DETAIL PROJECT REPORT

VISHWAKARMA YOJNA: VIII
AN APPROACH TOWARDS RURBANISATION
Moti kharaj :Village

Dahod :District

PREPARED BY

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COLLEGE NAME: GOVERNMENT ENGIINEERING COLLEGE, DAHOD

NODAL OFFICERS NAME:
PROF: D.K.OZA

YEAR: 2020-21

GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad – 382424 Gujarat

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ON

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CERTIFICATE

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

Detail Project Report for ,

VILLAGE :Moti kharaj

DISTRICT : Dahod

Under

Vishwakarma Yojana: Phase-VIII

in partial fulfillment of the project offered by

GUJARAT TECHNOLOGICAL UNIVERSITY, CHANDKHEDA

during the academic year 2020-21.

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

STUDENT NAME	BRANCH NAME	ENROLLMENT NO
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Date of Report Submission:	
Principal Name and Signature:	Dr. Pragnesh K Brahmabhatt
VY-Nodal Officer Name and Signature:	PROF.D.K.OZA
Internal(Evaluator) Guide Name and Signature:	PROF.D.K.OZA
College Name:	Government Engineering College, Dahod
College Stamp:	

ABSTRACT

Vishwakarma Yojana project and how you do your vision project:
"Developing a village with a 'rural soul' but with all urban amenities that a city may have"
the vision of the project is to provide urban amenities in rural areas and maintaining the rural soul. This will help in developing villages sustainably, reduce migration from villages, and prevent the cities from the urban Pressure.
Our vision of the project is to improve practical knowledge and enhance the skills.

About your village description:
According to Census 2011 information the location code or village code of Moti Kharaj village is 519449. Moti Kharaj village is located in Dohad Tehsil of Dohad district in Gujarat, India. It is situated 5km away from Dohad, which is both district & sub-district headquarter of Moti Kharaj village. As per 2009 stats, Moti Kharaj village is also a gram panchayat.
The total geographical area of the village is 1019.01 hectares. Moti Kharaj has a total population of 12,581 peoples. There are about 1,544 houses in Moti Kharaj village. As per 2019 stats, Moti Kharaj villages come under the Garbada assembly & Dahod parliamentary constituency. Dohad is the nearest town to Moti Kharaj which is approximately 5km away.

About existing village condition:
A village called Moti Kharaj which is located 5 kilometers away from Dahod. All the people in that village are tribal. The total geographical area of the village is 1019.01. Naghrala (3 KM), Punsri (3 KM), Borkheda (3 KM), Brahmkheda (4 KM), Jalat (4 KM) are the nearby Villages to Moti Kharaj.Gujarati is the local language in this village. In this village good road facilities available. In this village 1 gram panchayat, 1 phc, 3 sub center, 7 primary schools, 1 secondary school and 11 Anganwadis is available. Three Major Occupation groups in village is farming, farm labour, ingaged in the home industry process. The main crops are maize, paddy, and pulses.

About your proposed designs your view for village development:
Low cost toilet, ATM, community hall, public library, cybercafe, supermarket

About future scope of the village development:
(i) Development of housing, education, health, transport.
(ii) Improvement of knowledge, skills, and capability.
(iii) Making agriculture a profitable and attractive occupation.
(iv) To avoid the migration of rural people to cities.
(v) To improve small scale and cottage industries.
(vi) Continued employment opportunities for Scheduled Castes, Scheduled Tribes, and other backward classes.
(vii) Providing essential facilities.

Key Words: Development, Rurban, Rurbanisation, Ifrastructure

ACKNOWLEDGEMENT

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

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

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

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

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An act of gratitude is expressed to our internal guide / Evaluator / Nodal Officer,
PROF. D.K.OZA from college Government Engineering College, Dahod for their Invaluable guidance, constant inspiration and active involvement in our project work.

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

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

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ABBREVIATIONS

SHORT NAME / SYMBOL	FULL NAME
PHC	Primary health care
CHC	Community Health Centers
URDPFI	Urban and Regional Development Plans Formulation and Implementation

CHAPTER-1

1 Ideal village visit from District of Gujarat State (Civil & Electrical Concept)

Ideal village – Bavka, dist. Dahod, Gujarat.

Smart village – Punsari, dist. Sabarkantha, Gujarat.

1.1 Background & Study Area Location

About Bavka

According to Census 2011 information the location code or village code of Bavka village is 519452. Bavka village is located in Dohad Tehsil of Dohad district in Gujarat, India. It is situated 15km away from Dohad, which is both district & sub-district headquarter of Bavka village. As per 2009 stats, Bavka village is also a gram panchayat.

The total geographical area of village is 2321.77 hectares. Bavka has a total population of 9,384 peoples. There are about 1,587 houses in Bavka village. As per 2019 stats, Bavka villages comes under Garbada assembly & Dahod parliamentary constituency. Dohad is nearest town to Bavka which is approximately 15km away.

About punsari

Punsari is a village located in Sabarkantha district in the state of Gujarat, India. Punsari is considered as India's smartest village. The village is located at about 80km from the state capital, Gandhinagar. Punsari is 20km from Parvati Hills. Parvati Hills is the largest table top land of India. The village follows the Panchayati raj system. The village extent is about 65 km. The land in use of agriculture is 6 hectares. The main non farming activity is dairy in this village. The village has undergone a transformation under the panchayat. There has been use of new and advanced technology in education. This village has wi-fi connection for all people. Efforts have been made for the empowerment of women and increasing 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 reception service. Consequently, Punsari received the award of being the best Gram Panchayat in Gujarat. The village's model has been appreciated by delegates from Nairobi and they are keen to replicate this in Kenyan villages.

Study Area Location

Fig1.1.1 Bavka map

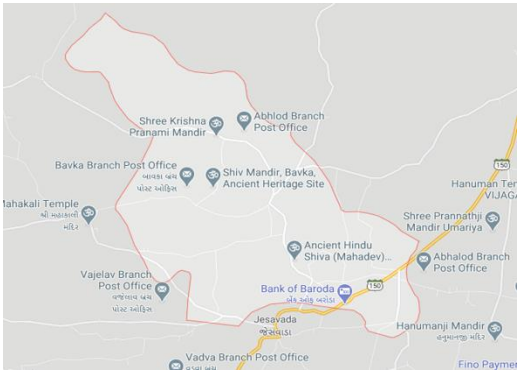
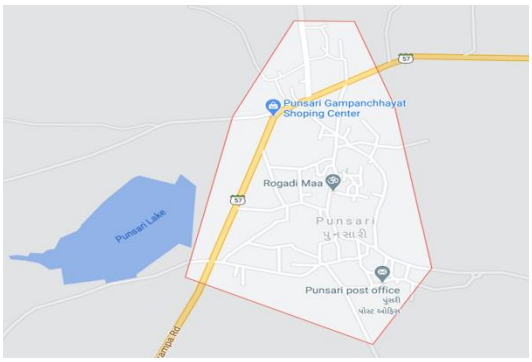


Fig1.1.2 Punsari map



1.2Concept: Ideal Village, Normal Village

1.2.1Objectives

Following are the various objectives of the study

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

1.2.2Example / Live Case studies of ideal village of India/Gujarat

1)Punsari (Gujarat):

Punsari, located in Gujarat, puts most metros to shame. Funded by the Indian government and the village's own funding model, Punsari is no NRI-blessed zone. The village also boasts of a mini-bus commute system and various other facilities.

2)Dharnai (Bihar) First fully solar powered village:

Dharnai, a village in Bihar, beat 30 years of darkness by developing its own solar-powered system for electricity. With the aid of Greenpeace, Dharnai declared itself an energy-independent 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.

3)Pothanikkad (Kerala) The village with 100% literacy rate:

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

4)Mawlynnong (Meghalaya) Asia's cleanest village:

Mawlynnong, a small village in Meghalaya, was awarded the prestigious tag of 'Cleanest Village in Asia' in 2003 by Discover India Magazine. Located at about 90 kms 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 lying around there.

1.2.3The Idea of a model/Smart Village

The idea of an "Adarsh Gram" or model village has been explored earlier as well, most notably through the Pradhanmantri Adarsh Gram Yojana, launched by the Central Government in 200910. The scheme was implemented in pilot mode in 1000 villages of Assam, Bihar, Himachal Pradesh,

Rajasthan and Tamil Nadu, with an allocation of Rs 10 lakh per village. This limit was later raised to Rs 20 lakh per village. The target villages under the scheme were those with more than 50% of the population belonging to Scheduled Castes (SCs). Additionally, State governments have also taken steps in this direction. Himachal Pradesh launched a Mukhya Mantri Adarsh Gram Yojana along similar lines in 2011, with the allocation of Rs 10 lakh per village.

1.2.4 Ancient History Civil / Electrical concept about Indian Village / other Countries Perspective about village and its new Development

- Rural development is the process of improving the quality of life and economic well-being of people living in rural areas, often relatively isolated and sparsely populated areas.

- Rural development has traditionally centered on the exploitation of land-intensive natural resources such as agriculture and forestry. However, changes in global production networks and increased urbanization have changed the character of rural areas. Increasingly tourism, niche manufacturers, and recreation have replaced resource extraction and agriculture as dominant economic drivers.

- The need for rural communities to approach development from a wider perspective has created more focus on a broad range of development goals rather than merely creating incentive for agricultural or resource based businesses. Education, entrepreneurship, physical infrastructure, and social infrastructure all play an important role in developing rural regions.

- Rural development is also characterized by its emphasis on locally produced economic development strategies.

- In contrast to urban regions, which have many similarities, rural areas are highly distinctive from one another. For this reason there are a large variety of rural development approaches used globally.

- Rural development is a comprehensive term. It essentially focuses on action for the development of areas outside the mainstream urban economic system. We should think of what type of rural development is needed because modernization of village leads to urbanization and village environment disappears.

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

smart village punsari

Punsari is a village located in Sabarkantha district in the state of Gujarat, India. Punsari is considered as India's smartest village. The village is located at about 80km from the state capital, Gandhinagar. Punsari is 20km from Parvati Hills. Parvati Hills is the largest table top land of India. The village follows the Panchayati raj system. The village extent is about 65 km. The land in use of agriculture is 6 hectares. The main non farming activity is dairy in this village. The village has undergone a transformation under the panchayat. There has been use of new and advanced technology in education. This village has wi-fi connection for all people. Efforts have been made for the empowerment of women and increasing 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 reception service. Consequently, Punsari received the award of being the best Gram Panchayat in Gujarat. The village's model has been appreciated by delegates from Nairobi and they are keen to replicate this in Kenyan villages.

Demographics

The population of Punsari was 5500 as per 2011 census of India which has increased to 5500 in 2011. As of June 2012, the population is 6000.

Urbanization

There is a 66 KV sub-station that supplies power to the village. The Sarpanch aims at getting Wi-Fi connectivity in the entire village so that the villagers can use unlimited internet once they purchase the modem from the panchayat office.

The panchayat in this village has made efforts to provide the best possible facilities to students. Air-conditioners and CCTV cameras are installed in the primary schools. Apart from schools, 25 CCTVs are installed at prime junctions of the village so that the litterbugs can be spotted and punished.

Mini-buses are used for transport purpose within the village. The panchayat has started a bus facility called the Atal Express for women which is used for the import of milk.

For communication purposes, 120 waterproof speakers have been installed, which are used by the Sarpanch to inform the people of new schemes and to make important announcements. The speakers are also used to play bhajans, shlokas, and slogans of Mahatma Gandhi.

The total estimate 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 National 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 prestigious Rajiv Gandhi Best Gram Panchayat National Award for the Year-2012, conferred by the Academy of Grassroots Studies and Research of India (AGRASRI), Tirupati, Andhra Pradesh.<www.agrasri.org.in> at a function held in New Delhi,from the Governor of Punjab Shri Shivraj V. Patil,on 20 August 2012.

Education system

There are five primary schools in Punsari. All the five schools have CCTV cameras placed to enable parents check their wards' performance without interrupting the lectures and also to keep a watch on the teachers. The school drop-out rate is zero in Punsari. The village was rated B+ during Ganotsav 2011 which is an annual education campaign run by the state government.

Water system

The panchayat has installed a reverse osmosis plant in 2010 to ensure the supply of clean drinking water to the villagers. During weddings and other ceremonies, water tankers are arranged. Drinking water taps are available for all. The village also has a proper sanitation and drainage system, which is completely underground.

Fig 1.3.1 Punsari gram panchayat

fig1.3.2primary school

Fig 1.3.3 PHC

Fig 1.3.4 Punsari sub station

Fig 1.3.5 Canal solar power

Fig 1.3.6 panchayat bus

Fig 1.3.7 Solar street, loudspeaker and cctv

Fig 1.3.8 door to door waste collection

1.4 SWOT analysis of Ideal village / Smart Village

Strength

- Good housing condition,
- Road network,
- Health, Education,
- infrastructure facilites,
- employment

Weakness

Less scope of green development in future

Opportunities

- Use of solar panels,
- green development,
- water supply,
- bus stand

Threats

Poor maintenance, increasing pollution and population.

1.5 Future prospects of Development of the Ideal village / Smart Village

For future prospect, the village punsari can use more advanced technologies for agricultural prospect and for other requirements also**.**

1.6 Benefits of the visits of Ideal village / Smart Village

By the visit of the village bavka and punsari, we got an idea about an ideal village. We had seen many kind of new technologies which can be used in village that are being used in the urban area. By this visit of bavka and punsari, it improved our communication skills and we knew how to interact with the different peoples.

1.7Civil aspects required in Ideal village

We have observed the balance of commercial, residential and recreational land use in the bavka village but as per the feedback which were given by villagers some facilities are lacking in the village from civil aspects and these are, Gas Pipelines, Biogas Plant, Cold Storage Area, Rain Water Harvesting, Solar Street Lights, Public WiFi Connection, Fire Station , e

CHAPTER 2

2.ABOUT VILLAGE Literature Review – (Civil & Electrical Concept)

2.1Introduction: Urban & Rural village concept

Urban: Urban is that area where the population density is more and new facilities are provided to the people. Urban area is the region surrounding a city. Most of inhabitants of urban areas have non-agricultural jobs. Urban areas have municipality, corporation, cantonment board or notified town area committee etc. According to census 2011, there are 7,935 towns, 4,041 statutory town and 3,894 census towns.

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

2.2Importance of the Rural development

- Removal of unemployment;
- Reduction in under-employment;
- Improve the standard of living;
- Adequate income for nutritious food;
- Sufficient clothes;
- Availability of soft drinking water;
- Hygienic living conditions;
- Satisfactory educational facilities for learning;
- Suitable medical facilities for treatment;
- Proper house to live in;
- Appropriate socio-cultural activities to enrich oneself;
- Adequate all-weather roads for better communication.

2.3Ancient Villages / Different Definition of: Rural Urban Villages

Rural areas have low population density and large amount of undeveloped land. Agricultural activities are more in rural areas.

Census rural refers to individuals living in the countryside outside centres of 1000 or more population.

Rural and small town refers to individuals in towns or municipalities outside the commuting zone of larger urban centers. These individuals may disaggregated into zones according to the degree of a larger urban center.

2.4Scenario: Rural / Urban village of India population Growth

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

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

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

Table 2.5.1 Population of Rural and Urban areas as per census 2001 and 2011

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

Rural-Urban Distribution: 68.84% & 31.16

Level of urbanisation increased from 27.81% in 2001 census to 31.16% in 2011. Literacy rates (in %)

	2001	2011	Difference
India	64.8	74.0	+9.2
Rural	58.7	68.9	+10.2
Urban	79.9	85.0	+5.1

Table: 2.5.2 Literacy Rates in Rural and Urban areas as per Census 2001 and 2011

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

	2001	2011	Difference
Male			
India	75.3	82.1	+6.8
Rural	70.7	78.6	+7.9
Urban	86.3	89.7	+3.4
Female			
India	53.7	65.5	+11.8
Rural	46.1	58.8	+12.7
Urban	72.9	79.9	+7.0

Table: 2.5.3 Literacy Rates in Rural and Urban area as per the males and females Gujarat

Census:

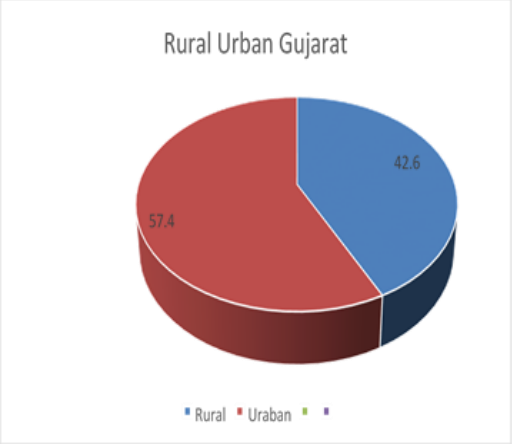


Figure.2.5.1 Population of Gujarat in %

Population of Gujarat:

Population	2001	2011
Male	26,385,577	31,491,260
Female	24,285,440	28,498,432
Total	50,671,017	60,439,692

Table: 2.5.4 Population of Gujarat as per census 2001 and 2011

2.6 Rural Development Issues - Concerns – Measures

Following issues are concern with rural areas:

i) People are directly or indirectly dependent on agriculture and a large number of landowners have small and medium-sized landholding.
ii) Economy of the people living in rural areas is low.
iii) The price the farmers get for their produces is less in relation to the work they put in.
iv) People have to migrate to the urban areas due to unavailability of education.
v) The other rural problems are due to the fact that since the rural people do not live in concentrated masses, the availability of specialised service to them is minimum.
vi) Very less people are employed in the rural areas.
vii) Lack of physical facilities in rural areas.
viii) Lack of recreation facilities.
ix) Farmers are not having market area for selling their goods directly to the market.

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

Various infrastructure facilities

An ideal should have the following facilities

1.Physical Facilities

Road facilities:

An ideal village must have good road facilities that the people can easily move from one place to other. The roads linking with the other nearby village or town or city must be provided.

Dwelling houses:

The dwelling-house in an ideal village are very neat and clean. The dwellers of these houses look to the house sanitation and house-drainage. The houses have sufficient windows to let in light and air. All the houses are roofed by good tiles at least.

Electricity:

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

2.Social Facilities:

Sanitation and Drainage:

An ideal village has good system of sanitation and drainage. Because filth and rubbish of the village should be regularly removed away into the compost pits. An ideal village has very good drains so that the dirty water of the village is properly drained away.

Food and fodder:

The villagers grow food for themselves and fodder for their cattle. They eat fresh and healthy food. They grow good grass for fodder and also leave sufficient land for pasture.

Drinking Water:

An ideal village should have good supply of drinking water. There are enough tube

wells in an ideal village. There are separate ponds for men and cattle.

Agriculture and Industry:

People of an ideal village are good farmers and good artisans. They grow food crops,

commercial crops and oil-seeds. They take up improved method of farming. They do

all kinds of home industry including spinning and weaving.

Educational Facilities:

There are Primary schools, High schools and craft schools in an ideal village. Primary education is free and compulsory.

Clinical Facilities: In an ideal village,

there are clinical facilities for men and the domestic animals. Hence, there are

dispensaries and veterinary dispensaries.

3.Socio-Cultural Facilities:

These includes facilities like playgrounds, library, gardens, Lake Etc.

4. Sustainable Facilities:

An ideal village should have facilities like biogas plant, solar systems, use of rain water harvesting system etc.

2.8Other Projects / Schemes of Gujarat / Indian Government

Following are the projects/schemes by Govt. Sector:

i) Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) ii) Pradhan Mantri Gram Sadak Yojana (PMGSY) iii) Indira Awas Yojana (IAY)

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

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

This work guarantee also serve other objectives: generating productive assets and skills thereby boosting the rural economy, protecting the environment, empowering rural women, reducing rural urban migration and fostering social equity, among others. The Act offers an opportunity to strengthen our democratic processes by entrusting principle role to Panchayats at all levels in its implementation and promises transparency through involvement of community at planning and monitoring stages.

ii)Pradhan Mantri Gram Sadak Yojana (PMGSY):

Pradhan Mantri Gram Sadak Yojana (PMGSY) was launched on 25th December 2000 as a fully funded Centrally Sponsored Scheme to provide all weather road connectivity in rural areas of the country. The programme envisages connecting all habitations with a population of 500 persons and above in the plain areas and 250 persons and above in hill States, the tribal and the desert areas.

According to latest figures made available by the State Governments under a survey to identify Core Network as part of the PMGSY programme, about 1.67 lakh Unconnected Habitations are eligible for coverage under the programme. This involves construction of about 3.71 lakh km. of roads for New Connectivity and 3.68 lakh km. under upgradation.

The President of India, in his address to Parliament on 25th February, 2005 announced a major business plan for rebuilding rural India called Bharat Nirman. The Finance Minister, in his Budget Speech of 28th February,2005, identified Rural Roads as one of the six components of Bharat Nirman and has set a goal to provide connectivity to all habitations with a population of 1000 persons and above (500 persons and above in the case of hilly or tribal areas) with an all-weather road. A total of 59564 habitations are proposed to be provided new connectivity under Bharat Nirman. This would involve construction of 1, 46,185 kms of rural roads. In addition to new connectivity, Bharat Nirman envisages upgradation/renewal of 1, 94,130 kms of existing rural roads. This comprises 60% upgradation from Government of India and 40% renewal by the State

Governments.

iii)Indira Awas Yojana (IAY) :

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

Objective:

The objective of Indira Awaas Yojana is primarily to help construction of dwelling units by members of Scheduled Castes/ Schedule Tribes, freed bonded labourers and also non-SC/ST rural poor below the poverty line by providing them with grant-in-aid.

Other private project

In other projects for the development of the rural area is the Public Private Partnership (PPP).

Public-Private-Partnership - The Concept:

Public-Private-Partnership or PPP is a mode of implementing government programmes/schemes in partnership with the private sector. The term private in PPP encompasses all non-government agencies such as the corporate sector, voluntary organizations, self-help groups, partnership firms, individuals and community based organizations, PPP, moreover, subsumes all the objectives of the service being provided earlier by the government, and is not intended to compromise on them. Essentially, the shift in emphasis is from delivering services directly, to service management and coordination. The roles and responsibilities of the partners may vary from sector to sector. While in some schemes/projects, the private provider may have significant involvement in regard to all aspects of implementation; in others s/he may have only minor role.

The potential benefits expected from PPP could be mentioned as below:

• Cost-effectiveness- since selection of the developer/ service provider depends on competition or some bench marking, the project is generally more cost effective than before.

•Higher Productivity- by linking payments to performance, productivity gains may be expected within the programme/project.

•Accelerated Delivery – since the contracts generally have incentive and penalty clauses vis-a-vis implementation of capital projects/programmes this leads to accelerated delivery of projects.

•Clear Customer Focus - the shift in focus from service inputs to outputs create the scope for innovation in service delivery and enhances customer satisfaction.

•Enhanced Social Service- social services to the mentally ill, disabled children and delinquents etc. require a great deal of commitment than sheer professionalism. In such cases it is Community/Voluntary Organizations (VOs) with dedicated volunteers who alone can provide the requisite relief.

•Recovery of User Charges- Innovative decisions can be taken with greater flexibility on account of decentralization. Wherever possibilities of recovering user charges exist, these can be imposed in harmony with local conditions.

CHAPTER 3

3. Smart (Cities / Village) Concept Idea and its Visit (Civil & Electrical Concept)

Smart village punsari

Technology: Use of technology is a key factor for making a village smart. Digital education and use of technology through mobile phones, mobile applications and computers, etc. will put smart village development on a faster pace.

Access of power supply to Punsari village has ensured uninterrupted power. It has helped to improve the socioeconomic infrastructure of village. Power generated through waste collection has made village sustainable and independent, it has potential to create a source of revenue for village. Wi-Fi connectivity in village will bring transformation to access of information by villagers. This helps villagers to keep pace with agricultural assistance and trade and to understand the different schemes run by government. Primary school in village has set up the foundation for education. CCTV camera across village had made continuous surveillance possible and the crime rate is negligible. Availability of local transport system provides better connectivity to outer world and it has improved the economic activity of village. Availability of clean R.O water for village has improved the health condition. Availability of toilet and adequate drainage has improved the sanitation facility of village. Local skill development and Anganwadi has opened the door for employment in village. Healthcare centre and veterinary centre takes care of health issues of villagers and cattle. Infant mortality rate has reduced to zero. Monthly newspaper in village has improved awareness of villagers about own village and activities happening around. There are couple of things which have been ignored like disaster management system for village and clean energy integration. Such provision will make villages more responsive to emergencies and renewable integration will improve the reliability of power.

3.1Introduction: Concepts, Definitions and Practices

Concept

Smart Village concept developed in rural area that provides solutions to problems occurred and improves the quality of life. The main problems faced by rural areas are cover poverty, low level of education, and limited access to technology.

Smart Village concept and the importance of digital transformation for rural areas.

Definition of Smart Villages

Smart Villages are communities in rural areas that use innovative solutions to improve their resilience, building on local strengths and opportunities. They rely on a participatory approach to develop and implement their strategy to improve their economic, social and/or environmental conditions, in particular by mobilising solutions offered by digital technologies. Smart Villages benefit from cooperation and alliances with other communities and actors in rural and urban areas. The initiation and the implementation of Smart Village strategies may build on existing initiatives and can be funded by a variety of public and private sources.

Communities in rural areas can include one or several human settlements, without any restrictions regarding the administrative boundaries or the number of inhabitants. As regards eligibility conditions for support, Member States may use definitions of rural areas as provided for by the OECD, EUROSTAT or other definitions.

A participatory approach means an active participation of the local community in the drawing up and decision-making regarding the Smart Village strategy. During the implementation phase, the participatory approach will ensure that the needs for capacity building and for training of people

are properly addressed.

Digital technologies include, for example, information and communication technologies, the exploitation of big data or innovations related to the use of the Internet of Things (IoT). They act as a lever to enable Smart Villages to become more agile, make better use of their resources and improve the attractiveness of rural areas and the quality of life of rural residents. The use of digital technologies is not a precondition for becoming a Smart Village. Where possible, high-speed broadband will facilitate the deployment of the digital solutions. Smart Village strategies respond to the challenges and needs of their territory by building on their local strengths and assets. Strategies must determine short, medium and long-term goals. Progress must be measurable through performance indicators that will be set in a roadmap. These roadmaps should be reviewed at regular intervals to allow continuous improvement. Strategies may aim, for example: to improve access to services (in various fields such as health, training or transport), to enhance business opportunities and create jobs, to the development of short food supply chains and farming practices, to the development of renewable energies, to development of a circular economy, to a better exploitation of natural resources, to adapt to climate change, to preserve the environment and biodiversity, to a better valorisation of the cultural heritage for a greater tourist attractiveness etc.

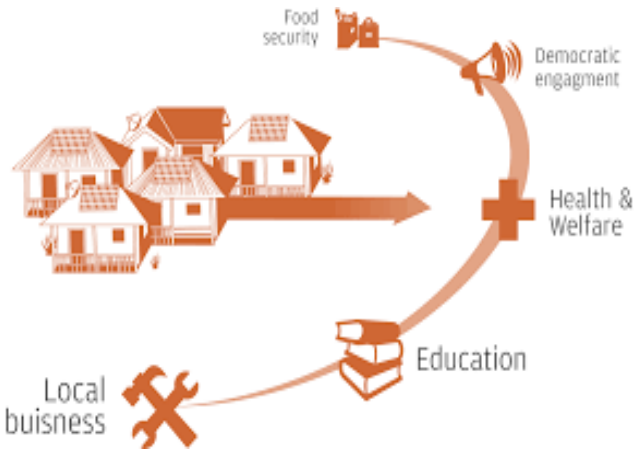


Fig 3.1.1 Smart Villages

3.2Vision-Goals, Standards and Performance Measurement Indicators

In order to enhance and improve the quality of "public services", a sound and clearquality management concept is needed. From he process perspective, "high quality" means that a process must deliver satisfaction the ultimate output variable of any process. A smart city uses information and communication technologies (ICT) in order to increase the quality of its services—which should result in the high satisfaction of the inhabitants.

CITY keys provide a validated, holistic performance measurement framework for monitoring and comparing the implementation of Smart City solutions, with the objective of speeding up the transition to low carbon, resource-efficient cities. The indicators are arranged in an extended triple bottom line sustainability framework, including the themes people, planet, prosperity, governance and propagation, and completed with specific smart city indicators. Under the main themes, subthemes conforming to major policy ambitions have been identified.

All indicators have been described in detail, with an indication of expected data sources. As such the indicators are ready for use. The first use of the indicator sets was in the esting of the indicators in smart city projects or cases in the CITY keys partner cities.

3.3Technological Options

Human society is developing with rapid momentum and achieved various successes for making its livelihood better. The civilization is witness for various changes related to its development through different catalysts like industrial development, green revaluation, science and technology, etc. India has more than 72% of its population living in villages. Near about seven decade had been passed since India got freedom, but the scenario in villages in our country is still unchanged. On one side India has recently selected 100 cities for Smart City project and ready to adapt all the advanced technologies for these smart cities and on other hand villages in our country are still struggling for getting basic amenities like 24 x 7 electricity. On one hand 4G internet technology is being utilized all over the urban areas but on other hand villages in our country are still searching for genuine mobile networks. Our Governments are joining hands with developed countries like America, China, Japan to run bullet trains to connect big cities in India whereas villages in our country are still disconnected and are lacking with basic facilities like drinking water, healthy food, sanitization, toilets, transportation, education, etc. The technology that we use here can be availed to the people living in rural areas to help in improving their lifestyle. This paper summarizes such efforts which can definitely help us to introduce various technologies in these neglected parts of our country fulfilling our responsively to build up our nation. Thus new concept of smart villages can be introduced to make heaven in the heart of our India, because real Bharat is recognized by the villages in our country. Various technologies for developing smart villages : Following various techniques can be promoted improving the life of people in villages and for actual development of smart villages.

➢ Enhanced Use of Smart Phones and Optical Fiber Technology for Internet Techniques ➢ Online Library and E- Education

➢ Smart Agriculture

➢ Smart and Efficient Public Transport System

➢ Smart Sewage Management System and Sanitation

➢ Renewable Energy Sources and Solar Energy

➢ Latest and Affordable Medical Facilities

Indian villages need to be more focused on basic things such as sanitization, health care, drinking water and education. As villages and the villagers have farming - agriculture as their primary source of income. So having villages reap the benefits of irrigation is really very important. The biggest barrier to achieve our goal of developing smart villages will be to deal with the mentality of the villagers and make them understand the real need of modernization. Also to create and develop SMART VILLAGES across the country, the authorities thought process would need a shift. Adopting a village or group of villages by each of MPs and MLAs for its development is good initiative taken by our governments and should be implemented up to a grass root level. Also we can promote many of self-financed firms like industries, educational institutes to adopt such villages or group of villages for developing them and can provide possible technical support. Recently 02 years back, ITM College of Engineering, Kamptee had adopted Ghorpad villages in its vicinity and extended their technical and staff support for few services like drinking water

testing, sewage water analysis, etc. Such types of movement can be conducted by other Engineering Institutes too.

