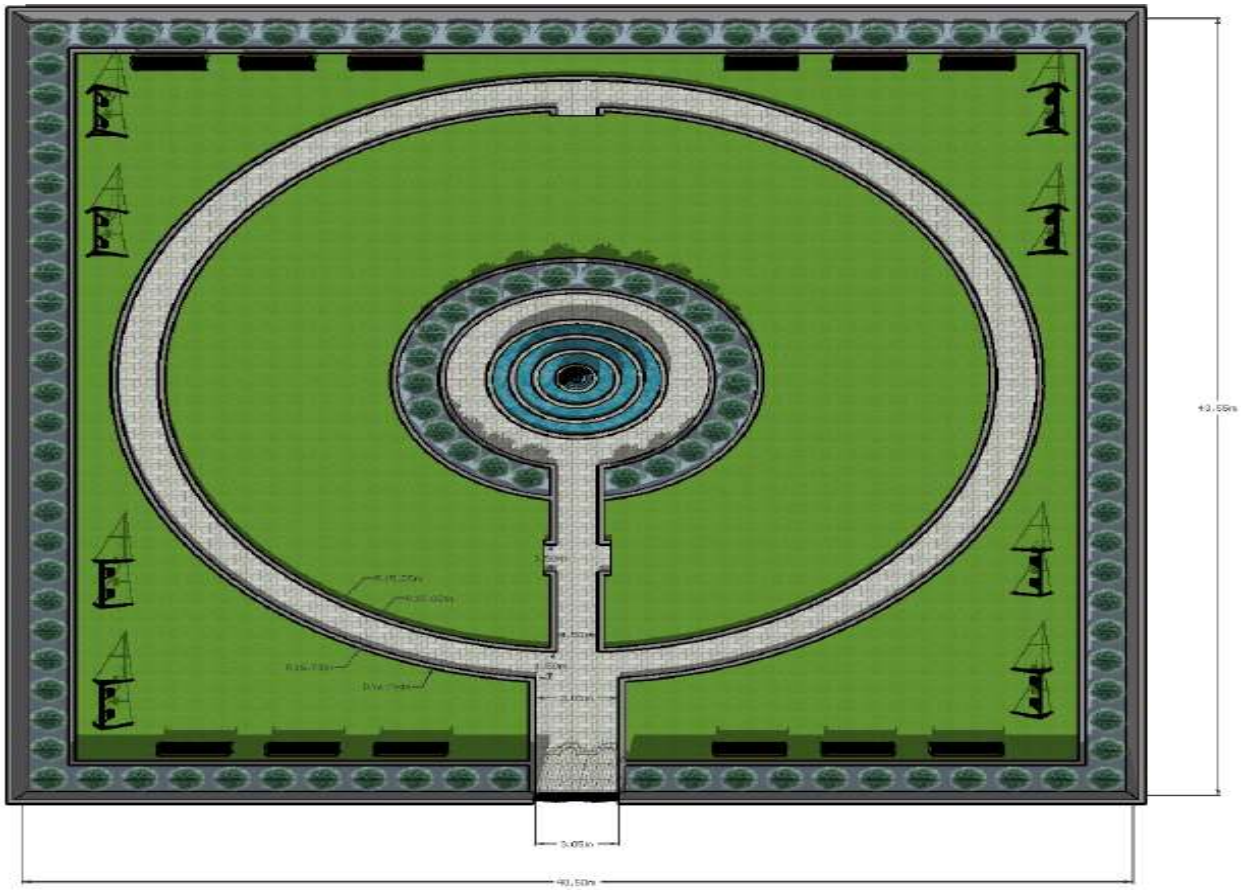
Design Infrastructure: Avedo
Village: Moti-kunkavav **District:** Amreli