3.4road map and safe guards

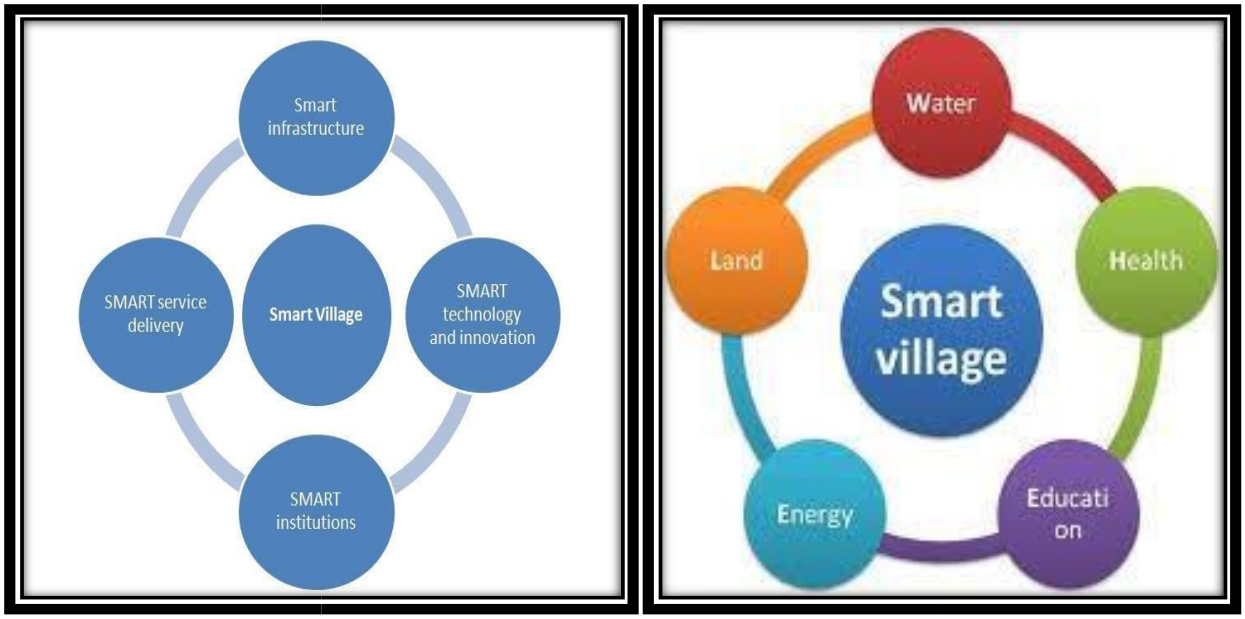


Fig 3.4.1 road map safe guards

Mahatma Gandhi said, "the future of India lies in its villages". Despite government's focus on villages for many decades, villages remain poorly serviced and governed. India has been an agricultural economy yet the sector is still not a well-paying livelihood option. Generating new avenues of employment in villages, reviving agriculture and improving services in rural areas are some of the components that need to be included right away in rural development policies. The visual perception of Indian villages has not changed much though certain corrective policy measures and infrastructural reforms have taken place. Governments need to transform our villages into smart habitats by generating lucrative economic opportunities and addressing the basic challenges rural areas are facing for decades. Delhi and Mumbai add almost 200 migrants every day. A combination of factors like agriculture becoming less remunerative, poor civic services, defunct infrastructure, and unavailability of good career opportunities has accelerated the migration from rural areas to cities.

India is a country of villages. Any product or solution that has to succeed and be popular in the country has to be of direct relevance to village life of this country. As per Census of India 2011, the country has a 69% rural population spread across more than 600,000 villages. Now, that being the case, no marketer worth his salt can ever dream of ignoring rural India.

Globally the concept of 'Smart City' is a significant initiative that seeks to improve the quality of life of urban citizens. In India to the new central government's stated priority of building 'Smart Cities' has found a relatively modest budgetary allocation of Rs. 7,060 crore for FY 2014-15, though its significance for the long term can be much larger. Be it the push of the 'Smart City' concept from solution providers, real estate developers or the government itself, the concept finds wide appeal. The

Government of India's stated plan to set up 100 Smart Cities across the country has the potential

to be a game-changer in the country's urban landscape and the lives of ordinary citizens.

New avenues: Like any other field agriculture needs to be viewed with a new prism to make it economically rewarding. Most of the initiatives targeted to transform agriculture have always been seen as philanthropy gestures, not as a sustainable business model in India. The country is supporting start-up culture to give boost to entrepreneur skills among youngsters. There must be some provision where government bodies support the idea of reviving agriculture through various transformative solutions like opening up of market for agriculture produce in strategically targeted locations for greater economic output, providing technical and financial support to the new ideas of marketing and innovation.

For example: a growing demand in cities for organic and chemical-free food was driving a spurt in online and offline stores that sell such products. Many social enterprises were being formed and the concept was being widely discussed to enable villagers to market their goods to cater to this demand. Even Prime Minister Narendra Modi has promoted the idea in many of his election speeches in north eastern states. Rural Development Ministry must take this into account.

Government initiatives: Pradhan Mantri Gram Sadak Yojana (PMGSY) has proved to be a transformative scheme. Thousands of villages which were cut-off from the outside world were connected. The national rural road construction program has built paved roads to over 100,000 villages since its launch in 2000. A research report 'Market Access and Structural Transformation: Evidence from Rural Roads in India' by Sam Asher and Paul Novosad examines the labor market consequences of high rural transport costs by estimating the causal effects of a USD 37 billion rural road construction program, which has provided over 100,000 Indian villages with paved connections to the wider road network. It states, "These effects are driven by villages close to large cities, where a new rural road represents a larger proportional decrease in total transportation costs to external demand for rural labor and production." Similarly the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) has brought significant improvement in employment generation in rural India. The scheme that is termed the biggest poverty reduction scheme provides jobs to over 50 million households. However, the government needs to find out some innovative ways through which rural workforce can be provided skills and improve their employability in the evolving markets in rural India.

3.5 Issues & Challenges

1. Inability to develop a shared vision of development over a longer period
2. Disconnection between development inputs delivered and the genuine needs of the community
3. Lack of participation of all sections of society, especially the marginalized and the aged
4. Focus on infrastructure and expenditure ignoring the social aspects
5. and sustainable outcomes
6. Reliance primarily on government grants and not emphasising community contributions and self-help
7. Absence of organic convergence of different schemes
8. Unfair decisions regarding the allocation of benefits to locations and
9. households leading to alienation
10. Political partisanship – perceived and real
11. Disregard for socio-cultural values of different sections of the community

12. Existence of multiple power structures and absence of a reconciling
13. mechanism
14. Ignoring environmental concerns for immediate gains
15. Prevalence of social evils like drinking,

3.6 Smart Infrastructure - Intelligent Traffic Management

Intelligent Traffic Management System for Smart Cities: In present-day times, the number of vehicles has increased drastically, but in contrast, the capabilities of our roads and transportation systems still remain underdeveloped and as a result, fail to cope with this upsurge in the number of vehicles. As a consequence, traffic jamming, road accidents, increase in pollution levels are some of the common traits that can be observed in our new age cities. With the emergence of the Internet of Things and its applicability in Smart Cities, creates a perfect platform for addressing traffic-related issues, thus leading to the establishment of Intelligent Traffic Management Systems (ITMS). The work presented in this paper talks about an intelligent traffic management system that lays its foundation on Cloud computing, Internet of Things and Data Analytics. Our proposed system helps to resolve the numerous challenges being faced by traffic management authorities, in terms of predicting an optimum route, reducing average waiting time, traffic congestion, travel cost and the extent of air pollution. The system aims at using machine learning algorithms for predicting optimum routes based upon traffic mobilization patterns, vehicle categorization, accident occurrences and levels of precipitation. Finally, the system comes up with the concept of a green corridor, wherein emergency services are allowed to travel without facing any kinds of traffic congestion.

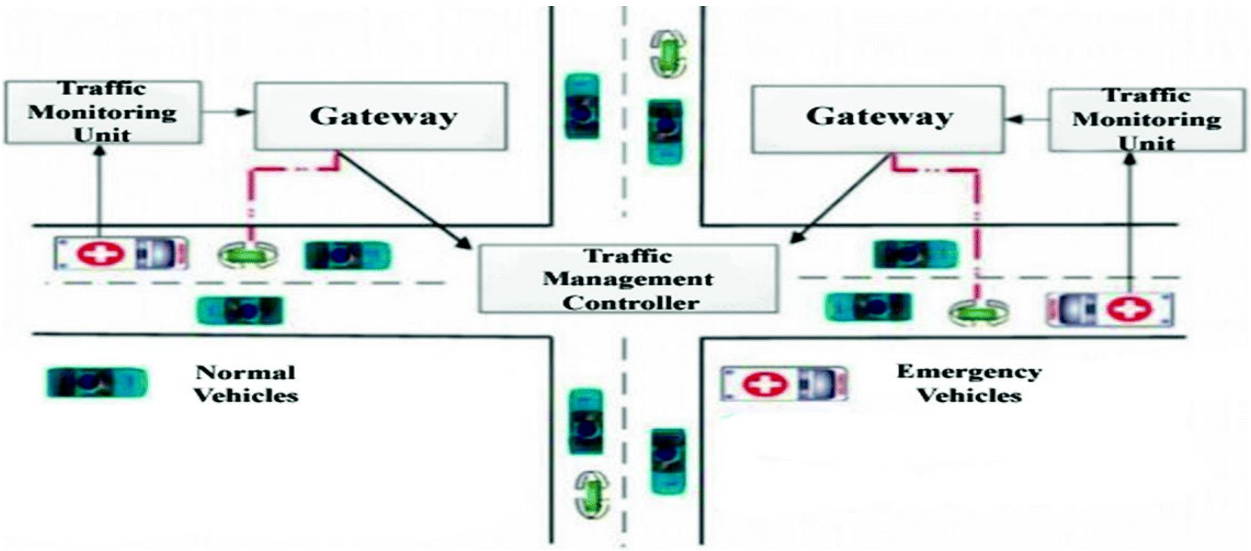


Fig 3.6.1 traffic management

Smart Infrastructure:

 # Social Health Indices:

The number of businesses per ten lakh population can form a city's level of economic activity and economic performance. It provides a single indication of the business climate in a jurisdiction, and attitudes towards entrepreneurship. The unemployment rate is measured by taking the unutilized labor supply and then tracks business cycles. It is measured in terms of working-age city residents who during the survey period were not considered in paid employment or self-employment and

were searching for work divided by the number of total labor force.

 # Sanitation : The sanitation front will see figuring out of sanitary toilet facilities used by the people and community toilet facilities provided at public places. The rate is 10 people per seat. Share of primary, secondary or tertiary treatment of wastewater shall give ranking in matters of handling of waste water. For solid waste management, disposal by bio digestion, landfills, burning or recycling will end the Smart Cities their place in the ranking.

 # Electricity: All the electrical lines will be present underground by not disturbing aesthetics of a place or making any kind of nuisance. The power generated will be available from renewable sources like wind energy farm, hydroelectric plant or natural gases will also be used for not exhausting natural resources.

 # Transportation: An entire intermodal transport available to all at affordable rate with minimum time delay and maximum possible comfort. It has an elaborated recommendation to keep track of transport facilities such as high capacity public transport and light passenger transport The results will be expressed in annual number of public transport trips per capita and ridership of public transport.

 # Security system: CCTV camera present everywhere in every gate. Specially trained policemen will be present System to detect probe of water and electricity, parking or anything necessary.

Fig 3.6.2 Smart Infrastructure

3.7 Cyber Security:

Securing smart cities is a not-for-profit global initiative which aims at solving the existing and future cyber security problems of smart cities through collaboration between companies, government, media outlets and individuals across the world.

Over the past few years, Technology has begun to play an important role in our daily lives. Internet enabled gadgets have changed the way in which we work or do our daily chores. Digitization has an impact on personal lives, education, health, government and national security. Due to increase in complexity of smart city systems and globally connected social, economic, political systems, etc. has increased vulnerability of security of a city. The cyber threats have amplified due to infinite supply of data. Smart surveillance technology or analytics to manage the crowd, traffic, cyber security, data privacy, building codes to manage natural/man-made disasters, etc. are some

parameters that would make a city safe. Different challenges to our security and expectations of privacy have arrived due to innovations in IT. Humans are already interconnected via gadgets. Standards are evolved for all these potentially connected systems. This will lead to improve in quality in life.

Smart Transportation will also provide an access to a web of connected data from GPS location.

Integrated systems and cyber security will aid public safety. We examine two important challenges : Security and Privacy.

3.8 Retrofitting- Redevelopment- Greenfield Development District Cooling:

Retrofitting:

Retrofitting is one of the strategic components which when will be introduce planning in an existing built-up area, will help us to achieve several objectives for smart city like making the existing area more efficient and liveable along with others. In this method, generally an area more than 500 acres will be identified by the city in consultation with citizens. After identification and observation of the current situation of infrastructure services in the identified area and the vision of the residents, the cities will prepare a strategy to become smart. Since existing structures are largely to remain intact in this model, it is expected that more intensive infrastructure service levels and a large number of smart applications will be packed into the retrofitted smart city. The whole process of retrofitting must be completed in a shorter time frame, as it will lead to help and assistance in other part of city or another city of similar condition. SMART-RETROFITS are projects to mitigate major issues affecting urban resilience; are catalytic in nature, effective, requires policy initiatives & some investments for pre-take-off. Now days, one of the most commonly method used for the retrofitting for any buildings is Green retrofitting.

Redevelopment:

Redevelopment causes the tremendous development in infrastructure by using the mixed land use patterns and also increasing the density at the same time. When the area is more than 50 acres then for the sake of concerns of citizens redevelopment is adopted. For example, By implementing high ground coverage, mixed land use is done by preparing new layout for the area. Vacant land represents both a significant problem and an attractive opportunity for many central cities. Vacant land and abandoned structures impose both economic and social costs on cities and the neighborhoods or districts in which they are located. On the economic side, such properties lower neighboring property values and tax revenues even as they create pressure to raise taxes to maintain service levels. Addressing the issue of vacant and abandoned land and structures, state governments play an important role as well. In many cases, the ability to overcome the problems associated with vacant properties and convert them to productive use requires legislative powers that are found only at the state level. Even when demand for new or restored land uses is sufficient for redevelopment to occur, the path to success is troubled by the displacement of previous residents and the elimination of their neighborhoods. Displacement can occur directly through property clearance and conversion to new uses, or indirectly through gentrification when land prices and rents are bid-up to a level unaffordable to the neighborhood's long-term residents. The redevelopment process can create winners and losers, with the losers too often racial and ethnic minorities and the economically disadvantaged. Physical and economic redevelopment are virtual imperatives for cities, but paths to redevelopment that minimize displacement and offset its negative consequences are unsure. Redevelopment has created new, vibrant central city areas. Historic buildings have been restored to physical and economic vitality. At the same time, affordable housing has filtered upward in price and economic class. Historic buildings have been

lost. Residences and neighborhoods have been destroyed. People have been displaced. Two examples of the redevelopment model are the Saifee Burhani Upliftment Project in Mumbai (also called the Bhendi Bazaar Project) and the redevelopment of East Kidwai Nagar in New Delhi being undertaken by the National Building Construction Corporation.

Green field development:

Greenfield development will introduce most of the Smart Solutions in a previously vacant area (more than 250 acres) using innovative planning, plan financing and plan implementation tools (e.g. land pooling/ land reconstitution) with provision for affordable housing, especially for the poor. Greenfield developments are required around cities in order to address the needs of the expanding population. from a legal perspective, the challenges in obtaining timely, effective, and affordable approvals for Greenfield residential development. In particular, we focus on the constraints on Greenfield developments (not all green fields are equal); the need to integrate land use planning with the provision of infrastructure; and the opportunities provided by the Special Housing Area legislation. Greenfield areas are seen as the low hanging fruit in terms of providing land for urban expansion, however the reality is quite different. There will be no perfect sites where the conversion of land for urban use will have no effects; all areas will be constrained, and the conversion of any area will need to occur in the context of compromises HAVING been made. One of the most important issues with Greenfield developments is to ensure that the development area can be appropriately served with infrastructure. New areas (Greenfield) will be developed around cities in order to accommodate the expanding population in urban areas. Application of Smart Solutions will enable cities to use technology, information and data to improve infrastructure and services that includes physical as well as social infrastructure.

Unlike retrofitting and redevelopment, Greenfield developments could be located either within the limits of the ULB or within the limits of the local Urban Development Authority (UDA). Some of the important determining factors about Greenfield development are:

- Areas of land that have never been used for construction, areas of natural, often grassed, land.
- Nothing to demolish, and no existing issues
- Cheaper to develop
- Demand for rural/suburban housing
- Easier to comply with environmental standards
- Profitable for local farmers to sell their land on, and they have a right to do so.

District Cooling Systems - Integrated chilled water production system for efficient cooling of buildings in cities:

District Cooling Systems are positioned as an effective technology to mitigate the heat island effect exacerbated by conventional, stand-alone cooling systems.

Key features

- 50% energy efficiency improvement while electricity consumption is decreased by 35%.
- 50% CO_2 emissions savings and decrease of water usage by 65%.
- Architectural heritage preservation.

Profitability

➢ This solution significantly reduces usage costs for end customers, compared to stand-alone units.

➢ The comparable reductions in cost relative to energy and water use. Categories of Application

➢ Advanced grid infrastructure ➢ Etc.

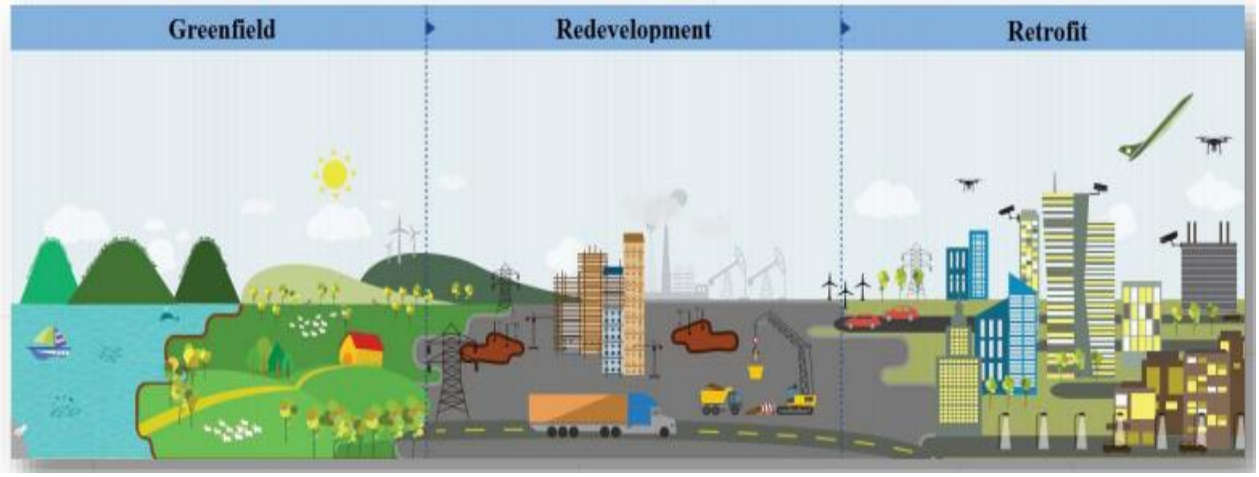


Fig 3.8.1Smart strategies

3.9 Strategic Options for Fast Development

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.

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

India's Urban Water and Sanitation Challenges

The problem of access to safe drinking water and sanitation facilities in urban areas of India is also a major concern. It is estimated that by 2050, half of India's population will be living in urban areas and will face acute water problems. At present, 163 million people do not have access to safe drinking-water and 210 million people lack access to improved basic sanitation in India. In urban areas, 96% have access to an improved water source and 54% to improved sanitation. Whereas in rural areas, which accounts for 72% of India's population lives, only 84% have access to safe water and only 21% for sanitation. In addition, there is a lack of wastewater treatment facilities to treat the wastewater of a growing population. There is a need to reuse treated wastewater in order to meet the current and future demands for water.

Role of Indigenous Technologies

Indigenous technology : Technologies employed and discovered by the native inhabitants of a

country are regarded as Indigenous technology. It constitutes an important part of its cultural heritage and protects the country against exploitation by industrialized countries. Scientists like C.V Raman, Homi J. Bhabha, Visvesvaraya etc. played an important role to shape the structure of Indigenous technology.

Importance of indigenous technology : It provides effective alternatives to western; it gives local people and development workers extra points when designing projects. They can choose from indigenous knowledge or combination of indigenous and western technology instead of searching only western technologies for the feasible solution. Indigenous technologies are cheaper than western technologies. They rely on locally available skills, materials and require little or no cash outlay. Some of the examples of indigenous technologies are given below: • Plastic Roads • Thorium-based nuclear reactors • Defense Technology • Space Technology

3.11 Initiatives in village development by local self-government

This is 8 years back when district administration stitched up funds from various heads of the district development fund ? and started focusing on development of village (lowest administrative unit) named Punsari, Gujarat State (province) India. generally when we listen to the word village the first impression which strikes our images is, mud houses, narrow potholed roads, no drainage and drinking water facilities with socially backward and unconnected people, but Punsari is different story altogether. Punsari has been constructed as a ?model village" by the intervention of state government and its young headman, Himanshu Patel. He proudly states that his village offers "the amenities of a city but the spirit of a village?. Narendra Modi, Present Prime Minister of India and former chief minister of Gujarat has sent officials to study Punsari and its development model and prepare a project for creating model villages all over the country. The village has also been visited by "more than 300 officials" from all over India who want "to learn how they can replicate our model in their states", Mr Patel proudly claims that the village has public announcement systems, CCTV cameras to provide 24/7 security for villagers, free WiFi connectivity at public gathering places, portable drinking water at affordable price, mobile library, two primary schools with WI Fi connection and projector facilities, gaming zones and internet café for students and children and other basic facilities like health , education drainage, are on par with urban standardsPunsari makes a perfect case study as the local self-governance model and this can be a role model for rural India with respective changes accordingly to the local demands. I would discuss the transformative challenges in convincing the villagers and bringing the best practice out of it and its impact on rural development.

3.12 Smart Initiatives by District Municipal Corporation

Talking about the smart city initiative by dahod district the goal of the initiative is “ Smart utilization of dahod city’s potential for enhancing quality of life for the citizens of providing equal access to best quality physical infrastructure , social infrastructure and mobility through leveraging state of the art and technology : thus making dahod a futuristic Global city with focus on enhancing economy , protecting the ecology and preserving the identity and culture of the city”.

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

Digital India Initiative: The initiative comprises of several projects which will focus on better governance, knowledge and universal phone connectivity across the country.

- Digi Locker
- MyGov.in
- eSign Framework
- Swachh Bharat Mission mobile app
- National Scholarship Portal
- eHospital
- Digitize India Platform
- Bharat Net
- Wi-fi Hotspots
- Next Generation Network
- Electronics Development Fund
- Centre of Excellence on Internet of Things (IoT)

3.14 How to implement other Countries smart village projects in Indian village context (Regarding Environment , Employment) :

Smart Environment

Smart villages can be stewards of the environment aided by technologies to monitor key environmental indicators such as forest health, water quality, soil conditions and changes to the landscape. They can also reduce pressure on deforestation using efficient cook stoves to decrease the need for traditional biomass energy sources such as charcoal and wood a key driver of unsustainable forest use. Smart villages can host community-run recycling facilities ranging from those equipped to recycle wastewater and organic waste from agro -processing, to next-generation facilities for the recycling of e-waste, including energy-storage and generation technologies such as batteries and solar panels. Depending on geographical endowments, some smart villages will be able to operate as regional ecotourism hubs, an activity that can improve the welfare and connectivity of rural and urban communities. The aforementioned Villages have all emerged as Smart Villages but only in a particular domain. It’s not holistic in nature. However, the pressing need of hour is to have a Smart Village with all sorts of comprehensiveness in it.

Smart cities revolution to boost employment in India

Government of India’s ‘smart cities mission’, a flagship initiative, is aimed at developing 100 sustainable and citizen friendly cities across the country. Each of these smart cities will be a key driver of economic growth boosting the GDP of the country and creating multiple new-age employment opportunities. With increased urbanization, urban areas are expected to house 40 per

cent of India's population and contribute to over 75 per cent of India's GDP by 2030. This calls for large scale infrastructural development which is not just physical and institutional but also social and economic infrastructure. Only then would these cities will attract investments leading to continuous growth and development. A key way of developing smart cities is by enabling using smart evolved technology for local area development in the cities. Such development will generate employment for a large segment of local population. Application of smart solutions will enable cities to use technology, information and data to improve their services. Integration of technology is a major challenge and implementation of technology across smart cities needs a lot of hand holding at the moment. To understand the dynamics of smart cities and to create a strong eco-system it is important that the workforce has advanced skill sets. Smart cities have emerged as a potential job creator in the past few months. Many new-age profiles are likely to witness potential growth especially in the areas of ICT (Information Communication Technology), Data Management & Analytics and e-Governance. As there is a large pool of data being used in the building and management of smart cities, data monitoring and surveillance will become a crucial aspect. Whether the data is used for intelligence gathering, prevention of crime, public health, investigation or surveys; surveillance will hold a lot of importance for citizens. It is important for us to understand that the existing workforce and the new workforce entering the labor market need to align their skill sets basis the requirements of smart cities. Each and every sector and job roles will need enhancement of knowledge, specialized skills training and continuous upskilling. People with varied skill sets will be needed to manage and monitor data across smart cities. Data Skills, Communication skills, Business Intelligence and Analytics, Visualization, Data Modelling, Numerical skills, Quantitative Analysis, Product Development are few key skills that will be required for continuous surveillance at smart cities.

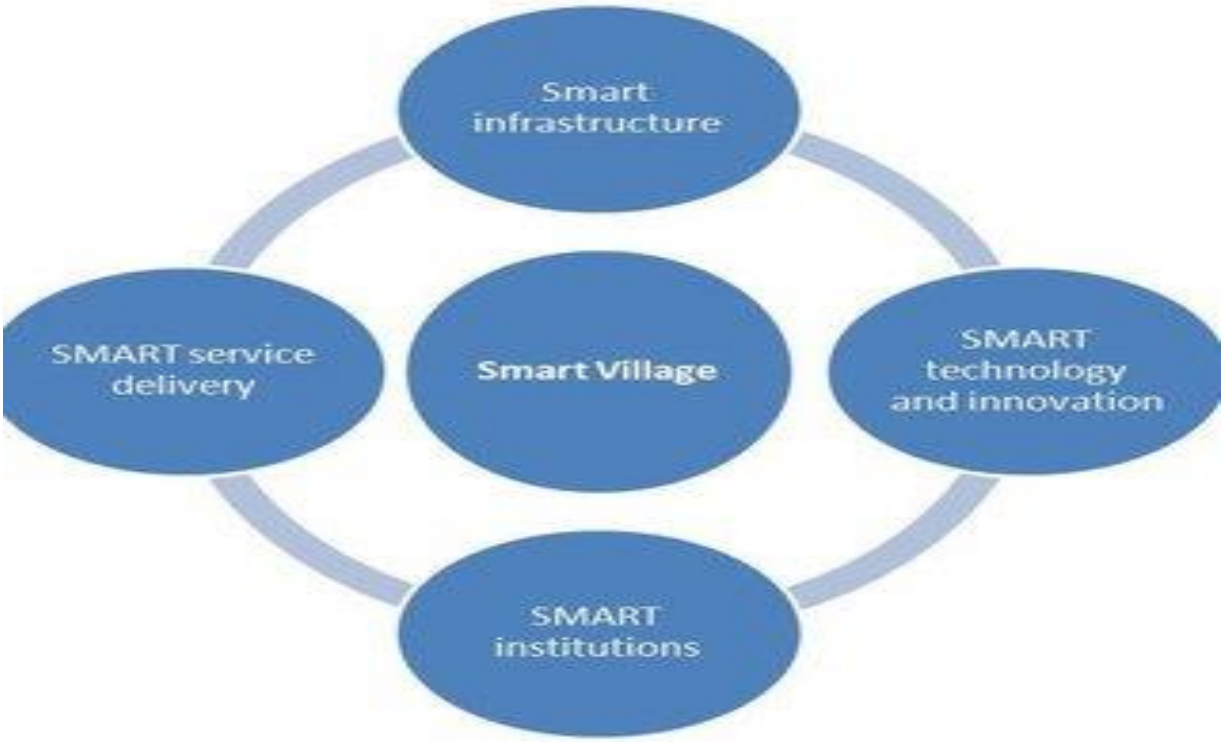


Fig 3.14.1 smart village

CHAPTER 4

4.About MOTIKHARAJ VILLAGE

MOTI KHARAJ

4.1 introduction

4.1.1 Introduction About motikharaj Village details

About Moti Kharaj

According to Census 2011 information the location code or village code of Moti Kharaj village is 519449. Moti Kharaj village is located in Dohad Tehsil of Dohad district in Gujarat, India. It is situated 5km away from Dohad, which is both district & sub-district headquarter of Moti Kharaj village. As per 2009 stats, Moti Kharaj village is also a gram panchayat.

The total geographical area of village is 1019.01 hectares. Moti Kharaj has a total population of 12,581 peoples. There are about 1,544 houses in Moti Kharaj village. As per 2019 stats, Moti Kharaj villages comes under Garbada assembly & Dahod parliamentary constituency. Dohad is nearest town to Moti Kharaj which is approximately 5km away.

4.1.2 Justification/ need of the study

The basic need of this study is to provide facilities in the villages for the Rurban Development. Implement the different Physical and Social infrastructural facilities in the villages and to lessen the urban migration of people of the village. So, for this purpose information of village is to be collected like Drainage Facility, Education Facilities, Health Facilities, Transportation Facilities, Banking Facilities, and Public Toilets etc. It will also provide so many job opportunities. Development of the village will indirectly affect the GDP of India. So, it is very important to develop the villages of India.

4.1.3 Study Area (Broadly define)

Study area mainly includes the study of the village Moti kharaj which is located in Dahod taluka in Dahod district of Gujarat state. It is about 5 km from dahod.

The Vishwakarma Yojana is aimed to Rurban development of the village. For that purpose study area is decided for taking detail information of the village. The study area includes education, health and safety, drainage, transportation facilities, social life etc.

Education includes various facilities like Anganwadi, Primary School, Secondary School, Higher Secondary School, College etc. Medical Facility includes study of Gov. / Panchayat Dispensary, Health Centre, PHC & CHC, Child Welfare and Maternity Home, Hospital etc. Drainage facilities includes the open drainage system or the closed or underground drainage facilities etc.

4.1.4 Objectives of the study

Following are the various objectives of the study:

 To provide basic physical infrastructure – Water Supply, Transport, Sewerage and Solid Waste Management should be the priority focus and be provided.

 To provide insufficient Social infrastructure like health and education facilities and to ensure proper delivery of facilities to village dwellers.

 To promote integrated development of rural areas with provision of quality housing, better

connectivity, employment opportunities and supporting physical and social infrastructure.

- Reduce migration from rural to urban areas due to lack of basic services and sufficient economic activities in rural areas.
- Electricity connection like street lighting that is energy efficient and eco-friendly.
- Identification of sanitation facilities that need improvement.

4.1.5 Scope of the Study

By studying the present status and techno-economic survey of Moti kharaj village in Dahod district of the Gujarat state in terms of basic services, public amenities, other infrastructural facilities for the need of the people and to prepare a report on the expected socio-economic growth of the area with the consultation of TDO, DDO and Sarpanch; will help full in providing better facilities and services in village.

From the gap analysis, development strategies for village development will be proposed and planning proposals for Physical infrastructure, Social Infrastructure and Renewable energy Source will be suggested for the village. The study will focus on the development of the village.

4.1.6 Methodology Frame Work for development of your village

- Firstly, we studied what are various objectives and the need of the Vishwakarma Yojana.
- Then we completed our Literature Review that includes the basic definitions of rural area, urban area, Rurbanisation, Sustainable development etc.
- We also visited an ideal village named Bavka which is also located in the Dahod taluka in Dahod district. There we understood what kind of facilities are required in the village and how to implement it.
- After this we met our village (Moti kharaj) Sarpanch, talati cam mantri and other gram Panchayat members.
- We collected all the required data related to the various facility and completed our TechnoEconomic survey and Smart Village form.
- Gap analysis is done using the collected data and various suggestions made by us on the development of the village and based on this suggestions we will design proposed facilities in the village according to the need and population of the village.

4.1.7 Available Methodology for development of related to Civil :

Methodology:

- ➢ Design objectives
- ➢ Technical approach
- ➢ Proposed sustainability features
- ➢ Identify customer needs
- ➢ Identify local/state/federal engineering and construction specifications
- ➢ Project management structure

- Budget
- Gantt Chart of project schedule
- Resumes of team members

4.2 MOTIKHARAJ VILLAGE Study Area Profile

4.2.1 Study Area Location with brief History land use details

 A village called Moti Kharaj which is located 5 kilometers away from Dahod.All the people in that village are tribal.

 The total geographical area of the village is 1019.01. Naghrala (3 KM), Punsri (3 KM), Borkheda (3 KM), Brahmkheda (4 KM), Jalat (4 KM) are the nearby Villages to Moti Kharaj.

 Gujarati is the local language in this village.In this village good road facilities available. In this village 1 gram panchayat, 1 phc, 3 sub center, 7 primary schools, 1 secondary school and 11 Anganwadis is available

 Three Major Occupation groups in village is farming, farm labour, ingaged in the home industry process.

 The main crops are maize, paddy, and pulses.

4.2.2 Base Location map, Land Map, Gram Tal Map

Fig:4.2.2.1 Base map

Fig:4.2.2.2 Google base map

4.2.3 Physical & Demographical Growth

A village called Moti Kharaj which is located 5 kilometers away from Dahod. All the people in that village are tribal. Moti Kharaj has a total population of 12,581 peoples. The total geographical area of the village is 1019.01. Naghrala (3 KM), Punsri (3 KM), Borkheda (3 KM), Brahmkheda (4 KM), Jalat (4 KM) are the nearby Villages to Moti Kharaj. Gujarati is the local language in this village.In this village good road facilities available. In this village 1 gram panchayat, 1 phc, 3 sub center, 7 primary schools, 1 secondary school and 11 Anganwadis is availableThree Major Occupation groups in village is farming, farm labour, ingaged in the home industry process. The main crops are maize, paddy, and pulses.

4.2.4 Economic generation profile / Banks

Three Major Occupation groups in village is farming, farm labour, ingaged in the home industry process.

The main crops are maize, paddy, and pulses. Some of the peoples are also running their stores (local stores).

4.2.5 Actual Problem faced by Villagers and smart solution

- No Hospital or doctor clinic - if you got fever, the best option is to run to the nearest city or district.
- No transportation - considering 1st point, if you are sick and have no personal vehicle. what possible option you got?
- No drinking water supply - usually in most villages, people survive on HANDPUMPS(i.e. UnderGround water).
- No OUTDOOR games area - it can be a possibility that someone has real talent for a sport. but if there's no place to practice, that talent is waste.
- Less electricity - as mobiles are a basic need nowadays. so having electricty for a hour in one day(usually), will you charge your phone or the torch(yess the charging torch,because its cheap and this is what they use mostly)
- Family Planning - hah, the biggest problem. they just dont know how to control and increase their family size like they are competing for guinness world record. One man and 12–16 kids

Smart solution

- Provide this facility and knowledge

4.2.6 Social scenario -Preservation of traditions, Festivals, Cuisine

Following table is showing the Literacy Percentage of the Male and Females of the Moti kharaj.

In 2011	Literacy Percentage (%)
Male	49.55
female	50.45

Table 4.2.6.1 Literacy Percentage of Moti kharaj

Following table is about cast vise population detail as per population data of 2011 of census

Cast	TOTAL	MALE	FEMALE
General	0	0	0
OBC	0	0	0
SC	0	0	0
ST	12581	6233	6348

Table 4.2.6.2 Cast vise Population Detail of Moti kharaj as per census 2011

4.2.7 Migration Reasons / Trends

People migrate for many different reasons. These reasons can be classified as economic, social, political or environmental: economic migration - moving to find work or follow a particular career path.

Push and pull factors

lack of services, lack of safety, high crime, crop failure, Drought, Flooding, Poverty, war.

4.3.Data Collection MOTIKHARAJ VILLAGE Photograph/Graphs/Charts/Table)

4.3.1 Describe Methods for data collection

Base line survey is a benchmark for any intervention during and post implementation of any development programme. A detailed baseline survey was undertaken which involved household census survey, Biophysical survey and Village level data collection from Sarpanch. This gave in the details of the demographic profile of the village, the literacy percentage, SC/ST population, cattle population and net consumption rate in the village, average milk production of the cattle and various schemes running and their benefits Bio-physical survey was undertaken to identify various natural resources available in the village. It included the soil typology, well in the area, crop taken in the field, Cropping pattern, fertilizer used and various sources of irrigation in the field.

4.3.2 Primary details of survey details

- A village called Moti Kharaj which is located 5 kilometers away from Dahod.All the people in that village are tribal.
- The total geographical area of the village is 1019.01. Naghrala (3 KM), Punsri (3 KM), Borkheda (3 KM), Brahmkheda (4 KM), Jalat (4 KM) are the nearby Villages to Moti Kharaj.
- Gujarati is the local language in this village.In this village good road facilities available. In this village 1 gram panchayat, 1 phc, 3 sub center, 7 primary schools, 1 secondary school and 11 Anganwadis is available
- Three Major Occupation groups in village is farming, farm labour, ingaged in the home industry process.

The main crops are maize, paddy, and pulses

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

In motikharaj: Average size of the house in the village is 5 X 10m

Geo-Tagging: The process of tagging infrastructure with geographical information like Latitude, Longitude, Distance, place name, etc. It is connected to GPS which are monitored through computer internet networks. It can be used to locate important places like labs, dispensaries, milk center, etc. Geo Tagging is not implemented in Kamrol village.

4.3.4 No of Human being in One House :

Total number of population in motikharaj is 12581 as per 2011 census. There are different number of people in each house as there are nuclear families as well as joint families, but the average no

of human beings in one house is 5.

4.3.5 Material available locally in the village and Material Out Sourced by the villagers:

The materials like milk, other grocery materials, maize, paddy, pulses and other agricultural cereals are used locally as they are locally easily available.

4.3.6 Geographical Detail

A village called Moti Kharaj which is located 5 kilometers away from Dahod.All the people in that village are tribal.

The total geographical area of the village is 1019.01. Naghrala (3 KM), Punsri (3 KM), Borkheda (3 KM), Brahmkheda (4 KM), Jalat (4 KM) are the nearby Villages to Moti Kharaj.

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

The Total Population of Moti kharaj is 12581 as per census 2011. There are 6233 male in the village and 6348 females are there.

Literacy rate for male in the village is 49.55 and that for female is 50.55.

4.3.8 Occupational Detail - Occupation wise Details / Majority business

Three Major Occupation groups in village is farming, farm labour, ingaged in the home industry process.

4.3.9 Agricultural Details / Organic Farming / Fishery

The main crops are maize, paddy, and pulses.

4.3.10 Physical Infrastructure Facilities - Manufacturing HUB / Ware Houses

In this village 1 gram panchayat, 1 phc, 3 sub center, 7 primary schools, 1 secondary school and 11 Anganwadis is available.

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

In motikharaj village there are no any tourism activities available for attracting the tourist.

4.4 Infrastructure Details (With Exiting Village Photograph)

4.4.1 Drinking Water / Water Management Facilities

Main Source of Drinking water

Public taps – 20, Standpipe – 5, Tube Well Or Bore Well

Hand pump-365

Lake/pond

4.4.2 Drainage Network / Sanitation Facilities

Not available Drainage Network

CLEANING -Every two to three weeks

FOGGING

4.4.3 Transportation & Road Network

village is connected to all road for the all facility or town or City.

4.4.4 Housing condition

Pucca 25%

Kutchha 75%

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

Moti kharaj village PHC

Fig 4.4.5.1 Moti kharaj village PHC

Fig 4.4.5.2 Primary and secondary school:- (1 to 10th std)

Anganwadi

Fig 4.4.5.3 moti kharaj aaganwwadi

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

Moti kharaj gram panchayat

Fig 4.4.6.1 Moti kharaj gram panchayat

Moti kharaj village post office

Fig 4.4.6.2 Moti kharaj village post office

4.4.7Technology Mobile/ WIFI / Internet Usage Details :

Almost in all the households the villagers are using mobile phone and they are also using the internet facility for personal usage. There are no private WIFI users in the village as per the data collected. But in the panchayat building there is a WIFI connection available.

4.4.8 Sports Activity as Gram Panchayat :

There are no any sports activities are being done by gram panchayat. The primary school has some sports equipment and tools & also children and students are using these facilities.

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

Moti kharaj village pond

Fig 4.4.9.1 moti kharaj village pond

4.4.10 Other Facilities (e.g. like foot path development-Smart toilets-Coin operated entry, selfcleansing, waterless, public building) :

There are no any kind of facilities like smart toilet-coin operated entry, footpath development, selfcleansing, waterless public building, etc

4.4.11 Any other details

Canal for irrigation

Fig 4.4.11.1 Canal for irrigation

4.6 existing institute like village administration detail profile – not available

CHAPTER 5

5.Technical Options with Case Studies

5.1.1 Advance Sustainable construction techniques / Practices and Quantity urveying

India's construction sector is assessed at Rs.4000 billion or $100 billion. As a result of government spending, private investments as well as foreign direct investment, has made India number one of the top ten spending nations on construction in the world. We manufacture more than 250 million tons of cement and are second only to China. A recent report "Global Construction 2020", estimates that India will be the third largest global construction market after China and USA. In order to improve the standard of living of her population, one of the key hurdles that faces today's India is to overcome the challenge of infrastructure bottlenecks. Consequently the federal government has announced our 11th five years plan which allocates 9% of the GDP to infrastructure projects. The National Planning commission - an apex federal body has estimated an allocation of $515 billion which is equivalent to Rs.23 trillion to infrastructure sectors over the next five years. This includes construction of Roads, Highways, Airports, Bridges, Ports, Railways as well as water supply and sanitation amongst few others. The 12th five years plan projects an investment of 10% of the national GDP into infrastructure which equates to a staggering $1 trillion or equivalently Rs.45 trillion.

Drivers for Sustainability :

While India is preparing to tackle these growth plans with enthusiasm, it is imperative that the country should analysis and take into account the price that the future populations of the world and here will have to pay and the world in turn will have to pay, should this unprecedented growth take place without adequate thought to sustainability. Should we consume all our energy, materials, water resources without considering for the needs of our children and grandchildren, the future of the world and our nation is at peril. Obviously GHG emissions, climate change and sustainability are at stake. It is estimated that GHG emissions would increase from 2 billion tons to 6-7 billion tons of CO2 in 2030.

Some of us may question why India must slow down her pace of development and pay for the sins of already developed and industrialized Western nations. Clearly, the OECD or the industrialized countries must take the lead in mitigating climate change, reducing greenhouse gas emissions, but also large developing countries such as India and China will also have to start to reduce their emissions over the next 20 to 30 years if we truly want to give our children a chance at a future. Developing countries with large emissions should have some responsibility, although differentiated and different from the industrialized world. While sustainable practices and products may be slightly unintuitive and perceived as counterproductive to the growth of GDP in the short-term, in the long- term, the future growth of the country depends on it. Growth that is not sustainable is not true growth.

Recommendations :

In mapping out sustainable practices that India must adopt a "cradle to grave" analysis is required. And for this we need to have a total approach than a patch work point system or a grade based certification system. In order to have a comprehensive plan for sustainable construction, every structure may be thought about based on the following parameters:

- Planning, design and specifications based on performance and service life
- Construction Practices

- Material Conservation and Selection
- Demolition and recycling
- Energy Conservation

1. Planning, Design and Specifications :

Structures in India are designed well however so far in most specifications, there is no reference to any service life or calculations thereof. To this effect, deeper study of various service life prediction models and calculations are essential. Specifications must to be performance based as opposed to their present form of being prescription based.

2. Construction Practices :

It is acknowledged that wastage in the construction industry is as high as 30%. That means at current valuation, we are talking about wastage to the tune of Rs.1200 billion or $27 billion in India. This is in itself a large, yet relatively simple and straight forward challenge to tackle. These wastages are activities that absorb resources, man hours and materials but create no value. Most developed countries have different forums / institutes / researchers / academic institutions for seeking solutions to mitigate these wastages and lean construction practices that emerged have yielded encouraging. Lean construction is a "way to design production systems to minimize waste of materials, time and efforts in order to generate the maximum possible value". While some novel initiatives are being taken in some parts of India to adopt leaner construction practices, India does not have a fully focused lean construction forum. Creation of an industry consortium or lean construction forum may be a good beginning.

3. Material Conservation and Selection :

Concrete is the largest synthesized material which has a per capita consumption of 1.5 tons per annum in India. Presence of concrete is all pervading simply because it has the capacity to utilize locally available ingredients, develop adequate engineering properties for a variety of applications, easily adapt to any shape and size and has comparatively low initial and maintenance costs. While concrete not be as big of an energy consumer as structural steel, aluminum and glass; concrete and particularly cement still remains a major energy 'sink' due to its sheer volume of production and also environmentally unsustainable due to large quantities of CO2 evolution associated with its manufacture. Raw materials for cement manufacture include non-renewable natural resources like lime stone, aggregates, manufactured sands (fine aggregates), and so on. Hence the Indian concrete Industry needs to take a fresh look at these challenges. Some of the problems faced by Indian concrete industry towards achieving sustainability in concrete utilization are as follows:

Increase the use of fly ash and other cement substitutes ; Use of manufactured sand ; Use of lightweight aggregates

4. Demolition and Recycling :

In India, the use of recycled aggregates has not been adequately explored. Reportedly, the construction and demolition waste has substantially increased as new super structures are being built on land after tearing down the smaller structures that previously existed. It is estimated that the construction industry in India generates about 10-12 million tons of waste annually. Projections for building materials requirement of the housing sector indicate a shortage of aggregates of about 55,000 million cu. m. An additional 750 million cu.m. of aggregates would be required for achieving the targets of the road sector. Recycling of aggregate material from construction and demolition waste may reduce the demand-supply gap in both these sectors. There is also an increasing-acute shortage of dumping grounds and landfills particularly in metropolitan cities. SERC, Ghaziabad had taken up a pilot R&D project on Recycling and Reuse of Demolition and

Construction Wastes in Concrete for Low Rise and Low Cost Buildings in mid-nineties with the aim of developing techniques/methodologies for use of recycled aggregate concrete in construction. The experimental investigations were carried out in Mat Science laboratory and Institutes around Delhi/GZB to evaluate the mechanical properties and durability parameters of recycled aggregate concrete made with recycled coarse aggregate collected from different sources. Also, the suitability in construction of buildings has been studied.

5. Energy Conservation :

Since sources of good quality, aggregates are fast depleting, the concrete industry in India needs to prepare itself to use locally available 'marginal' aggregates. The use of local materials helps reduce the carbon footprint associated with transport. Thus, from sustainability angle, the emphasis should be placed on using locally-available aggregates, even if there are small deficiencies in their quality. It has been amply demonstrated that desired properties of concrete can be obtained by intelligent blending of available aggregates with crushed sand, inert fillers, supplementary cementitious materials and chemical admixtures. Another important issue is that river sand and other construction materials are usually transported by road. India has a well-developed and efficient rail and water transport system that need to be leveraged by the construction industry. This is not only more sustainable option but also most cost effective.

Conclusion :

➢ India is an astoundingly growing economy and hence the pressure on the use of natural resources is very heavy.

➢ There is an awakening about the words durability and then sustainability.

➢ Though the durability is understood to a point the real meaning and importance of sustainability is not fully comprehended by engineering fraternity as well as planners.

➢ Some sporadic efforts are carried out in the form of very repetitive academic experimentation; however, these efforts are in extreme primitive conditions.

➢ Industry has not opened to this "Sustainability aspect" proactively as they are busy joining the band wagon of growth machine.

➢ Federal authorities also are not well informed and hence not equipped to adopt 'Sustainability initiative'.

➢ Also use of renewable energy and resources is not much sought after option and not given due importance as the initial costs are high.

➢ At the same time, there is definite internal feeling in all that something is definitely needed to be done for next generation. Typically not to leave them with depleted resources.

➢ At the behest of ACI international – India Chapter of ACI has organized couple of international conferences on sustainability along with the help of other organizations and Institutions.

➢ But this effort to create and spread awareness should be all pervasive. The proactive participation of all the institutions, professional bodies, academicians, industry as well as firm patronage and participation of government is extremely essential.

➢ 'Lean Concrete' and 'Reduce Wastage' initiatives in the industry are very necessary.

➢ India chapter of ACI has decided to take the lead role in this initiative by forming "JSI" like efforts in India. It was suggested by late President Dick Stehly to the chapter after he witnessed the capability of chapter to galvanize the support and participation of many in the recent international conference on "Sustainability".

5.1.2 Soil Liquefaction :

Soil liquefaction occurs when a saturated or partially saturated soil substantially loses strength and stiffness in response to an applied stress such as shaking during an earthquake or other sudden change in stress condition, in which material that is ordinarily a solid behaves like a liquid. In soil mechanics, the term "liquefied" was first used by Allen Hazen in reference to the 1918 failure of the Calaveras Dam in California. He described the mechanism of flow liquefaction of the embankment dam as: If the pressure of the water in the pores is great enough to carry all the load, it will have the effect of holding the particles apart and of producing a condition that is practically equivalent to that of quicksand… the initial movement of some part of the material might result in accumulating pressure, first on one point, and then on another, successively, as the early points of concentration were liquefied.

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

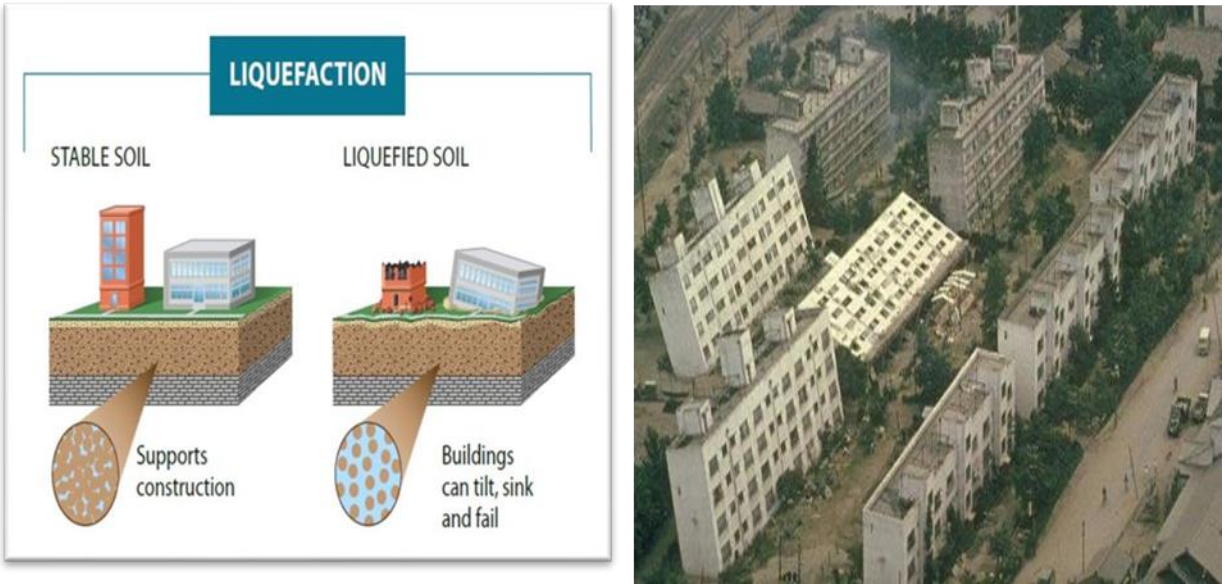


Fig-5.1.2.1-Soil Liquefaction

5.1.3 Sustainable Sanitation :

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

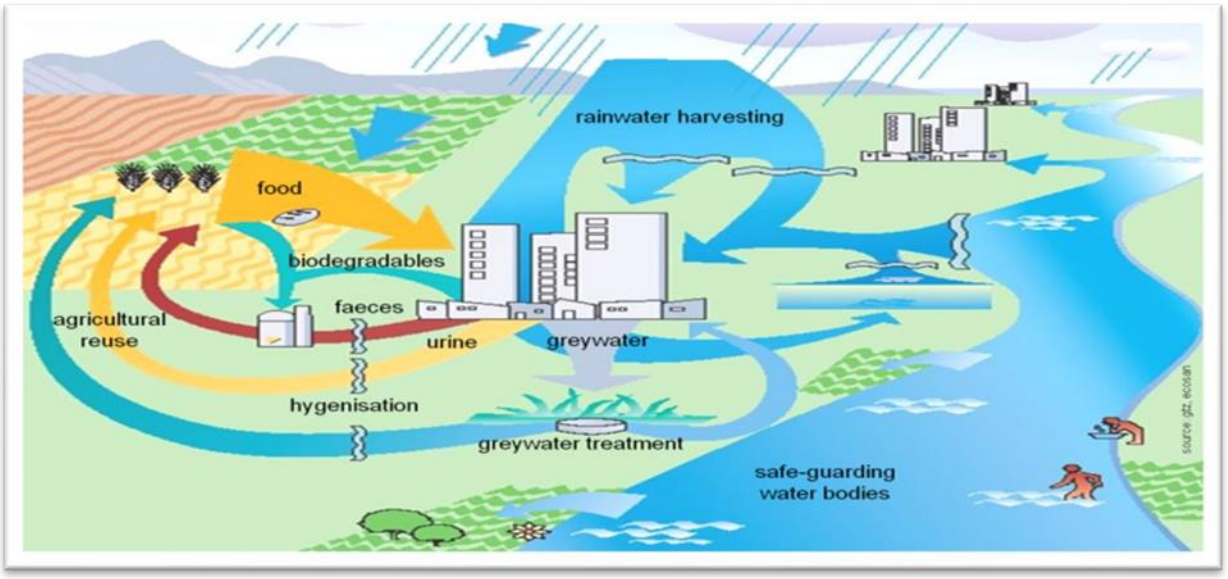


Fig-5.1.2.1-Sustainable Sanitation

5.1.4 Transport Infrastructure / system :

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

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

Fig 5.1.4.1 Transport Infra

5.1.5 Vertical Farming :

Vertical farming is the practice of growing crops in vertically stacked layers. It often incorporates controlled-environment agriculture, which aims to optimize plant growth, and soilless farming techniques such as hydroponics, aquaponics, and aeroponics. Some common choices of structures to house vertical farming systems include buildings, shipping containers, tunnels, and abandoned mine shafts. As of 2020, there is the equivalent of about 30 ha (74 acres) of operational vertical farmland in the world. The modern concept of vertical farming was proposed in 1999 by Dickson Despommier, professor of Public and Environmental Health at Columbia University. Despommier and his students came up with a design of a skyscraper farm that could feed 50,000 people. Although the design has not yet been built, it successfully popularized the idea of vertical farming. Current applications of vertical farming coupled with other state-of-the-art technologies, such as specialized LED lights, have resulted in over 10 times the crop yield than would receive through traditional farming methods. The main advantage of utilizing vertical farming technologies is the increased crop yield that comes with a smaller unit area of land requirement. The increased ability to cultivate a larger variety of crops at once because crops do not share the same plots of land while growing is another sought-after advantage. Additionally, crops are resistant to weather disruptions because of their placement indoors, meaning less crops lost to extreme or unexpected weather occurrences. Because of its limited land usage, vertical farming is less disruptive to the native plants and animals, leading to further conservation of the local flora and fauna. Vertical farming technologies face economic challenges with large start-up costs compared to traditional farms. In Victoria, Australia, a “hypothetical 10 level vertical farm” would cost over 850 times more per cubic meter of arable land than a traditional farm in rural Victoria. Vertical farms also face large energy demands due to the use of supplementary light like LEDs. Moreover, if non-renewable energy is used to meet these energy demands, vertical farms could produce more pollution than traditional farms or greenhouses.

F-5.1.5.1-Vertical Farming

5.1.6 Corrosion Mechanism, Prevention & Repair Measures of RCC Structure :

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

Prevention : Corrosion of steel in reinforced concrete structures can be divided into four different categories, based on how they provide protection:

1) Alternative reinforcement and slab design method includes materials that electrically isolate the steel from the concrete and create a barrier for chloride ions, materials that protect steel galvanic-ally, and materials that have significantly higher corrosion thresholds than conventional reinforcing steel. Concrete slabs have been designed without any internal reinforcement.
2) Barrier methods protect reinforced concrete from corrosion damage by preventing water, oxygen, and chloride ions from reaching the reinforcement and initiating corrosion.
3) Electrochemical methods use current and an external anode to protect the reinforcement, even when the chloride ion concentration is above the corrosion threshold.
4) Corrosion inhibitors offer protection by raising the threshold chloride concentration level, by reducing the permeability of the concrete, or by doing both.

5.1.7 Sewage treatment plant :

Sewage treatment plant is a plant where waste water is treated. Sewage treatment is the process of removing contaminants from municipal wastewater, containing mainly household sewage plus some industrial wastewater. Physical, chemical, and biological processes are used to remove contaminants and produce treated wastewater (or treated effluent) that is safe enough for release into the environment.

A by-product of sewage treatment is a semi-solid waste or slurry, called sewage sludge. The sludge has to undergo further treatment before being suitable for disposal or application to land. Sewage treatment may also be referred to as wastewater treatment. However, the latter is a broader term that can also refer to industrial wastewater. For most cities, the sewer system will also carry a proportion of industrial effluent to the sewage treatment plant that has usually received pre-treatment at the factories to reduce the pollutant load. If the sewer system is a combined sewer, then it will also carry urban runoff (stormwater) to the sewage treatment plant. Sewage water can travel towards treatment plants via piping and in a flow aided by gravity and pumps. The first part of the filtration of sewage typically includes a bar screen to filter solids and large objects that are then collected in dumpsters and disposed of in landfills. Fat and grease are also removed before the primary treatment of sewage.

The term "sewage treatment plant" (or "sewage treatment works" in some countries) is nowadays often replaced with the term wastewater treatment plant or wastewater treatment station. Sewage can be treated close to where the sewage is created, which may be called a "decentralized" system

or even an "on-site" system (in septic tanks, biofilters or aerobic treatment systems). Alternatively, sewage can be collected and transported by a network of pipes and pump stations to a municipal treatment plant. This is called a "centralized" system (see also sewerage and pipes and infrastructure).

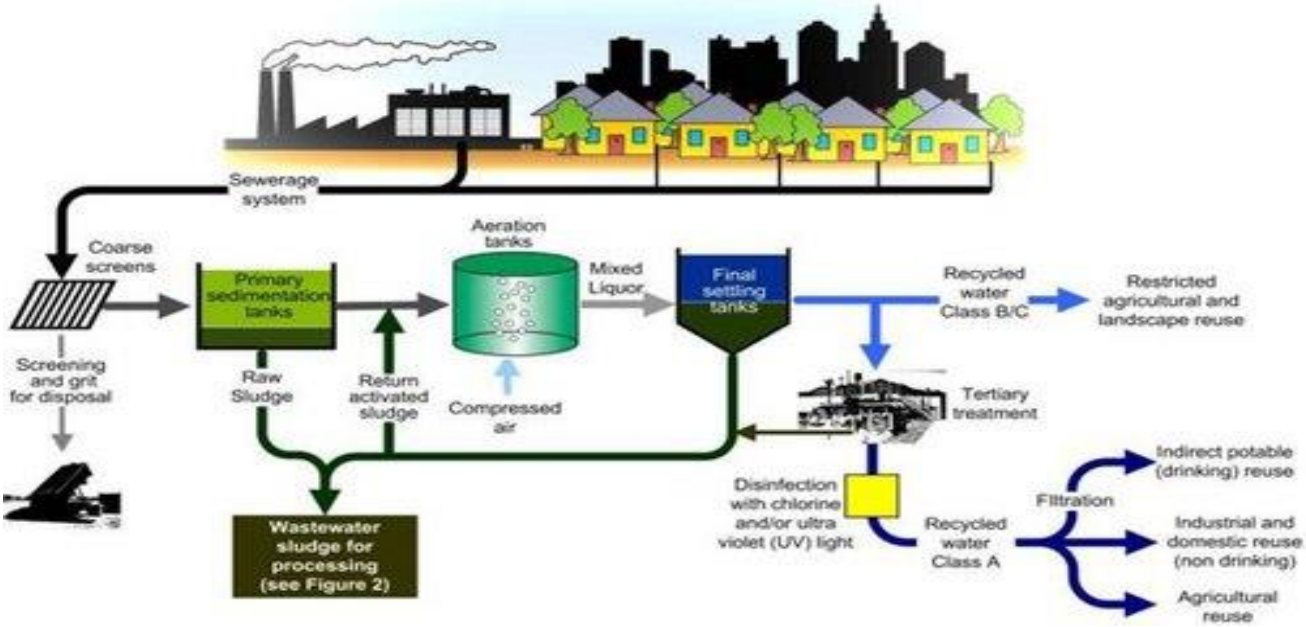


Fig-5.1.7.1- Sewage Treatment Plant

5.1.8 Technical Case Study On "The burj khalifa" :

Burj Khalifa – World's Tallest Building

- OfficialName: BurjKhalifa BiZayed
- Also Known As: Burj Dubai
- Also Known As: Tower Of Khalifa
- Formerly: Burj Dubai
- Built: 2004-2010
- Cost: $4,100,000,000
- Designed By: Skidmore, Owings & Merrill
- Type: Skyscraper
- Stories: 206
- Maximum Height: 2,717 Feet / 828 Meters

Fig 5.1.8.1 burj khalifa

- Location: No. 1, Burj Dubai Boulevard, Dubai, United Arab

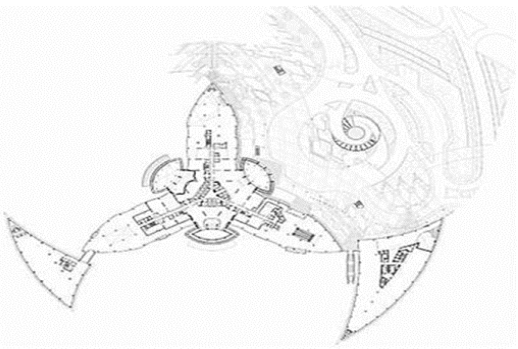


Fig 5.1.8.2- Site Plan – Burj Khalifa

Structure In General

- Construction Type: Skyscraper
- Current Status: Existing [Completed]
- Structural System: Buttressed Core
- Structural Material: Concrete, Steel
- Facade Material: Stainless Steel
- Facade System: Curtain Wall
- Architectural Style: Modernism
- Floor Plan: 517,240m2

Key Data

Order Year: 2003
Construction Start: 2004
Project Type: Mall, Residential And Retail Facilities And World's Tallest Skyscraper
Location: Dubai, United Arab Emirates
Estimated Investment: Aed800m (Mall, Residential And Retail Facilities); Aed3.9bn (Tower); Overall Development $8bn
Completion: 2008 (Mall); 2008 (Tower), Mall Opening On 31st August 2008, Tower Officially Opened 4 January 2010
Retail Space: 9 Million Square Feet

Burj Khalifa Construction Timeline

January 2004	Excavation Started
February 2004	Piling Started
March 2005	Superstructure Started

June 2006	Level 50 Reached
January 2007	Level 100 Reached
March 2007	Level 110 Reached
April 2007	Level 120 Reached
May 2007	Level 130 Reached
July 2007	Level 141 Reached – World'sTallest Building
September 2007	Level 150 Reached – World's Tallest Free-Standing Structure
April 2008	Level 160 Reached – World's Tallest Man-Made Structure
January 2009	Completion of Spire – Burj Dubai Tops Out
September 2009	Exterior Cladding Completed
January 2010	Official Launch Ceremony

Table 5.1.8.1 Burj khalifa construction time line

Some Interesting Facts About The Burj Dubai

- Although the building's shape resembles the bundled tube concept of the Willis Tower, it is structurally very different and is technically not a tube structure.
- The tower is situated on a man-made lake which is designed to wrap around the tower and to provide dramatic views of it.
- The elevators have the world's longest travel distance from lowest to highest stop.

- Hot air on the outside condense due to the large cooling needs of the building. The condensation is collected and used to water the buildings flora and fauna. 20 Olympic-sized swimming pools per year of water.
- There are 1,210 fire extinguishers on the site.
- At the peak cooling times, the tower require approximately 10,000 tons of cooling per hour.

- The tower's observation deck is located 442 metres above ground, the highest publicly accessible observation deck in the world.
- Condensation on the building is collected and drained down to a holding tank located in the basement from where it is pumped into the site irrigation system for use on the tower's landscaped gardens. This system provide about 15 million gallons of supplemental water per year, equivalent to nearly 20 olympic-sized swimming pools.
- Engineers working on the design considere

d installing triple-decker elevators, which would have been the first in the world. In fact, the realized building uses double-decker elevators.
- The amount of steel rebar used for the tower is 31,400 metric tons – laid end to end this would extend over a quarter of the way around the world.
- Over 330,000 cubic meters of concrete was used at the completion of the tower.

- Dubai has set a new world record for vertical concrete pumping for a building, by pumping to over 460 metres. The previous record was held by Taipei 101 for pumping concrete up to a height of 448 metres.