Design Infrastructure: Medical store
Village: Moti-kunkavav **District:** Amreli

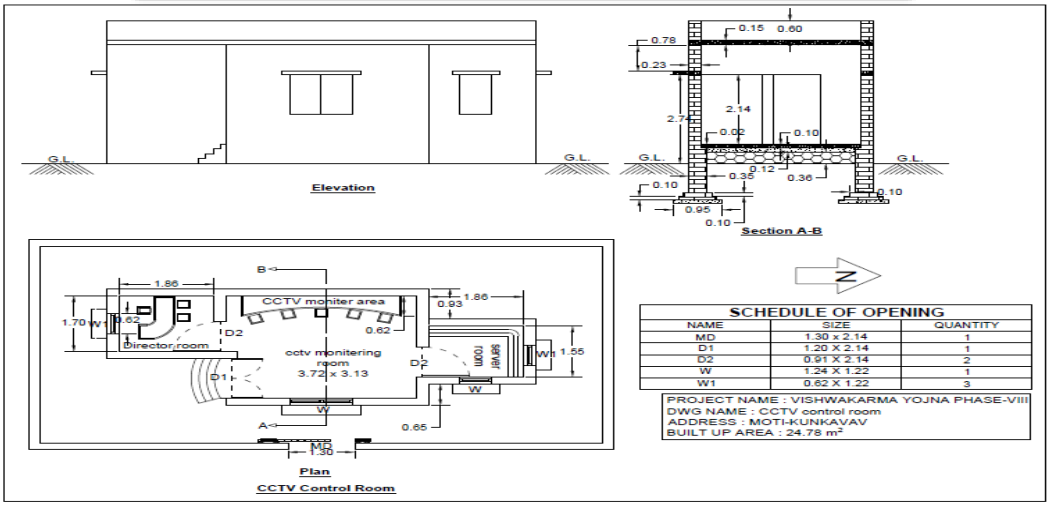


Design Infrastructure: Public Garden
Village: Moti-kunkavav **District:** Amreli