- Burj Dubai break the world record for altitude transportation of concrete
- The total area of cladding used to cover the Burj Dubai is equivalent to 17 football fields.
- The concrete used for the Burj Dubai is equivalent to: a solid cube of concrete 61 metres on a side, a sidewalk 1,900 kilometres long, the weight of 100,000 elephants.

- The tower's peak electricity demand is estimated at 36mva, equivalent to roughly 360,000 100-watt light bulbs.
- There are 200 metres of dancing fountains at the foot of the Burj Dubai.
- The Burj Dubai feature the world's first Armani Hotel.

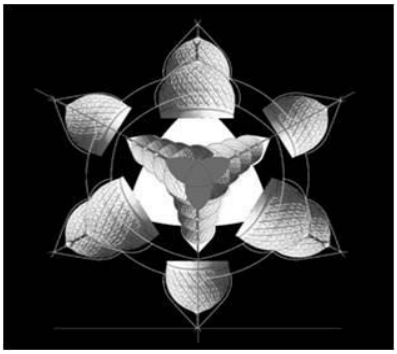
- Burj Dubai derives its design inspiration from the desert flower, hymenocalis, and incorporates patterning systems that are embodied in Islamic architecture.
- At 5,500 kg capacity, the firemen/service elevator is the world's tallest service elevator.
- First mega-rise to have elevators with specially programmed, permit-controlled evacuation procedures.
- The total glass requirement is 142k sq/m
- The car park has approx. 3,000 parking places in four levels and a total area of just under 89,000 m2.
- The car park ventilation system is comply with the US Standards Ashrae and Amca for air quality and fan requirements and in case of fire it is suitable for operating at 300°c for not less than 60 minutes.
- The building was rotated 120 degrees to allow for less stress from the prevailing winds.
- The building sits on a concrete and steel podium with 192 piles descending to a depth of more than 50 metres (164 feet).
- A total of 45,000 cubic metres of concrete are used in the foundations with a weight in excess of 110,000 tons.
- The double deck cabin elevators are the fatest in the world and also the one to travel the longest from a lower to higher point. The speed of the cabin is 18 m/sec (40 mph).
- It also has the worlds first programmed and controlled evacuation in the world.
- It can withstand the worst storm to hit Dubai in a 100 years
- It has 15,000 sq ft of fitness facilities.
- Connected to the largest mall in the world.

Burj Khalifa In Numbers

- 95: Distance In Km At Which Its Spire Can Be Seen
- 504: Rise In Metres Of Its Main Service Lift
- 57: Number Of Lifts
- 49: Number Of Office Floors
- 1,044: Number Of Residential Apartments
- 900: Length In Feet Of The Fountain At The Foot Of The Tower, The World's Tallest Performing Fountain
- 28,261: Number Of Glass Cladding Panels On The Exterior Of The Tower

Architecture

- The architecture features a triple-lobed footprint, an abstraction of the hymenocallis flower.



- The tower is composed of three elements arranged around a central core.
- The modular, Y-shaped structure, with setbacks along each of its three wings provides an inherently stable configuration for the structure and provides good floor plates for residential.
- Twenty-six helical levels decrease the cross section of the tower incrementally as it spirals skyward.
- The central core emerges at the top and culminates in a sculpted spire. A Y-shaped floor plan maximizes views of the Arabian Gulf. Viewed from the base or the air, Burj Dubai is evocative of the onion domes prevalent in Islamic Architecture.

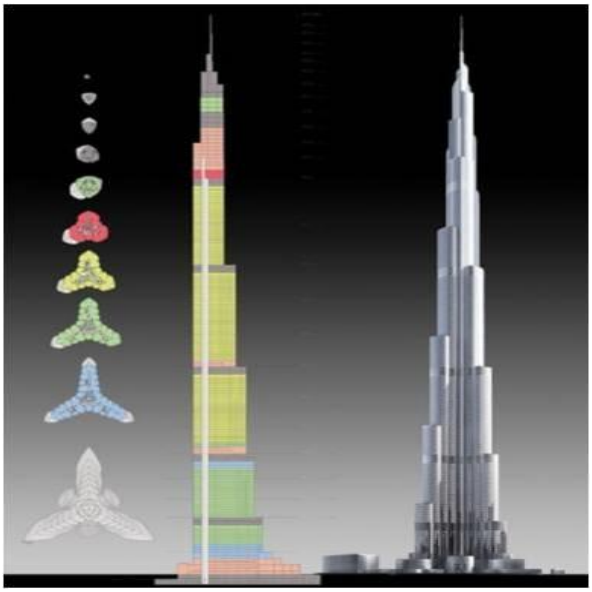


Fig5.1.8.3 Architecture

- The Y-shaped plan is ideal for residential and hotel usage, with the wings allowing maximum outward views and inward natural light.

Foundation

- The superstructure is supported by a large reinforced concrete mat, which is in turn supported by bored reinforced concrete piles.
- The design was based on extensive geotechnical and seismic studies.
- The mat is 3.7 meters thick, and was constructed in four separate pours totaling 12,500 cubic

meters of concrete.

- The minimum centre-to-centre spacing of the piles for the tower is 2.5 times the pile diameter.
- The 1.5 meter diameter x 43 meter long piles represent the largest and longest piles conventionally available in the region.
- A high density, low permeability concrete was used in the foundations, as well as a cathodic protection system under the mat, to minimize any detrimental effects form corrosive chemicals in local ground water.

Fig 5.1.8.4 foundation

Podium

- The Podium provides a base anchoring the tower to the ground, allowing on grade access from three different sides to three different levels of the building.
- Fully glazed entry pavilions constructed with a suspended cable-net structure provide separate entries for the corporate suites at B1 and Concourse levels, the Burj Khalifa residences at ground level and the Armani Hotel at Level 1.

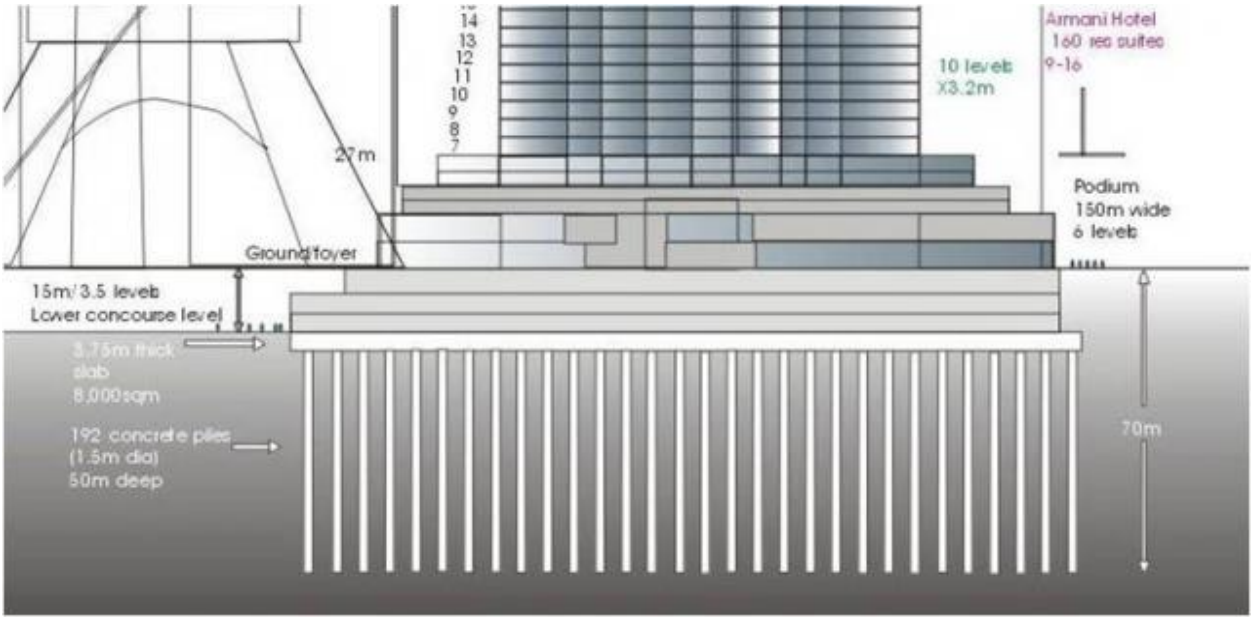


Fig5.1.8.5 Podium

Structural System

- The structure is modular in nature with a central hexagonal shaft or core and three branches that spread out at 120 degrees from each other.
- Attached to these branches are wall like columns at 9 meter spacing that simply drop off as

each leg sets back, avoiding complex and costly structural transfers.

- In addition to its aesthetic and functional advantages, the spiraling “Y” shaped plan was utilized to shape the structural core of Burj Khalifa.

This design helps to reduce the wind forces on the tower, as well as to keep the structure simple and foster constructability

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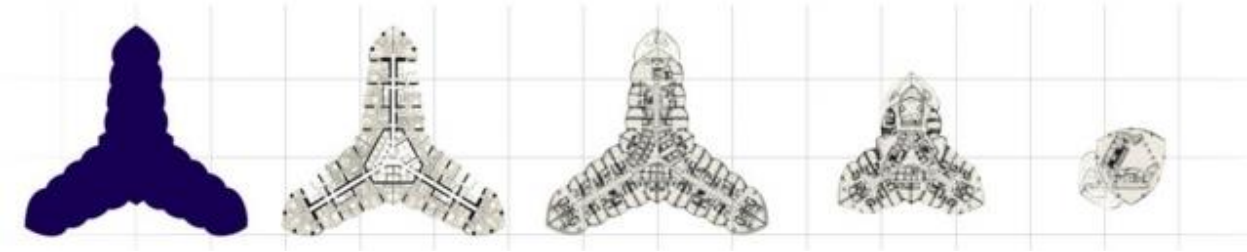

- The structural system can be described as a “buttressed core”, and consists of high performance concrete wall construction.

- Each of the wings buttress the others via a six-sided central core, or hexagonal hub. This central core provides the torsional resistance of the structure, similar to a closed pipe or axle.

- Corridor walls extend from the central core to near the end of each wing, terminating in thickened hammer head walls. These corridor walls and hammerhead walls behave similar to the webs and flanges of a beam to resist the wind shears and moments.

- Perimeter columns and flat plate floor construction complete the system.

- At mechanical floors, outrigger walls are provided to link the perimeter columns to the interior wall system, allowing the perimeter columns to participate in the lateral load resistance of the structure; hence, all of the vertical concrete is utilized to support both gravity and lateral loads.

- The result is a tower that is extremely stiff laterally and torsionally. It is also a very efficient structure in that the gravity load resisting system has been utilized so as to maximize its use in resisting lateral loads.

- As the building spirals in height, the wings set back to provide many different floor plates.

- The setbacks are organized with the tower’s grid, such that the building stepping is accomplished by aligning columns above with walls below to provide a smooth load path. As such, the tower does not contain any structural transfers.

- These setbacks also have the advantage of providing a different width to the tower for each differing floor plate. This stepping and shaping of the tower has the effect of “confusing the wind”: Wind vortices never get organized over the height of the building because at each new tier the wind encounters a different building shape.

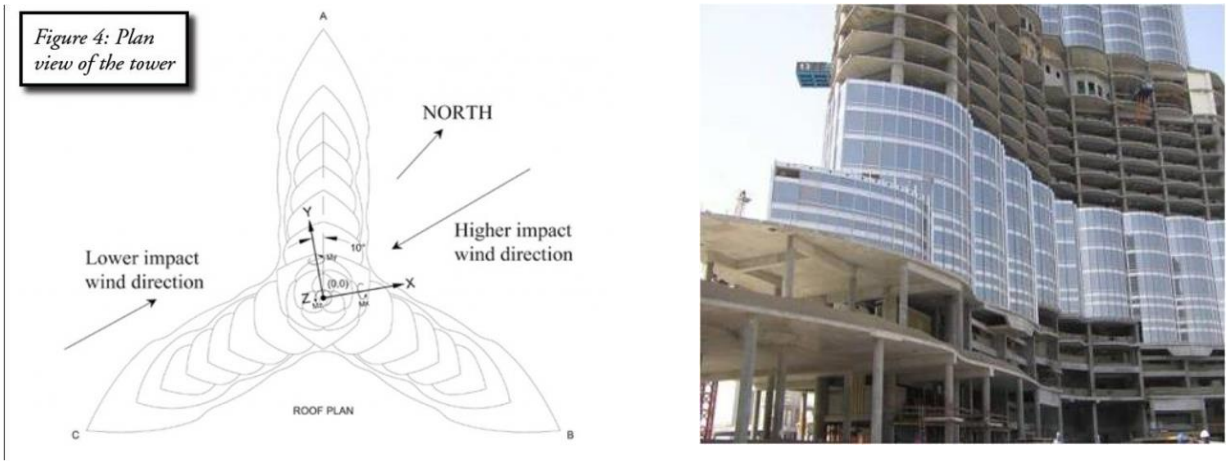

Fig 5.1.8.6 structural system

Reinforced Concrete Structure

- The center hexagonal reinforced concrete core walls provide the torsional resistance of the structure similar to a closed tube or axle.

- The center hexagonal walls are buttressed by the wing walls and hammer head walls which behave as the webs and flanges of a beam to resist the wind shears and moments.

- Outriggers at the mechanical floors allow the columns to participate in the lateral load resistance of the structure; hence, all of the vertical concrete is utilized to support both gravity and lateral loads.

- The wall concrete specified strengths ranged from C80 to C60 cube strength and utilized portland cement and fly ash.
- Local aggregates were utilized for the concrete mix design
.
- The C80 concrete for the lower portion of the structure had a specified young's elastic modulusSCC Conc. Flow Table Testing
of 43,800 n/mm2 (6,350ksi) at 90 days.

- The wall and column sizes were optimized using virtual work / lagrange multiplier methodology which results in a very efficient structure.

Comparison Between Cross Sections Of The Tall Structures

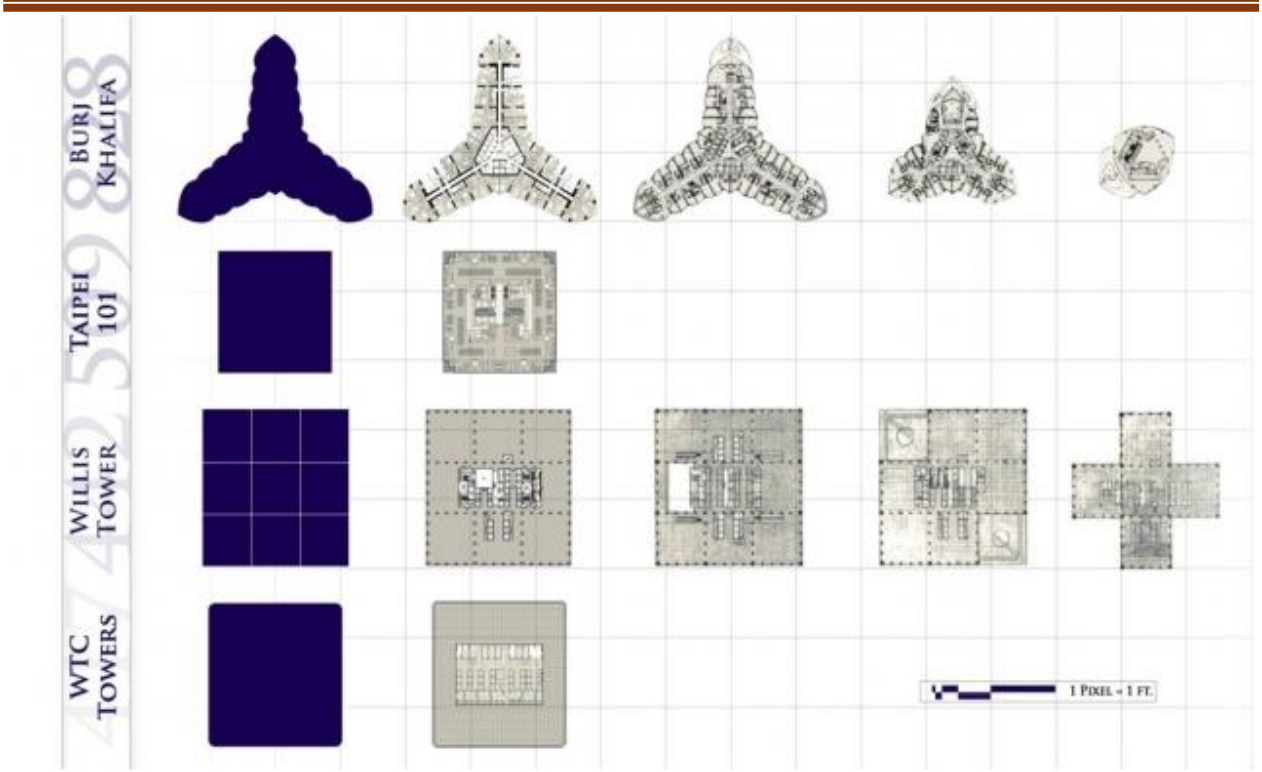

Fig 5.1.8.7 Comparison Between Cross Sections Of The Tall Structures

Purpose

- Burj Dubai has been designed to be the centerpiece of a large-scale, mixed-use development that will include 30,000 homes, nine hotels such as the Burj Dubai Lake Hotel & Serviced Apartments, 0.03 km² (0.01 sq mi) of parkland, at least 19 residential towers, the Dubai Mall, and the 0.12 km² (0.05 sq mi) man-made Burj Dubai lake.
- Burj Dubai cost US$ 800 million to build and the entire 2 km² (0.77 sq mi) development cost around US$ 20 billion.
- The silvery glass-sheathed concrete building gives the title of earth's tallest free-standing structure to the Middle East — a title not held by the region since 1311 AD when Lincoln Cathedral in England surpassed the height of the Great Pyramid of Giza, which had held the title for almost four millennia.
- The decision to build Burj Dubai is reportedly based on the government's decision to diversify from a trade-based economy to one that is service- and tourism-oriented.
- According to officials, it is necessary for projects like Burj Dubai to be built in the city to garner more international recognition, and hence investment. "He [Sheikh Mohammed Bin Rashid Al Maktoum] wanted to put Dubai on the map with something really sensational," said Jacqui Josephson, a Tourism and VIP Delegations Executive at Nakheel Properties.

REFERENCE

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Chapter 6

6 Swatchh Bharat Abhiyan (Clean India)

Swachh Bharat Mission (SBM), Swachh Bharat Abhiyan (SBA), or Clean India Mission

It is a country-wide campaign initiated by the Government of India in 2014 to eliminate open defecation and improve solid waste management (SWM). Phase 1 of the mission lasted till October 2019. Phase 2 will be implemented between 2020-21 and 2024-25.

Initiated by the Government of India, the mission aimed to achieve an "open-defecation free" (ODF) India by 2 October 2019, the 150th anniversary of the birth of Mahatma Gandhi. The objectives of the first phase of the mission also included eradication of manual scavenging, generating awareness and bringing about a behavior change regarding sanitation practices, and augmentation of capacity at the local level. The second phase of the mission aims to sustain the open defecation free status and improve the management of solid and liquid waste. The mission is aimed at progressing towards target 6.2 of the Sustainable Development Goals Number 6 established by the United Nations in 2015.

The campaign's official name is in Hindi. In English, it translates to "Clean India Mission". The campaign was 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 4,043 cities, towns, and rural communities. At a rally in Champaran, the Prime minister called the campaign Satyagrah se Swachhagrah in reference to Gandhi's Champaran Satyagraha launched on 10 April 1916. The mission was split into two: rural and urban. In rural areas "SBM - Gramin" was financed and monitored through the Ministry of Drinking Water and Sanitation; whereas "SBM - urban" was overseen by the Ministry of Housing and Urban Affairs.

As part of the campaign, volunteers, known as Swachhagrahis, or "Ambassadors of cleanliness", promoted indoor plumbing and community approaches to sanitation (CAS) at the village level. Other activities included national real-time monitoring and updates from non-governmental organizations (NGOs) such as The Ugly Indian, Waste Warriors, and SWaCH Pune (Solid Waste Collection and Handling).

The government provided subsidy for construction of nearly 110 million toilets between 2014 and 2019, although many Indians especially in rural areas choose to not use them. The campaign was criticized for using coercive approaches to force people to use toilets. Many households were threatened with a loss of benefits such as access to electricity or food entitlements through the public distribution system.

6.1 Swatchhta needed in motikharaj village -Existing Situation with photograph

We have done one survey on existing condition of village regarding swachhta. The people are maintaining cleanliness of the village.

Fig 6.1.1Existing Photos of swachhta

6.2 Guidelines - Implementation in motikharaj village with Photograph:

According to Talati, Sarpansh and villagers, the people are cleaning their nearby area regularly.

Fig-6.2.1Existing Photos of village streets

6.3 Activities Done by Students for Kamrol village with Photograph:

Firstly we took a permission from village Talati and Sarpanch for doing one Swachhta awareness camp and then we have done one activity of swachhta awareness in the village and we have done an interaction with villagers and aware them about the importance of swachhta in our life and told them to keep the village and infrastructure clean and safe.

Fig-6.3.1Swachhta Awareness Activity Photos

Chapter 7

1.Village condition due to Covid-19

With respect to COVID 19 pandemic, Ministry of Panchayati Raj, Government of India in close collaboration with State Governments has taken various initiatives. Close consultation and guidance of the State as well as District authorities is being maintained to ensure that lock down conditions are not violated and norms of social distancing are scrupulously followed to contain the spread of the disease. India has overtaken Brazil and become the second-worst affected country in the world by the coronavirus pandemic, with more than 4 million cases. COVID-19 had mostly remained in India's cities, but the disease is now spreading to rural India – an area with over 850 million people and far worse healthcare. The reason for this shift appears to be migrant workers who have been returning to their villages since lockdown was eased at the end of June. The medical response to stop the spread and treat those infected has been inadequate, according to media reports. With one trained doctor for every 1,497 people, against the World Health Organization recommended one per 1,000, and public health expenditure for 2018 at just 1.3% of GDP, India faces an uphill struggle in dealing with the pandemic. While two-thirds of India's population lives in rural areas, there are almost four times as many health workers per person in cities. Most rural communities rely on untrained health workers. Over two-thirds of these rural health providers have no formal medical training, but remain the only option of medical support for most of the rural population.

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

During interaction with the Talati, he told us that quarantine place and home quarantine facility were implemented during the lockdown. According to Talati, Sarpanch and villagers; in the motikharaj village the sanitization process was done during the lockdown period.

Fig7.1.1 motikharaj quarantine centers

7.2 Activities Done by Students for motikharaj village with Photograph

we have distributed some face masks to the villagers for the protection against covid 19 and aware them about covid 19 situation in India and told them to take precautionary measures like wear a

mask perfectly, wash hands regularly, maintain social distancing in public and avoid crowdy area & firstly make yourself home quarantined if you fill any COVID-19 symptom in your body.

Fig-7.2.1-Covid 19 Awareness Activity Photos

7.3 Any other steps taken by the students / villagers:

During interaction with the Talati, he told us In the COVID-19 situation cleaning, fogging and sanitization were done in the village.

Chapter 8

Sustainable Design Planning Proposal (Prototype Design) - Part- I (Scenario / Existing Situation / Proposed Design in Auto cad / Recapitulation Sheet / Measurement Sheet / Abstract Sheet / Sustainability of Proposal / Any other software):

8.1.1 Sustainable Design (Civil)

LOW COST TOILET:

Gramalaya has been implementing for more than two and half decades various toilet technology depending on the terrain with the support of Water Aid and Water.org for the last 20 years. There are several designs and technologies available for installing a household type sanitary latrine. Therefore, it is important to give several technological options or informed choices to the user to choose and own and maintain a sanitary latrine without much external support but several inter-related factors play important role in installing a sanitary latrine to a rural household. This includes:

- Affordability
- Space in the home
- Geographical conditions - soil/water table etc.
- Cultural habits
- Availability of water/scarcity of water
- Availability of skilled or semi-skilled manpower

1.Plinth level toilet with temporary superstructure :

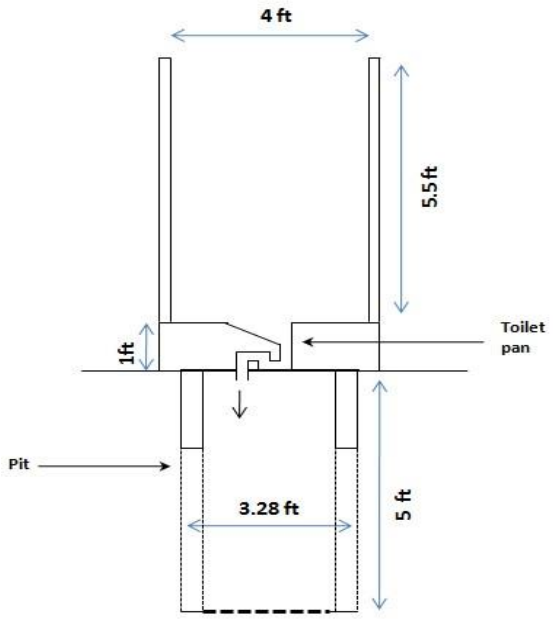


Fig.8.1.1.1Front view

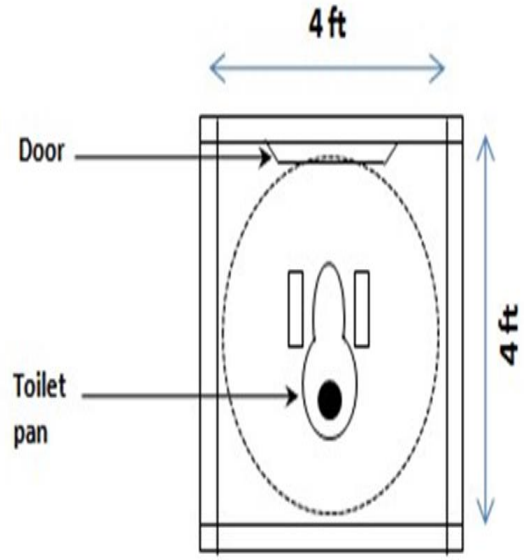


Fig.8.1.1.2 Top view

Salient features:

1. Appropriate where space is limited
2. Easier to empty when pit fills
3. Low cost
4. Superstructure made from locally available materials such as banana leaves, bamboo sticks and gunny bags

5. It is appropriate for festival places and during emergencies
6. It is constructed in one day
7. The plinth level basement may be circle or square shape

Cost Estimate:

Details	Number of units	Unit cost (in Rs.)	Total amount (In Rs.)
Toilet pan with ptrap (ceramic rural pan with deep slope)	1	250	250
Jaggery and jute bag for connecting the p-trap and pan			75
Squatting slab	1	300	300
Cement	½ bag	140	140
Masonry charges	1 mason	350	350
Sand	3 bond	100	100
Soling slope for pit lining	½ unit		300
	Total		1515

Table 8.1.1 Cost estimation of Plinth level toilet with temporary structure

2.Toilet only model with superstructure using hollow bricks :

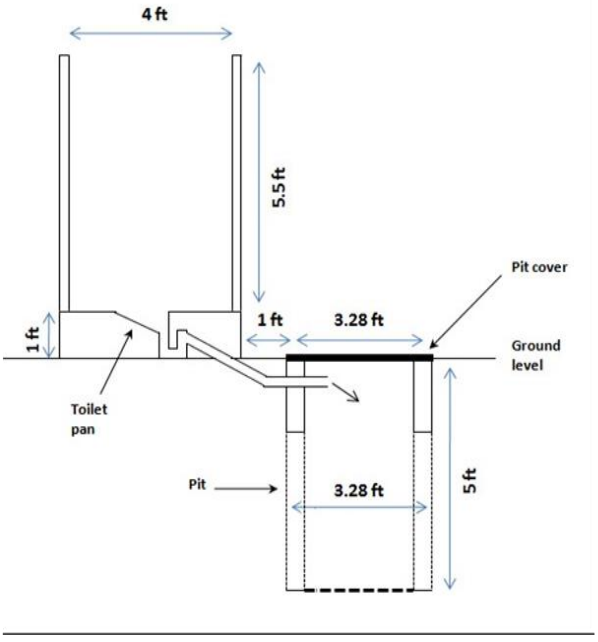


Fig. 8.1.1.3 Front view

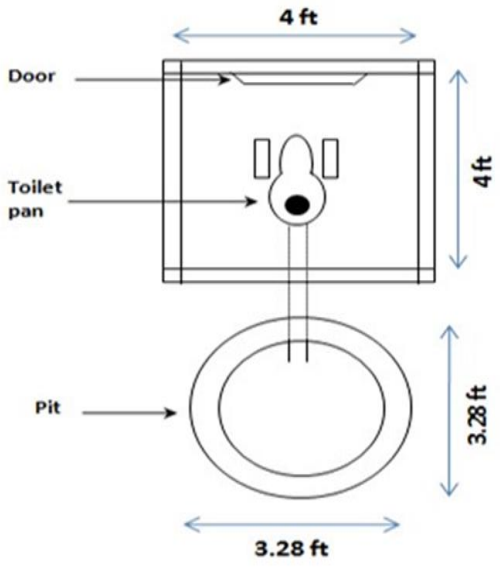


Fig.8.1.1.4 Top view

Salient features:

1. It is a suitable model for all
2. Low cost
3. Appropriate where space is limited

Cost Estimate:

Details	No. of units	Unit cost (in Rs.)	Total amount (in Rs.)
Toilet pan with p-trap (ceramic rural pan with deep slope)	1	250	250
PVC pipe-4 feet (dia 4 inch)	4 feet pipe	22	28
Hollow Bricks	75	15	1125
Cement	2.5 bags	275	687
Masonry charges	3 mason	350	1050
Sand	1 bullock cart	400	400
Door	1	600	600
Soling stone	1 bullock cart	500	500
Cover slab for pit	1	300	300
Transport charges		500	500
Total		5500	

Table 8.1.2 Cost Estimate of Toilet only model with superstructure using hollow bricks

ECO SANITATION:

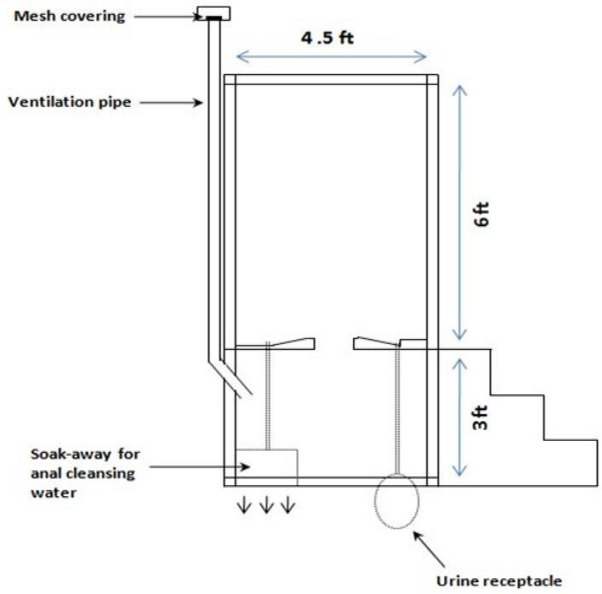


Figure.8.1.1.5 Eco sanitation

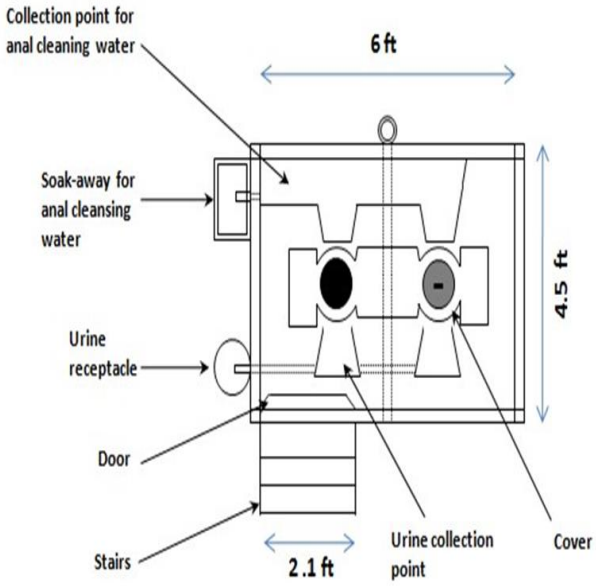


Figure.8.1.1.6 Eco Sanitation system

Salient features:

- Avoids contamination of water sources and soil
- Composting of human waste for use as a natural fertilizer
- There is no need of emptying the pits
- It is applicable for water logged, water scarce, coastal and rocky areas
- Promotes soil fertility and improved crop production

Cost Estimate:

Details	No. of units	Unit cost (in Rs.)	Total amount (in Rs.)
Hollow bricks	200	15	3000
PVC pipe-10 feet (3 inch dia)	10 feet	36	360
PVC pipe-1 inch	10 feet		200
Cement	2.5 bags	275	687
Masonry charges	4 masons	350	1400
Sand	1 bullock cart	500	500

Door	1	600	600
Roof slab- 5’ x 2.5’	2 slabs	600	1200
Cover slab for chamber – 2’ x 2’	2	300	600
Squatting slab	2	400	800
Pot, buckets with lid			200
Foundation work			700
Transportation charges		500	500
Total		10747	

Table 8.1.3 Cost Estimate of Eco Sanitation

COMMUNITY LEVEL TOILET FACILITIES:

A community level toilet is a room or small building containing one or more toilets (and possibly also urinals) which is available for use by the general public, or by customers or employees of certain businesses. Community level toilets are commonly separated into male and female facilities, particularly the smaller or single-occupancy types. Increasingly, community level toilets are accessible to people with disabilities.