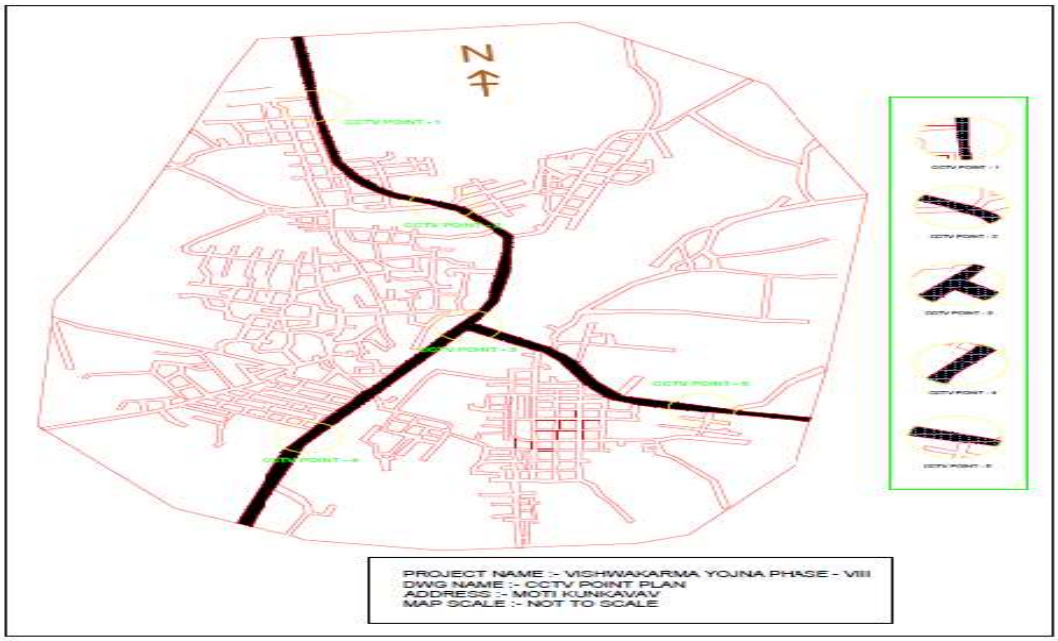


3D-VIEW

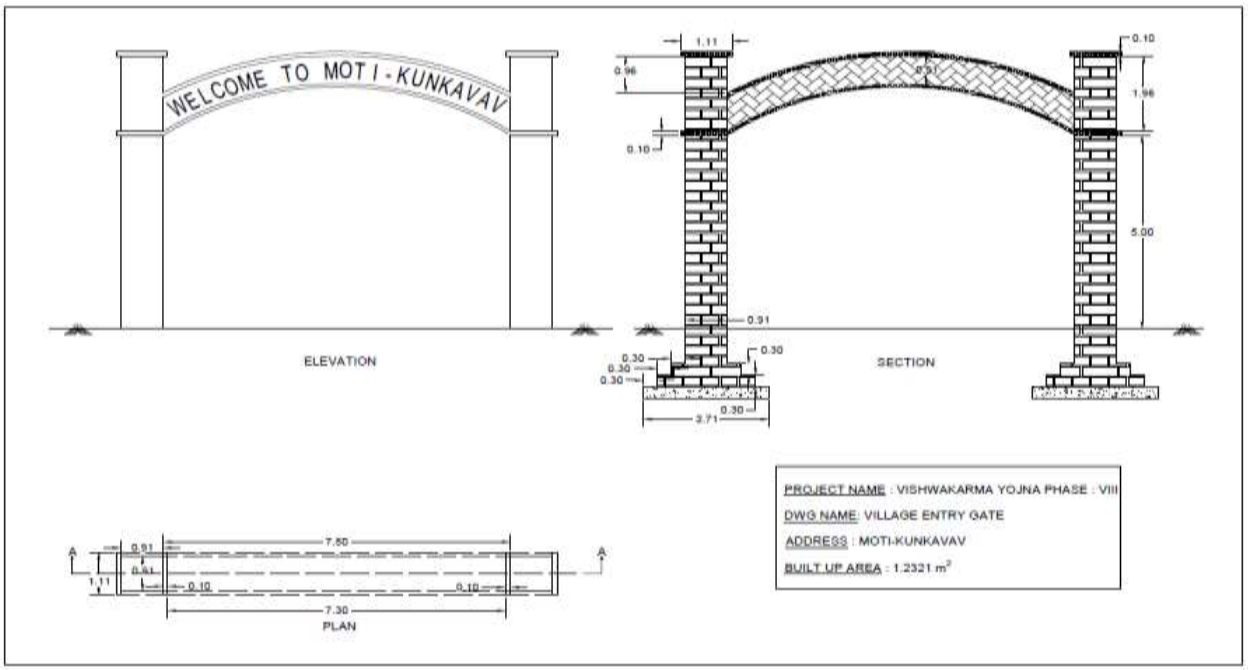
Design Infrastructure: CCTV with Control
Village: Moti-kunkavav **District:** Amreli