Community level toilets may be provided by the local authority or by a commercial business. They may be unattended or be staffed by attendant (possibly with a separate room). In many cultures, it is customary to tip the attendant; pay toilets charge a small fee for entrance, sometimes by use of a coinoperated turnstile. Some venues such as nightclubs may feature a grooming service provided by an attendant in the room. Portable toilets are often provided at large outdoor events.

Community level toilets are typically found in schools, offices, factories, and other places of work; in museums, cinemas, bars, restaurants, and other places of entertainment; in railway stations, filling stations, and on long distance public transport vehicles such as trains and planes.

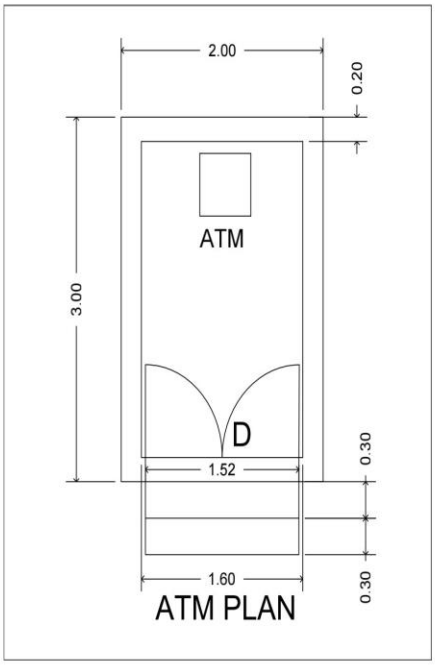
8.1.2 pysical design
ATM

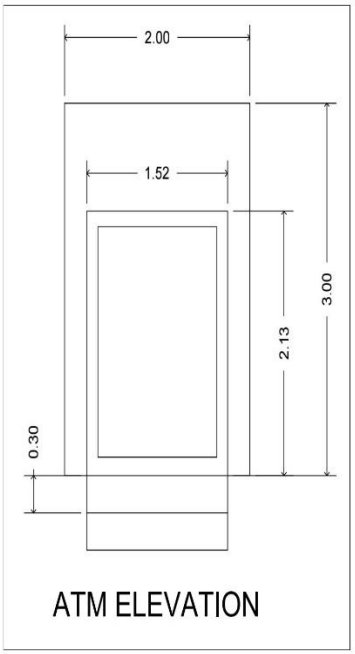
Scenario
In motikharaj village no atm facility available. So villagers go out of motikharaj village for case requirement so that we have decided and finalized the design of ATM . if the atm facility available it can help the villagers.

Existing situation
There is no atm available. Villagers go out of motikharaj village for case requirement

Need
If we provide atm so villagers take benefit of atm.

Proposed Design in Auto cad





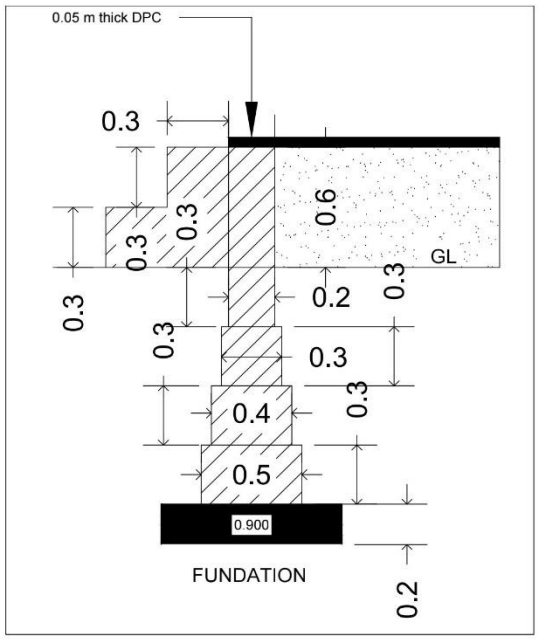


Fig 8.1.2.1 ATM plan, elevation, foundation

Measurement sheet with help of center line method						
ATM						
Item no	Item description	no	Length (m)	Breadth (m)	Height (m)	quantity
1	Earth work in excavation up to 1.5m depth including throwing material within a lead of 30m.	1	9.2	0.9	1.4	11.60 cum
2	Brick bat cement concrete 1:4:8	1	9.2	0.9	0.2	1.66 cum
3	Brick masonary up to plinth	1	9.2	0.5	0.3	1.38 cum
			9.2	0.4	0.3	1.10 cum
			9.2	0.3	0.3	0.83 cum
			9.2	0.2	0.9	1.67 cum
						Total = 4.98 cum
	STEP	1	1.52	0.6	0.3	0.27 cum
		1	1.52	0.3	0.3	0.14 cum
						Total=0.41 cum
4	Refilling of foundation trench	11.60 – (1.66+4.98)= 4.96				4.96 cum
5	Earth filling in plinth	1	1.6	2.6	0.60	2.50 cum
6	DPC 0.05m thick	1	2	3		6 sqm
7	First class brick masonary in 1:6cm for super structure including deduction					3.92 cum
8	RCC work					0.95 cum
9	Reinforcement for all RCC members 1% of RCC work					75 kg
10	12mm thick internal plaster					21.09 sqm
11	15mm thick in external plaster					22.80 sqm
12	Celling plaster					4.16 sqm
13	2cm thick marble flooring					4.16 sqm

Table 8.1.2.1 ATM measurement sheet

Abstract sheet					
ATM					
Item no	Item description	Quantity	Rate (rs.)	Per	Amount (rs)
1	Earth work in excavation up to 1.5m depth including throwing material within a lead of 30m.	11.60 cum	85	Cu m	986
2	Brick bat cement concrete 1:4:8 including compaction and curing	1.66 cum	2700	Cu m	4482
3	Brick masonary up to plinth including curing	5.39 cum	3200	Cu m	17248
4	Refilling of foundation trench	4.96 cum	50	Cu m	248
5	Sand filling in plinth	2.50 cum	950	Cu m	2375
6	DPC 0.05m thick	6 sqm	70	Sq m	420
7	First class brick masonary in 1:6cm for super structure including deduction	3.92 cum	3500	Cu m	13720
8	RCC work	0.95 cum	8800	Cu m	8360
9	Reinforcement for all RCC members 1% of RCC work	75 kg	46	kg	3450
10	12mm thick internal plaster	21.09 sqm	132	Sq m	2784
11	15mm thick in external plaster	22.80 sqm	153	Sq m	3488
12	Celling plaster	4.16 sqm	132	Sq m	550
13	2cm thick marble flooring	4.16 sqm	400	Sq m	1664
					Total amount = 59775
					Add 1.5% water charges =897
					Add 10% contractor profit =5978
					Total = 66650

Table 8.1.2.2 ATM abstract sheet

8.1.3 Social design
Community Hall

Scenario

Community hall is a public location where members of a community gather for group activities, events, festivals and social purpose. They may sometimes be open for whole community or for a specialized group example Mahila mandal hall. A community hall of village generally consists of a hall, storage or and washroom.

Existing Situation in motikharaj

In the motikharaj village there is no any community hall so that according to the village population there should be two community hall in village. It is a public location where members of a community gather for group activities, events, festivals and social purpose. A community hall of village generally consists of a hall, storage and washroom.

Needs

Design required as per URDPF guidelines. Area 750sqm required. where members of a community gather for group activities, events, festivals and social purpose; for mahila mandal in the village; etc.

Proposed Design in Auto cad

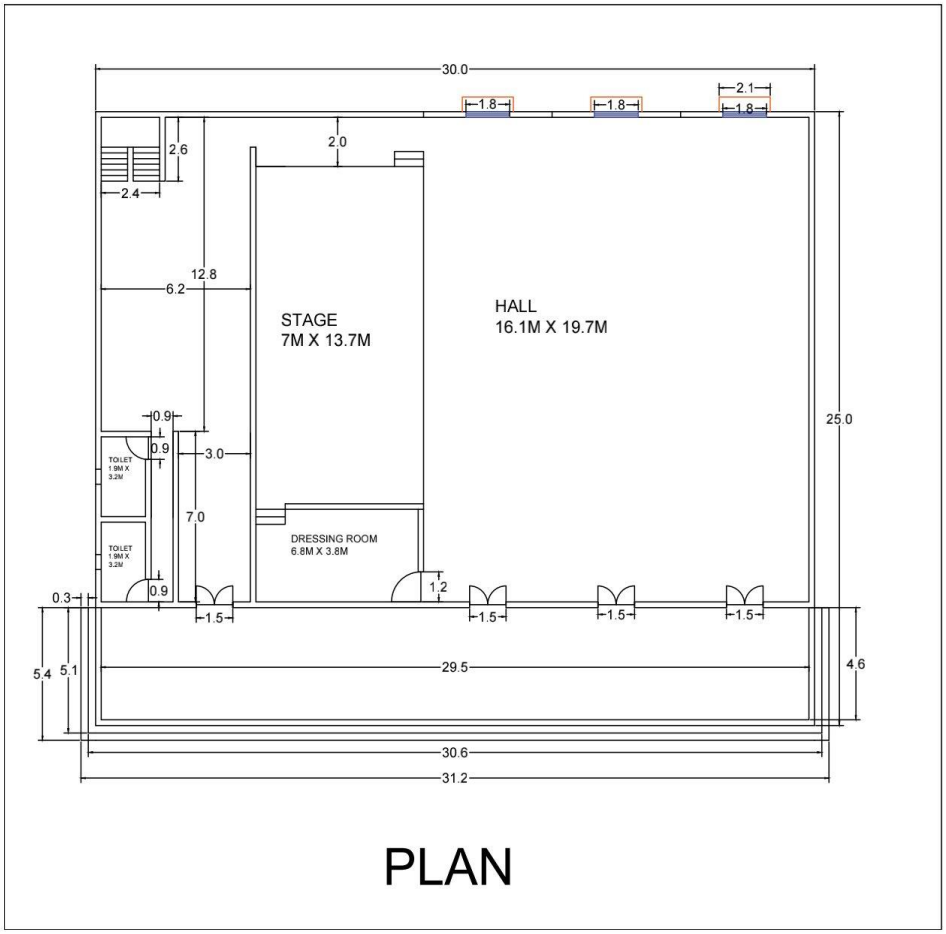


Fig8.1.2.1 community hall plan

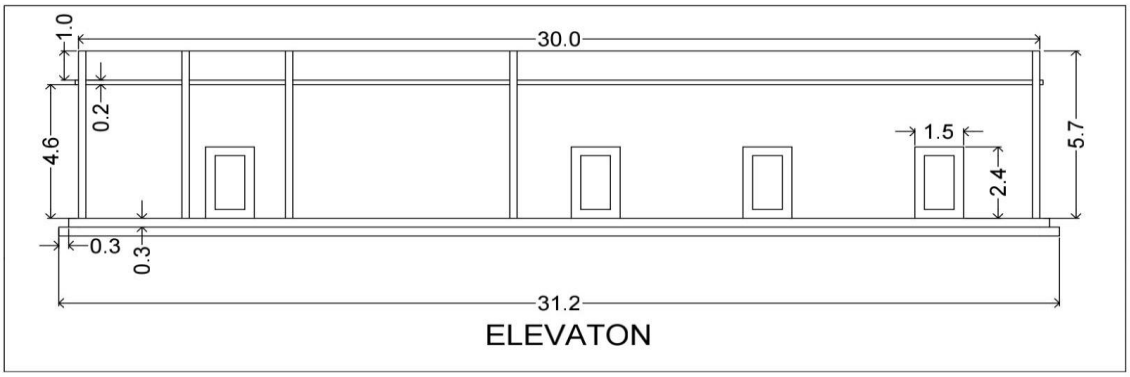
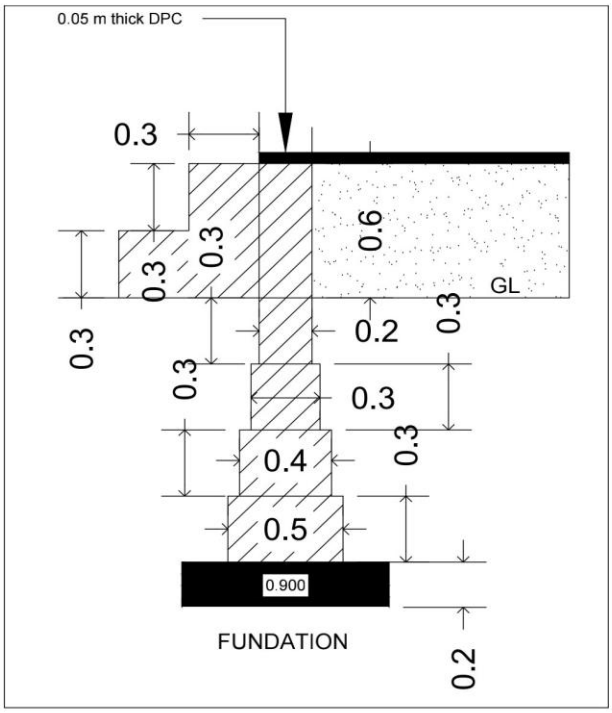


Fig 8.1.2.2 Community hall elevation



8.1.2.3Community hall foundation

Measurement sheet with help of center line method						
Community hall						
Item no	Item description	no	Length (m)	Breadth (m)	Height (m)	quantity
1	Earth work in excavation up to 1.5m depth including throwing material within a lead of 30m.	1	186.32	0.9	1.4	234.76 cu m
2	Brick bat cement concrete 1:4:8	1	186.32	0.9	0.2	33.54 cu m
3	Brick masonary up to plinth	1	188.52	0.5	0.3	28.28
		1	189.04	0.4	0.3	22.96
		1	189.62	0.3	0.3	17.07
		1	190	0.230	0.91	39.77
						TOTAL =107.81
	STEP	1	36.63	0.31	0.305	3.46
		1	35.72	0.31	0.305	3.38
						TOTAL=114.65
						TOTAL =222.46cum
4	Refilling of foundation trench	234.76 - 143.35= 91.41				91.41 cum
5	Earth filling in plinth					448.4 cum
6	DPC 0.05m thick	1	25	30		750 sq m
7	First class brick masonary in 1:6cm for super structure including deduction					218.98 cu m
8	RCC work					90.65 cu m
9	Reinforcement for all RCC members 1% of RCC work					7116 kg
10	12mm thick internal plaster					531.8 sq m
11	15mm thick in external plaster					450.42 sq m
12	Celling plaster					733.90 sq m

13	2cm thick marble flooring					733.90 sq m

Table 8.1.2.1 community hall mesurement sheet

Abstract sheet					
Community hall					
Item no	Item description	Quantity	Rate (rs.)	Per	Amount (rs)
1	Earth work in excavation up to 1.5m depth including throwing material within a lead of 30m.	234.76 cu m	85	Cu m	199546
2	Brick bat cement concrete 1:4:8 including compaction and curing	33.54 cu m	2700	Cu m	90558
3	Brick masonary up to plinth including curing	222.46 cu m	3200	Cu m	711872
4	Refilling of foundation trench	91.41 cum	50	Cu m	45705
5	Sand filling in plinth	448.4 cum	950	Cu m	425980
6	DPC 0.05m thick	750 sq m	70	Sq m	52500
7	First class brick masonary in 1:6cm for super structure including deduction	218.98 cu m	3500	Cu m	766430
8	RCC work	90.65 cu m	8800	Cu m	797720
9	Reinforcement for all RCC members 1% of RCC work	7116 kg	46	kg	327336
10	12mm thick internal plaster	531.8 sq m	132	Sq m	70198
11	15mm thick in external plaster	450.42 sq m	153	Sq m	68915
12	Celling plaster	733.90 sq m	132	Sq m	96875
13	2cm thick marble flooring	733.90 sq m	400	Sq m	293560
					Total =3947195
					Add 1.5% water charges=59208
					Add 10% contractor profit=394720
					Total =4401123

Table 8.1.2.2 community hall abstract sheet

8.1.4 Socio-Cultural design (Civil)
Public library

Scenario

As per URDPF guidline 2000sqm land area required. A public library of village generally consists of a storage area and washroom.

Existing Situation in motikharaj

In the motikharaj village there is no any public library so that according to the village population there should be one public library in village.

Need

Design required as per URDPF guidelines. also need for educational porpose.

Proposed Design in Auto cad

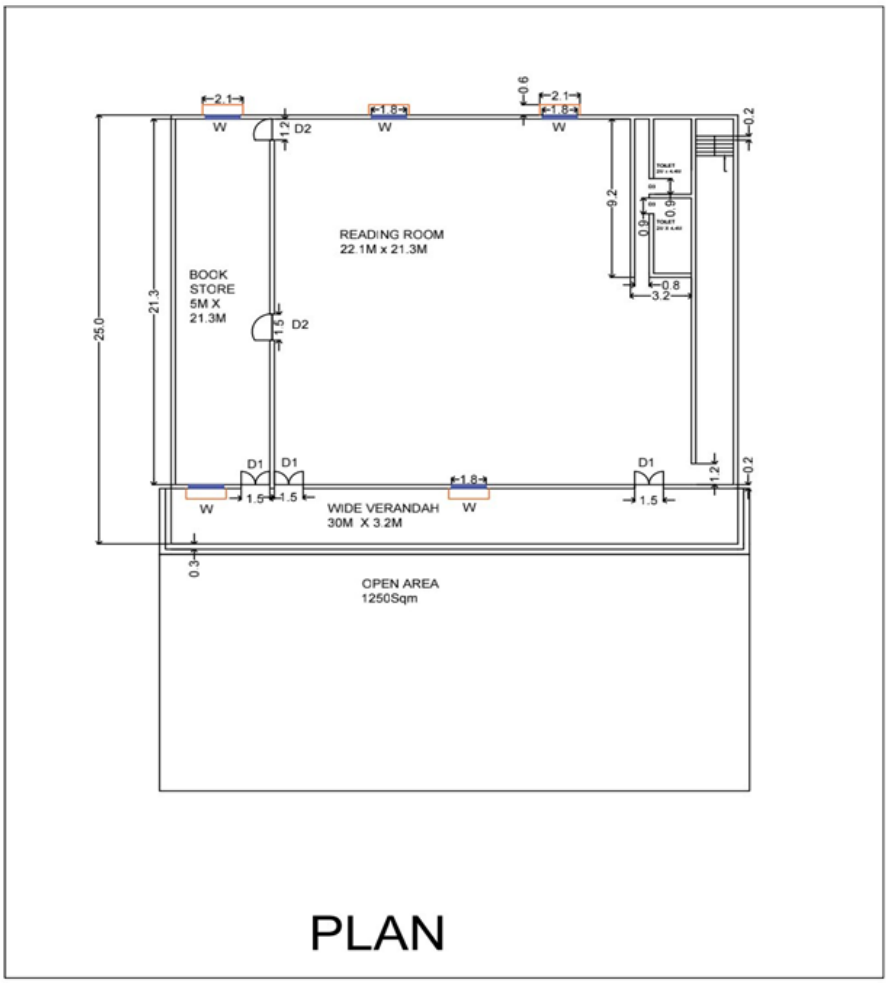


Fig 8.1.4.1 public library plan

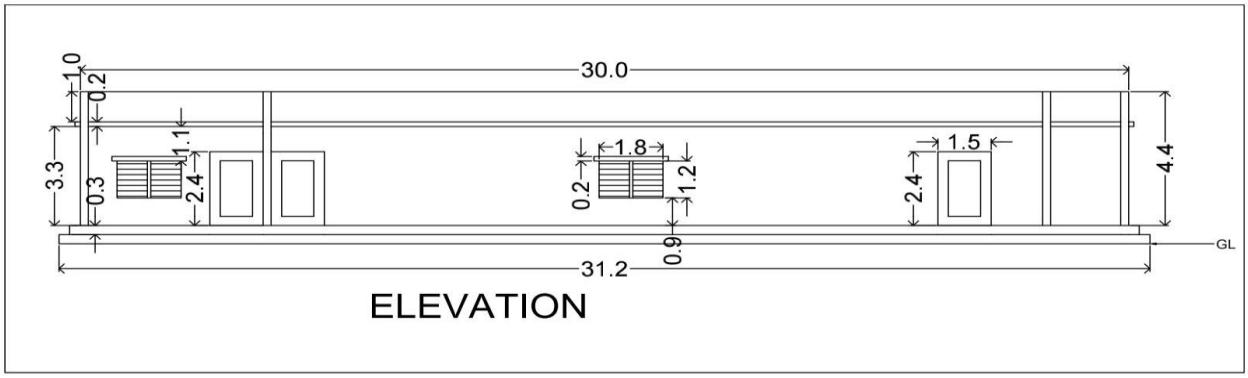


Fig 8.1.4.2 public library elevation

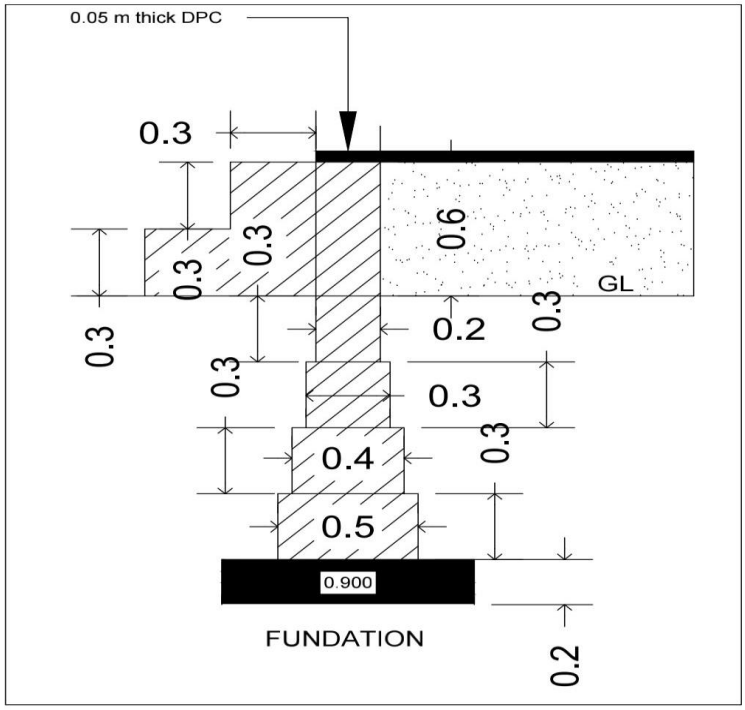


Fig 8.1.4.3 public library foundation

Measurement sheet with help of center line method						
Public library						
Item no	Item description	no	Length (m)	Breadth (m)	Height (m)	quantity
1	Earth work in excavation up to 1.5m depth including throwing material within a lead of 30m.	1	200.13	0.90	1.4	252.16 cu m
2	Brick bat cement concrete 1:4:8	1	200.13	0.90	0.2	36.02 cu m
3	Brick masonary up to plinth		202.33	0.5	0.3	30.35
			202.88	0.4	0.3	24.35
			203.43	0.3	0.3	18.31
			203.83	0.230	0.91	42.65
						115.66 cu m
	STEP		34.76	0.305	0.305	3.23
			33.84	0.305	0.305	3.15
						6.38 cu m
						Total =122.04 cu m
4	Refilling of foundation trench	252.16 – 36.02 – 115.66=100.48				100.48 cu m
5	Earth filling in plinth					404.21 cu m
6	DPC 0.05m thick					750 sq m
7	First class brick masonary in 1:6cm for super structure including deduction					166.49 cu m
8	RCC work					102.19 cu m
9	Reinforcement for all RCC members 1% of RCC work					8007 kg
10	12mm thick internal plaster					760.02 cu m
11	15mm thick in external plaster					525.86 sq m
12	Celling plaster					664.29 sq m

13	2cm thick marble flooring					664.29 sq m

Table 8.1.4.1 measurement sheet public library

Abstract sheet					
Public library					
Item no	Item description	Quantity	Rate (rs)	Per	Amount(rs)
1	Earth work in excavation up to 1.5m depth including throwing material within a lead of 30m.	252.16 cu m	85	Cu m	21434
2	Brick bat cement concrete 1:4:8	36.02 cu m	2700	Cu m	97254
3	Brick masonary up to plinth	122.04 cu m	3200	Cu m	390528
4	Refilling of foundation trench	100.48 cu m	50	Cu m	5024
5	Sand filling in plinth	404.21 cu m	950	Cu m	383999
6	DPC 0.05m thick	750 sq m	70	Sq m	52500
7	First class brick masonary in 1:6cm for super structure	166.49 cu m	3500	Cu m	582715
8	RCC work	102.19 cu m	8800	Cu m	899272
9	Reinforcement for all RCC members 1% of RCC work	8007 kg	46	kg	368322
10	12mm thick internal plaster	760.02 cu m	132	Sq m	100323
11	15mm thick in external plaster	525.86 sq m	153	Sq m	80456
12	Celling plaster	664.29 sq m	132	Sq m	87686
13	2cm thick marble flooring	664.29 sq m	400	Sq m	265716
					Total =3335229

Add 1.5% water charges =50028
Add 10% contractor charges = 333523
Total =3718780

Table 8.1.4.2 abstract sheet public library

8.1.5 smart village design
Cybercafe

Scenario

A cybercafe is a type of business where computers are provided for accessing the internet, playing games, chatting with friends or doing other computer-related tasks. In most cases, access to the computer and internet is charged based on time.

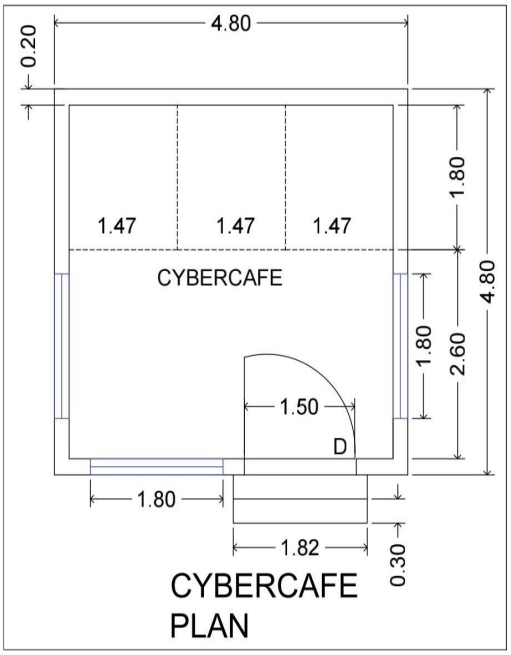
Existing Situation in Kamrol

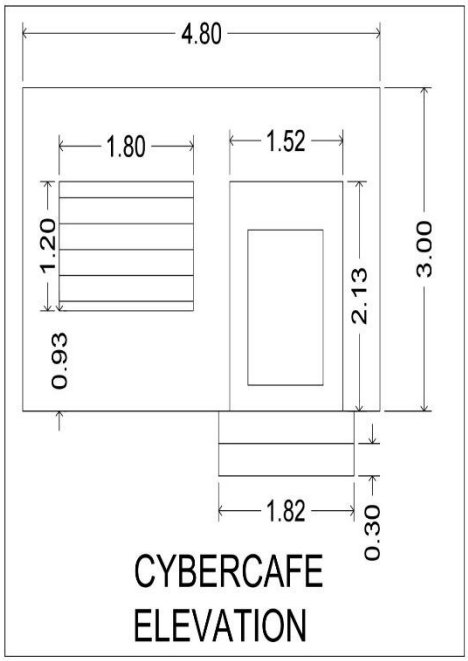
In the motikharaj village there is no any cybercafe existing in the village. From the feedbacks which were given by the villagers we have decided to design a cybercafe as a smart village design for the main purpose of internet availability at any time for any person in the village.

Need

Ease of use, Availability internet and for the people who can know about the internet etc.

Proposed Design in Auto cad





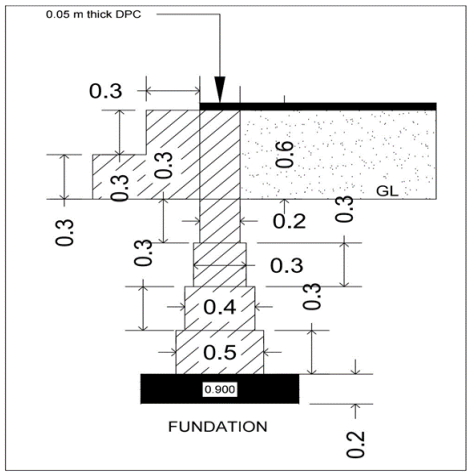


Fig 8.1.5.1 cybercafe plan, elevation, foundation

Measurement sheet with help of center line method						
Cybercafe						
Item no	Item description	no	Length (m)	Breadth (m)	Height (m)	quantity
1	Earth work in excavation up to 1.5m depth including throwing material within a lead of 30m.	1	18.4	0.90	1.4	23.18 cum
2	Brick bat cement concrete 1:4:8	1	18.4	0.90	0.2	3.31 cum
3	Brick masonary up to plinth	1	18.4	0.5	0.3	2.76 cum
			18.4	0.4	0.3	2.21 cum
			18.4	0.3	0.3	1.66 cum
			18.4	0.2	0.9	3.31 cum
						Total =9.94 cum
	STEP	1	1.82	0.6	0.3	0.33 cum
		1	1.82	0.3	0.3	0.16 cum
						0.49 cum
4	Refilling of foundation trench	23.18 – (3.31+9.94)=9.93				9.93 cum
5	Earth filling in plinth	1	4.4	4.4	0.6	11.62 cum
6	DPC 0.05m thick	1	4.80	4.80		23.04 sqm
7	First class brick masonary in 1:6cm for super structure including deduction					8.4 cum

8	RCC work					3.61 cum
9	Reinforcement for all RCC members 1% of RCC work					284 kg
10	12mm thick internal plaster					50.16 sqm
11	15mm thick in external plaster					69.12 sqm
12	Celling plaster					19.36 sqm
13	2cm thick marble flooring					19.36 sqm

Table 8.1.5.1 Cybercafe Measurement sheet

Abstract sheet					
Cybercafe					
Item no	Item description	Quantity	Rate (rs.)	Per	Amount (rs)
1	Earth work in excavation up to 1.5m depth including throwing material within a lead of 30m.	23.18 cum	85	Cu m	1971
2	Brick bat cement concrete 1:4:8 including compaction and curing	3.31 cum	2700	Cu m	8937
3	Brick masonary up to plinth including curing	10.43 cum	3200	Cu m	33376
4	Refilling of foundation trench	9.93 cum	50	Cu m	496.5
5	Sand filling in plinth	11.62 cum	950	Cu m	11039
6	DPC 0.05m thick	23.04 sqm	70	Sq m	1613
7	First class brick masonary in 1:6cm for super structure including deduction	8.4 cum	3500	Cu m	29400
8	RCC work	3.61 cum	8800	Cu m	31768
9	Reinforcement for all RCC members 1% of RCC work	284 kg	46	kg	13064
10	12mm thick internal plaster	50.16 sqm	132	Sq m	6622

11	15mm thick in external plaster	69.12 sqm	153	Sq m	10576
12	Celling plaster	19.36 sqm	132	Sq m	2556
13	2cm thick marble flooring	19.36 sqm	400	Sq m	7744
					Total amount =159163
					Add 1.5% water charges = 2387
					Add 10 % contractor profit = 15916
					Total = 177466

Table 8.1.5.2 Cybercafe abstract sheet

8.1.6 other design
Super market

Scenario

A supermarket is a self-service shop offering a wide variety of food, beverages and household products, organized into sections. It is larger and has a wider selection than earlier grocery stores, but is smaller and more limited in the range of merchandise than a hypermarket or big-box market.