3D-VIEW

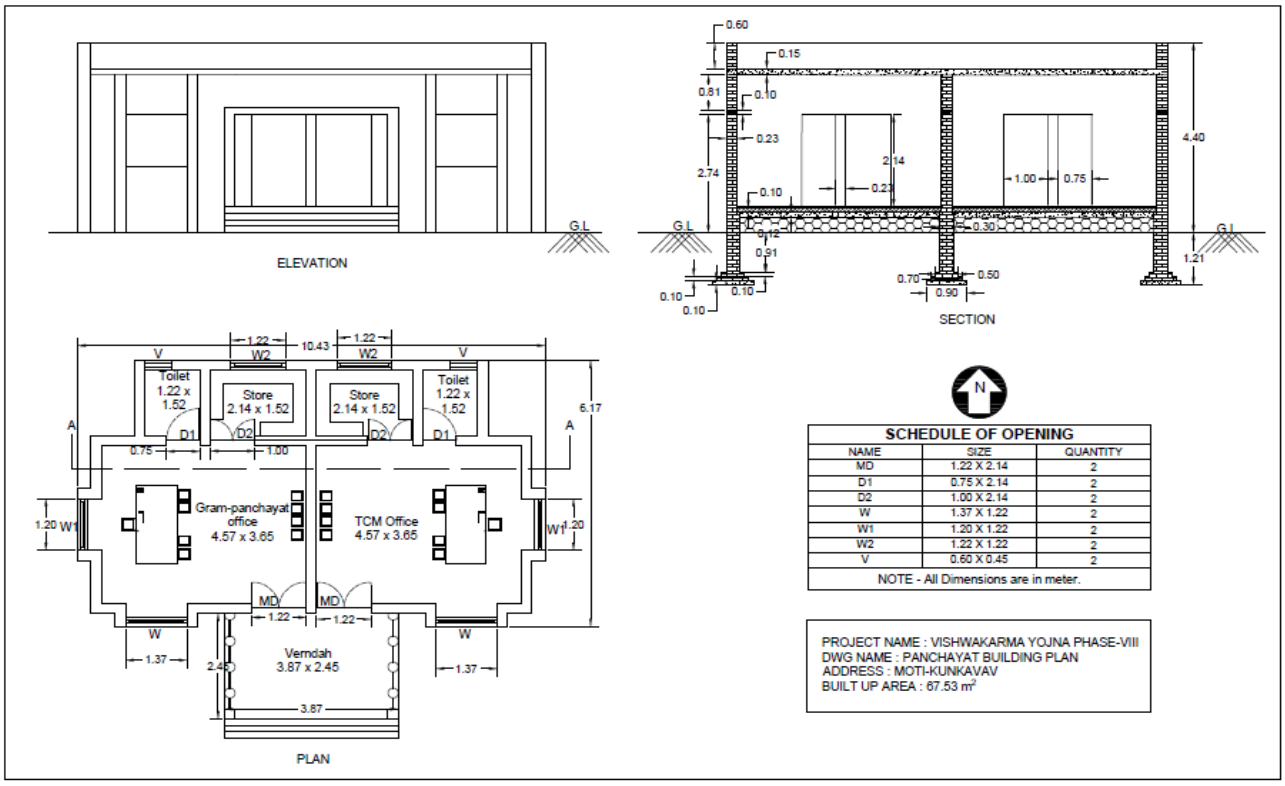


Design Infrastructure: Entrance Gate
Village: Moti-kunkavav **District:** Amreli



3D-VIEW

Design Infrastructure: Gram-Panchayat
Village: Moti-kunkavav **District:** Amreli