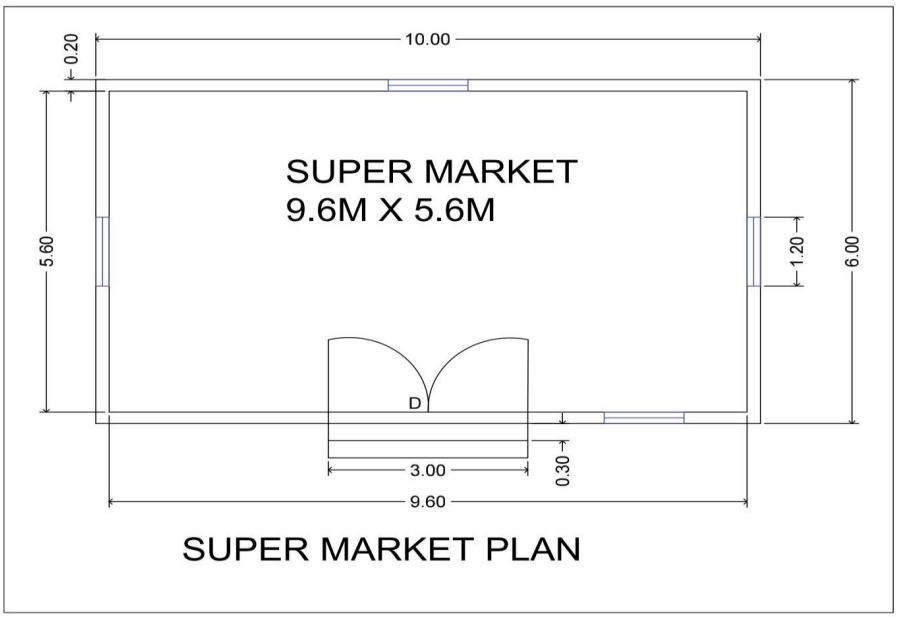
Existing Situation in motikharaj

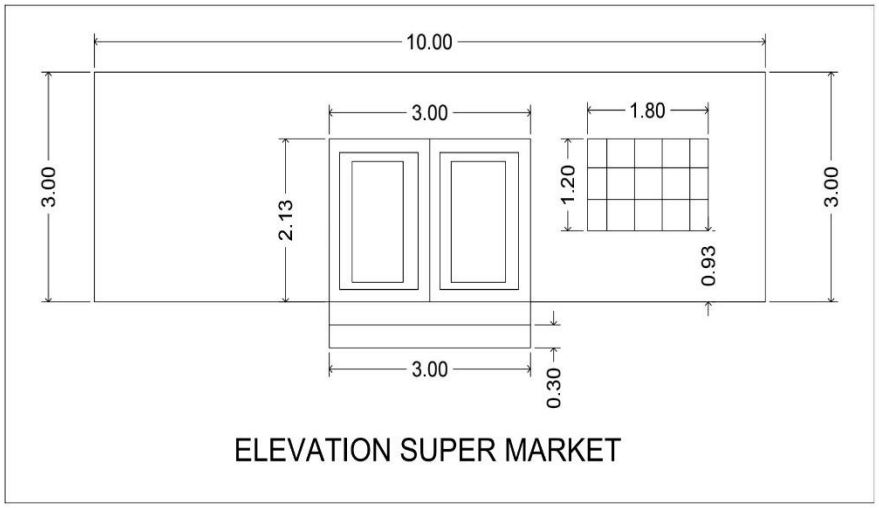
In the motikharaj village there is no any self-service shop and having variety in it. So we have designed a Supermarket as other design or structure of the village. Supermarket is a self-service shop offering a wide variety of food, beverages, and household products, organized into sections. It is larger and has a wider selection than earlier grocery stores.

Need

Ease of use, Availability of more grocery and food products, etc.

Proposed Design in Auto cad





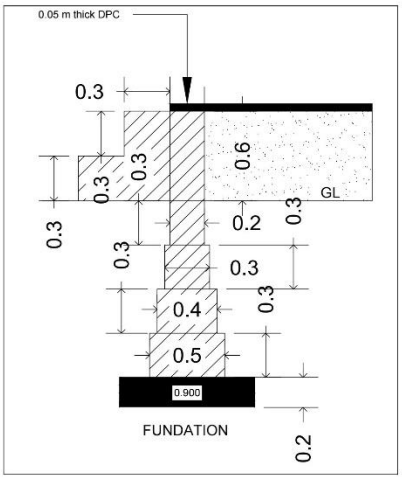


Fig 8.1.6.1 super market pan, elevation, foundation

Measurement sheet with help of center line method						
Supermarket						
Item no	Item description	no	Length (m)	Breadth (m)	Height (m)	quantity
1	Earth work in excavation up to 1.5m depth including throwing	1	31.2	0.9	1.4	39.31 cum

	material within a lead of 30m.					
2	Brick bat cement concrete 1:4:8	1	31.2	0.9	0.2	5.62 cum
3	Brick masonary up to plinth	1	31.2	0.5	0.3	4.68 cum
		1	31.2	0.4	0.3	3.74 cum
		1	31.2	0.3	0.3	2.81 cum
		1	31.2	0.2	0.9	5.65 cum
						Total = 16.91 cum
	STEP	1	3	0.60	0.3	0.54 cum
		1	3	0.30	0.3	0.27 cum
						Total =0.81 cum
4	Refilling of foundation trench	39.31 – (5.62+16.91) = 16.78				16.78 cum
5	Earth filling in plinth	1	9.6	5.6	0.6	32.26 cum
6	DPC 0.05m thick	1	10	6		60 sqm
7	First class brick masonary in 1:6cm for super structure including deduction	1				13.15 cum
8	RCC work					10.62 cum
9	Reinforcement for all RCC members 1% of RCC work					864 kg
10	12mm thick internal plaster					86.64 sqm
11	15mm thick in external plaster					115.2 sqm
12	Celling plaster					53.76 sqm
13	2cm thick marble flooring					53.76 sqm

Table 8.1.6.1 supermarket measurement sheet

Abstract sheet					
Super market					
Item no	Item description	Quantity	Rate (rs.)	Per	Amount (rs)
1	Earth work in excavation up to 1.5m depth including throwing material within a lead of 30m.	39.31 cum	85	Cu m	3342

2	Brick bat cement concrete 1:4:8 including compaction and curing	5.62 cum	2700	Cu m	15174
3	Brick masonary up to plinth including curing	17.72 cum	3200	Cu m	56704
4	Refilling of foundation trench	16.78 cum	50	Cu m	839
5	Sand filling in plinth	32.26 cum	950	Cu m	30647
6	DPC 0.05m thick	60 sqm	70	Sq m	4200
7	First class brick masonary in 1:6cm for super structure including deduction	13.15 cum	3500	Cu m	46025
8	RCC work	10.62 cum	8800	Cu m	93456
9	Reinforcement for all RCC members 1% of RCC work	864 kg	46	kg	39744
10	12mm thick internal plaster	86.64 sqm	132	Sq m	11437
11	15mm thick in external plaster	115.2 sqm	153	Sq m	17626
12	Celling plaster	53.76 sqm	132	Sq m	7097
13	2cm thick marble flooring	53.76 sqm	400	Sq m	21504
					Total amount = 347795
					Add 1.5% water charges = 5217
					Add 10% contractor profit = 34780
					Total = 387792

Table 8.1.6.2 supermarket abstract sheet

8.2 Reason for Students Recommending this Design

low cost toilet -Affordability , Space in the home, Geographical conditions - soil/water table etc,Cultural habits, Availability of water/scarcity of water.

ATM- The villagers have to go in dahod city for cash requirement so that we have decided and finalized the design of ATM. As per URDPF guidline also atm is required.

Community hall - to organize events easily for the villagers

Public library- education purpose

Cybercafe -The design of cybercafe is the smart concept in the motikharaj village. A cybercafe is a type of business where computers are provided for accessing the internet, playing games, chatting with friends or doing other computer related tasks. And mainly internet facility will be available for all the villagers at any time

Supermarket -By designing the supermarket in the motikharaj, many needs of the villagers will be satisfied.Supermarket is a self-service shop offering a wide variety of food, beverages, and household products, organized into sections.

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8.3 About designs Suggestions / Benefit of the villagers

Low cost toilet

Affordability , Space in the home, Geographical conditions - soil/water table etc,Cultural habits, Availability of water/scarcity of water.

ATM

The population of motikharaj village is 12581 as per 2011 census. So it is required to have three ATM in the village. The villagers have to go in dahod city for cash requirement so that we have decided and finalized the design of ATM.

Community hall

There is no Community hall in the motikharaj village. Community hall is a public location where members of a community gather for group activities, events, festivals and social purpose. A community hall of village generally consists of a hall , storage area and washroom.

Public library

In the motikharaj village there is no any public library so that according to the village population there should be one public library in village. For education purpose.

Cybercafe

The design of cybercafe is the smart concept in the motikharaj village. A cybercafe is a type of business where computers are provided for accessing the internet, playing games, chatting with friends or doing other computer related tasks. And mainly internet facility will be available for all the villagers at any time.

Supermarket

By designing the supermarket in the motikharaj, many needs of the villagers will be satisfied. Supermarket is a self-service shop offering a wide variety of food, beverages, and household products, organized into sections.

Chapter 9

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

1. Sustainable design - Rain water harvesting

An additional source of water will be available which could be used at the time of emergency or watershortage by implementing the Rain Water Harvesting system in the village households.

2. Physical design : High school

In motikharaj village no high school. Student should go dahod city or nagarala village for 11^{th} 12^{th} study. So in village high school is required.

3. Social design : Bank

In the motikharaj village there is no any bank and villagers have to go outside the village at dahod for banking facility so that one bank should be there in village so villagers can easily do their banking related works and for easy access of it.

4. Socio-Cultural design : Public Garden

In the motikharaj village there is no any recreational area existing. So that for the better living standard and entertainment purpose we have proposed one design of public garden as recreational area in the village.

5. Smart village design : Skill Development Center

There is no any child development or maternity home or skill development center in the motikharaj village but for the better development of students and children there should be one skill development center in the village.

6. Heritage village design : Bus stop

In the motikharaj village no any bus stop. so that the better transportation we have proposed one bus stand.

These are the proposed designs for the future development of motikharaj village for Vishwakarma Yojana phase VIII , Part 2 design**.**

Chapter 10

10 Conclusion of the Entire Village Activities of the Project

We have visited the ideal village bavka and that visit helped us to know about the type of infrastructure needed by the village. With help of techno-economic survey and gap analysis and also studying / surveying our ideal village bavka , we were able to broadly define requirements of development for people of bavka village.

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

The amenities designed under this Vishwakarma project phase viii will be helpful for better development of the village as physically as well as socially, which improves the overall lifestyle of people along with nation with preserving nature bit by bit. This will help in developing Smart villages in sustainable manner, reduce migration from villages and prevent the cities from the urban pressure. This should lead to some rethinking about the meaning of efficiency beyond the usual conceptions of economic or technical efficiency. Indeed, employment expansion is at least as important as growth in productivity. In a sense, both represent the utilization of labor as a resource. Why, then, does thinking about efficiency focus on one and neglect the other It is important to reflect on this question. The answer, which calls for change in both economics and politics, could make a real difference.

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

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

Chapter 11

11.References refereed for this project

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Chapter 12

12. Annexure attachment

12.1 Survey form of Ideal Village Scanned copy attachment in the report for Part-I :

Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

5

Techno Economic Survey

For

Vishwakarma Yojana: Phase VIII

IDEAL VILLAGE SURVEY

An approach towards Rurbanisation for Village Development

Name of Village:	BAVKA
Name of Taluka:	DAHOD
Name of District:	DAHOD
Name of Institute:	GOVERNMENT ENGINEERING COLLEGE DAHOD
Nodal Officer Name & Contact Detail:	PROF. D.K. OZA MO. NO.:-9426788106
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	PASAYA BHARATBHAI KALUBHAI (Sarpanch)
Date of Survey:	08/09/2020

1. **Demographical Detail:**

Sr. No.	Census	Population	Male	Female	Total House Holds
i)	2001	7193	3640	3553	
ii)	2011	9384	4775	4609	1587

2. **Geographical Detail:**

Sr. No.	Description	Information/Detail
i)	Area of Village (Approx.) (In Hector) Coordinates for Location:	2321.77 hectares
	Forest Area (In hect.)	401.2 hectares
	Agricultural Land Area (In hect.)	1416.30 hectares
	Residential Area (In hect.)	514.1 Hectares

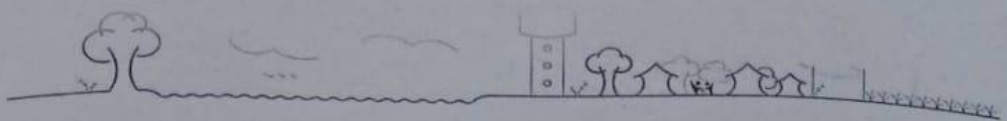
	Other Area (In hect.)	No
	Water bodies	80.3 hectares
	Nearest Town with Distance:	DAHOD , dahod is nearest town to bavka which is 15km away.

3. Occupational Details:

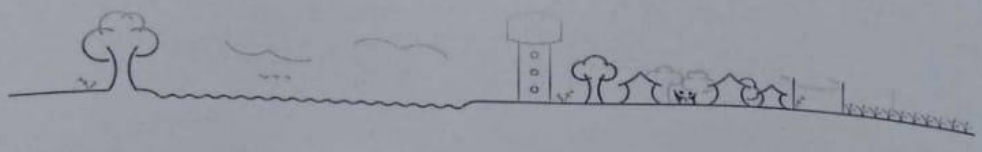
Name of Three Major Occupation groups in Village	1. AGRICULTURE
	2. SEMI INDUSTRIAL
	3. JOB

4. Physical Infrastructure Facilities:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				
	• Tap Water (Treated/ Untreated) • RO Water • Well (Covered/ Uncovered) • Hand pumps • Tube well/ Borehole • River/ Canal/ Spring/ Lake/ Pond	YES(Untreated) NO YES(uncovered) YES YES YES	NO NO	YES YES	Tap connections are located in a few areas.
Suggest ions if any:					
B.	**Water Tank Facility**				
	Overhead Tank	Capacity: 1 Lakh liters	No	Yes	closed
	Underground Sump	Capacity:			
Suggest ions if any:					
C.	**Drainage Facility**				
	Available (Yes/ No)	NO	-	-	
Suggest ions if any: FOR SEWAGE THEY HAVE PROVIDED SEPTIC TANK.					



D.	**Type of Drainage**				
	Closed/ Open	No	No	Yes	
	If Open than Pucca / Kutchcha	No	No	Yes	
	Whether drain water is discharged directly in to Water bodies/Sewer plants	Water bodies	No	Yes	
Suggestions if any:					
E.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Black topped pucca	Yes	No	
	Main road	Black topped pucca	Yes	No	
	Internal streets	RCC	Yes	No	
	Nearest NH/SH/MDR/ODR Dist. in kms.	NH:- 12km SH:- 3km MDR:- 0km			NH No.47 which is 12km away.
Suggest ions if any:					
F.	**Transport Facility**				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No (Railway station dahod which is 17km away)	–	–	
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	YES. GOOD	Yes	No	
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	AUTO, BUS, CHHAKDA AND PRIVATE VEHICLES	Yes	No	Most of people have private vehicles.
Suggest ions if any:					



G.	Electricity Distribution				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes (government) More than 6hrs.	Yes	No	24hrs electricity available.
	Power supply for Domestic Use	Yes MORE THAN 6hrs	Yes	No	24 hrs available
	Power supply for Agricultural Use	Yes more than 6 hrs	Yes	No	12 hrs
	Power supply for Commercial Use	Yes	Yes	No	
	Road/ Street Lights	Yes	No	Yes	Most of roads do not have provided street lights.
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	Yes		
	Renewable Energy Source Facilities (Y/ N)	Yes	No	Yes	Only provided on gram panchayat and schools.
	LED Facilities	No	No	Yes	
Suggest ions if any:					

H.	Sanitation Facility				
	Public Latrine Blocks If available than Nos.	Yes 3	No	Yes	
	Location Condition	GAMATAL FALIYA GOOD Condition			
	Community Toilet (With bath/ without bath facilities)	YES (With bath)			

	Solid & liquid waste Disposal system available	NO	No	Yes	
	Any facility for Waste collection from road	NO	No	Yes	
Suggest ions if any:					
I.	**Irrigation Facility:**				
	Main Source of Irrigation (Stream/River/ Canal/ Well/ Tube well/ Other)	Stream, Well, tube well	yes		ground water level is high.
Suggest ions if any:					
J.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)				98% houses are pucca.

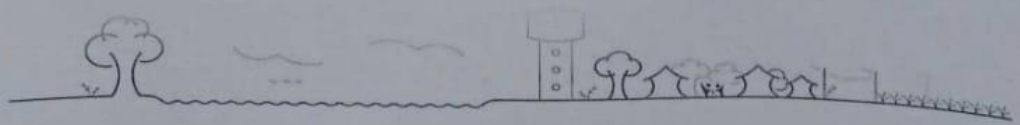
5. **Social Infrastructural Facilities:**

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
K.	**Health Facilities:**				
	Sub center/ PHC/ CHC /Government Hospital/ Child welfare & Maternity Homes (If Yes than specify No. of Beds) Condition:	2	YES	No	
	Private Clinic/Private Hospital/ Nursing Home	NO	–	–	private clinic 6km away from bavka. at jesawada.

	If any of the above Facility is not available in village th an approx. dista nce from village: .....kms.				
Suggesti ons if any: Veterinary hospital facility available.					
L.	**Education Facilities:**				
	Aaganwadi/ Play group	17	YES	No	
	Primary School	9	YES	NO	upto 5th standard
	Secondary school	1	YES	NO	
	Higher sec. School	1	YES	NO	A few students also go to JESAWADA, DAHOD.
	ITI college/ vocational Training Center	1	YES	No	A few students also go to JESAWADA, DAHOD.
	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities	NO	-	-	Students go to DAHOD for graduation.
	If any of the above Facilit y is not available in village than suggest. distance from village: .....kms.				
6uggest ions if any: Navjivan Arts and commerce collage Dahod which is 18km away from BAVKA.					
M.	**Socio- Culture Facilities**				
	Community Hall (With or without TV) Location:	Yes at gram panchayat	Yes	No	without TV.
	Condition:				

	Public Library (With daily newspaper supply: Y/N) Location: Condition:	yes first floor of gram panchayat Good	Yes	No	Library more than 12hrs open.
	Public Garden Location: Condition:	No	No	Yes	
	Village Pond Location: Condition:	Two pond are available.	Yes	No	Water distribution system not provided for irrigation or domestic puspose.
	Recreation Center Location: Condition:	–	–	–	
	Cinema/ Video Hall Location: Condition:	No	–	–	
	Assembly Polling Station Location: Condition:	Yes At primary school	Yes	No	
	Birth & Death Registration Office Location: Condition:	Gram panchayat	Yes	No	
If any of the above Facility is no t available in village than approx. distance from village : .....kms.					
7uggest ions if any:					

N.	Other Facilities				
	Post-office	Yes	Yes	No	
	Telecommunication Network/ STD booth	Yes	Yes	No	More than 80% people used mobile phone
	General Market	NO	-	-	People go to jesawada to shopping.
	Shops (Public Distribution System)	Yes	Yes	No	
	Panchayat Building	Yes	Yes	No	
	Pharmacy/Medical Shop	No	No	Yes	6km away. at jesawada
	Bank & ATM Facility	Yes	Yes	No	some peoples goes at jeasawada.
	Agriculture Co-operative Society	No	-	-	at jasawada
	Milk Co-operative Soc.	Yes	Yes	No	In current situation closed.
	Small Scale Industries	No			available at dahod(17km away)
	Internet Cafes/ Common Service Center/Wi Fi	Yes	Yes	No	
	Other Facility	No			
Suggestions if any:					



6. Sustainable /Green Infrastructure Facilities:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
O.	Adoption of Non-Conventional Energy Sources/ Renewable Energy Sources	No	-	-	
P.	Bio-Gas Plant Solar Street Lights Rain Water Harvesting System	Yes(community) Yes Yes	No No No	Yes Yes Yes	Solar street lights and RWHS are available only at school and gram panchayat.
Q.	Any Other	No			

7. Data Collection From Village

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

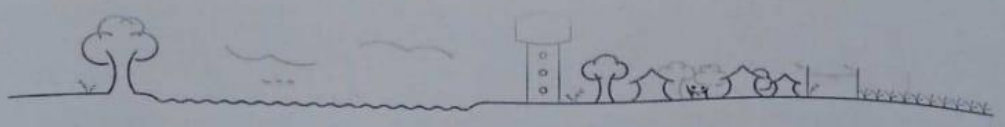
Recent Projects going on for Development of Village	-Pradhan mantri awas yojana -Pradhan mantri gram sadak yojana, etc.
Any NGO working for village development	Self help groups

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)	No	All buildings are in good condition.
2.	Additional Information/ Requirement	No	

9. Smart Village Proposal Design

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	First of fulfil Inadequate facilities. And then proceed on other work.	- Renewable Energy Sources - provide street lights in whole roads - Provide water distribution system - Develop small scale Industries - To develop small general market - Wi-Fi facility - Solar Street Lights - solid waste management - provide proper drainage facilities - Develop community Bio-Gas Plant	

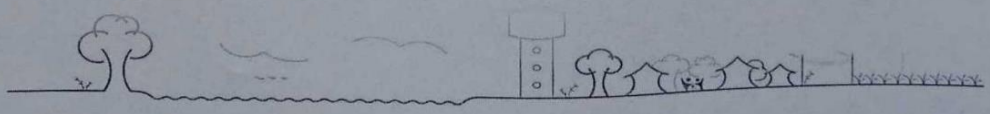


		- Should provide Rain Water Harvesting System - Develop gruh udhyog - e-gram service - Emphasize the use of solar device - Improve farming productivity	

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

પટાવાળા ઠાકોર
સરપંચ
ગ્રામ પંચાયત બાવકા
તા.જી.દાહોદ



12.2 Survey form of Smart Village Scanned copy attachment in the report for Part-I

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:	Sabar Kantha
Name of Taluka:	Talod
Name of Village:	Punsari
Name of Institute:	Government Engineering College Dahod
Nodal Officer Name & Contact Detail:	PROF D.K. OZA SIR +919426788106
Respondent Name: (Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)	internet
Date of Survey:	

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	-	-	-	-
2.	2011	5100	2653	2447	1109

II. GEOGRAPHICAL DETAIL:

1

Sr. No.	Description	Information/Detail
1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1395.65 hectares
2.	Forest Area (In hect.)	0
3.	Agricultural Land Area (In hect.)	1041.08 hectares
4.	Residential Area (In hect.)	-
5.	Other Area (In hect.)	-
6.	Distance to the nearest railway station (in kilometers):	TALOD 22.8 Kms
7.	Name of Nearest Town with Distance:	TALOD 24 kms
8.	Distance to the nearest bus station (in kilometers):	5.7 kms from punsari gram panchayat
9.	Whether village is connected to all road for the any facility or town or City?	yes

III. OCCUPATIONAL DETAILS:

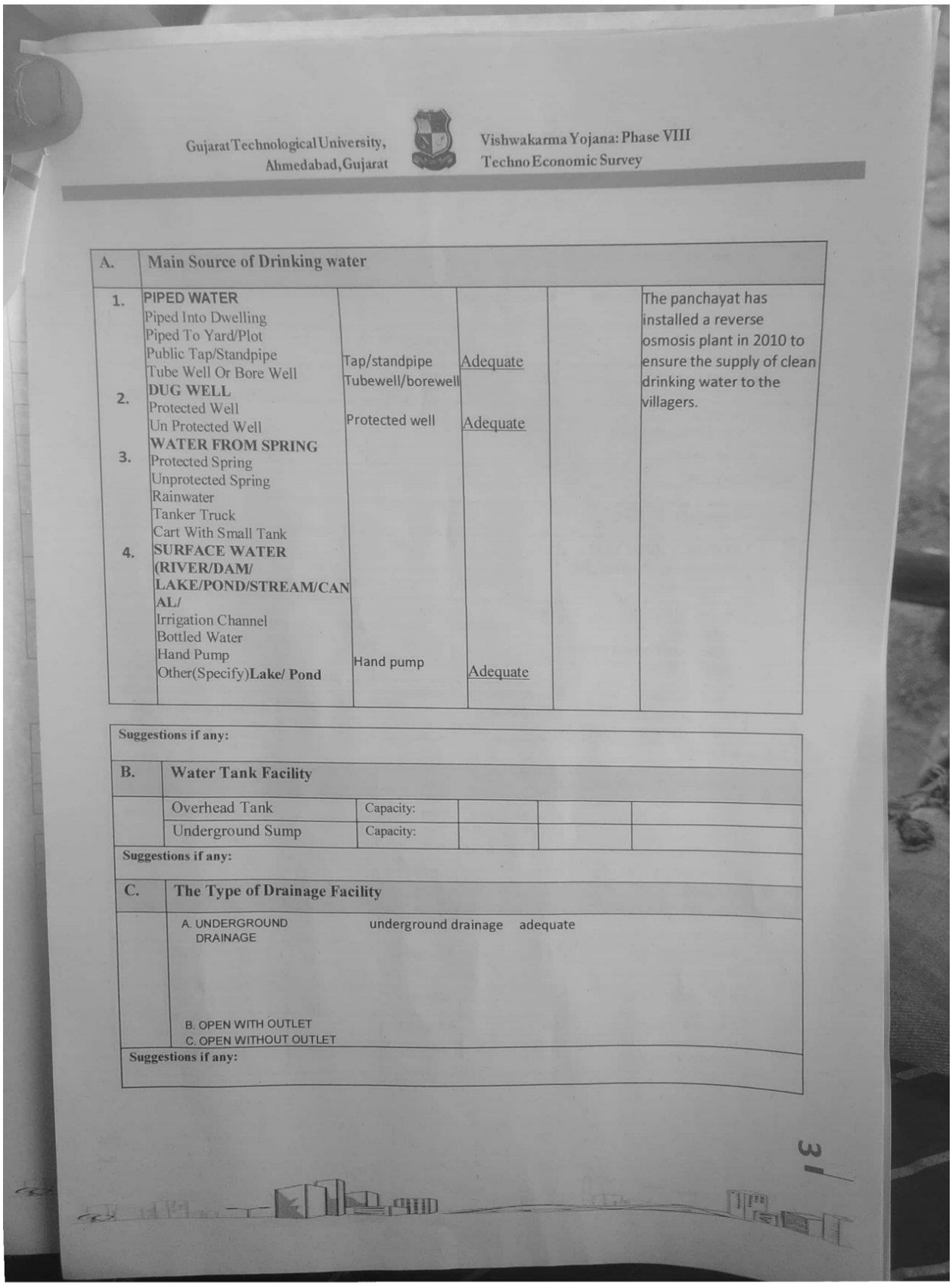
Name of Three Major Occupation groups in Village	1. agricultural
	2. animal husbandry, dairy
	3. small scale industries

Major crops grown in the village:	1 PEARLMILLET/BAJRA.
	2. WHEAT
	3. GROUND NUT

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks

21



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

A.	Main Source of Drinking water				
1.	PIPED WATER Piped Into Dwelling Piped To Yard/Plot Public Tap/Standpipe Tube Well Or Bore Well	Tap/standpipe Tubewell/borewell	Adequate		The panchayat has installed a reverse osmosis plant in 2010 to ensure the supply of clean drinking water to the villagers.
2.	DUG WELL Protected Well Un Protected Well	Protected well	Adequate		
3.	WATER FROM SPRING Protected Spring Unprotected Spring				
4.	Rainwater Tanker Truck Cart With Small Tank SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/ Irrigation Channel Bottled Water Hand Pump Other(Specify)Lake/ Pond	Hand pump	Adequate		

Suggestions if any:

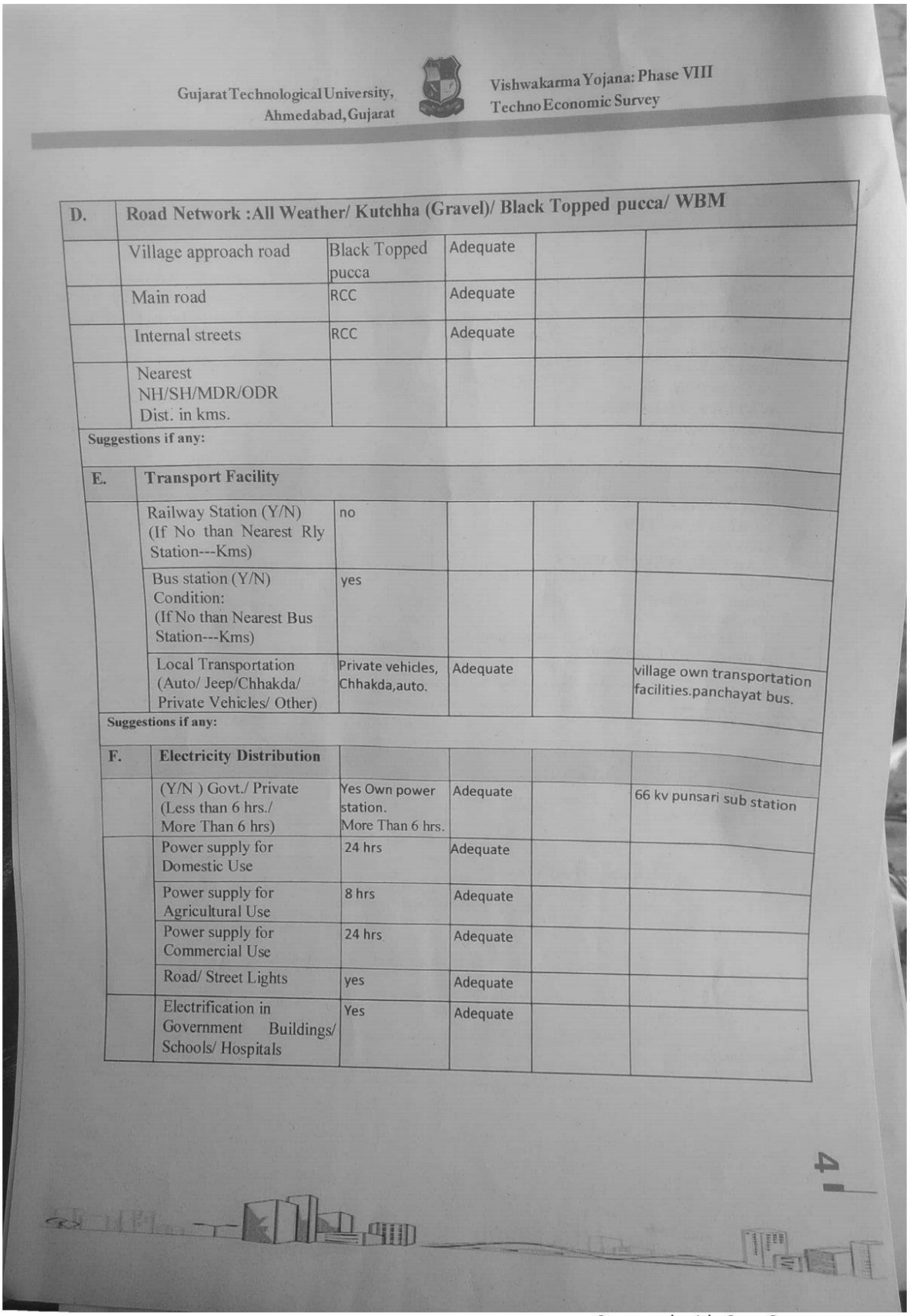
B.	Water Tank Facility				
	Overhead Tank	Capacity:			
	Underground Sump	Capacity:			

Suggestions if any:

C.	The Type of Drainage Facility		
	A. UNDERGROUND DRAINAGE	underground drainage	adequate
	B. OPEN WITH OUTLET C. OPEN WITHOUT OUTLET		

Suggestions if any:

3



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

D.	Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM				
	Village approach road	Black Topped pucca	Adequate		
	Main road	RCC	Adequate		
	Internal streets	RCC	Adequate		
	Nearest NH/SH/MDR/ODR Dist. in kms.				
Suggestions if any:					
E.	Transport Facility				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	no			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	yes			
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Private vehicles, Chhakda,auto.	Adequate		village own transportation facilities.panchayat bus.
Suggestions if any:					
F.	Electricity Distribution				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Yes Own power station. More Than 6 hrs.	Adequate		66 kv punsari sub station
	Power supply for Domestic Use	24 hrs	Adequate		
	Power supply for Agricultural Use	8 hrs	Adequate		
	Power supply for Commercial Use	24 hrs	Adequate		
	Road/ Street Lights	yes	Adequate		
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	Adequate		

4

	Renewable Energy Source Facilities (Y/ N)	yes	Adequate		
	LED Facilities	yes	Adequate		
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	yes	Adequate		
	Any facility for Waste collection from road	Door to door waste collection	Adequate		
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	TANK/POND				
	STREAM/RIVER				
	CANAL				
	WELL	well	Adequate		
	TUBE WELL.	Tube well	Adequate		
	OTHER (SPECIFY)				
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	90% pucca 10% kutchha	Adequate		

V. SOCIAL INFRASTRUCTURAL FACILITIES:

51

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	8 icds	Adequate		
	Sub-Centre				
	PHC	1 phc	Adequate		
	BLOCK PHC				
	CHC/RH				
	District/ Govt. Hospital				
	Govt. Dispensary				
	Private Clinic				
	Private Hospital/ Nursing Home				
	AYUSH Health Facility				
	sonography /ultrasound facility				
	If any of the above Facility is not available in village than approx. distance from village: more than 10 kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	8 anganwadi	Adequate		
	Primary School	5 (1-8 std)	Adequate		Cctv cameras placed in school
	Secondary school				
	Higher sec. School	1 (9-12 std)	Adequate		
	ITI college/ vocational Training Center	1			

	Art, Commerce& Science /Polytechnic/ Engineering/ Medical/ Management/ other college facilities				
	If any of the above Facility is not available in village than approx. distance from village:more than 10 kms.				