SCHEDULE OF OPENING

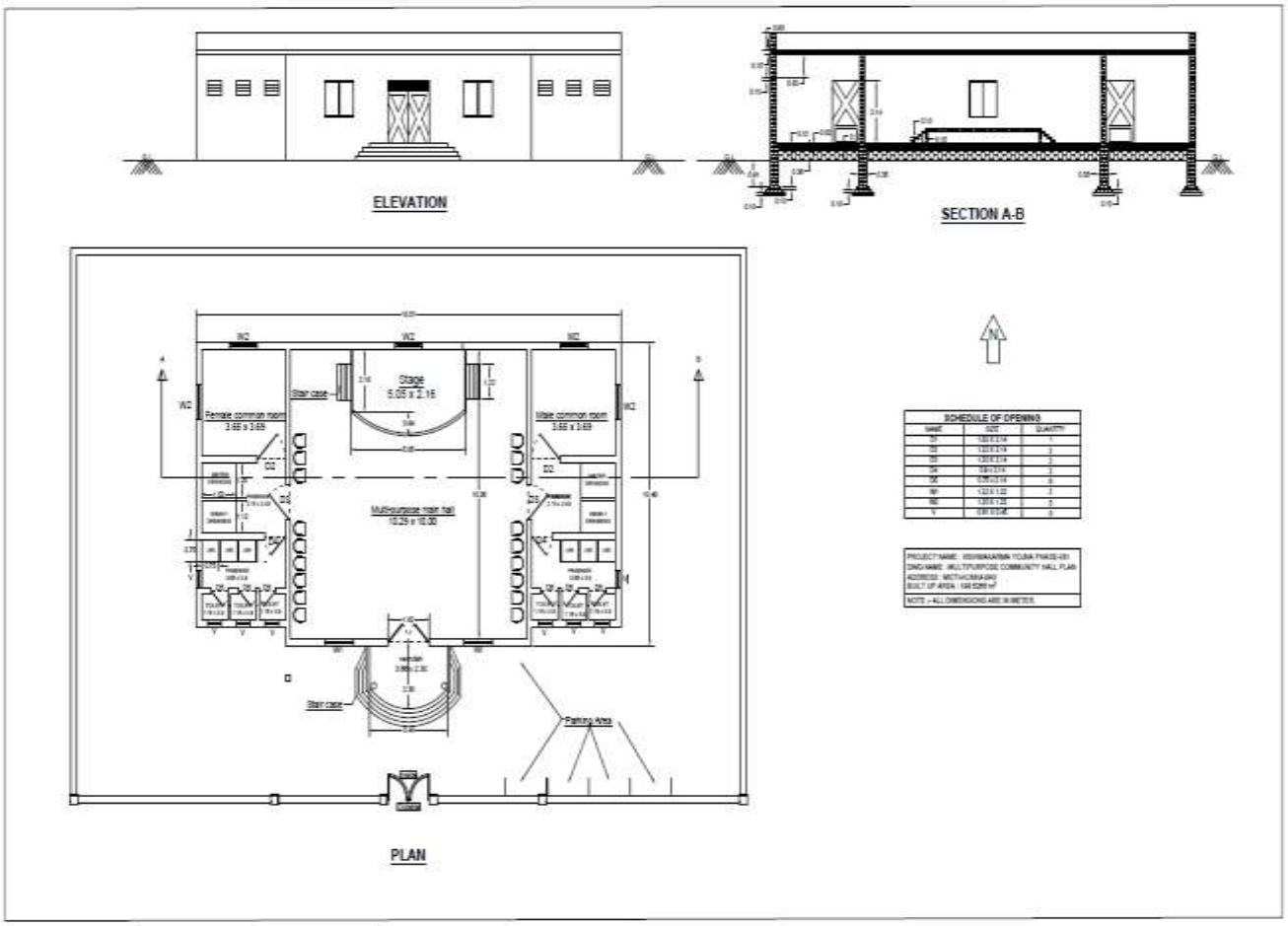
NAME	SIZE	QUANTITY
MD	1.22 X 2.14	2
D1	0.75 X 2.14	2
D2	1.00 X 2.14	2
W	1.37 X 1.22	2
W1	1.20 X 1.22	2
W2	1.22 X 1.22	2
V	0.60 X 0.45	2

NOTE - All Dimensions are in meter.

PROJECT NAME : VISHWAKARMA YOJNA PHASE-VIII
DWG NAME : PANCHAYAT BUILDING PLAN
ADDRESS : MOTI-KUNKAVAV
BUILT UP AREA : 67.53 m²