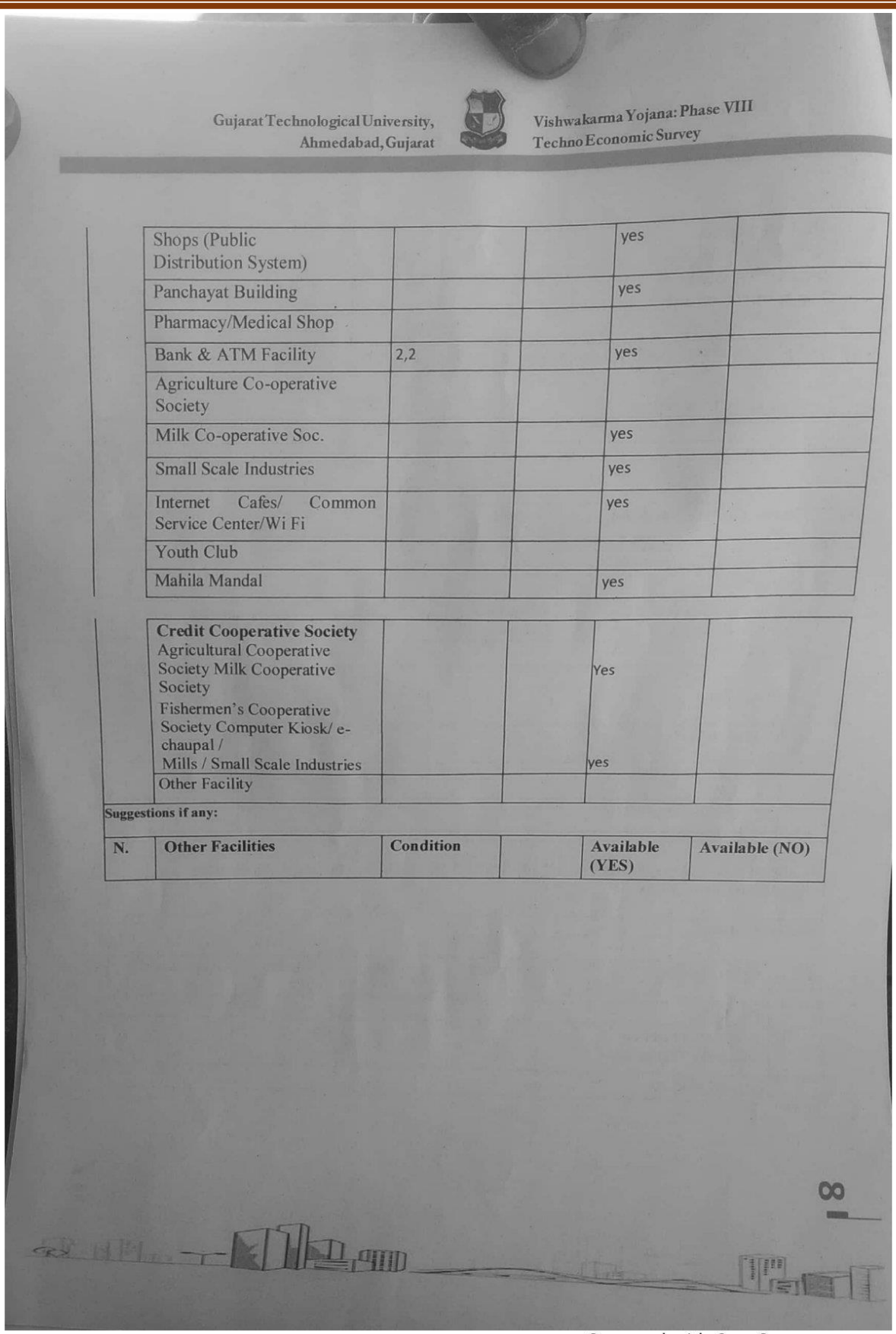
Suggestions if any:

L.	Socio- Culture Facilities	Condition	Location	Available (YES)	Available (NO)
	Community Hall (With or without TV)			Yes	
	Public Library (With daily newspaper supply: Y/N)	Village own newspaper			
	Public Garden				No
	Village Pond				No
	Recreation Center				No
	Cinem a/ Video Hall				No
	Assembly Polling Station	1 good		yes	
	Birth & Death Registration	1 good		yes	

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

Suggestions if any:

M.	Other Facilities	Condition	Location	Available (YES)	Available (NO)
	Post-office			yes	
	Telecommunication Network/ STD booth			yes	
	General Market				



Gujarat Technological University, Ahmedabad, Gujarat

Vishwakarma Yojana: Phase VIII
Techno Economic Survey

Shops (Public Distribution System)			yes	
Panchayat Building			yes	
Pharmacy/Medical Shop				
Bank & ATM Facility	2,2		yes	
Agriculture Co-operative Society				
Milk Co-operative Soc.			yes	
Small Scale Industries			yes	
Internet Cafes/ Common Service Center/Wi Fi			yes	
Youth Club				
Mahila Mandal			yes	

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

Suggestions if any:

N.	Other Facilities	Condition		Available (YES)	Available (NO)

8

1. Have these programme implemented the village?					
2. Are there any beneficiaries in the village from the following programme?					
3. Janani Suraksha Yojana					
4. Kishori Shakti Yojana					
5. Balika Samriddhi Yojana					
6. Mid-day Meal Programme					
7. Intergrated Child Development Scheme (ICDS)					
8. Mahila Mandal Protsahan Yojana (MMPY)					
9. National Food for work Programme (NFFWP)					
10. National Social Assistance Programme					
11. Sanitation Programme (SP)					
12. Rajiv Gandhi National Drinking Water Mission					
13. Swarnjayanti Gram Swarozgar Yojana					
14. Minimum Needs Programme (MNP)					
15. National Rural Employment Programme					
16. Employee Guarantee Scheme (EGS)					
17. Prime Minister Rojgar Yojana (PMRY)					
18. Jawahar Rozgar Yojana (JRY)					
19. Indira Awas Yaojna (IAY)					
20. Samagra Awas Yojana (SAY)					
21. Sanjay Gandhi Niradhar Yojana (SGNY)					
22. Jawahar Gram Samridhi Yojana (JGSY)					
23. Other (SPECIFY)					

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Adoption of Non- Conventional Energy Sources/ Renewable Energy Sources	Renewable Energy Sources	Adequate		
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	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)				

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	All in good condition	
2.	Additional Information/ Requirement	–	
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?		

IX. Smart Village / Heritage Details

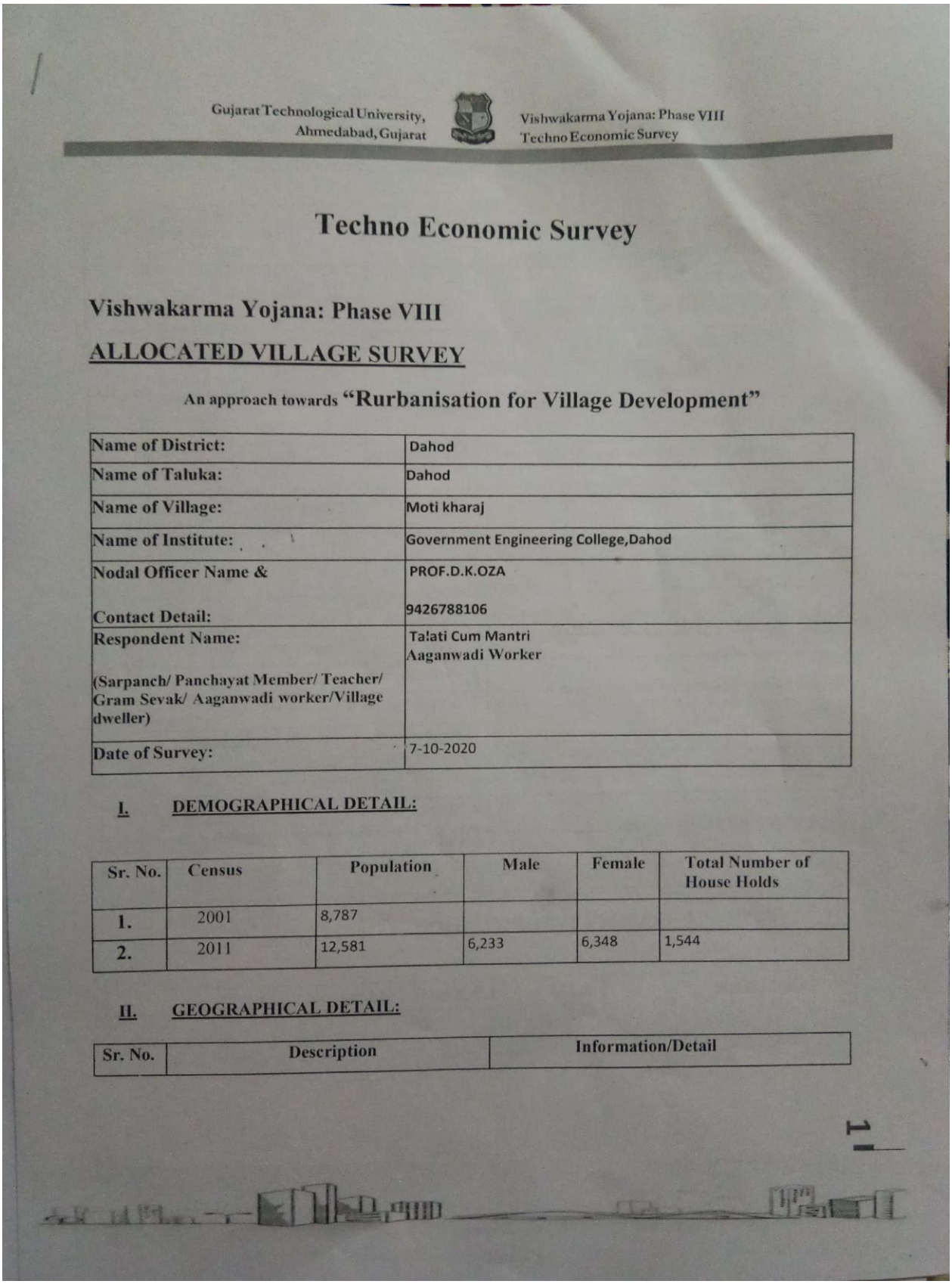
Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?		

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

For Any Administration queries/ Difficulties:

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

12.3 Survey form of Allocated Village Scanned copy attachment in the report for Part-I



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:	Dahod
Name of Taluka:	Dahod
Name of Village:	Moti kharaj
Name of Institute:	Government Engineering College,Dahod
Nodal Officer Name & **Contact Detail:**	PROF.D.K.OZA 9426788106
Respondent Name: **(Sarpanch/ Panchayat Member/ Teacher/ Gram Sevak/ Aaganwadi worker/Village dweller)**	Talati Cum Mantri Aaganwadi Worker
Date of Survey:	7-10-2020

I. DEMOGRAPHICAL DETAIL:

Sr. No.	Census	Population	Male	Female	Total Number of House Holds
1.	2001	8,787			
2.	2011	12,581	6,233	6,348	1,544

II. GEOGRAPHICAL DETAIL:

Sr. No.	Description	Information/Detail

1.	Area of Village (Approx.) (In Hector)Coordinates for Location:	1044 hectares
2.	Forest Area (In hect.)	0
3.	Agricultural Land Area (In hect.)	866 hectares
4.	Residential Area (In hect.)	—
5.	Other Area (In hect.)	—
6.	Distance to the nearest railway station (in kilometers):	Dahod-6 kms.
7.	Name of Nearest Town with Distance:	Dahod-6 kms.
8.	Distance to the nearest bus station (in kilometers):	Motikharaj-0.7 kms.
9.	Whether village is connected to all road for the any facility or town or City?	yes

III. OCCUPATIONAL DETAILS:

Name of Three Major Occupation groups in Village	1. Farming
	2. farm labor
	3. ingaged in the home industry process

Major crops grown in the village:	1. Maize
	2. Paddy
	3. Pulses

IV. PHYSICAL INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Detail	Adequate	Inadequate	Remarks
A.	**Main Source of Drinking water**				

1.	**PIPED WATER** Piped Into Dwelling Piped To Yard/Plot Public Tap/Standpipe Tube Well Or Bore Well	Public taps – 20 Standpipe - 5 Tube Well Or Bore Well	Adequate		
2.	**DUG WELL** Protected Well Un Protected Well	Un protected well	Adequate		Protection is required in dug well
3.	**WATER FROM SPRING** Protected Spring Unprotected Spring	—			
4.	Rainwater Tanker Truck Cart With Small Tank **SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/** Irrigation Channel Bottled Water Hand Pump	Hand pump-365	Adequate		
	Other(Specify)**Lake/ Pond**	LAKE/POND.	Adequate		
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	No			
Suggestions i f any:					
D.	**Road Network :All Weather/ Kutchha (Gravel)/ Black Topped pucca/ WBM**				
	Village approach road	Bituminous	Adequate		

	Main road	Bituminous	Adequate		
	Internal streets	Cement concrete	Adequate		
	Nearest NH/SH/MDR/ODR Dist. in kms.	SH-58 Pass from village	Adequate		NH-47 Dist.6 kms.
Suggestions if any:					
	Transport Facility				
	Railway Station (Y/N) (If No than Nearest Rly Station---Kms)	No Nearest Rly Station dahod - 6-Kms.			
	Bus station (Y/N) Condition: (If No than Nearest Bus Station---Kms)	yes	Adequate		
	Local Transportation (Auto/ Jeep/Chhakda/ Private Vehicles/ Other)	Auto,Jeep, Private Vehicles.	Adequate		
Suggestions if any:					
	Electricity Distribution				
	(Y/N) Govt./ Private (Less than 6 hrs./ More Than 6 hrs)	Government More than 6 hrs.	Adequate		

	Power supply for Domestic Use	24 hrs.	Adequate		
	Power supply for Agricultural Use	8 hrs.	Adequate		
	Power supply for Commercial Use	24 hrs.	Adequate		
	Road/ Street Lights	Yes		Inadequate	Not in all street
	Electrification in Government Buildings/ Schools/ Hospitals	Yes	Adequate		
	Renewable Energy Source Facilities (Y/ N)	Yes (solar street)		Inadequate	In village only 4-5 solar street

	LED Facilities	Yes		inadequate	Not in all village
Suggestions if any:					
G.	**Sanitation Facility**				
	Public Latrine Blocks If available than Nos.	Available Nos-2			
	Location Condition	-			
	Community Toilet (With bath/ without bath facilities)	Yes nos-2			
	Solid & liquid waste Disposal system available	No		inadequate	
	Any facility for Waste collection from road	No		inadequate	
Suggestions if any:					
H.	**Main Source of Irrigation Facility:**				
	LAKE/POND STREAM/RIVER CANAL WELL TUBE WELL. OTHER (SPECIFY)	Lake/pond. Canal-450. Well/tube well – 150. Other lift irrigation - 120.	Adequate Adequate Adequate Adequate		
Suggestions if any:					
I.	**Housing Condition:**				
	Kutchha/Pucca (Approx. ratio)	Pucca 25% Kutchha 75%			Pucca house required

51

V. SOCIAL INFRASTRUCTURAL FACILITIES:

Sr. No.	Descriptions	Information/ Detail	Adequate	Inadequate	Remarks
J.	**Health Facilities:**				
	ICDS (Anganwadi)	11 ICDS	Adequate		
	Sub-Centre	3 Sub-centre	Adequate		
	PHC	1 PHC	Adequate		
	BLOCK PHC	—			
	CHC/RH				
	District/ Govt. Hospital	—			
	Govt. Dispensary				
	Private Clinic				
	Private Hospital/	—			
	Nursing Home				
	AYUSH Health Facility	—			
	sonography /ultrasound facility				
	If any of the above Facility is not available in village than approx. distance from village:5-10 kms.				
Suggestions if any:					
K.	**Education Facilities:**				
	Aaganwadi/ Play group	11 Aaganwadi			
	Primary School	7 (1-8 std)			
	Secondary school	1 (9-10 std)			
	Higher sec. School	–			

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:5-10 kms.

Suggestions if any:

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

If any of the above Facility is not available in village than approx. distance from village: 5-10 kms.

Suggestions if any:

M.	Other Facilities	Condition	Location	Available (YES)	Available (NO)
	Post-office	good		Yes	

	Telecommunication Network/ STD booth				No
	General Market				No
	Shops (Public Distribution System)	good		yes	
	Panchayat Building	good		Yes	
	Pharmacy/Medical Shop				No
	Bank & ATM Facility				No
	Agriculture Co-operative Society				No
	Milk Co-operative Soc.				No
	Small Scale Industries				No
	Internet Cafes/ Common Service Center/Wi Fi				No
	Youth Club				No
	Mahila Mandal			yes	

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

Suggestions if any:

N.	Other Facilities	Condition		Available (YES)	Available (NO)
	1. Have these programme implemented the village?			Yes but not all	
	2. Are there any beneficiaries in the village from the following programme?			Yes	
	3. Janani Suraksha Yojana			Yes	
	4. Kishori Shakti Yojana			Yes	
	5. Balika Samriddhi Yojana				No
	6. Mid-day Meal Programme			Yes	
				Yes	

	7. Intergrated Child Development Scheme (ICDS)			Yes	
	8. Mahila Mandal Protsahan Yojana (MMPY)			Yes	
	9. National Food for work Programme (NFFWP)				No
	10. National Social Assistance Programme			Yes	
	11. Sanitation Programme (SP)				No
	12. Rajiv Gandhi National Drinking Water Mission			Yes	
	13. Swarnjayanti Gram Swarozgar Yojana			Yes	
	14. Minimum Needs Programme (MNP)				No
	15. National Rural Employment Programme				No
	16. Employee Guarantee Scheme (EGS)			Yes	
	17. Prime Minister Rojgar Yojana (PMRY)				No
	18. Jawahar Rozgar Yojana (JRY)			Yes	
	19. Indira Awas Yaojna (IAY)				No
	20. Samagra Awas Yojana (SAY)				No
	21. Sanjay Gandhi Niradhar Yojana (SGNY)			Yes	
	22. Jawahar Gram Samridhi Yojana (JGSY)				
	23. Other (SPECIFY)	Pradhanmantari Aawas yojana(PMAY)			

VI. SUSTAINABLE /GREEN INFRASTRUCTURE FACILITIES:

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks

1.	Adoption of Non- Conventional Energy Sources/ Renewable Energy Sources	No			
2.	Bio-Gas Plant Solar Street Light Rain Water Harvesting System	No No No			
3.	Any Other				

VII. DATA COLLECTION FROM VILLAGE

Sr. No.	Descriptions	Information/ Details	Adequate	Inadequate	Remarks
1.	Village Base Map Available: Hard Copy/Soft Copy	Yes soft copy			
2.	Recent Projects going on for Development of Village	14 nu nana panch			
3.	Any NGO working for village development	No			
4.	Any natural calamity in the village during the last one year: EARTHQUAKES FLOODS CYCLONE DROUGHT LANDSLIDES AVALANCHE OTHER (SPECIFY)	No			

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Vishwakarma Yojana: Phase VIII
Techno Economic Survey

VIII. ADDITIONAL INFORMATION/ REQUIREMENT:

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	Repair & Maintenance of Existing Public Infrastructure facilities, School Building Health Center Panchayat Building Public Toilets & any other	No all construction is in good condition	
2.	Additional Information/ Requirement		
3.	During the last six months how many times CLEANING ..... FOGGING..... Drive was undertaken in the village?	Every two to three weeks	

IX. Smart Village / Heritage Details

Sr. No.	Descriptions	Information/ Detail	Remarks
1.	IS THEIR ANY THING FOR THE VILLAGE ENHANCEMENT POSSIBLE ?	Higher sec. School, Community Hall (With or without TV), Public Library (With daily newspaper supply), Bank and ATM Facility	

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

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મનીષાબેન
સરપંચ
ગ્રામ પંચાયત મોટીખરજ
તા.જિ.દાહોદ.

તલાટી-કમ-મંત્રી
ગ્રામ પંચાયત,મોટીખરજ
તા.જિ.દાહોદ

12.4 Gap Analysis of the Allocated Village

Moti kharaj village population as per 2011 census is:-12581

Facilitie	Population served per unit	Required as per norms	existing	gap
Education				
Aganwadi	Per 5000 population	1	11	0
Primary School	Per 5000 population	1	7	+6
Secondary School	Per 7500 population	1	1	0
Higher Secondary School	Per 7500 population	1	0	-1
College	Per 1.25 lakh population	0	0	0
Tech. Training Institute	Per 10 lakh population	0	0	0
Agriculture Research Centre	Per 10 lakh population	0	0	0
Medical Facility				
Gov./Panchayat Dispensary or Sub PHC or Health Centre	Per 15000 population	1	3	+2
PHC & CHC	Per 20000 population	1	1	0
Hospital	Per 2.5 lakh population	0	0	0
Transportation		1		
Pucca Village Approach Road	Each village		Available	
Bus/Auto Stand Provision	All village connect by (st bus or auto)	1	1	0
Post Office	10000 population	1	1	0
Gram Panchayat Building	Each village	1	1	0
Fire Station	Per 2 lakh population and 5-7kms radius	0	0	0
Police Station	Per 90000 population	0	0	0
Community Hall	Per 5000 population	1	0	-1
Bank with extension counters with	Per 15000 population	1	0	-1

ATM facility				
Community hall with library	Per 15000 population	1	0	-1

Table 12.4.1 gap analysis

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

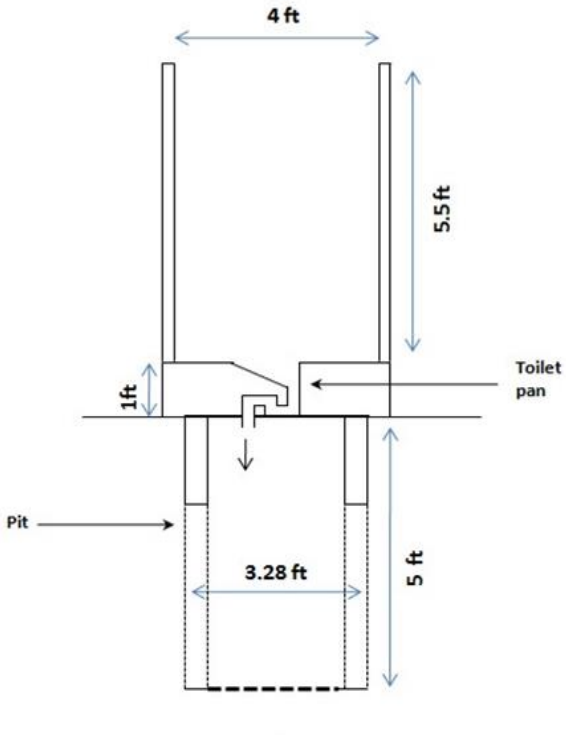
Sr. No.	Village Name	Discipline	Part-I	Part-II
1.	**Motikharaj**	**Civil**	Low cost toilet	Rainwater harvesting
			ATM	High school
			Community Hall	Bank
			Public library	Public Garden
			Cybercafe	Skill Development Center
			Supermarket	Bio gas plant
2.	**Kharod**	**Civil**	Public toilet	Post office
			Library	Bio gas plant
			Community hall	Secondary school
				Dudh mandali
				Aaganwadi
				Rain water harvesting
3	**Bhatiwad**	**Civil**	Public toilet	Gram panchayat
			Medical store	Solid waste management
				Drainage system
				Solar street light
				Community hall

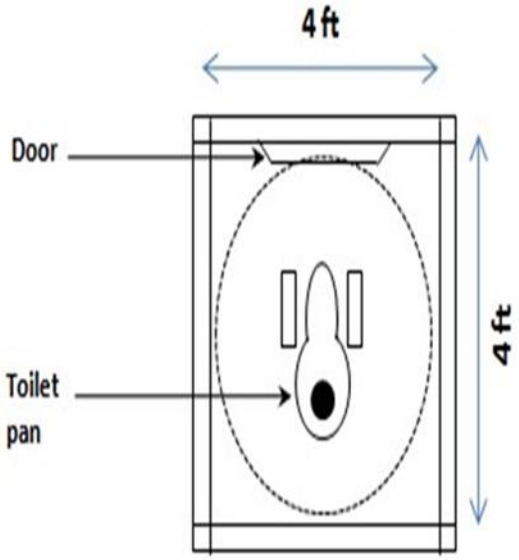
4.	**kharedi**	**Civil**	ATM	
			Road maintenance	
			Medical store	
			Super market	
			Rain water harvesting	

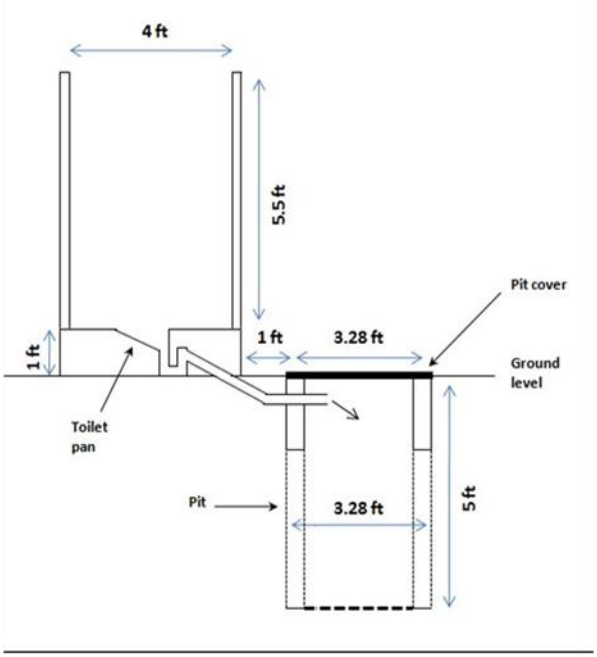
12.6 Drawings (If, required,A1, A2, A3 design is not visible then Only) :
All the drawings and images are attached in their respective chapters along with designs and their listing are mentioned in the list of figures along with their page numbers.