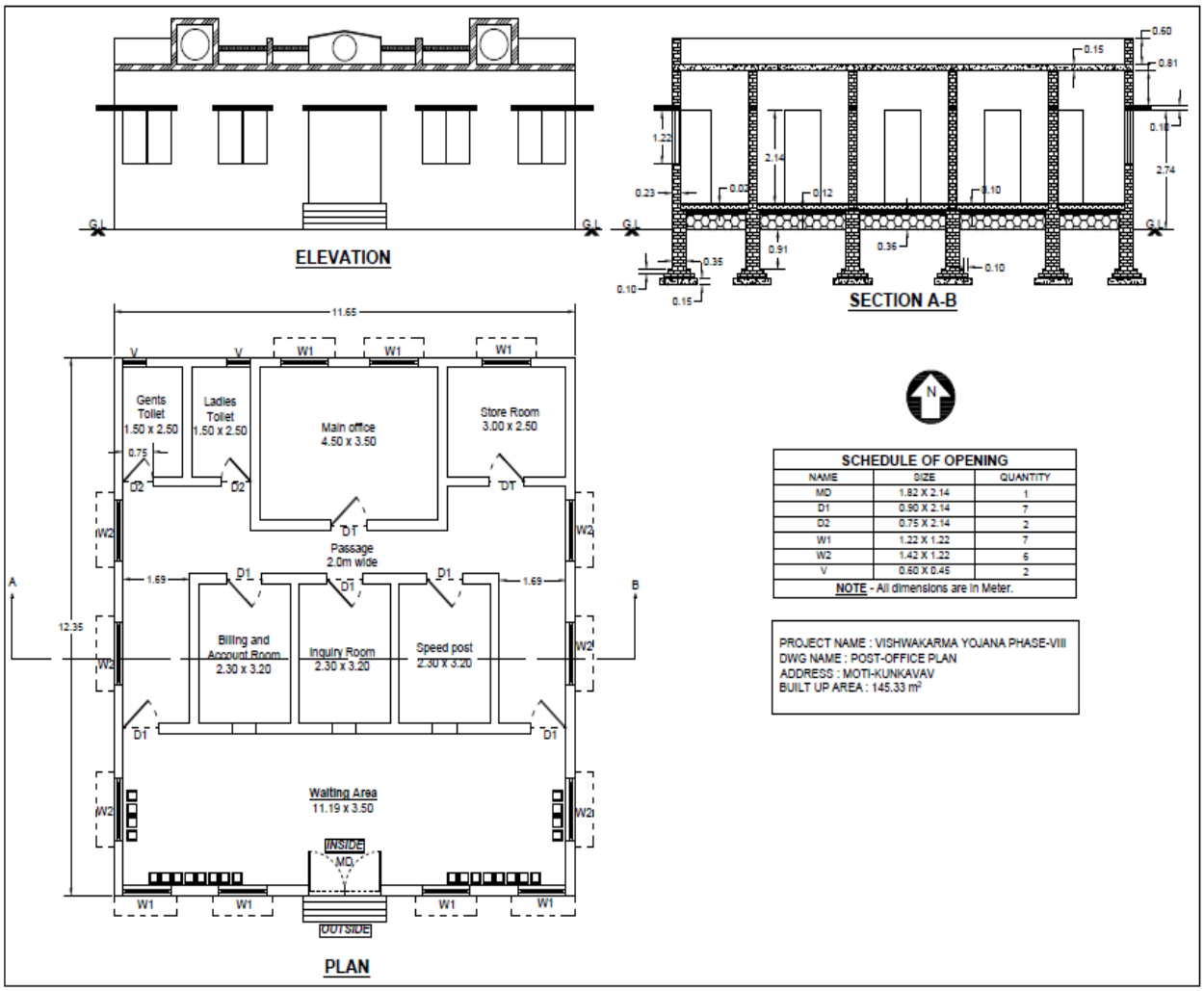
3D-VIEW

Design Infrastructure: Community Hall
Village: Moti-kunkavav **District:** Amreli



3D-VIEW

Design Infrastructure: Post-office
Village: Moti-kunkavav **District:** Amreli



SCHEDULE OF OPENING		
NAME	SIZE	QUANTITY
MD	1.82 X 2.14	1
D1	0.90 X 2.14	7
D2	0.75 X 2.14	2
W1	1.22 X 1.22	7
W2	1.42 X 1.22	6
V	0.60 X 0.45	2
NOTE - All dimensions are in Meter.		

PROJECT NAME : VISHWAKARMA YOJANA PHASE-VIII
DWG NAME : POST-OFFICE PLAN
ADDRESS : MOTI-KUNKAVAV
BUILT UP AREA : 145.33 m²

3D-VIEW