Note
- All dimensions are in Meters unless stated otherwise.
- Drawings should be read not for scale.
- design is prepared only for educational purpose and correction of all data must be check before use. Design is not responsible for any kind of wrong data.
- Minimum Grade of concrete is m20 and all Steel grade is fe500. Check first the plot dimensions

Low cost toilet



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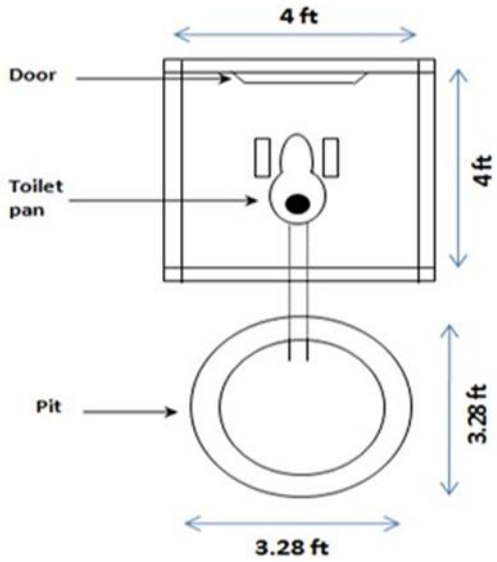
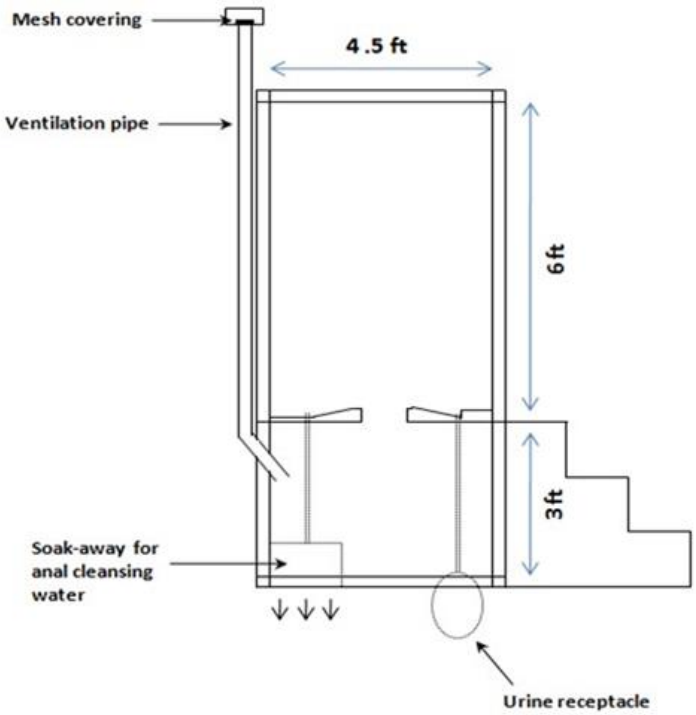
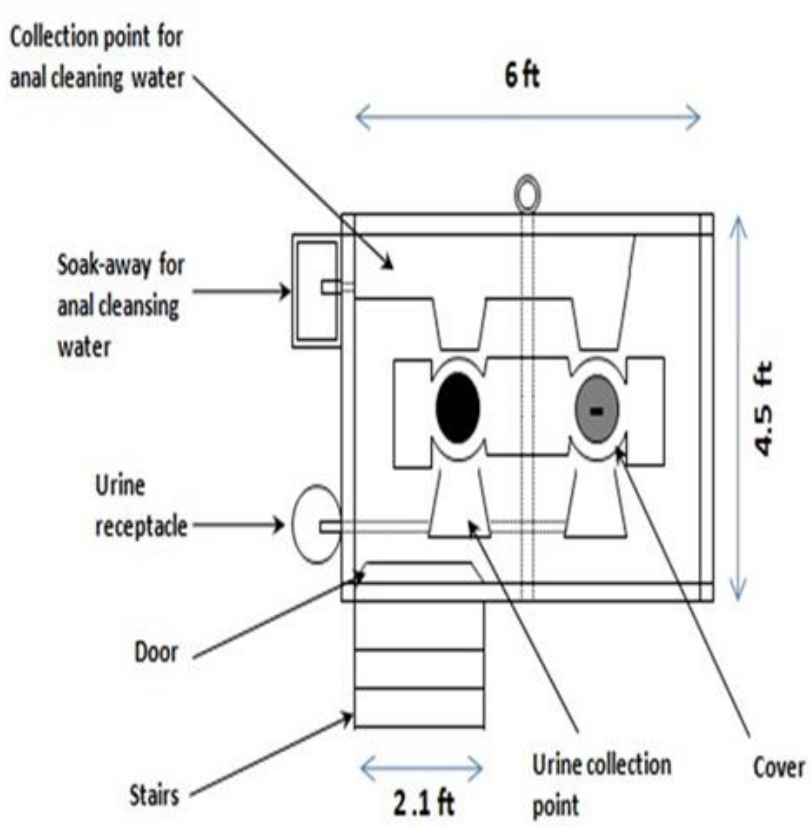
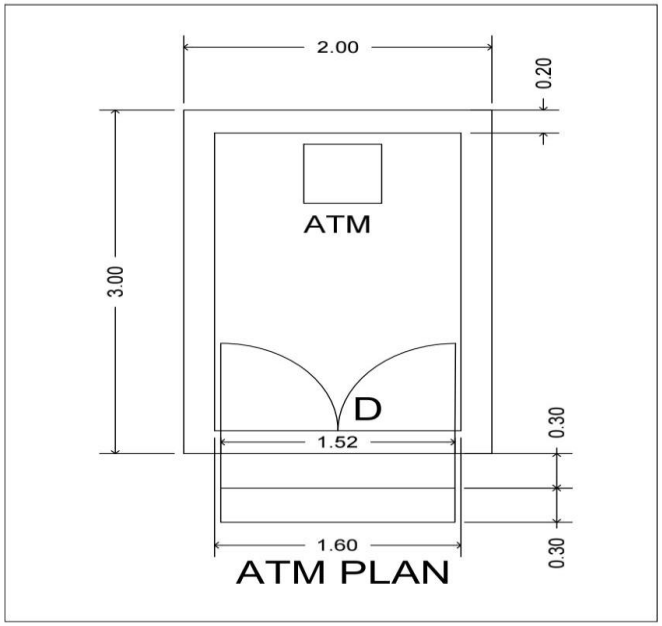
5.5 ft
1 ft
1 ft
3.28 ft
Pit cover
Ground level
Toilet pan
Pit
3.28 ft
5 ft


4 ft
Door
Toilet pan
4 ft
Pit
3.28 ft
3.28 ft


Mesh covering
4 .5 ft
Ventilation pipe
6 ft
3 ft
Soak-away for anal cleansing water
Urine receptacle


Collection point for anal cleaning water
6 ft
Soak-away for anal cleansing water
4.5 ft
Urine receptacle
Door
Stairs
2.1 ft
Urine collection point
Cover

ATM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ATM
3.00
D
1.52
0.30
1.60
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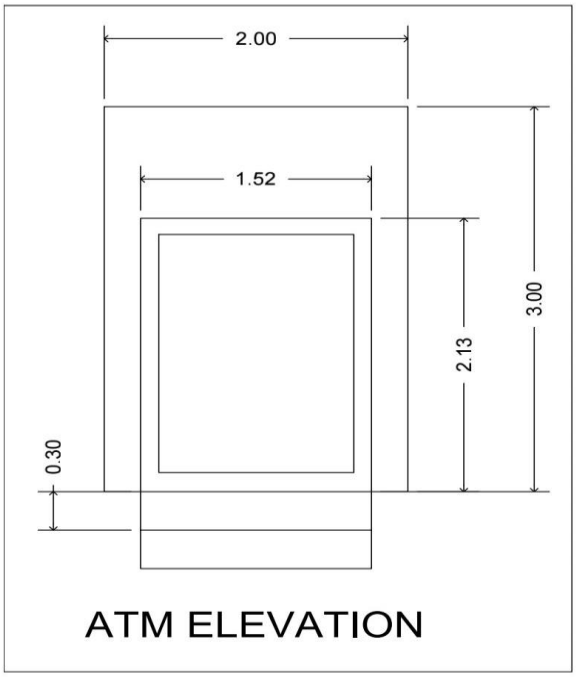
ATM PLAN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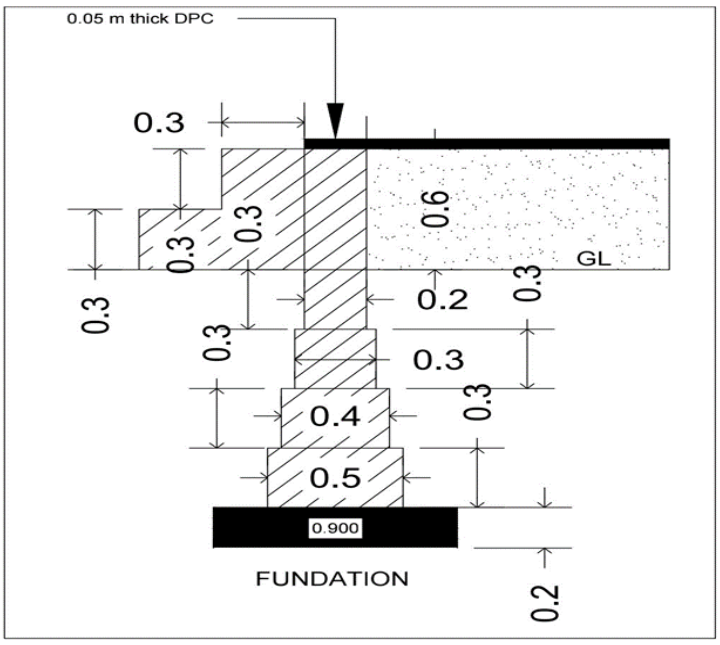
ATM ELEVATION


0.05 m thick DPC
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0.4
0.3
0.5
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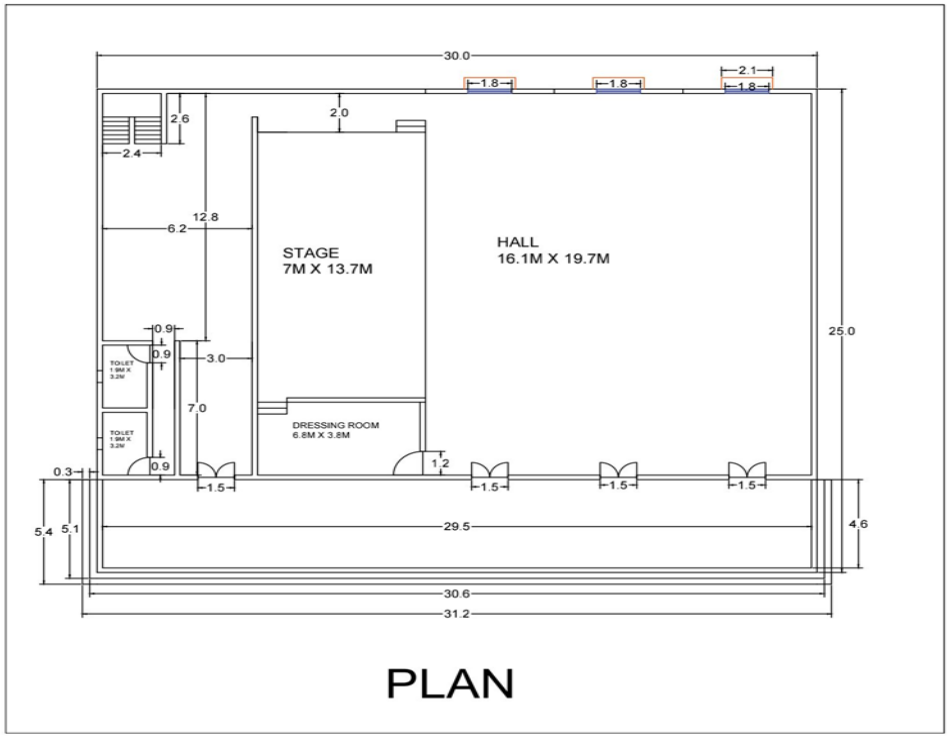
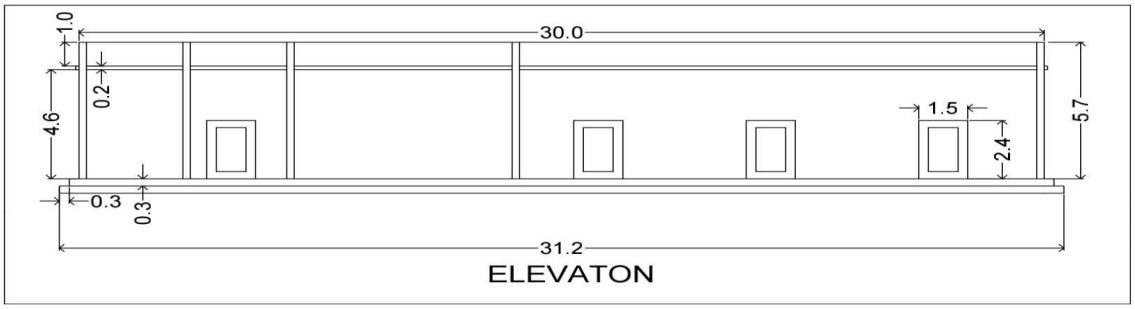
FUNDATION
0.2

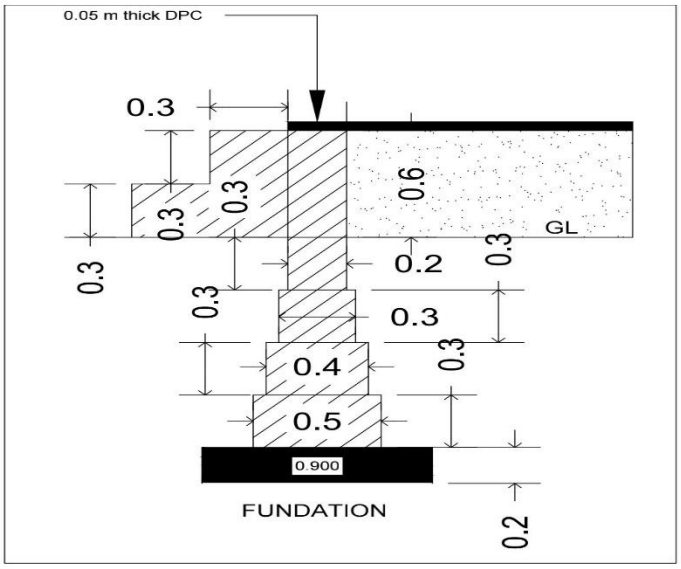
Community hall



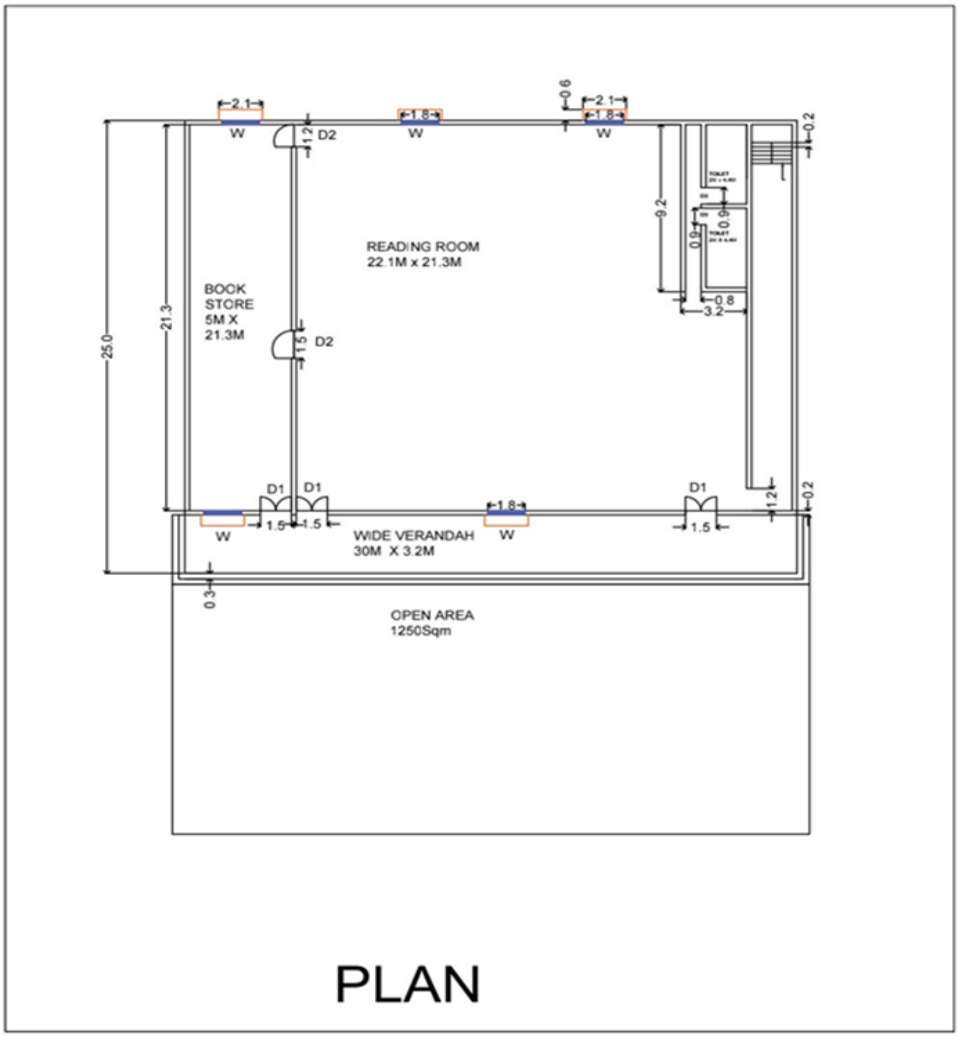
PLAN

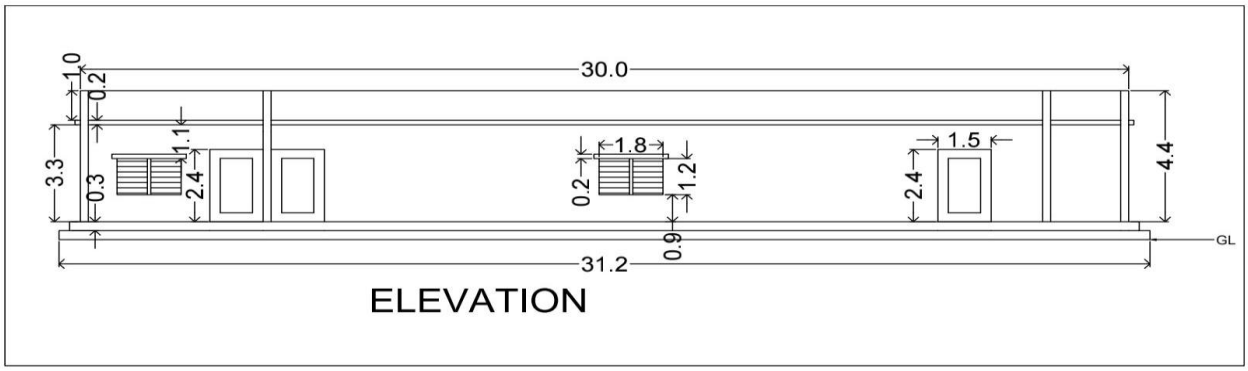


ELEVATON



Public library

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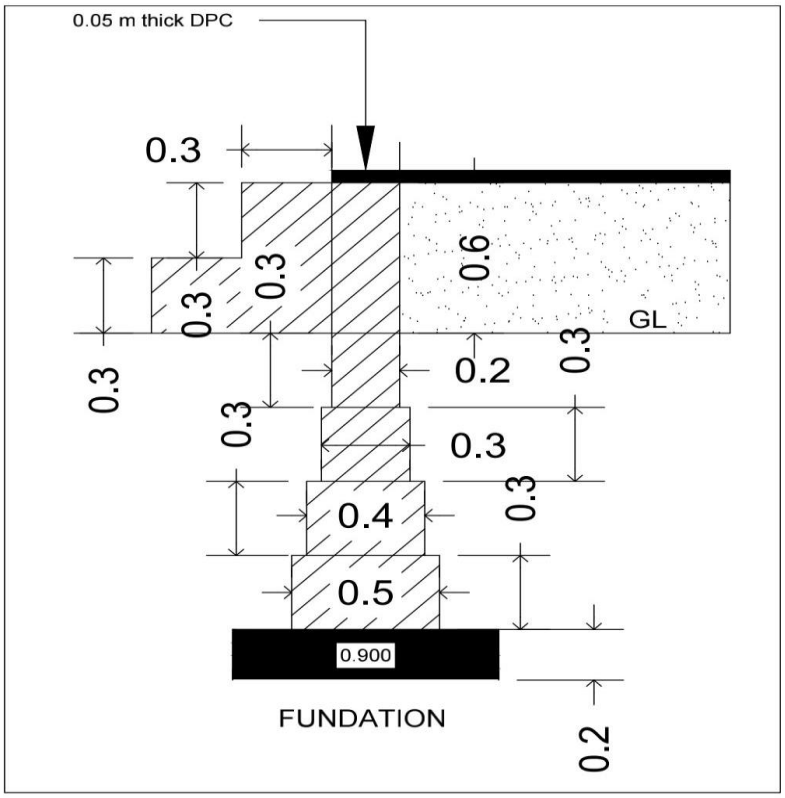
GL
31.2
ELEVATION


0.05 m thick DPC
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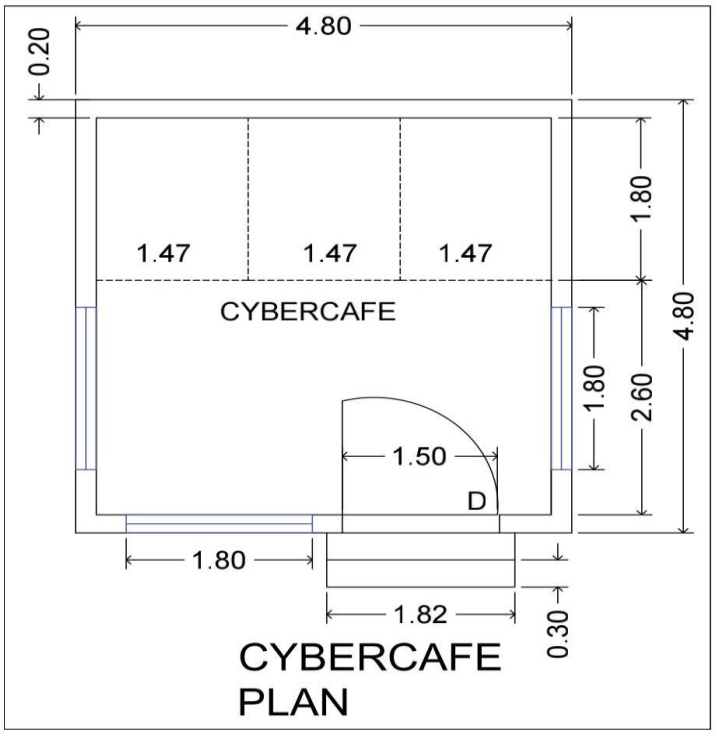
FUNDATION
0.2

Cybercafe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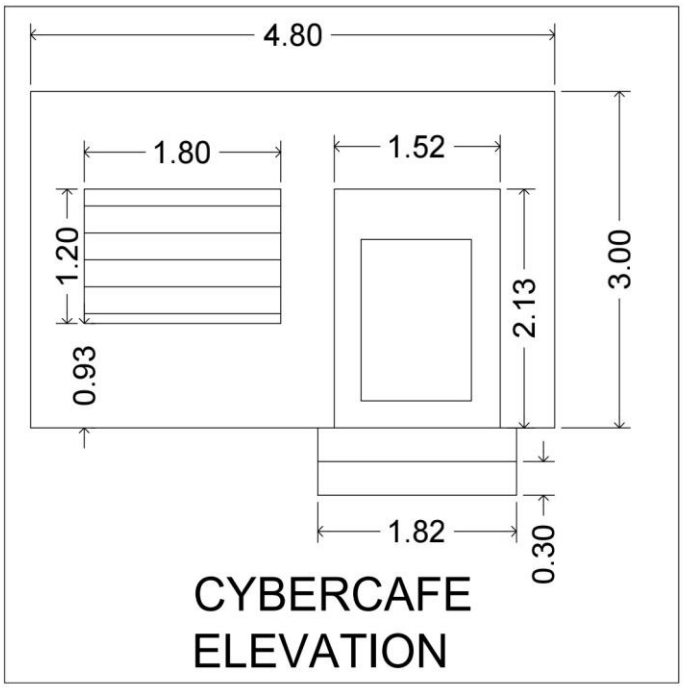
CYBERCAFE
PLAN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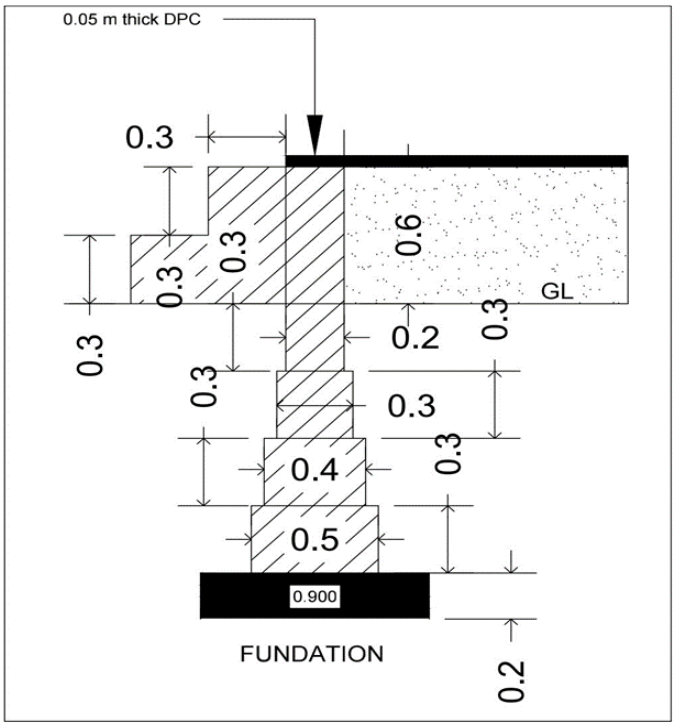
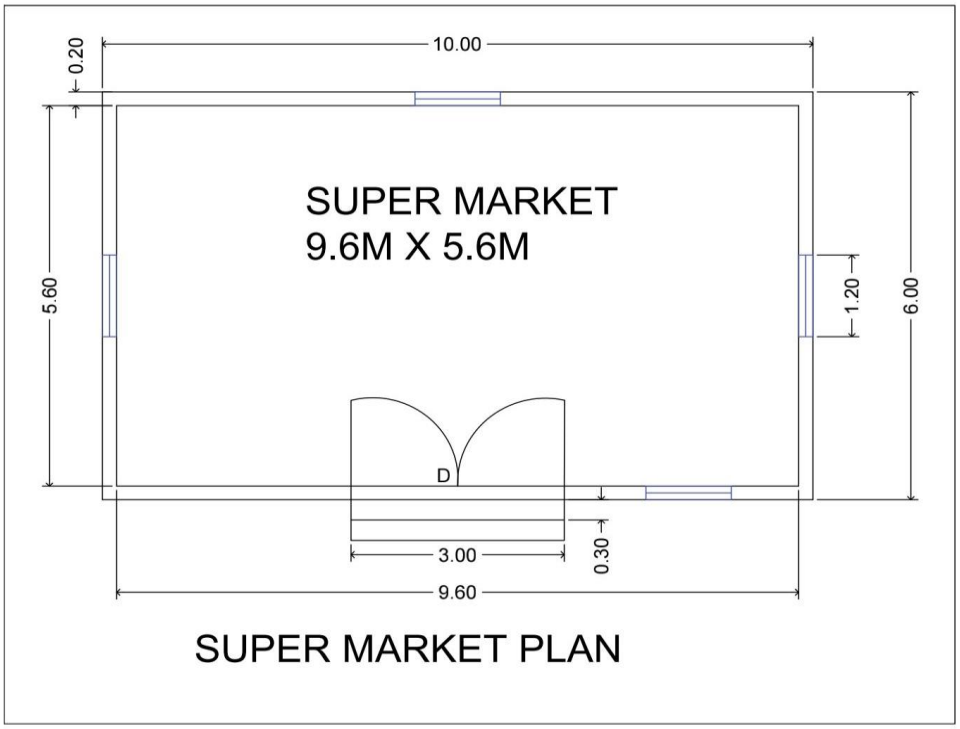
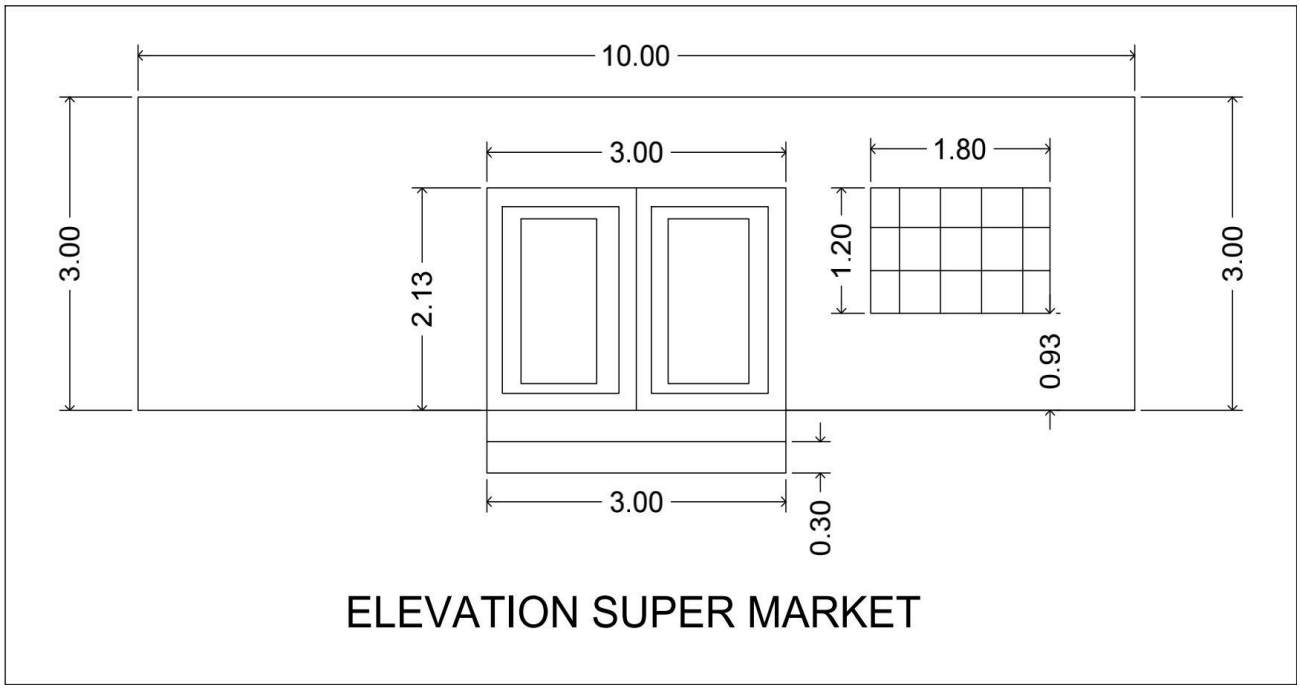
CYBERCAFE
ELEVATION

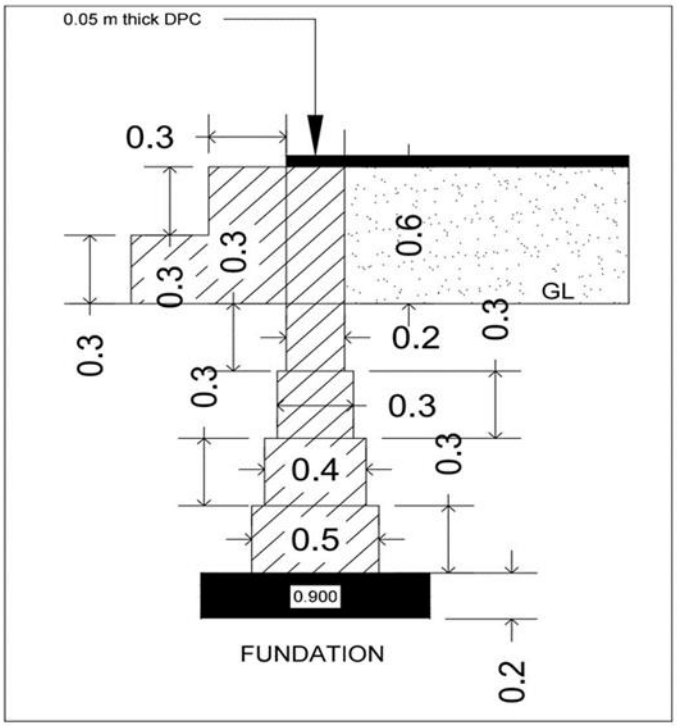


Supermarket





ELEVATION SUPER MARKET



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

❖**Summary Of Photographs Of motikharaj– Allocated Village** :

❖Summary Of Photographs Of bavka– Ideal Village

Summary Of Photographs Of punsari– Smart Village :

12.8 Village Interaction with sarpanch/talati Report with the photograph :

Village Interaction with Sarpanch / Talati letter

Vishwakarma Yojana Phase VIII

Motikharaj village , dahod taluka , dahod Dist .

Village code : 389151

Subject : Village Interaction Form with Sarpanch / Talati of motikharaj village

I sarpanch / talati of Motikharaj village undersigned gives approval of doing Village Interaction activity under Vishwakarma Yojana phase VIII- An approach towards rurbanisation by students of government engineering college dahod named bariya ankit (170180106009), Solanki divyesh (170180106110).

Date : 27-10-2020

Sign:

સરપંચ
ગ્રામ પંચાયત મોટીખરજ
તા.જિ.દાહોદ.

Seal Of Grampanchayat

12.9 Sarpanch Letter giving information about the village development :

- **Approval Letter for Proposed Designs approval**

Approval Letter For Proposed Design Approval

Vishwakarma Yojana Phase VIII

Motikharaj village , dahod taluka , dahod Dist .

Village code : 389151

Subject : Approval of design proposal for motikharaj

I sarpanch/talati of motikharaj village undersigned gives approval for following main design proposal given under Vishwakarma Yojana phase VIII- An approach towards rurbanisation by students of government engineering college dahod Named bariya ankit (170180106009). Solanki divyesh(170180106110).

Approved main design proposals as of part 1:

1) Low cost toilet

2) Community hall

3) Library

Date: 18-12-2020

Sign:

તલાટી-કમ-મંત્રી
ગ્રામ પંચાયત,મોટીખરજ
તા.જિ.દાહોદ

સરપંચ
ગ્રામ પંચાયત મોટીખરજ
તા.જિ.દાહોદ.

Seal Of Grampanchayat

❖Approval Letter For Swachhta & Covid Awareness Activity approval :

Approval Letter For Swachhta & Covid Awareness Activity Approval

Vishwakarma Yojana Phase VIII

Motikharaj village , dahod taluka , dahod Dist .

Village code : 389151

Subject : Approval of doing awareness activity for swachhta and covid for Motikharaj village

I sarpanch / talati of Motikharaj village undersigned gives approval of doing swachhta and covid awareness activity under Vishwakarma Yojana phase VIII- An approach towards rurbanisation by students of Government engineering college dahod named bariya ankit (170180106009). Solanki divyesh(170180106110).

Date: 18-12-2020

Sign:

તલાટી-કમ-મંત્રી
ગ્રામ પંચાયત,મોટીખરજ
તા.જિ.દાહોદ

Seal Of Grampanchayat